FINAL
Preliminary Assessment Report
Roy P. Benavidez National Guard Armory
El Campo, Texas

Perfluorooctane-Sulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA)
Impacted Sites
ARNG Installations, Nationwide

January 2020

Prepared for:

Army National Guard Headquarter
111 S. George Mason Drive
Arlington, VA 22204

U.S. Army Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

Prepared by:

AECOM
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876
aecom.com

Contract Number: W912DR-12-D-0014
Delivery Order: W912DR17F0192

Table of Contents

Figures

Tables

Appendices

Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
amsl	above mean sea level
AOI	area of interest
The Armory	Roy P. Benavidez National Guard Armory
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2-DCE	cis-1,2-dichloroethene
CLP	Cleaner, Lubricant & Protectant
COC	chemical of concern
CSM	conceptual site model
El Campo Armory	Roy P. Benavidez National Guard Armory
°F	degrees Fahrenheit
FTA	fire training area
GAC	granular activated carbon
GWBU	groundwater-bearing unit
GWTS	Groundwater Treatment System
HA	USEPA Health Advisory
IED	Installations & Environment Division
ITRC	Interstate Technology Regulatory Council
MSC	Media Specific Concentration
NOAA	National Oceanic and Atmospheric Administration
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PCL	protective concentration level
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
Reynolds	Reynolds Metal Company
SI	Site Inspection
TAC	Texas Administrative Code
TCE	trichloroethene
TCEQ	Texas Commission of Environmental Quality
TMD	Texas Military Department
TRRP	Texas Risk Reduction Program
TXARNG	Texas Army National Guard
TWDB SDR	Texas Water Development Board Submitted Drillers Reports
US	United States
USACE	United States Army Corps of Engineers

USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VCP	Voluntary Cleanup Program
VSI	visual site inspection
WRCC	Western Regional Climate Center

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division (IED), Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide*. The ARNG is assessing potential effects on human health related to processes at facilities that used or are impacted by per- and polyfluoroalkyl substances (PFAS), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible. In addition, the ARNG is reporting on known contamination and other ongoing investigations at businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for an off-site PFAS release.

AECOM completed a PA for PFAS at Roy P. Benavidez National Guard Armory (also referred to as “the Armory” or “the facility”) in El Campo, Texas, to assess potential PFAS release areas and exposure pathways to receptors. El Campo Armory was built by the Texas ARNG (TXARNG) in the 1960’s. Prior to 2004 the Armory served as a cavalry unit; activities on site included maintaining vehicles, mustering troops, grazing cattle, and small arms firing. Currently, the Armory serves as an engineering company. The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases;
- Conducted a 1-day site visit on 25 April 2019;
- Interviewed personnel associated with El Campo Armory activities during the site visit (personnel on site since 2018);
- Phone interviewed El Campo Volunteer Fire Department Fire Chief (who worked with fire department since 1984);
- Completed a visual site inspection (VSI) and documented with photographs.

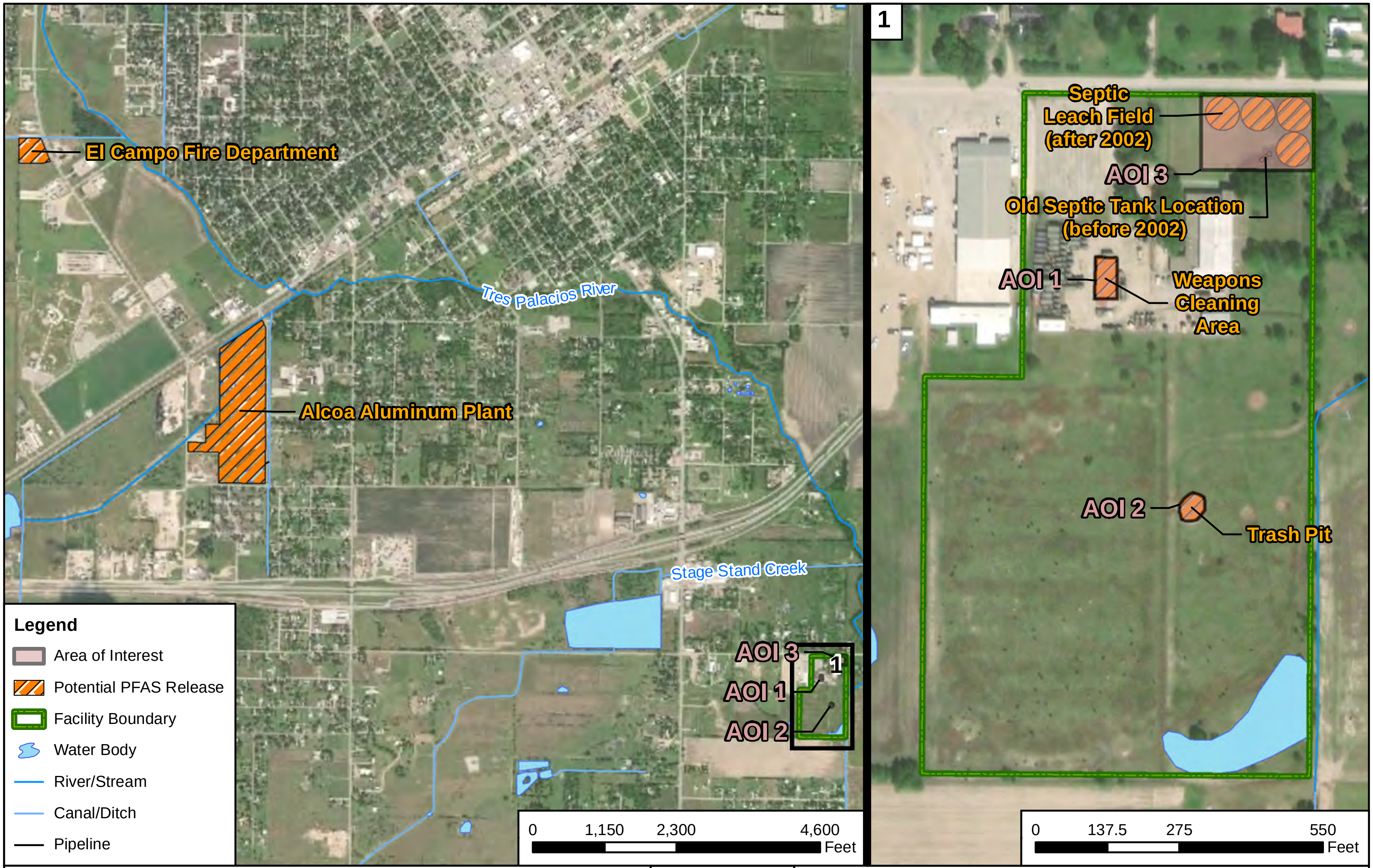
Three potential PFAS sources were identified at the Armory: weapons cleaning, which is suspected to have taken place at the Maintenance Building (area of interest [AOI] 1), a trash pit located in the undeveloped part of the facility (AOI 2), and the septic leach field (AOI 3). Two additional potential PFAS sources were identified at off-facility sites in the vicinity of the Armory. Alcoa currently owns a closed aluminum plant that is located approximately 2 miles west-northwest of the Armory. PFAS use has historically been linked to metal plating and etching (Interstate Technology Regulatory Council [ITRC], November 2017) and could have potentially been used at the plant. The second off-facility site is the El Campo Volunteer Fire Department, located approximately 3 miles northwest of the facility. The El Campo Volunteer Fire Department stores AFFF onsite and in its firefighting trucks and uses it during emergency firefighting activities.

PFAS have been confirmed in groundwater/drinking water at El Campo Armory, and complete exposure pathways exist for PFAS contamination in groundwater in association with either an on-facility or off-facility source. The locations of all potential on and off-facility PFAS sources are shown on **Figure ES-1**. **Figure ES-2** through **ES-4** present the preliminary conceptual site models (CSMs) for the on-facility AOIs.

Based on the documented presence of PFAS in the groundwater/drinking water at El Campo Armory, the Armory will move forward in the CERCLA process and proceed to an SI. **Table ES-1** below describes the potential sources of PFAS located at the facility.

Table ES-1: AOIs at El Campo Armory

Area of Interest	Description	Used by	Release Dates
AOI 1 Weapons Cleaning Area	Weapons cleaning activities have taken place at the Armory over many years. The product used for weapons cleaning is Cleaner, Lubricant & Protectant (CLP®), which includes trace amounts of PFAS. Weapons cleaning activities most likely took place in the Maintenance Building. Typically, the main waste from weapons cleaning is the rags used to wipe down the weapons. A small amount of the CLP® is applied to a rag and used to wipe down the weapons. The rags are then disposed in some manner. In addition to any releases at the building where the weapons cleaning was likely conducted, the rags may have been disposed in the trash pit. PFAS releases from CLP® may have migrated to surrounding soil and infiltrated into the subsurface and groundwater.	TXARNG	Potentially 1964-2019
AOI 2 Trash Pit	The trash pit at the facility has historically served as a dumping ground for municipal waste. The trash that has been dumped at the trash pit potentially contains PFAS, such as CLP® contaminated rags. PFAS releases could have infiltrated into subsurface soil and groundwater from beneath the trash pit.	TXARNG	Potentially 1964-2019
AOI 3 Septic Leach Field	PFAS-containing liquids may have been poured down the drains that are connected to the septic system. Liquids in the septic system are eventually sprayed in the northeast corner of the site using sprinklers. Potential PFAS releases could have infiltrated into the soil, subsurface, and groundwater.	TXARNG	Potentially 2002-2019



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at El Campo Armory, TX			
REVISED	10/2/2019	GIS BY	MS	10/2/2019
SCALE	1:27,600	CHK BY	MC	10/2/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	10/2/2019

N

TITLE

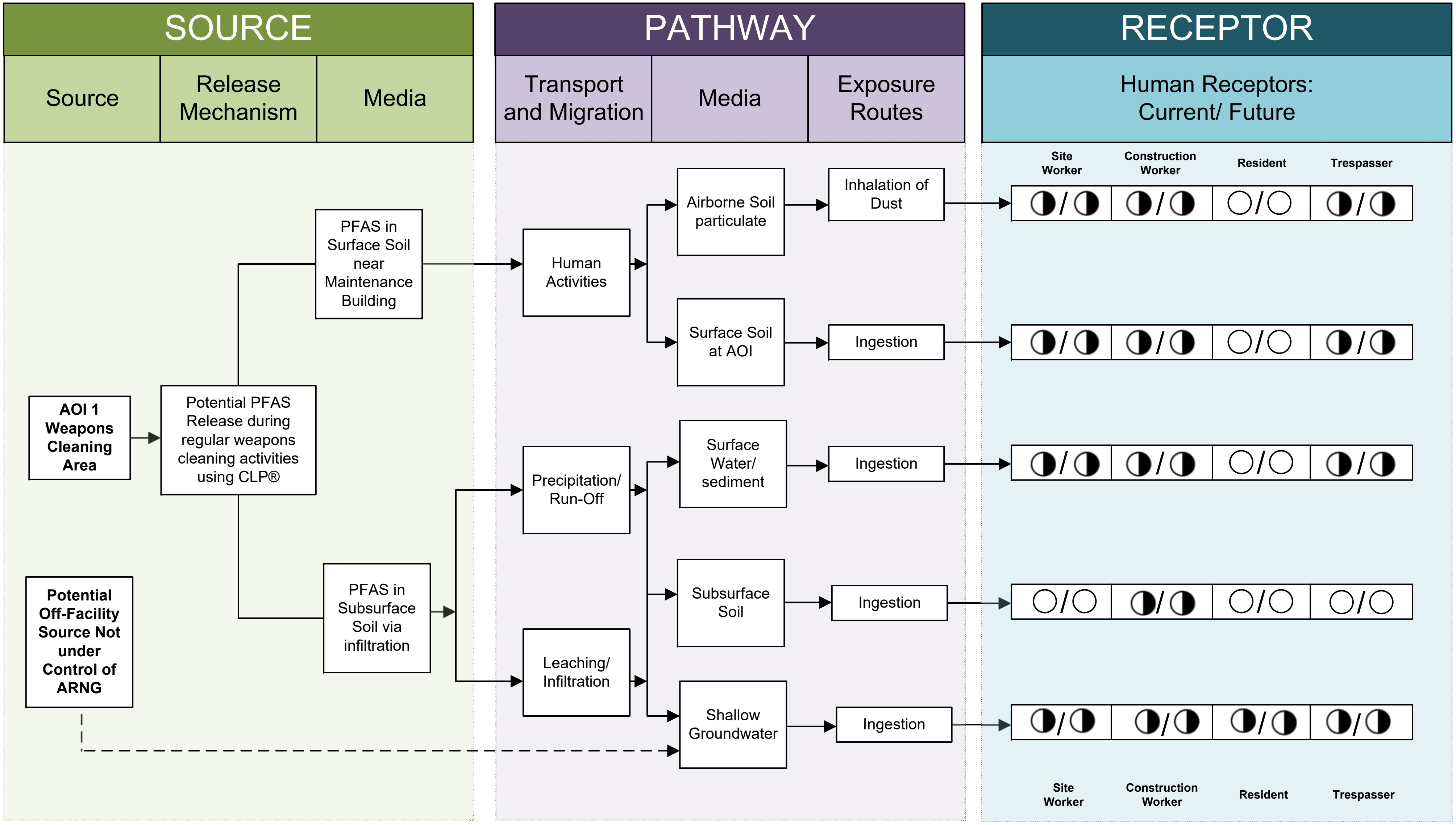
Summary of Findings

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_ES-1_El_Campo_Summary.mxd

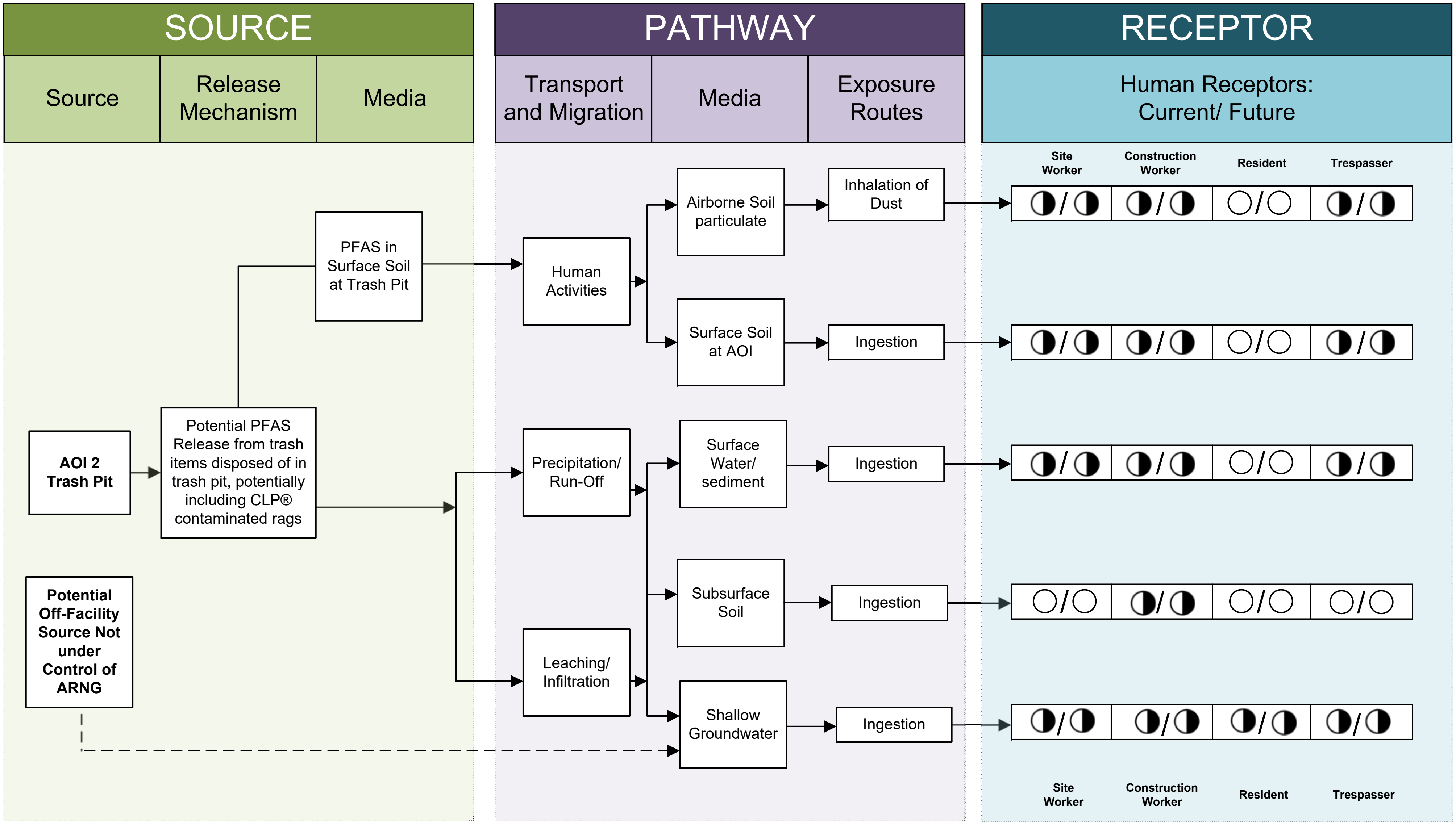


LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- ○ Incomplete Pathway
- ◐ Potentially Complete Pathway
- ● Complete Pathway

Note:
1. The residential receptor refers to an off-facility receptor.

Figure ES-2
Preliminary Conceptual Site Model
AOI 1 Potential PFAS Release at Weapons Cleaning Area at El Campo Armory



LEGEND

Flow-Chart Stops

Flow-Chart Continues

Partial / Possible Flow

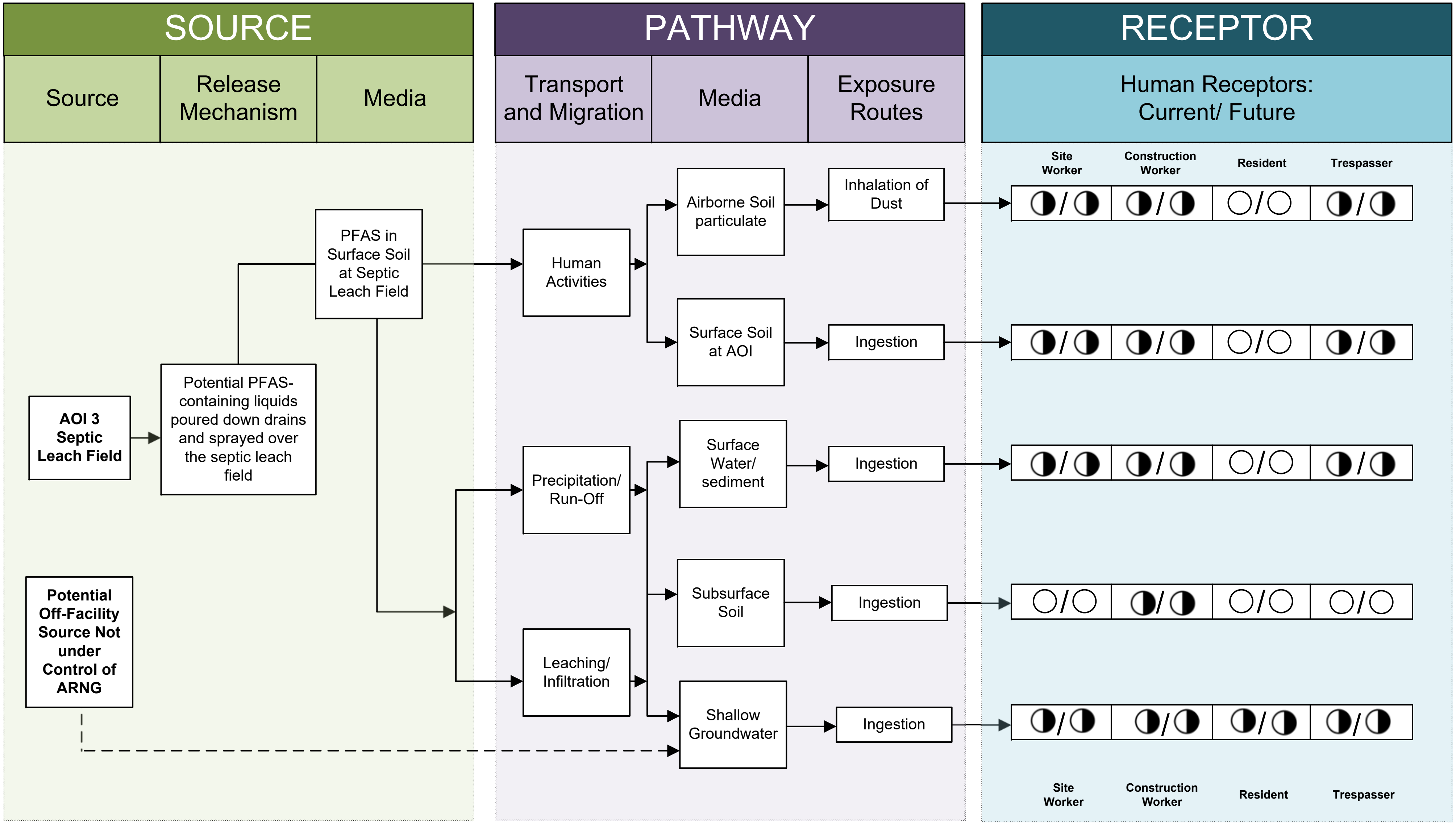
○ Incomplete Pathway

◑ Potentially Complete Pathway

● Complete Pathway

Note:
1. The residential receptor refers to an off-facility receptor.

Figure ES-3
Preliminary Conceptual Site Model
AOI 2 Potential PFAS Release at Trash Pit at El Campo Armory



LEGEND

Flow-Chart Stops
Flow-Chart Continues
Partial / Possible Flow
○ Incomplete Pathway
◐ Potentially Complete Pathway
● Complete Pathway

Note:
1. The residential receptor refers to an off-facility receptor.

Figure ES-4
Preliminary Conceptual Site Model
AOI 3 Potential PFAS Release at Septic Leach Field at El Campo Armory

1. Introduction

1.1 Authority and Purpose

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division (IED), Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017, and Modification 01 issued 30 September 2017. The ARNG is assessing potential effects on human health related to processes at their facilities that used per- and poly-fluoroalkyl substances (PFAS), primarily releases of aqueous film forming foam (AFFF) although other sources of PFAS are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued a Lifetime Health Advisory (HA) for PFOA and PFOS in May 2016 (70 parts per trillion [ppt] combined concentration), but there are currently no promulgated national standards regulating PFAS in drinking water. In the absence of federal maximum contaminant levels, some states have adopted their own drinking water standards for PFAS. The Texas Commission on Environmental Quality (TCEQ) has established Protective Concentration Levels (PCLs) for 16 PFAS, including PFOS and PFOA in soil and groundwater under the Texas Risk Reduction Program (TRRP) Rule, established in accordance with 30 Texas Administrative Code (TAC) § 350.75 (TCEQ, 2018). With TCEQ Tier 1 groundwater PCLs for PFAS ranging from 93 to 71,000 ppt, the HA of 70 ppt is more conservative.

This report presents findings of a PA for PFAS at Roy P. Benavidez National Guard Armory (also referred to as “the Armory” or “the facility”) in El Campo, Texas, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [Part 300], and USACE requirements and guidance.

The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA. This PA Report documents potential locations where PFAS may have been released into the environment at or adjacent to the El Campo Armory.

1.2 Preliminary Assessment Methods

The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases;
- Conducted a 1-day site visit on 25 April 2019;
- Interviewed personnel associated with El Campo Armory activities during the site visit (personnel on site since 2018);

- Phone interviewed El Campo Volunteer Fire Department Fire Chief (who worked with fire department since 1984);
- Completed a visual site inspection (VSI) and documented with photographs.

1.3 Report Organization

This report has been prepared in accordance with the USEPA *Guidance for Performing Preliminary Assessments under CERCLA* (USEPA, 1991). The report sections and descriptions of each are:

- **Section 1** – **Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA
- **Section 2** – **Fire Training Areas:** describes the potential or suspected fire training areas (FTAs) at the facility identified during the site visit
- **Section 3** – **Non-Fire Training Areas:** describes other locations of potential or suspected PFAS releases at the facility identified during the site visit
- **Section 4** – **Emergency Response Areas:** describes areas of suspected or potential PFAS release at the facility, specifically in response to emergency situations
- **Section 5** – **Adjacent Sources:** describes sources of potential PFAS release adjacent to the facility that are not under the control of ARNG
- **Section 6** – **Preliminary Conceptual Site Model:** describes the pathways of PFAS transport and receptors at the facility
- **Section 7** – **Conclusions and Uncertainty:** summarizes the data findings and presents the conclusions and uncertainties of the PA
- **Section 8** – **References:** provides the references used to develop this document
- **Appendix A** – Data Resources
- **Appendix B** – Preliminary Assessment Documentation
- **Appendix C** – Photographic Log

1.4 Facility Location and Description

The TXARNG El Campo Armory is located off County Road 406 in El Campo, Texas, in Wharton County, approximately 5 miles west of the Colorado River in southeast Texas (**Figure 1-1**). The 20-acre Armory is bordered on the north by residential properties, on the west by American Legion baseball fields, and undeveloped agricultural land surrounds the remainder of the Armory.

The El Campo Armory has been occupied by the TXARNG since approximately 1959. Prior to this time, the Armory was undeveloped. Historically, a portion of the Armory property was used as a small-arms firing range consisting of two firing platforms and a backstop/bermed area; however, the firing range is no longer in use. The site has been used to muster troops, maintain vehicles, and clean weapons (Corrigan Consulting, Inc., August 2005). The Armory property is currently used primarily by a TXARNG engineering company.

1.5 Facility Environmental Setting

El Campo Armory is located in southeastern Texas, approximately 50 miles north of the Gulf of Mexico. The topography of the El Campo area is generally flat with a gentle slope from north to south across the region. The Tres Palacios River is located approximately 0.25-mile east of the Armory.

1.5.1 Geology

Based on the Geologic Atlas of Texas Seguin Sheet, the Armory lies within the outcrop area of the Beaumont Formation, which consists of mostly clay, silt, sand, and gravel, and includes mainly stream channel, point bar, natural levee, and backswamp deposits. Concretions and massive accumulations of calcium carbonate (caliche), iron oxide, and iron-manganese oxides are evident in the zone of weathering (Corrigan Consulting, Inc., August 2005).

1.5.2 Hydrogeology

The Chicot Aquifer is the major aquifer for the area, consisting mainly of discontinuous layers of sand and clay of about equal thickness deposited during the Quaternary period. Stratigraphic units within the aquifer from oldest to youngest are: Willis Sand, Bentley Formation, Montgomery Formation, Beaumont Clay, and Alluvium. The Chicot Aquifer overlies the Evangeline Aquifer and includes all deposits from the land surface to the top of the Evangeline Aquifer (US Geological Survey [USGS], 1988). The base of the Chicot Aquifer extends to more than 1,100 feet below ground surface (bgs) in southern Wharton County. Based on data collected from local water wells, the hydraulic conductivity of the Chicot Aquifer in the area of the site is 88 feet per day, and the average seepage velocity throughout Wharton County is 75 feet per year (Corrigan Consulting, Inc., August 2005).

Land surface elevation at the facility is approximately 90 feet above mean sea level (amsl) (Corrigan Consulting, Inc., August 2005). According to well reports submitted to the Texas Water Development Board Submitted Drillers Reports (TWDB SDR), two domestic supply wells in the direct vicinity of the Armory had groundwater levels of 35 feet bgs and 48 feet bgs, respectively. The groundwater flow direction in the vicinity of the site is generally to the south and southwest. Site characterization work done to the west of the Armory, in the vicinity of the Alcoa Aluminum Plant, has identified three generalized, coarse-grained, alluvial groundwater-bearing units (GWBUs) ranging from shallow to deep. These GWBUs are the “A-Zone”, which is present between approximately 32 and 50 feet bgs; the “B-Zone”, which is present between approximately 55 and 135 feet bgs; and the “C-Zone”, which is present between approximately 150 and 200 feet bgs. Groundwater elevations in the A-Zone ranged from 60.99 feet amsl to 65.55 ft amsl, and the direction of groundwater flow was to the south-southwest. Groundwater elevations in the B-Zone ranged from 54.42 ft amsl to 64.75 ft amsl, and the direction of groundwater flow was to the southwest and south. Groundwater elevations in the C-Zone ranged from 49.50 ft amsl to 45.32 ft amsl, and the direction of groundwater flow was generally to the southwest (Amec Foster Wheeler Environment & Infrastructure, Inc., March 2016).

A query of the TWDB SDR Database identified 12 environmental soil borings, 17 domestic wells, 2 stock wells, and one rig supply well, for a total of 32 wells within a 1-mile radius of the site. The wells range in depth from 4 to 250 feet (**Figure 1-2**) (TWDB SDR Database, 2019).

The El Campo Armory uses a Class I groundwater well for all potable water uses and does not receive drinking water or sanitary sewer services from local utilities. The facility has a septic system that includes a pre-treatment tank, a dosing tank, a treatment plant, and a holding tank. Details on the septic system design, as of 2002, can be found in **Appendix A**. The plans show four sprinkler heads in the northeast corner of the facility that are used to spray the area. The location of the old septic tanks (prior to 2002) as well as the new septic leach field (after 2002) can be found on **Figure 3-1**.

Drinking water from the Armory's well was previously sampled by the National Guard Bureau in April 2017; PFAS were found above the combined HA of 70 ppt (**Table A-1**; **Appendix A**). Specifically, the combined concentration of PFOA and PFOS was 79.4 ppt; therefore, the Armory switched to bottled water at that time (Texas Military Department [TMD], May 2017). In August 2018, a groundwater treatment system (GWTS) was installed to reduce the levels of PFOS and PFOA in the Armory's drinking water to below 70 ppt. The GWTS consists of pumping groundwater into a holding tank and then through a granular activated carbon (GAC) vessel. After groundwater was treated through the new GWTS, analytical results for PFOS and PFOA were observed to be below the HA of 70 ppt.

1.5.3 Hydrology

Overland flow of surface water at El Campo Armory flows primarily across paved or grassy areas and collects near the northwest corner of the primary office building and in a manmade pond in the southeast corner of the Armory. There is no stormwater drainage system on the site; surface flow collects in low-lying areas (**Figure 1-3**). Surface water that falls to the east of the site generally flows to the southeast.

The nearest surface water body is Tres Palacios River, located less than 0.25 mile east of Armory property.

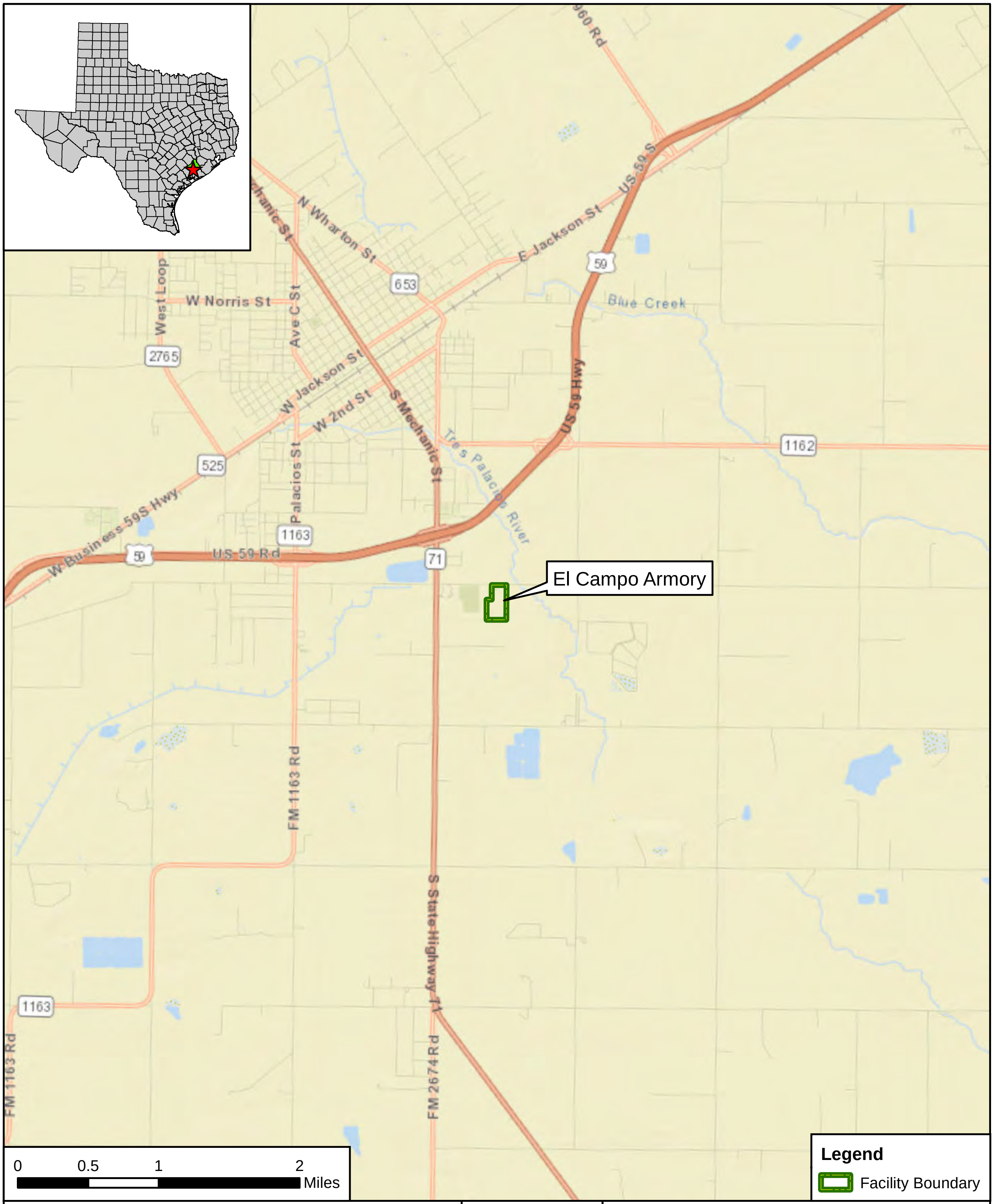
1.5.4 Climate

Reported 2018 climate data for the neighboring City of Wharton, Texas include an average winter temperature of approximately 50 degrees Fahrenheit (°F), and an average summer temperature of approximately 85°F; total precipitation was 37.15 inches, with the majority of rainfall occurring between June and December (National Oceanic and Atmospheric Administration [NOAA], 2019).

Historically, El Campo has an average annual minimum temperature of 59.3°F, and an average annual maximum temperature of 81.8°F. The historical average for total annual precipitation in El Campo is 41.27 inches. It very rarely snows in the area (Western Regional Climate Center [WRCC], June 2016).

1.5.5 Current and Future Land Use

The El Campo Armory has been occupied by the TXARNG since approximately 1959. Prior to this time, the site was undeveloped. The Armory currently includes approximately 1 acre of developed area used for vehicle/equipment storage and administrative activities. The Armory site includes a parking lot, a maintenance building, two office buildings, a water well, and approximately 13 acres of undeveloped grassland. Historically, a portion of the property was used as a small-arms firing range consisting of two firing platforms and a backstop/bermed area; however, the firing range is no longer in use (Corrigan Consulting, Inc., August 2005). The site has been used to muster troops, maintain vehicles, and clean weapons. Cattle have historically been allowed to graze on the undeveloped portion of the property. Currently, the Armory is used primarily as an engineering company. No future changes to the current use were noted during personnel interviews.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at El Campo Armory, TX			
REVISED	6/19/2019	GIS BY	MS	6/19/2019
SCALE	1:63,360	CHK BY	MC	6/19/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	6/19/2019

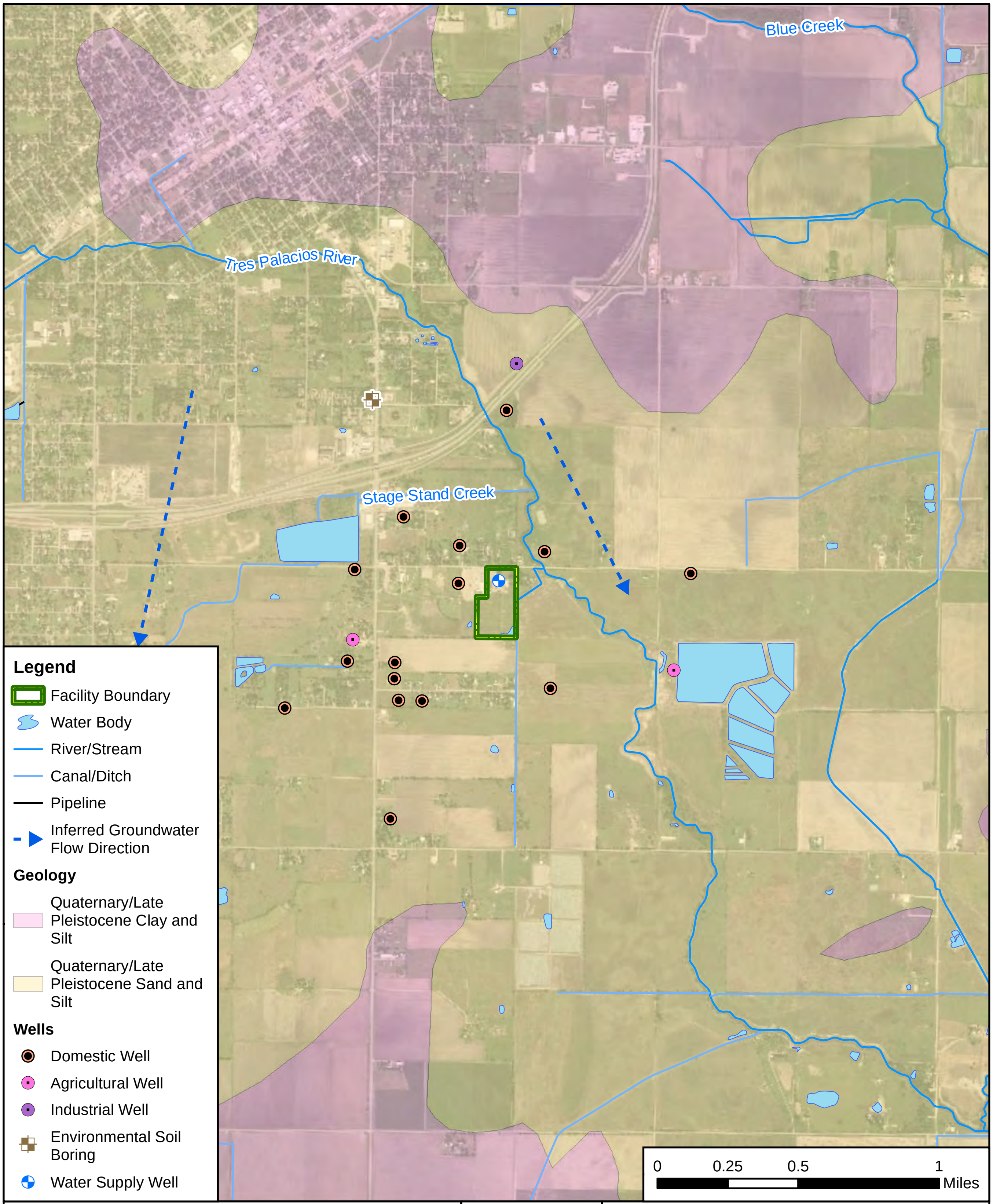
N

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_1-1_El_Campo_Facility_Location.mxd



CLIENT	ARNG				
NOTES	Preliminary Assessment for PFAS at El Campo Armory, TX				
REVISED	9/9/2019	GIS BY	MS	9/9/2019	
SCALE	1:31,680	CHK BY	MC	9/9/2019	
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	9/9/2019	

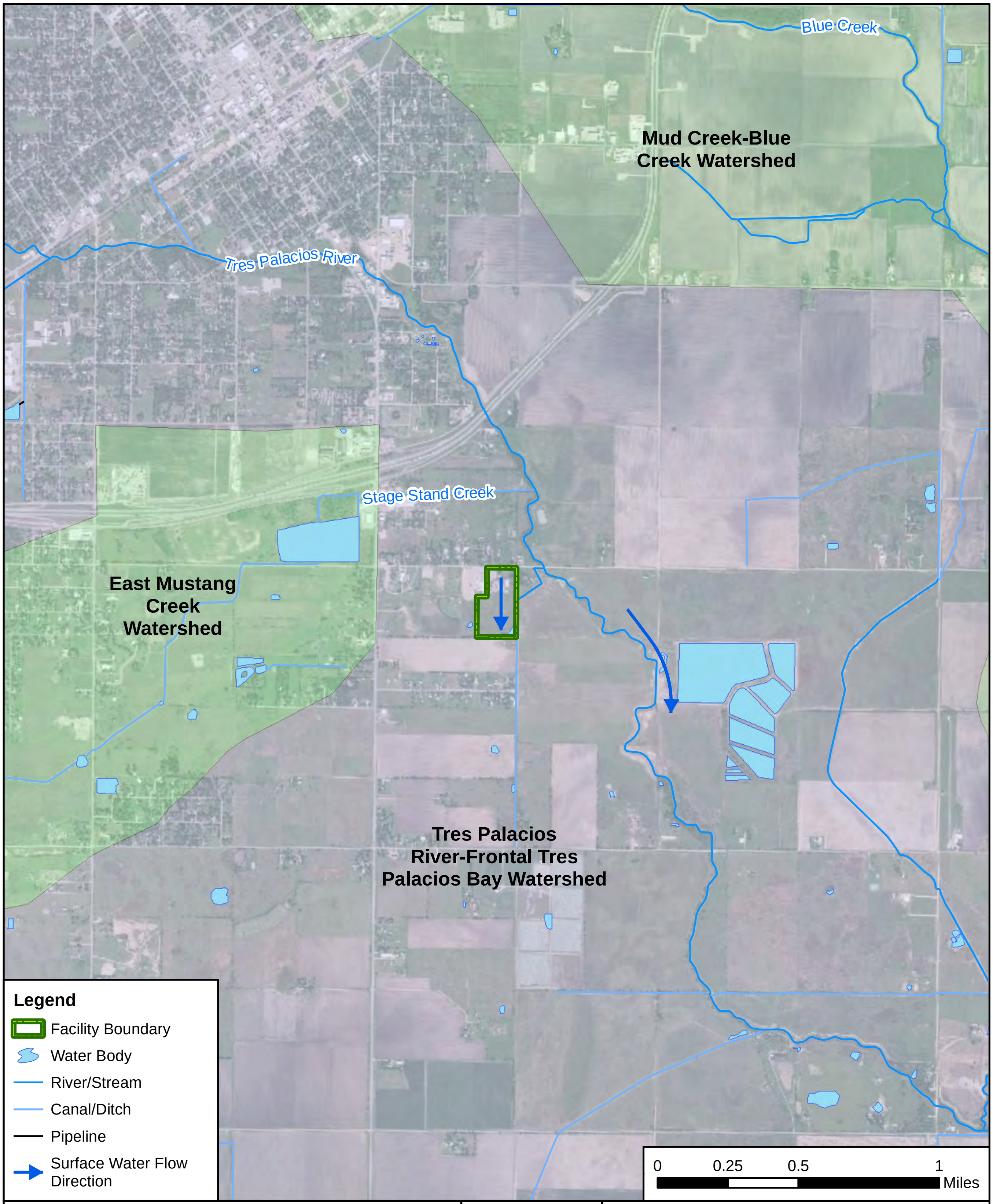
N

Groundwater Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-2

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_1-2_El_Campo_Groundwater.mxd



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at El Campo Armory, TX			
REVISED	6/19/2019	GIS BY	MS	6/19/2019
SCALE	1:31,680	CHK BY	MC	6/19/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	6/19/2019

N

Surface Water Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-3

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_1-3_El_Campo_Surface_Water.mxd

2. Fire Training Areas

El Campo Armory personnel confirmed there are no FTAs at the Armory. It is not suspected that fire training has ever taken place at the Armory, and AFFF is not suspected to have ever been stored or used onsite. The Armory receives all fire protection services from the El Campo Volunteer Fire Department.

3. Non-Fire Training Areas

Five non-FTAs were identified at El Campo Armory during the PA and are discussed below. The Armory manager stated during an interview that activities associated with PFAS-containing materials have not been conducted at the Armory; however, weapons cleaning was conducted on site, and a trash pit was located on site. In addition, the kitchen and a former fuel point are discussed below. No AFFF was identified or has historically been located on the Armory site. The following five subsections document the findings of the VSI. **Figure 3-1** shows the location of these non-FTAs, except for the location of the former fuel point, which is not known.

3.1 Weapons Cleaning

Small quantities of CLP® (Cleaner, Lubricant & Protectant) have been reportedly used by troops throughout the years at the Armory for weapons cleaning exercises. CLP® was used to clean small arms, and CLP® is known to contain Teflon, which contains PFAS. Typically, the main waste from weapons cleaning is the rags used to wipe down the weapons. A small amount of CLP® is applied to a rag and used to wipe down the weapons. The rags are then disposed in some manner. There is uncertainty regarding where the CLP® was used and how it was disposed of. It is assumed that the weapons cleaning activities were conducted primarily in the Maintenance Building. In addition to any releases at the building where the weapons cleaning was conducted, the rags may have been disposed of in the on-site trash pit.

3.2 Trash Pit

During PA interviews, TXARNG staff noted no current or former landfills located at or in the vicinity of the Armory; however, a small trash pit exists in the undeveloped area of the Armory. Historically, local community members have used the area to dump unwanted household materials. The contents of the trash pit are unknown. It is possible that rags used to clean weapons (containing PFAS) were disposed at the trash pit.

3.3 Septic Leach Field

Because the site does not have sanitary services from the city, a septic system is used instead. The septic system works by passing wastewater through a pre-treatment tank, dosing tank, treatment plant, and a holding tank. From the holding tank, treated wastewater is then sprayed in the northeast corner of the site through four pop-up sprinkler heads. Drawings of the septic system design can be found in **Appendix A**, and the location of the leach fields can be seen on **Figure 3-1**. PFAS could have reached the septic leach field if PFAS-containing liquids were poured down the drains at the Maintenance Building or Armory.

3.4 Kitchen

The kitchen, located in the main office building, is equipped with a fire suppression system. The kitchen hood is connected to a K-class fire extinguisher, which is not a known source of PFAS. A picture of the K-class fire extinguisher located in the kitchen can be found in **Appendix C**.

3.5 Former Fuel Point

The former fuel point, historically located adjacent to the maintenance building, was previously equipped with ABC class fire extinguishers. ABC class fire extinguishers are not a known source of PFAS.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at El Campo Armory, TX			
REVISED	10/2/2019	GIS BY	JP	10/2/2019
SCALE	1:2,667	CHK BY	MC	10/2/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	10/2/2019

N

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_3-1_El_Campo_Non-Fire_Training_Areas.mxd

4. Emergency Response Areas

To the best of their knowledge, TXARNG personnel who have been working at the facility since 2018 reported no past emergency responses during the previous 5 years (2014-2019). A phone interview was conducted with the El Campo Volunteer Fire Department Fire Chief, who has been in the role since 1984. The Fire Chief had no recollection of any emergency fire activities occurring in the vicinity of the Armory.

5. Adjacent Sources

Two off-facility potential PFAS sources adjacent to the El Campo Armory were identified during the PA through interviews (**Appendix B**), online research, and review of reports. **Figure 5-1** presents the location of potential adjacent source areas described below.

5.1 Alcoa Aluminum Plant

Located approximately 2 miles west-northwest of the Armory is a closed aluminum extrusion plant currently owned by Alcoa. This property was actively used from 1963 until 2001. In 1997, Bon L Campo conducted due diligence activities prior to purchasing the property from Reynolds Metal Company (Reynolds). Soil, sediment, sludge, and groundwater were assessed in and around the various waste management units and surface impoundments. Subsequent investigations were conducted by Reynolds in 1997 and documented chromium, aluminum, barium, lead, polychlorinated biphenyls (PCBs), and other chemicals of concern (COCs) in soil, and trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) in groundwater in excess of the 30 TAC 335 Risk Reduction Rule Standard 2 Media Specific Concentrations (MSCs). Subsequently, Reynolds enrolled the property into the Voluntary Cleanup Program in 1997 (VCP No. 538) (AMEC Geomatrix, Inc., December 2011).

Alcoa is known to have contributed to elevated levels of TCE in the groundwater located as far as 1.75 miles south-southwest of the plant. However, TCE, dichloroethane, and vinyl chloride were all analyzed for in the well located at the facility and were not detected (Letter from Alcoa, 2002). Groundwater flows from the plant to the south-southwest for the most part, but some locally influenced groundwater has been observed to flow to the south-southeast; however, there is no evidence that points to groundwater flow from the plant reaching the Armory. The idle aluminum plant has been owned at different times by the William L Bonnell Company, Inc., Reynolds Metals Company, and now Alcoa (Houston Chronicle, April 2002). The location of the Alcoa aluminum plant in El Campo, Texas is 29°10’56.9”N; 96°16’58.1”W.

5.2 El Campo Volunteer Fire Department

The El Campo Volunteer Fire Department is 3 miles northwest of the Armory. A phone interview was conducted with the El Campo Volunteer Fire Department Fire Chief, who has been working at the department since 1984. The Fire Chief reported that AFFF is stored on site and used in firefighting trucks for emergency firefighting. Fire training activities for the fire department are not conducted with AFFF. Additionally, the Fire Chief had no memory of any fires occurring at the Armory. However, AFFF was used by the fire department for emergencies in unknown locations within the city. The El Campo Volunteer Fire Department is located at 29°11’40.1”N; 96°17’37.5” W.

CLIENT ARNG				
PROJECT Preliminary Assessment for PFAS at El Campo Armory, TX				
REVISED	10/2/2019	GIS BY	MS	10/2/2019
SCALE	1:31,680	CHK BY	MC	10/2/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	10/2/2019

N

TITLE

Adjacent Sources

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_5-1_El_Campo_Adjacent_Sources.mxd

6. Preliminary Conceptual Site Model

Based on the PA findings, the potential PFAS release areas associated with the El Campo Armory weapons cleaning, trash pit, and septic leach field were identified as area of interest (AOI) 1, 2, and 3, respectively. This section describes the preliminary conceptual site model (CSM) components developed for these AOIs. The CSM identifies three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, and (3) receptor. If any of these elements are missing, the pathway is considered incomplete. The AOIs are shown on **Figure 6-1**, and the preliminary CSMs for AOIs 1, 2, and 3 are presented in **Figure 6-2** through **Figure 6-4**.

In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of PFAS toxicological study. Receptors at El Campo Armory include site workers, construction workers, and residents outside the facility boundary. As described below, the preliminary CSMs for the weapons cleaning area, trash pit, and septic leach field AOIs indicate the specific receptors that could potentially be exposed to PFAS.

Drinking water at the Armory was found to contain PFAS compounds above the combined HA. Sampling conducted by the National Guard Bureau in April 2017 found a combined PFOA and PFOS concentration of 79.4 ppt in drinking water. Exposure of El Campo Armory personnel to PFAS contaminated drinking water has been eliminated through installation of a drinking water filter system. TXARNG is working with the TMD to monitor the currently operating filter system that is intended to remove PFAS to below action levels. The system was activated in August 2018. Prior to operation of the filter, between April 2017 and August 2018, bottled water was supplied to the Armory for consumption (TMD, May 2017).

6.1 AOI 1 Weapons Cleaning

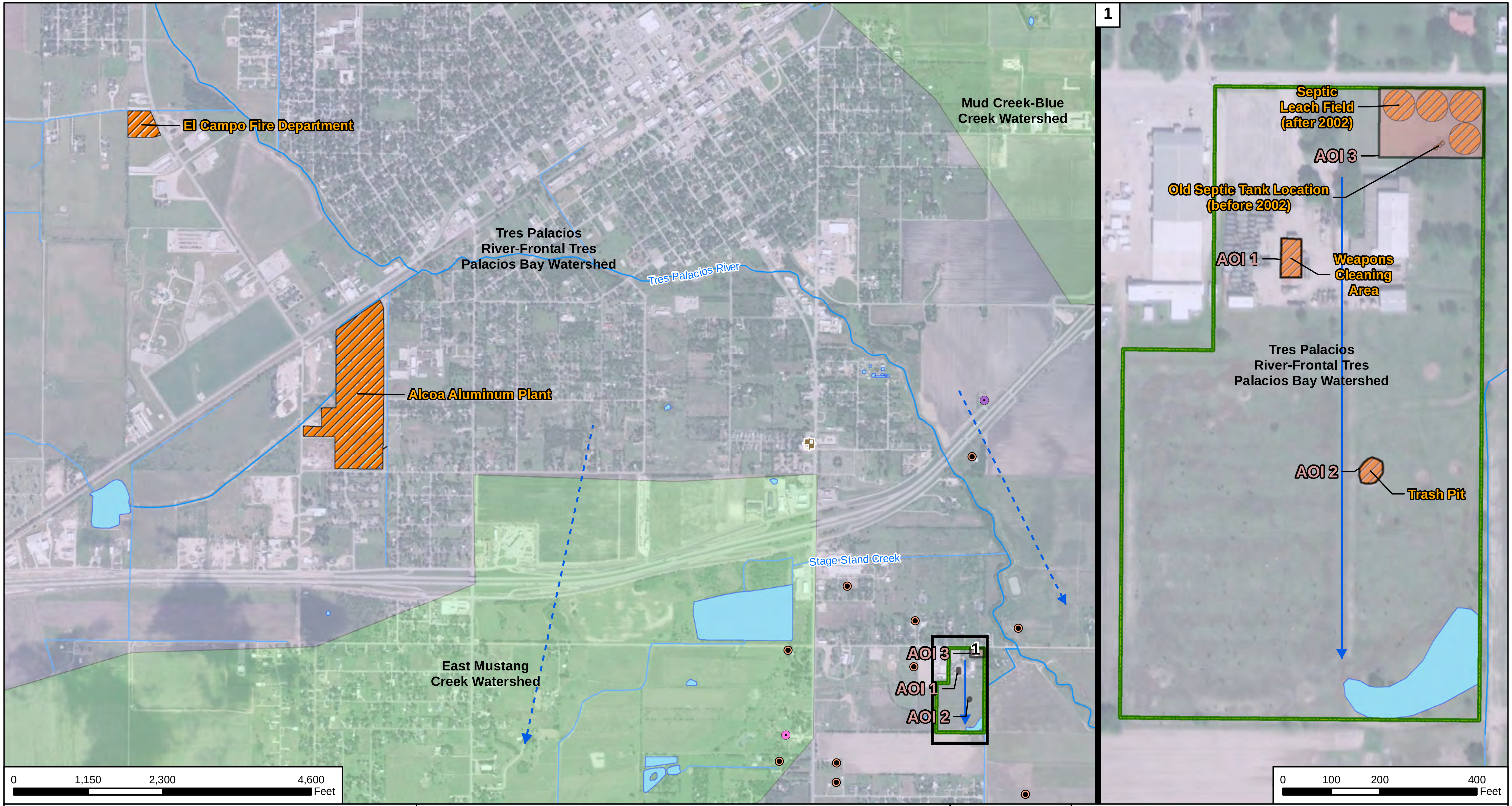
PFAS are contained in a weapons cleaning product used at the Armory called CLP®. An unknown quantity of CLP® has been used over the years. Typically, the main waste from weapons cleaning is the rags used to wipe down the weapons. A small amount of CLP® is applied to a rag and used to wipe down the weapons. The rags are then disposed in some manner. It is suspected that most weapons cleaning took place at the Maintenance Building (**Figure 6-1)**. Old and excess CLP® would have been scraped from the weapons that were being cleaned and then disposed of. It is unclear how the CLP® was disposed of. In addition to any releases at the building where the weapons cleaning was conducted, the rags may have been disposed in the trash pit. CLP® may have made its way into surrounding soil and infiltrated into the groundwater, causing exceedances of the HA in the nearby water well.

6.2 AOI 2 Trash Pit

The trash pit, located in the undeveloped portion of the Armory, may contain PFAS-containing materials. In addition to any releases at the building where the weapons cleaning was conducted, the rags may have been disposed in the trash pit. If this is the case, those materials may infiltrate into the surface soil, subsurface soil, and into shallow groundwater, potentially causing exceedances of the HA in the nearby water well.

6.3 AOI 3 Septic Leach Field

A possible source of PFAS at the Site may exist at the Septic Leach Field of the Armory, where PFAS could have been poured down the drains and entered the septic system. Wastewater that enters the septic system is eventually sprayed in the northeast corner of the Site through four sprinkler heads. **Figure 6-1** shows the location of the septic leach field. Any PFAS-containing liquids that were dumped down the drains and eventually sprayed over the leach field could potentially migrate from the surface soil to the subsurface and shallow groundwater.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at El Campo Armory, TX			
REVISED	10/2/2019	GIS BY	MS	10/2/2019
SCALE	1:18,000	CHK BY	MC	10/2/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	10/2/2019

- ▭ Area of Interest
- ▨ Potential PFAS Release
- 🟩 Facility Boundary
- Water Body
- — River/Stream
- — Canal/Ditch
- — Pipeline
- → Surface Water Flow Direction
- ⇢ Inferred Groundwater Flow Direction
- ● Domestic Well
- ● Agricultural Well
- ● Industrial Well
- ✣ Environmental Soil Boring

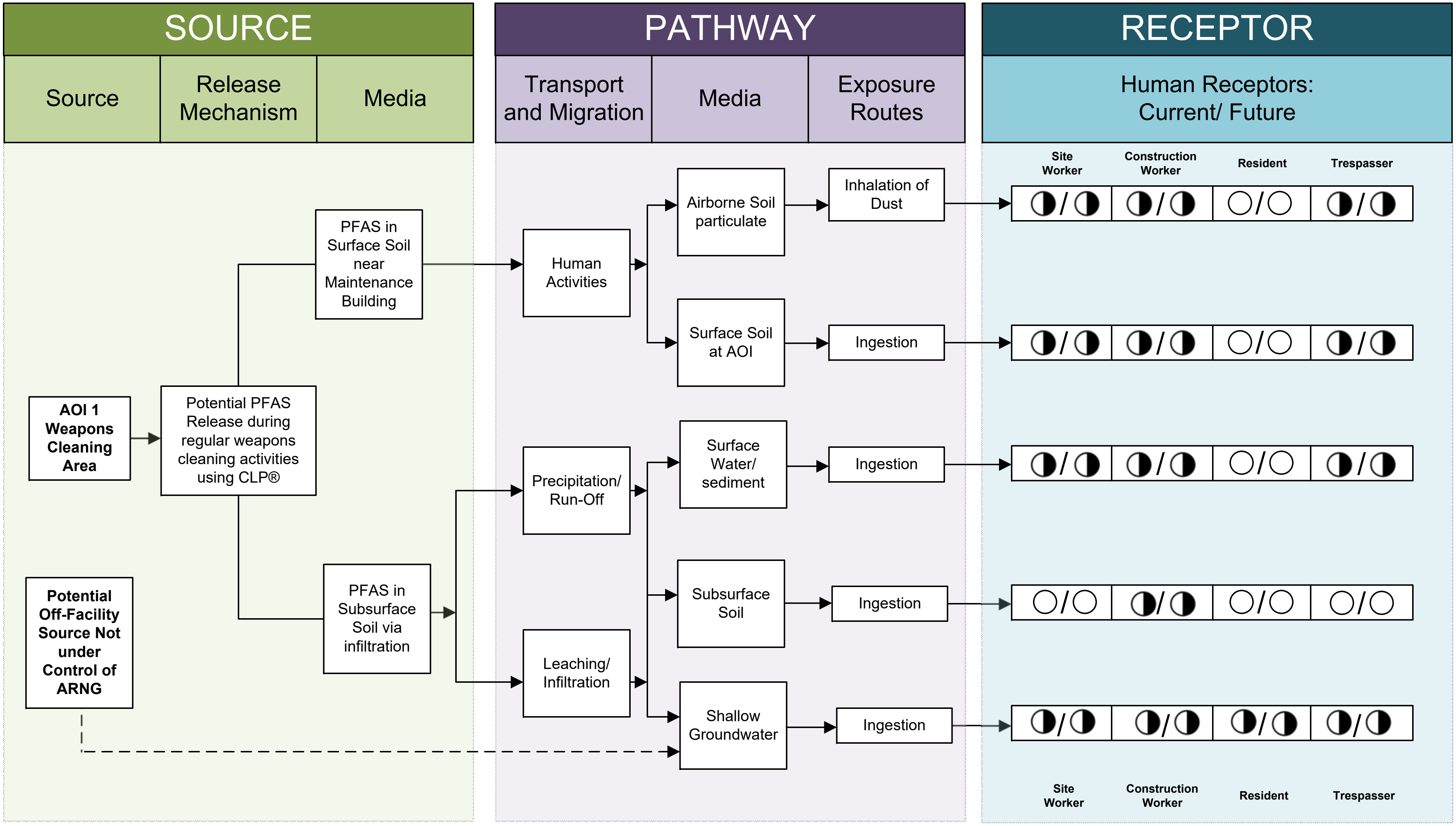
N

Areas of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_6-1_El_Campo_AOIs.mxd



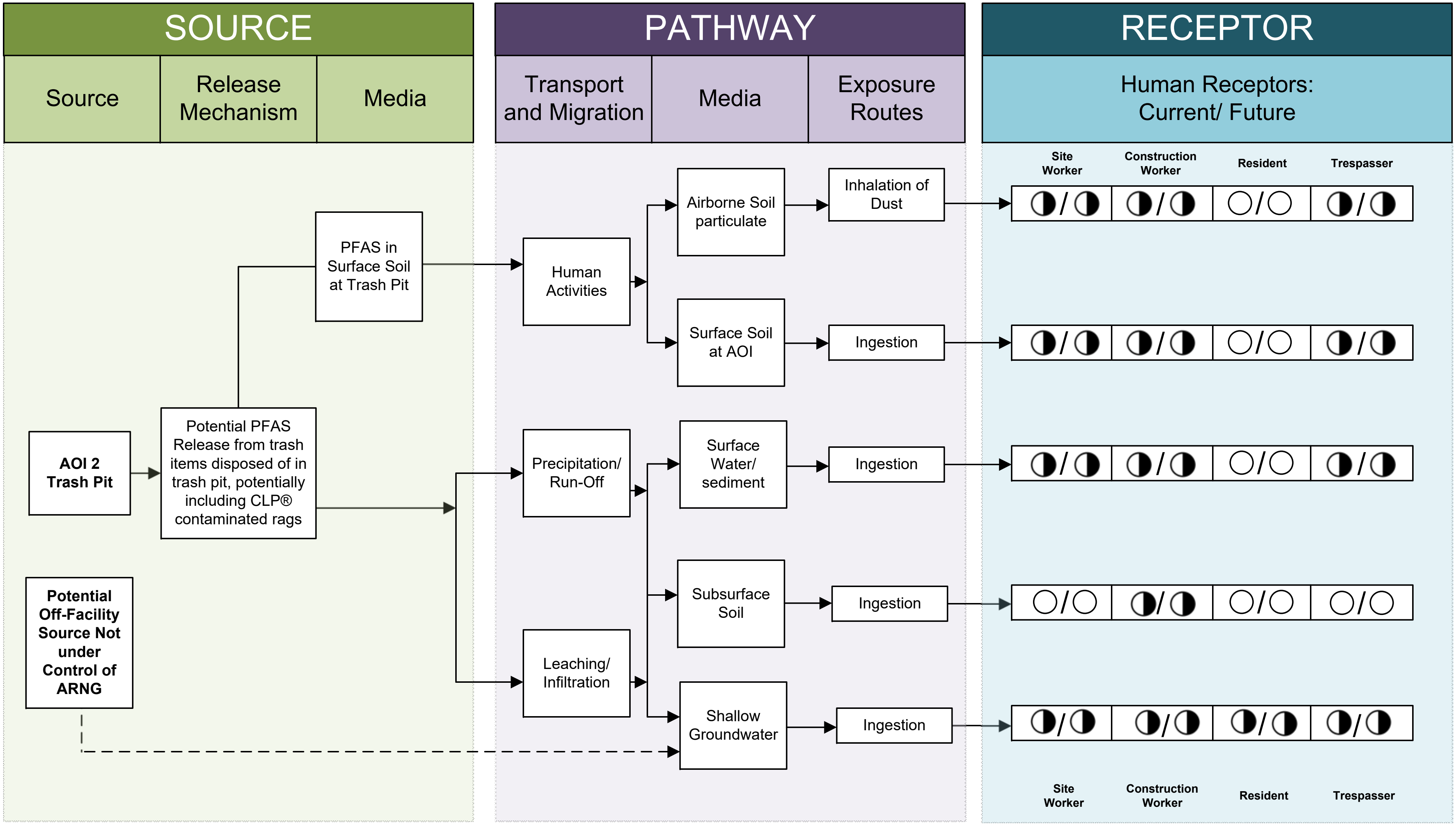
Media	Exposure Routes	Site Worker	Construction Worker	Resident	Trespasser
Airborne Soil particulate	Inhalation of Dust	◐/◐	◐/◐	○/○	◐/◐
Surface Soil at AOI	Ingestion	◐/◐	◐/◐	○/○	◐/◐
Surface Water/ sediment	Ingestion	◐/◐	◐/◐	○/○	◐/◐
Subsurface Soil	Ingestion	○/○	◐/◐	○/○	○/○
Shallow Groundwater	Ingestion	◐/◐	◐/◐	◐/◐	◐/◐

LEGEND

—□ Flow-Chart Stops
→ Flow-Chart Continues
- - → Partial / Possible Flow
○ Incomplete Pathway
◐ Potentially Complete Pathway
● Complete Pathway

Note:
1. The residential receptor refers to an off-facility receptor.

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 Potential PFAS Release at Weapons Cleaning Area at El Campo Armory



LEGEND

Flow-Chart Stops

Flow-Chart Continues

Partial / Possible Flow

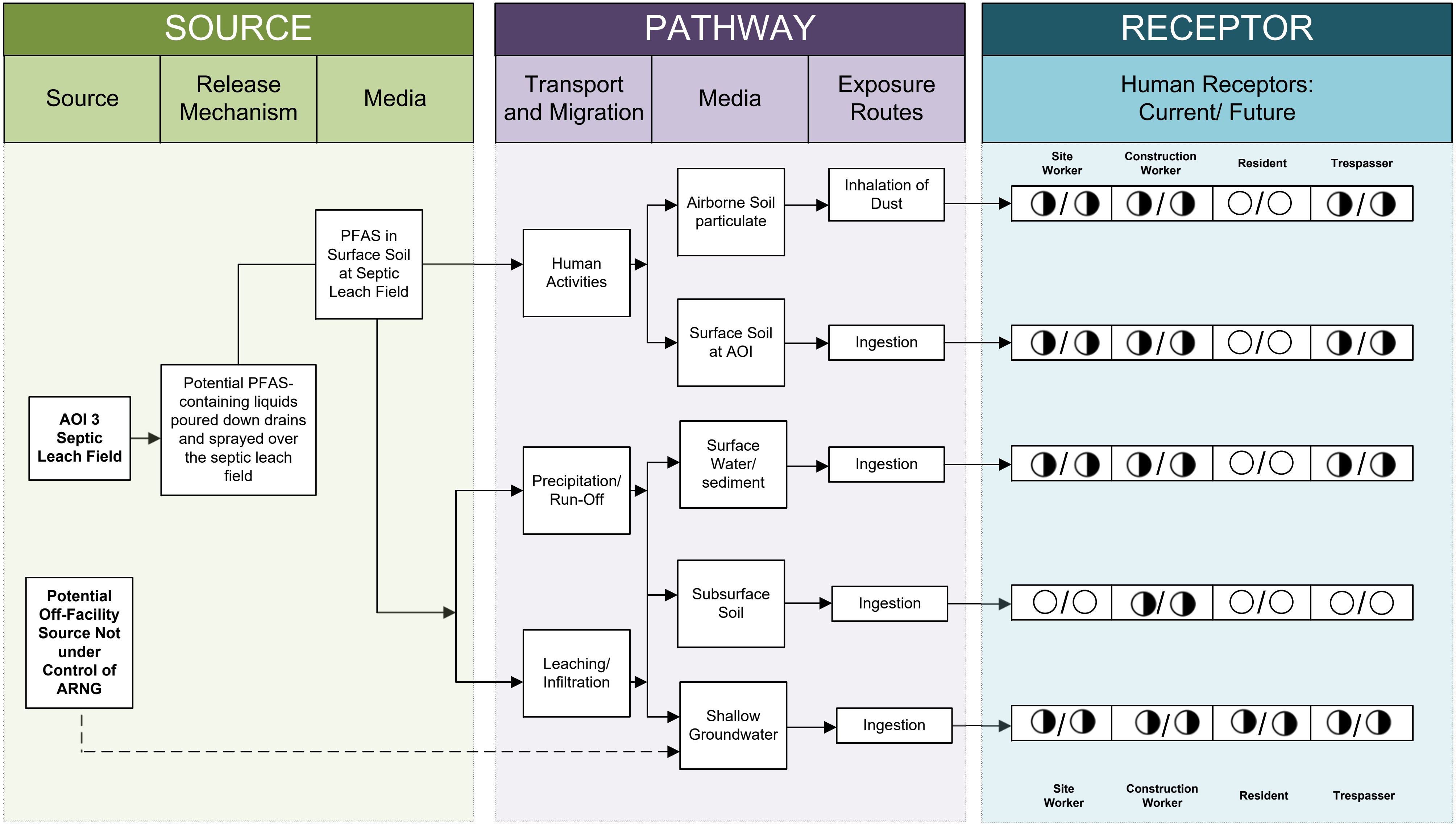
○ Incomplete Pathway

◐ Potentially Complete Pathway

● Complete Pathway

Note:
1. The residential receptor refers to an off-facility receptor.

Figure 6-3
Preliminary Conceptual Site Model
AOI 2 Potential PFAS Release at Trash Pit at El Campo Armory



LEGEND

Flow-Chart Stops

→ Flow-Chart Continues

- - → Partial / Possible Flow

○ Incomplete Pathway

◐ Potentially Complete Pathway

● Complete Pathway

Note:
1. The residential receptor refers to an off-facility receptor.

Figure 6-4
Preliminary Conceptual Site Model
AOI 3 Potential PFAS Release at Septic Leach Field at El Campo Armory

7. Conclusions

This report presents a summary of available information gathered during the PA on PFAS-related activities at El Campo Armory. The PA findings are based on personnel interviews, historical reports, historical documents, and the VSI.

7.1 Findings

Based on interviews with current Armory personnel, suspected PFAS releases are associated with weapons cleaning activities, the trash pit at the facility, and the septic leach field, and are identified as AOI 1, 2, and 3, respectively. Two off-facility potential sources of PFAS were also identified during the PA. The Alcoa aluminum plant, located in the vicinity of the El Campo Armory, has been identified as a potential PFAS source. The now closed aluminum plant has historically been used for aluminum extrusion processes, which potentially involved the use of PFAS. The second potential off-facility source of PFAS is the El Campo Volunteer Fire Department. The El Campo Volunteer Fire Department uses AFFF during emergency firefighting activities and stores AFFF at their fire house. There are no definitive data about releases at either the on-facility AOIs or the adjacent sources.

PFAS have been confirmed in groundwater/drinking water at El Campo Armory, and complete exposure pathways exist for PFAS contamination in groundwater in association with an on or off-facility source. The potential off-facility PFAS sources were identified through interviews with El Campo Armory personnel and independent research. Interviews were not conducted with Alcoa staff, and the site visit did not include visiting the closed aluminum plant; however, a phone interview was conducted with the El Campo Volunteer Fire Department Fire Chief. These on-facility and off-facility potential sources are shown on **Figure 7-1**.

Based on the potential release of PFAS-containing materials at El Campo Armory, current or former ARNG activities may have contributed to PFAS contamination in soil, groundwater, surface water, or sediment at the Armory. Three possible AOIs related to PFAS release were identified at El Campo Armory based on PA data and are shown in **Table 7-1** below.

Table 7-1: AOIs at El Campo Armory

Area of Interest	Description	Used by	Release Dates
AOI 1 Weapons Cleaning Area	Weapons cleaning involving PFAS-containing CLP® may have contributed PFAS to soil and groundwater.	TXARNG	Potentially 1964-2019
AOI 2 Trash Pit	The trash pit at the facility may have included PFAS-containing materials that infiltrated into the soil and groundwater.	TXARNG	Potentially 1964-2019
AOI 3 Septic Leach Field	PFAS-containing liquids may have been poured down the drains and subsequently entered the leach field. From the leach field, PFAS could migrate to subsurface soil and groundwater.	TXARNG	Potentially 2002-2019

7.2 Uncertainties

Several information sources were investigated during this PA to determine the potential for PFAS-containing materials to have been present, used, or released at the Armory. Historically, documentation of PFAS use was not required because PFAS were considered benign. Therefore, in general, records on the use of PFAS in training, firefighting, or other non-traditional activities, or on its disposition were not typically kept by facilities.

The conclusions of this PA are predominantly based on the information provided during an interview with personnel who had direct knowledge of activities at the facility. Sometimes, the provided information is vague or conflicts with other sources. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS were first used (early 1970s), and a reliance on personal recollection. There is also a possibility the PA missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and potential storage of PFAS were reviewed, current personnel were interviewed, and the facility was visually inspected.

Three AOIs were identified at El Campo Armory, and two adjacent potential sources of PFAS were identified off-facility. Based on the historical and current use of the facility and the lack of information for on-facility and off-facility PFAS sources, there are uncertainties associated with the findings of this PA. These uncertainties are presented below in **Table 7-2**.

Table 7-2: Uncertainties within the PA

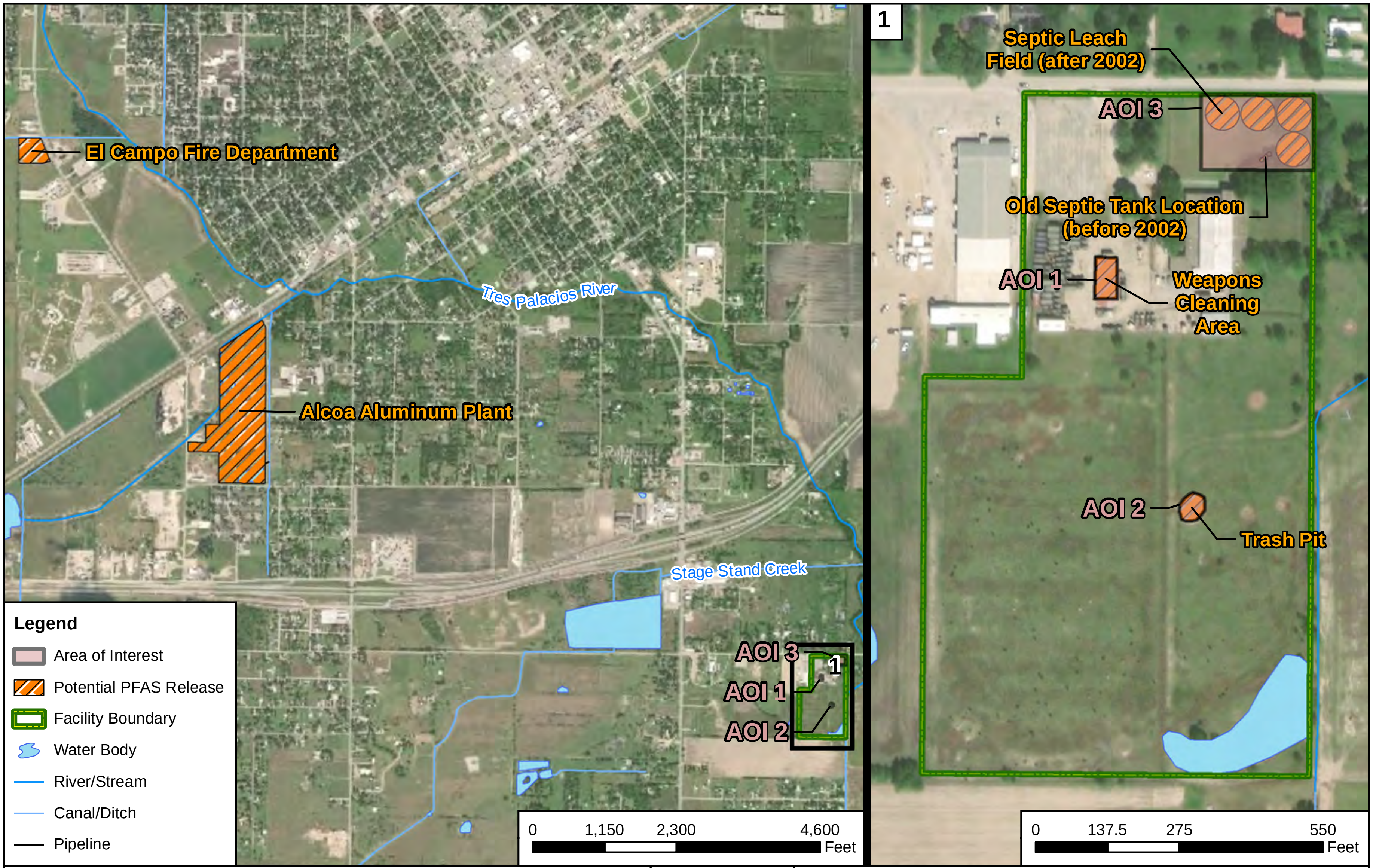
Location	Source of Uncertainty
AOI 1 Weapons Cleaning	The quantity of CLP® used over the years and the location of its disposal are unknown. It is assumed that weapons cleaning activities would have taken place in the Maintenance Building.
AOI 2 Trash Pit	It is unknown if material disposed of at the trash pit contained PFAS, however, rags containing CLP® may have been disposed of at the trash pit.
AOI 3 Septic Leach Field	It is unknown if any PFAS-containing materials were ever disposed of through the septic system.
Alcoa Aluminum Plant	It is unknown what processes at the historic aluminum extrusion plant might have used PFAS, and if used, at what quantity. It is also not clear if contamination in groundwater from the Alcoa plant could reach the El Campo Armory due to the groundwater flow direction in the vicinity of the Alcoa aluminum plant being to the south and southwest.
El Campo Volunteer Fire Department	Although it is known that the fire department used and continues to use AFFF for emergency firefighting, it is unknown where those firefighting activities occurred. In addition, the quantity of AFFF stored on site, as well as its disposal procedures are unknown.

7.3 Potential Future Actions

Although no definitive PFAS release areas have been identified, the documented presence of PFAS in groundwater/drinking water at the El Campo Armory at levels above the HA indicates a need for an SI. There is potential for the use or release of PFAS-containing materials to have occurred at El Campo Armory in soil, groundwater, surface water, or sediment. El Campo Armory will move forward in the CERCLA process, and an SI will be performed. The SI will focus on upgradient and downgradient groundwater, and the three low level potential source areas. **Table 7-3** presents the rationale used to determine whether or not the facility should proceed with an SI.

Table 7-3: Rationale

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: Weapons Cleaning Area	29°10'18.57"N; 96°15'13.27"W	Potential releases of PFAS during weapons cleaning activities involving CLP® at the Maintenance Building.	Proceed to an SI, focus on soil and groundwater
AOI 2: Trash Pit	29°10'14.26"N; 96°15'11.24"W	Potential releases of PFAS from materials in the trash pit could potentially infiltrate into soil and groundwater.	Proceed to an SI, focus on soil and groundwater
AOI 3: Septic Leach Field	29°10'21.7"N; 96°15'09.6"W	Potential releases of PFAS dumping down the drains and eventually spraying across the septic leach field via sprinkler heads.	Proceed to an SI, focus on soil and groundwater



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at El Campo Armory, TX			
REVISED	10/2/2019	GIS BY	MS	10/2/2019
SCALE	1:27,600	CHK BY	MC	10/2/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	10/2/2019

TITLE

Summary of Findings

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\TX\El_Campo_PA_Figures\Fig_7-1_El_Campo_Summary.mxd

8. References

Alcoa, Inc. May 11, 2002. Letter regarding analytical results of El Campo Armory water well.

Amec Foster Wheeler Environment & Infrastructure, Inc. March 2016. *2015 Annual Groundwater Monitoring Report*. Former El Campo Aluminum Facility. 902 Gladys Street, El Campo, Texas 77437.

AMEC Geomatrix, Inc. December 2011. *Response Action Plan Supplement*. El Campo Aluminum Facility – VCP No. 538. El Campo, Texas.

Corrigan Consulting, Inc. August 2005. Affected Property Assessment Report *Small Arms Firing Range Roy P. Benavidez National Guard Armory*. 801 Armory Road (CR406). El Campo, Texas.

Houston Chronicle. April 2002. *El Campo homeowners sue over 'poisoned' wells*. https://www.chron.com/news/houston-texas/article/El-Campo-homeowners-sue-over-poisoned-wells-2097152.php. Accessed 18 June 2019.

Interstate Technology Regulatory Council (ITRC). November 2017. *History and Use of Per- and Polyfluoroalkyl Substances (PFAS)*. https://pfas-1.itrcweb.org/wp-content/uploads/2017/11/pfas_fact_sheet_history_and_use__11_13_17.pdf. Accessed 17 June 2019.

National Oceanic and Atmospheric Administration (NOAA). 2019. Wharton Climate Data. https://www.weather.gov/hgx/climate_arm. Accessed 17 June 2019.

Texas Commission on Environmental Quality (TCEQ). April 2018. Texas Risk Reduction Program Rule Protective Concentration Levels. http://txrules.elaws.us/rule/title30_chapter350_sec.350.75. Accessed 1 October 2019.

Texas Military Department (TMD). May 2017. *Texas Army National Guard Addressing Water Issue at El Campo Armory*. https://tmd.texas.gov/texas-army-national-guard-addressing-water-issue-at-el-campo-armory. Accessed 17 June 2019.

Texas Water Development Board Submitted Drillers Reports (TWDB SDR) Database. 2019. Target Property El Campo Armory, 29°10'19.5"N, 96°15'10.9"W. https://www2.twdb.texas.gov/apps/WaterDataInteractive/GroundwaterDataViewer/?map=sdr. Accessed 17 June 2019.

United States Environmental Protection Agency (USEPA). 1991. *Guidance for Performing Preliminary Assessments under CERCLA*. EPA/540/G-91/013. September 1991.

United States Geological Survey (USGS), 1988. Hydrogeology and Predevelopment Flow in the Texas Gulf Coast Aquifer Systems. Water-Resources Investigations Report 87-4248. https://pubs.usgs.gov/wri/1987/4248/report.pdf. Accessed 20 June 2019.

Western Regional Climate Center (WRCC). June 2016. El Campo, Texas Period of Record Monthly Climate Summary. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?tx2786. Accessed 17 June 2019.

Appendix A
Data Resources

The following data resources will be provided separately on CD

El Campo Supply Well Sampling Results

- Table A-1 – 11April2017 Well Sample Results
- Alcoa Inc. Letter regarding analytical results of El Campo Armory water well, May 11, 2002.

Previous Investigations Completed

- Amec Foster Wheeler Environment & Infrastructure, Inc., March 2015. 2015 Annual Groundwater Monitoring Report. Former El Campo Aluminum Facility, 902 Gladys Street. El Campo, Texas 77437.
- AMEC Geomatrix, Inc., December 2011. Response Action Plan Supplement. El Campo Aluminum Facility – VCP No. 538. El Campo, Texas.
- Corrigan Consulting, Inc., August 2005. Affected Property Assessment Report, Small Arms Firing Range, Roy P. Benavidez National Guard Armory. El Campo, Texas.
- Corrigan Consulting, Inc., December 2006. Revised Sections Affected Property Assessment Report. Small Arms Firing Range, Roy P. Benavidez National Guard Armory. El Campo, Texas.
- Texas Commission of Environmental Quality (TCEQ), March 2010. Letter Re: Approval of Addendum to Affected Property Assessment Report (APAR) and Response Action Completion Report (RACR). Roy P. Benavidez National Guard Armory. 801 Armory Road, El Campo, TX.
- Texas Department of Health, May 2002. Health Consultation, Texas Voluntary Cleanup Program No. 538. Trichloroethylene Groundwater Plume. El Campo, Wharton County, Texas.
- Weston Solutions, Inc., September 2009. Attachment 1A-2 Lead Sampling Results. Small Arms Firing Range AGD El Campo National Guard Armory.
- Weston Solutions, Inc., October 2009. Response Action Completion Report. Former Small Arms Firing Range, Roy P. Benavidez National Guard Armory. El Campo, Texas.
- Weston Solutions, Inc., October 2009. Addendum 1, Affected Property Assessment Report, Former Small Arms Firing Range, El Campo Armory. Texas Army National Guard, El Campo, Texas.
- Quest Consulting, Inc., 2006. A Forensic Approach to Solve a Groundwater Contamination Problem.

Miscellaneous Data Resources

- EDR Radius Map Report with GeoCheck, June 2019. El Campo Armory, 1552 County Road 406, El Campo, TX 77437.
- EDR Aerial Photo Decade Package, June 2019. El Campo Armory, 1552 County Road 406, El Campo, TX 77437.

- El Campo National Guard Armory Septic System Design, MEP Site Plan, and Plumbing Details Sheet, 2002.
- Registered Water Wells in Area of El Campo OMS #12, 2001.

Table A-1
El Campo Armory Supply Well Sampling Results

Sub-Command (IMCOM Region, AMC's MSC, State Guard, RSC)	Garrison/ Installation/ Site/ Facility	SAMPLE LOCATION (FACILITY/BLDG NUMBER/DESCRIPTION)	SAMPLE ID #	SAMPLE COLLECTION DATE (DD/MMM/YY)	ANALYTE NAME	CONCENTRATION LEVEL	RESULT UNIT OF MEASUREMENT	MINIMUM REPORTABLE LEVEL	DL UNIT OF MEASUREMENT	DETECTED IN ASSOCIATED FIELD REAGENT BLANK? (YES OR NO)	FIELD REAGENT BLANK CONCENTRATION	BLANK UNIT OF MEASUREMENT	CLP FLAGS	ANALYTICAL METHOD	VALIDATED	SDG	Date_Lab_ Complete	Date_ Complete	Notes
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	6:2 Fluorotelomer sulfonate (FTS)		NG/L	9.45	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	8:2FTS		NG/L	9.45	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		NG/L	14.2	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		NG/L	14.2	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorooctanoic acid (PFOA)	23.3	NG/L	1.89	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorobutanesulfonic acid (PFBS)	2.45	NG/L	1.89	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorobutanoic acid (PFBA)	3.63	NG/L	0.945	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorodecanesulfonic acid (PFDS)		NG/L	2.84	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorodecanoic acid (PFDA)	0.658	NG/L	0.945	NG/L	No			J	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorododecanoic acid (PFDoA)		NG/L	1.89	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluoroheptanoic acid (PFHpA)	5.83	NG/L	1.89	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorohexanesulfonic acid (PFHxS)	9.40	NG/L	1.89	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorohexanoic acid (PFHxA)	8.44	NG/L	1.89	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorononanoic acid (PFNA)	1.13	NG/L	1.89	NG/L	No			J	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorooctane Sulfonamide (FOSA)	2.43	NG/L	1.89	NG/L	Yes	0.653	NG/L		537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorooctanesulfonic acid (PFOS)	56.3	NG/L	2.84	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluoropentanoic acid (PFPeA)	12.7	NG/L	1.89	NG/L	No				537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorotetradecanoic acid (PFTeA)	0.607	NG/L	0.945	NG/L	No			J	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluorotridecanoic Acid (PFTriA)		NG/L	1.89	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only
TXARNG	EL CAMPO	Well1	W-TX-CAMP-001-11APR17	04/11/2017	Perfluoroundecanoic acid (PFUnA)		NG/L	1.89	NG/L	No			U	537	Yes	320-27440-1	20170505	20170519	Sample Time: 1430 From Spigot. From only

Table A-1
El Campo Armory Supply Well Sampling Results

well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.
well on site, next to parking lot.

Original

VCP: 538
IN DATE: 3/31/2016
DOC NAME: GW/MEDIA MONITORING RPT
COMM # 20410885
PROJ MGR: S SALDANA

2015 ANNUAL GROUNDWATER MONITORING REPORT

Former El Campo Aluminum Facility
902 Gladys Street
El Campo, Texas 77437

Customer No. CN601736101
Regulated Entity No. RN101475192
Voluntary Cleanup Program No. 538

RECEIVED
OCT 05 2016
TCEQ
CENTRAL FILE ROOM

ORIGINAL

Prepared on behalf of:

Whittaker Corporation
1955 North Surveyor Avenue
Simi Valley, California 93063-3386

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
3520 Executive Center Drive, Ste. 200
Austin, Texas 78731-1026

March 2015

Project No. 0126200001

VCP: 538
IN DATE: 3/31/2016
DOC NAME: GW/MEDIA MONITORING RPT
COMM # 20410885
PROJ MGR: S SALDANA

2015 ANNUAL GROUNDWATER MONITORING REPORT

Former El Campo Aluminum Facility
902 Gladys Street
El Campo, Texas 77437

Customer No. CN601736101
Regulated Entity No. RN101475192
Voluntary Cleanup Program No. 538

ORIGINAL

Prepared on behalf of:

Whittaker Corporation
1955 North Surveyor Avenue
Simi Valley, California 93063-3386

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
3755 Capital of Texas Hwy., Ste. 375
Austin, Texas 78704

March 2016

Project No. 0126200001

2015 ANNUAL GROUNDWATER MONITORING REPORT

Former El Campo Aluminum Facility
902 Gladys Street
El Campo, Texas

Customer No. CN601736101
Regulated Entity No. RN101475192
Voluntary Cleanup Program No. 538

March 31, 2016
Project 0126200001

This report was prepared by the staff of Amec Foster Wheeler Environment & Infrastructure, Inc., under the supervision of the Texas Professional Geoscientist whose seal and signature appear hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, in accordance with generally accepted professional geologic practice. No warranty is expressed or implied.

JONATHAN SKAGGS
11370
3/23/16

Jonathan M. Skaggs, PG
Senior Geologist
Texas Professional Geoscientist No. 11370

C:\Users\susan.l.brown\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\HU5TH6R2\main cert page.docx

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

2015 ANNUAL GROUNDWATER MONITORING REPORT

Former El Campo Aluminum Facility
902 Gladys Street
El Campo, Texas

1.0 INTRODUCTION

This report presents the methods and results of groundwater assessment, monitoring, and response action activities performed by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), on behalf of Whittaker Corporation, between January and December 2015, at and in the vicinity of the former El Campo Aluminum Facility. For the purposes of this report, the term "the site" is used to define the on-site and off-site areas where groundwater monitoring and the response action is taking place. The term "the plant" refers to the former El Campo Aluminum Facility building located at 902 Gladys Street in El Campo, Texas. The site is overseen by the Texas Commission on Environmental Quality (TCEQ) under Voluntary Cleanup Program (VCP) No. 538, executed on July 20, 2006. The site is subject to the Texas Risk Reduction Program (TRRP) rules (30 Texas Administrative Code [TAC] Chapter 350). The objectives of the on-going activities at the site are to assess, monitor, and remediate the chemicals of concern (COCs) in groundwater, primarily the volatile organic compound (VOC), trichloroethene (TCE) and its degradation products including 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cDCE), and vinyl chloride.

Environmental assessment activities at the site began in 1997. The details and chronology of historical investigations are summarized in Geomatrix Consultants Inc.'s December 2006 *Affected Property Assessment Report* (APAR). Response action activities are currently being implemented pursuant to the TCEQ-approved May 2008 *Response Action Plan* (RAP; Geomatrix, 2008), the December 2011 *RAP Supplement* (2011 RAP Supplement; AMEC, 2011), and the July 2014 *RAP Supplement* (2014 RAP Supplement; AMEC, 2014). Groundwater analytical results for samples collected as part of the response action are also reported in Groundwater Response Action Effectiveness Reports (RAERs), which were submitted to the TCEQ in 2011 and 2012.

Activities completed in 2015 include the following:

1. Conducted the site-wide groundwater sampling event in February 2015 (this also served as the first quarterly sampling event).

2. Conducted quarterly groundwater monitoring at select wells during the second, third, and fourth quarters of 2015 in May/June, August, and October/November, respectively.
3. Conducted an injection gallery assessment program between July and August 2015 in the vicinity of the location of Injection Gallery 3, as proposed in the 2011 RAP Supplement. This effort involved collecting 17 depth-discrete groundwater samples.
4. Installed, developed, and sampled one new B-zone well within the proposed Injection Gallery 3 location.

1.1 PUBLIC NOTIFICATION

Amec Foster Wheeler notifies the public that groundwater data are available via U.S. Mail. In addition, a copy of each report is sent directly to the Wharton County Library in El Campo, Texas. Direct notification is also sent by letter to easement owners identified within the affected area. Amec Foster Wheeler plans to continue this notification process for the duration of this project. A notarized statement of notification required under 30 TAC § 350.55(d) and a table of parties receiving notices is included in this report as Appendix A.

2.0 GROUNDWATER-BEARING UNITS

Previous site characterization work has identified three generalized, coarse-grained alluvial groundwater-bearing units (GWBUs) from shallow to deep, consisting of: (1) A-Zone, which is present between approximately 32 and 50 feet bgs; (2) B-Zone, which is present between approximately 55 and 135 feet bgs; and (3) C-Zone, which is present between approximately 150 and 200 feet bgs (Geomatrix, 2006). A clay aquitard has been consistently observed between the B- and C-Zones and there is significant head difference between the B-Zone and the C-Zone (approximately 16 feet).

3.0 GROUNDWATER MONITORING ACTIVITIES

As specified in the TCEQ-approved RAP, the groundwater monitoring program consists of annual groundwater monitoring of all groundwater monitoring wells performed during the first quarter of each year and quarterly monitoring of select wells located near molasses injection galleries. As a supplement to the annual sampling, to more frequently monitor groundwater at key locations in order to better observe plume behavior, a select subset of B-Zone wells along the TCE plume edges are additionally sampled on a quarterly basis. In addition, the central injection gallery recovery well IG4-RW-1 is sampled monthly in accordance with the UIC Class V Injection Well Authorization (No. 5X2600478), which authorizes the injection of molasses as part of the groundwater response action activities. The current groundwater sampling schedules are shown on Tables 1 and 2. The results of the quarterly groundwater monitoring activities are reported to the TCEQ as part of annual groundwater monitoring reports.

To begin groundwater sampling at each well, depth to groundwater is measured prior to placing a submersible sampling pump in the monitoring well. All measurements are taken to the nearest hundredth of a foot using an electronic sounder. Low-flow groundwater purging and sampling is then performed using submersible flow-controlled pumps connected to polyethylene tubing dedicated to each monitoring well. Field personnel visually assess the tubing for damage and replace it when necessary. The submersible pump and associated down-hole power cord are decontaminated between uses at each monitoring well using a laboratory-grade detergent/municipal water solution.

4.0 GROUNDWATER MONITORING RESULTS

The following section presents the results of groundwater sampling activities performed between January and December 2015.

4.1 GROUNDWATER ELEVATIONS

The following section describes the groundwater elevations measured for each GWBU as measured during the 2015 reporting period. In general, groundwater elevations and lateral groundwater gradients observed in each of the GWBUs during the reporting period were consistent with historical observations. Tables 3, 4, and 5 present a compilation of water level data for the A-, B-, and C-Zones, respectively.

4.1.1 A-Zone

Groundwater elevations in the A-Zone ranged from 60.99 feet above mean sea level (ft amsl; well MW-111A) to 65.55 ft amsl (well MW-4). The lateral groundwater gradient in the A-Zone is to the south-southwest at approximately 8 x 10^{-4} ft/ft as measured between wells MW-4 andMW-109A (Figure 1).

4.1.2 B-Zone

Groundwater elevations in the B-Zone ranged from 54.42 ft amsl (MW-136B) to 64.75 ft amsl (IG2-MW-1). In the northern portion of the site, a lateral groundwater gradient to the southwest of approximately 6 x 10^{-4} ft/ft exists as measured between wells MW-19B and MW-114B (Figure 2). In the southern portion of the site, a lateral groundwater gradient to the south of approximately 7 x 10^{-4} ft/ft exists as measured between wells MW-128B and MW-139B. Figure 3 shows the potentiometric surface maps generated from depth-to-groundwater measurements from the second, third, and fourth quarters of 2015. The groundwater gradient is generally consistent throughout the reporting period and with historical groundwater observations. It appears that a cone of depression exists in the vicinity of well MW-136B and the Priesmeyer irrigation well (Figure 2). The Priesmeyer irrigation well is reported to be screened across the B-Zone and C-Zone between 122 and 360 feet bgs and is approximately 74 feet south of B-Zone well MW-136B (screened between approximately 125 and 135 feet bgs). The hydraulic influence of the Priesmeyer well is considered to be the cause of the observed cone of depression in this area.

4.1.3 C-Zone

Groundwater elevations in the C-Zone ranged from 49.50 ft amsl (MW-11C) to 45.32 ft amsl (MW-130C). The lateral groundwater gradient in the C-Zone is also generally to the southwest at approximately 1 x 10^{-3} ft/ft as measured between wells MW-11C and MW-130C (Figure 4).

4.2 GROUNDWATER ANALYTICAL RESULTS

The following sections discuss the groundwater analytical results from groundwater monitoring activities conducted during the reporting period. Groundwater analytical results are presented in Tables 6 through 8. Groundwater results were evaluated with respect to the TCEQ's Tier 1 residential groundwater ingestion ($^{GW}GW_{Ing}$) protective concentration levels (PCLs). Groundwater analytical laboratory reports are included in Appendix B, the analytical data usability summary (DUS) is included in Appendix C, and, for reference, a compilation of historical groundwater analytical results for samples collected from groundwater monitoring wells is included as Appendix D.

4.2.1 A-Zone

Analytical results for groundwater samples collected from A-Zone wells in 2015 indicate that no wells exceeded the PCL for TCE (5 micrograms per liter [µg/L]; Figure 5). The TCE PCL exceedance (PCLE) zone for samples collected from A-Zone groundwater monitoring wells over the last three site-wide groundwater monitoring events are presented on Figure 6. Additionally, cDCE, 1,2,4-thrimethylbenzene, 1,2-dichlorobenzene, 1,2-dichloroethane, and o-xylene were detected at low concentrations(below their respective PCLs) in samples collected from A-Zone wells during the first quarter 2015 sampling event. These results are generally consistent with those from 2014.

4.2.2 B-Zone

Analytical results from groundwater samples collected from B-Zone wells in 2015 indicate that four primary COCs (TCE and its degradation products [1,1-DCE, cDCE, and vinyl chloride]) exceeded their respective PCLs.

Isoconcentration maps depicting the TCE analytical results for the site-wide annual event conducted in the first quarter of 2015 are presented on Figure 7. In addition, TCE isoconcentration maps for the second through fourth quarters 2015 are presented on Figures 8, 9 and 10. The TCE isoconcentration contours are generally consistent throughout 2015, with the exception of the western-central portion of the plume in the vicinity of well MW-126B, which is discussed in Section 4.2.2.1 below. As shown on these figures, throughout 2015, the TCE PCLE zone comprised an area extending from near well MW-6B in the north to well MW-133B in the south. TCE was detected at a maximum concentration of 1,370 µg/L in the sample collected from well IG1-MW-6B3 during the first quarter 2015 groundwater sampling event. In general, the highest concentrations of TCE in the B-Zone have historically been detected south of US Highway 59 in the central portion of the plume.

Isoconcentration maps depicting the 1,1-DCE, cDCE, and vinyl chloride analytical results for the first through fourth quarters of 2015 are presented on Figures 11 through 22. As shown on these figures, 1,1-DCE, cDCE, and vinyl chloride isoconcentration contours are generally consistent through 2015 and the respective PCLE zones are present in the B-Zone within the boundaries of the TCE PCLE zone. Most detections of these COCs occurred in samples collected from wells that also contained TCE, although TCE was present in some wells where 1,1-DCE, cDCE, or vinyl chloride were not. In addition, the highest concentrations of these compounds were found to exist immediately downgradient of the molasses injection galleries. Therefore, it appears that the addition of carbohydrates (in the form of molasses) is working to enhance bioremediation of TCE. These observations provide evidence that 1,1-DCE, cDCE, and vinyl chloride are degradation products of TCE.

Analytical results of groundwater samples collected during the third quarter 2015 groundwater sampling event indicated that two additional VOCs (1,2-dichloropropane and bromodichloromethane) were anomalously detected above their PCLs in well IG1-MW-7. These two compounds were not detected during the first, second, or fourth quarters of 2015 and, accordingly, the third quarter detections appear to be outliers. . Additionally, trans-1,2-dichloroethene (also a TCE degradation product), 1,1,1,2-tetrachloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethane, acetone, benzene, bromodichloromethane, carbon tetrachloride, chloroform, chloromethane, naphthalene, xylenes, and toluene were sporadically detected below their respective PCLs during 2015.

Figures 23 and 24 show the TCE PCLE zone and the distribution of the B-Zone TCE plume "core" (defined as groundwater concentrations of TCE greater than 100 µg/L) over the last three annual, site-wide groundwater sampling events, respectively. The lateral extents of the 2015 TCE PCLE zone and plume core are generally consistent with those from 2013 and 2014, with the exception of the detection of TCE at 104 µg/L in well MW-21B. However, this TCE detection is within the range of those in 2014 and 2015 (between 47.7 and 120 µg/L).

4.2.2.1 Western Plume Area

Groundwater analytical results for samples collected in 2015 from certain wells located in the western portion of the plume (wells MW-126B, MW-141B, MW-114B) indicate that TCE concentration trends are increasing.

Well MW-126B, which was installed in 2009 and is located just inside of the TCE PCLE zone, has exhibited an increasing TCE concentration trend since March 2013 when TCE was first detected. Since March 2013, TCE has consistently exceeded its PCL, which required the installation of an additional plume delineation well further to the west in 2014 (MW-143B). TCE has never been detected above the reporting limit in samples collected from well MW-143B.

Well MW-141B, which is located approximately 300 feet to the northeast of well MW-126B in the interior of the TCE plume core, has exhibited an increasing TCE concentration trend since this well was installed in March 2013 through 2015. The TCE result from the last sampling event of 2015 (November 2015) was 171 µg/L, which is the first time TCE exceeded the active response action criterion of 100 µg/L. To confirm whether the TCE concentrations at MW-141B remain consistently above 100 µg/L, we will evaluate the groundwater analytical results from this well after one year of monitoring and determine if additional actions are necessary.

Well MW-114B, which is located approximately 700 feet south of well MW-126B and just outside of TCE PCLE zone, began exhibiting an increasing TCE concentration trend in May 2015. TCE was detected at 3.10 µg/L in the last sampling event of 2015 (November 2015), which is just below the PCL. Previously, TCE in MW-114B had only been detected above the reporting limit once (February 2013) since this well was installed in 2003. If future exceedances occur and persist, an additional plume delineation well may be necessary.

4.2.3 C-Zone

Analytical results for groundwater samples collected from C-Zone wells in 2015 indicate that only two wells, MW-7C and MW-23C, exceeded the PCL for TCE. TCE was detected with concentrations of 19.3 µg/L and 36.2 µg/L, respectively (Figure 25). Field duplicates were collected from MW-7C confirmed the primary sample results at 16.8 µg/L. TCE degradation products cDCE, trans-1,2-chloroethene, 1,1-DCE, and vinyl chloride were detected in samples collected from wells MW-7C and MW-23C. None of these compounds were detected at concentrations above their PCLs. Additionally, 1,1-dichloroethane, benzene, ethylbenzene, p-isopropyltoluene, and toluene were sporadically detected during 2015, but below their respective PCLs in samples collected from C-Zone wells during the first quarter 2015 sampling event.

Figure 26 depicts the C-Zone TCE PCLE zone over the last three site-wide groundwater monitoring events. The 2015 PCLE zone is consistent with those from 2013 and 2014.

5.0 DEPTH-DISCRETE GROUNDWATER SAMPLING ACTIVITIES

This section describes the depth-discrete groundwater sampling activities performed at the site in July and August 2015. These activities consisted of the collection of 17 depth-discrete groundwater samples from the B-Zone at 4 locations (Figure 27). The objective of these activities was to assess whether the core of the TCE plume exists in the vicinity of Injection Gallery 3 for the purpose of potentially expanding the molasses injection system.

5.1 PRE-FIELD ACTIVITIES

Prior to the start of drilling activities, the boring locations were marked in the field, Texas Excavation Safety System, Inc. (Texas 811), was notified to identify public subsurface utilities in the vicinity of the proposed boring locations, and Amec Foster Wheeler utility location professionals located and marked nearby subsurface utilities. Other drilling limitations, such as overhead clearance and drill rig access, were evaluated prior to final placement of boring locations. The first approximately 5 feet of each monitoring well boring was advanced using a hand auger and a hand soil probe as an additional precautionary measure before starting powered mechanical drilling.

5.2 DRILLING ACTIVITIES

Pilot borings were advanced at three of the four depth-discrete groundwater sampling locations within the B-Zone to the maximum depth of investigation up to 126 feet bgs. The pilot borings were advanced using a Gus Pech GP-RW300 sonic drill rig operated by Cascade Drilling LP of

Glendale, Arizona. The drilling activities were overseen by Mr. Wayne Wright, a licensed Texas Water Well Driller, and Amec Foster Wheeler field professionals. Depth-discrete groundwater samples were collected as described in Section 5.4 below.

5.3 LITHOLOGIC LOGGING

As described in Section 5.1, the first 5 feet of each pilot boring were advanced using a hand auger. After logging and sampling the first 5 feet with the hand auger, the drill rig was used to advance approximately 6-inch-diameter sonic casing to collect nearly continuous soil samples. The sonic casing was cleaned between locations by pressure washing with municipal water.

Amec Foster Wheeler field personnel observed and recorded the lithology encountered during the installation of each well. The lithology was described using the visual-manual procedures of the American Society for Testing and Materials (ASTM) Standard D2488-09a for guidance, which is based on the Unified Soil Classification System (UCSC). The lithology and sample collection details are shown on the boring logs included in Appendix G.

5.4 SAMPLE COLLECTION

Lithologic information from each pilot boring was used to identify lithologic intervals within the B-Zone. Depth-discrete groundwater sampling intervals were selected as to provide general vertical coverage across the entire thickness of the B-Zone (between approximately 70 and 116 feet bgs) and to characterize the A-Zone.

To collect depth-discrete groundwater samples at a particular location, a groundwater sampling boring was advanced within approximately 10 feet from each pilot boring location. Depth-discrete groundwater samples were collected using a retractable Hydropunch™-style groundwater sampling tool capable of sampling vertical intervals. Each groundwater sampling boring was first cored by advancing the sonic drive casing to approximately the top of the shallowest depth-discrete groundwater sampling interval. The drive casing was left in the boring to keep the formation from collapsing and to reduce the likelihood of cross contamination from shallow intervals. The groundwater sampling tool was then placed within the drive casing and driven ahead of the drive casing cutting shoe, to the bottom of the desired groundwater sampling interval. Selected vertical depth-discrete groundwater sampling intervals were approximately one foot long. Prior to opening the groundwater sampling tool, a water level meter was used to confirm that groundwater had not entered the sampler. The groundwater sampling tool was then lifted to expose the steel screen to the formation and the tool was allowed to fill with groundwater. The groundwater samples were collected using clean, disposable bailers lowered through the groundwater sampling tool. After groundwater sample collection, the drive rods were brought to the surface and cleaned using high-pressure municipal water. To collect the next deeper depth-discrete groundwater sample, the sampling tool was then advanced again to the next target zone for sample collection using the methods described above.

Following the completion of groundwater sampling activities, all drilling tools were removed and the resulting borehole was filled to the ground surface with cement grout as the drive casing was removed.

5.5 DEPTH-DISCRETE GROUNDWATER SAMPLE ANALYTICAL RESULTS

This section describes the results of depth-discrete groundwater sampling activities performed in the vicinity of each injection gallery. A B-Zone geologic cross-section was developed for the Injection Gallery 3 area, which shows the lithology encountered during drilling activities at each soil boring and groundwater well and TCE concentrations detected in groundwater samples collected from depth-discrete groundwater intervals. This cross-section is presented on Figure 28. The depth-discrete groundwater sample analytical results are presented on Table 9.

The results from depth-discrete groundwater samples provide sufficient lateral and vertical definition to the core of the TCE plume core in the Injection Gallery 3 area. TCE only exceeded 100 µg/L in 3 out of 17 depth-discrete groundwater samples from two locations. To assess the necessity of Injection Gallery 3, a B-Zone well (IG3-IW-1) was installed at the location from which depth-discrete groundwater samples exhibited the highest concentrations of TCE (location IG3-B-01 with a concentration of 1,090 µg/L). TCE was detected at 186 µg/L in the sample collected from this well on August 19, 2015, and 459 µg/L in the sample collected on November 11, 2015. To confirm that concentrations at this location are consistently above 100 µg/L, which is the threshold above which the active groundwater response action should be implemented (i.e., an injection gallery would be installed), we will add this well to the quarterly groundwater monitoring schedule and evaluate the groundwater analytical results after one year of monitoring.

6.0 WELL INSTALLATION ACTIVITIES

This section describes the activities associated with the installation of one injection well (well IG3-IW-1).

6.1 PRE-FIELD ACTIVITIES

As described in Section 5.1, prior to the start of drilling activities, the well location was marked in the field, Texas 811 was notified to identify public subsurface utilities in the vicinity of the proposed boring locations, and Amec Foster Wheeler utility location professionals located and marked nearby subsurface utilities. Other drilling limitations, such as overhead clearance and drill rig access, were evaluated prior to final placement of boring locations. The first approximately 5 feet of each monitoring well boring was advanced using a hand auger and a hand soil probe as an additional precautionary measure before starting powered mechanical drilling.

6.2 DRILLING ACTIVITIES

A pilot boring was advanced to approximately 126 feet bgs using a Gus Pech GP-RW300 drill rig operated by Cascade Drilling LP of Glendale, Arizona. The drilling activities were overseen by Mr. Wayne Wright, a licensed Texas Water Well Driller, and Amec Foster Wheeler field professionals. The wells were constructed following completion of each pilot boring as described in Section 6.4.

6.3 LITHOLOGIC LOGGING

As described in Section 5.1, the first 5 feet of each monitoring well were advanced using a hand auger. After logging and sampling the first 5 feet with the hand auger, the drill rig was used to advance nominal 8-inch-diameter sonic casing to collect nearly continuous soil samples. The sonic casing was cleaned between wells by pressure washing with municipal water.

An Amec Foster Wheeler Texas Professional Geoscientist observed and recorded the lithology encountered during the installation of the well. The lithology was described using the visual-manual procedures of the ASTM Standard D2488-09a for guidance, which is based on the UCSC. Amec Foster Wheeler field personnel also observed the construction of the well. The lithology and well construction details are shown on the well log included in Appendix F.

6.4 WELL CONSTRUCTION

The well was constructed within a nominal 8-inch-diameter borehole. The screened interval for well IG3-IW-1 was selected to screen the entire B-Zone based on the lithologic units encountered.

The well was constructed with 4-inch-diameter, schedule 80 PVC blank well casing and 0.040-inch PVC screens. The well was installed by lowering the completed well screen and casing into the sonic drive casing to the designed depth interval. Filter packs were constructed by placing #8/12 filter sand in the annular space between the well screen and the borehole. Two feet of 3/8-inch bentonite chips were placed as a seal above the filter sand and hydrated. The remaining annular space above the bentonite chips was filled with neat cement grout. A locking, watertight plug was placed in the top of the well casing. The well was completed at the surface with a concrete pad. Specifics regarding the well construction are presented on the well log in Appendix F.

The downhole drilling and sampling equipment was cleaned between uses at each location using high-pressure municipal water. Soil cuttings were placed in a lined soil bin, characterized, and transported as Class II non-hazardous waste to Altair Landfill in Altair, Texas, a licensed disposal facility owned by Clean Harbors. The soil waste characterization analytical data (sample "Baker Tank Soil") is included in laboratory report J120356, which is included in Appendix B.

6.5 WELL DEVELOPMENT

Following installation, the newly installed well was developed to remove sediment that entered the well during well installation activities, to enhance hydraulic communication between the well and the surrounding formation, and to establish a uniform sand filter pack within the annulus of the well. The well was developed using a combination of bailing, surging, and air lifting techniques. Purge water was transported back to a water storage tank at the site for use in the groundwater remediation system.

6.6 WELL SURVEYING

After installation, the horizontal location and vertical elevation of the top of the well casing was surveyed by Ganem & Kelly Surveying, Inc., of Victoria, Texas, a Texas-licensed land surveyor. The North American Datum of 1983 (NAD83) and North American Vertical Datum of 1988 (NAVD88) were used for this well survey.

7.0 RESPONSE ACTION STATUS

Amec Foster Wheeler is implementing the groundwater response action per the TCEQ-approved RAP and subsequent RAP Supplements (Geomatrix, 2008; AMEC, 2011; AMEC 2014). The groundwater response action objectives consists of the following: (1) active molasses injection into the core (i.e., greater than 100 µg/L), of the TCE plume within B-Zone groundwater to stimulate microbial degradation of TCE and its degradation products via aerobic cometabolism; and (2) monitored natural attenuation (MNA) of TCE-affected groundwater outside of the core of the plume.

7.1 RESPONSE ACTION EFFECTIVENESS

Reductions have been observed in total VOC concentrations (sum of TCE, all isomers of DCE, and vinyl chloride) detected in groundwater samples collected in the areas downgradient of the two operational carbohydrate injection galleries since carbohydrate injection began in September 2010 and March 2011. As discussed above, a further evaluation of the response action effectiveness is presented in the RAERs, which are submitted in accordance with the schedule approved in the RAP Supplement. The next RAER will be submitted to the TCEQ by June 30, 2016.

7.2 MOLASSES INJECTION SYSTEM EXPANSION AND RESTART

As proposed in the RAP and RAP Supplements, Injection Gallery 1 was expanded and the installation of Injection Gallery 4 was completed. The molasses injection system expansion included the installation of additional molasses injection wells laterally along the injection gallery transects and vertically with screens that are capable of delivering molasses throughout the TCE plume core (Figure 29). The molasses injection system was restarted in July 2015. Approximately 16,560 gallons of molasses was injected in 2015.

8.0 FUTURE ACTIVITIES

The following are activities planned for the near future to be performed at the site:

- Continue molasses injection activities at Injection Galleries 1 and 4.
- Continue groundwater monitoring activities. The current groundwater sampling schedules are shown on Tables 1 and 2.
- Continue to evaluate the TCE trends for wells located in the western plume area.
- Submit a RAER covering response action activities performed between 2013 and 2015 by June 30, 2016.
- Submit the next annual groundwater monitoring report in the first quarter 2017.

9.0 REFERENCES

AMEC Environment & Infrastructure, Inc. (AMEC), 2011, Response Action Plan Supplement, El Campo Aluminum Facility, El Campo, Texas, VCP No. 538, December.

AMEC Environment & Infrastructure, Inc. (AMEC), 2014, Response Action Plan Supplement, El Campo Aluminum Facility, El Campo, Texas, VCP No. 538, July 8.

Geomatrix Consultants, Inc. (Geomatrix), 2006, Affected Property Assessment Report, El Campo Groundwater Site, VCP No. 538, December.

Geomatrix Consultants, Inc. (Geomatrix), 2008, Response Action Plan, El Campo Aluminum Facility, El Campo, Texas, VCP No. 538, May.

TCEQ, 2014, Response to Multiple Submittals, El Campo Aluminum Facility, VCP no. 538, September 25.

Tables

TABLE 1
QUARTERLY GROUNDWATER SAMPLING AND ANALYSIS SCHEDULE
Former El Campo Aluminum Facility
El Campo, Texas

Well ID	VOCs (8260B)	TDS (2540C)	TOC (9060)	Methane (RSK 175)	Temp, pH, Cond, DO, ORP
IG1-MW-1	X		X	X	Field Meter
IG1-MW-2	X		X	X	Field Meter
IG1-MW-3	X		X	X	Field Meter
IG1-MW-4	X		X	X	Field Meter
IG1-MW-5	X		X	X	Field Meter
IG1-MW-6B1	X	X	X	X	Field Meter
IG1-MW-6B2	X	X	X	X	Field Meter
IG1-MW-6B3	X	X	X	X	Field Meter
IG1-MW-7	X	X	X	X	Field Meter
IG1-RW-4	X		X	X	Field Meter
IG2-MW-1	X		X	X	Field Meter
IG2-MW-2	X		X	X	Field Meter
IG2-MW-3	X		X	X	Field Meter
IG2-MW-4	X		X	X	Field Meter
IG4-MW-1	X	X	X	X	Field Meter
IG4-MW-2	X	X	X	X	Field Meter
IG4-MW-3	X	X	X	X	Field Meter
IG4-RW-1	**X**	**X**	**X**	**X**	**Field Meter**
MW-5B	X				Field Meter
MW-6B	X		X	X	Field Meter
MW-7B	X		X	X	Field Meter
MW-10B	X		X	X	Field Meter
MW-21B	X		X	X	Field Meter
MW-100B	X				Field Meter
MW-101B	X				Field Meter
MW-102B	X				Field Meter
MW-108B	X				Field Meter
MW-109B	X		X	X	Field Meter
MW-110B	X				Field Meter
MW-111B	X		X	X	Field Meter
MW-112B	X				Field Meter
MW-112B2	X				Field Meter
MW-113B	X		X	X	Field Meter
MW-114B	X				Field Meter
MW-116B	X				Field Meter
MW-118B	X				Field Meter
MW-119B	X				Field Meter
MW-120B	X				Field Meter
MW-124B	X				Field Meter
MW-125B	X		X	X	Field Meter
MW-126B	X				Field Meter
MW-127B	X				Field Meter
MW-128B	X				Field Meter
MW-131B	X				Field Meter
MW-132B	X				Field Meter
MW-133B	X				Field Meter
MW-134B	X				Field Meter
MW-135B	X				Field Meter
MW-136B	X				Field Meter
MW-137B	X				Field Meter
MW-140B	X				Field Meter
MW-141B	X		X	X	Field Meter
MW-142B	X				Field Meter
MW-143B	X				Field Meter
MW-144B	X				Field Meter
MW-145B	X				Field Meter

Notes:
1. **Shaded and Bold** indicates UIC compliance wells and analyses to be sampled and analyzed monthly when injection is performed at the associated gallery.

TABLE 2
ANNUAL GROUNDWATER SAMPLING AND ANALYSIS SCHEDULE
Former El Campo Aluminum Facility
El Campo, Texas

Well ID	VOCs (8260B)	TDS (2540C)	TOC (9060)	Methane (RSK 175)	Temp, pH, Cond, DO, ORP
IG1-MW-1	X		X	X	Field Meter
IG1-MW-2	X		X	X	Field Meter
IG1-MW-3	X		X	X	Field Meter
IG1-MW-4	X		X	X	Field Meter
IG1-MW-5	X		X	X	Field Meter
IG1-MW-6B1	X	X	X	X	Field Meter
IG1-MW-6B2	X	X	X	X	Field Meter
IG1-MW-6B3	X	X	X	X	Field Meter
IG1-MW-7	X	X	X	X	Field Meter
IG1-RW-4	X		X	X	Field Meter
IG2-MW-1	X		X	X	Field Meter
IG2-MW-2	X		X	X	Field Meter
IG2-MW-3	X		X	X	Field Meter
IG2-MW-4	X		X	X	Field Meter
IG4-MW-1	X	X	X	X	Field Meter
IG4-MW-2	X	X	X	X	Field Meter
IG4-MW-3	X	X	X	X	Field Meter
IG4-RW-1	X	X	X	X	Field Meter
MW-2A	X				Field Meter
MW-4A	X				Field Meter
MW-4B	X				Field Meter
MW-5B	X				Field Meter
MW-5C	X				Field Meter
MW-6A	X				Field Meter
MW-6B	X		X	X	Field Meter
MW-6C	X				Field Meter
MW-7A	X				Field Meter
MW-7B	X		X	X	Field Meter
MW-7C	X				Field Meter
MW-8A	X				Field Meter
MW-9A	X				Field Meter
MW-10A	X				Field Meter
MW-10B	X		X	X	Field Meter
MW-11B	X				Field Meter
MW-11C	X				Field Meter
MW-12A	X				Field Meter
MW-12B	X				Field Meter
MW-13A	X				Field Meter
MW-13B	X				Field Meter
MW-14A	X				Field Meter
MW-14B	X				Field Meter

TABLE 2
ANNUAL GROUNDWATER SAMPLING AND ANALYSIS SCHEDULE
Former El Campo Aluminum Facility
El Campo, Texas

Well ID	VOCs (8260B)	TDS (2540C)	TOC (9060)	Methane (RSK 175)	Temp, pH, Cond, DO, ORP
MW-17B	X				Field Meter
MW-17C	X				Field Meter
MW-18A	X				Field Meter
MW-19A	X				Field Meter
MW-19B	X				Field Meter
MW-21A	X				Field Meter
MW-21B	X		X	X	Field Meter
MW-22A	X				Field Meter
MW-22C	X				Field Meter
MW-23A	X				Field Meter
MW-23C	X				Field Meter
MW-24B	X				Field Meter
MW-25A	X				Field Meter
MW-25B	X				Field Meter
MW-26B	X				Field Meter
MW-100B	X				Field Meter
MW-101B	X				Field Meter
MW-102B	X				Field Meter
MW-103B	X				Field Meter
MW-104B	X				Field Meter
MW-108B	X				Field Meter
MW-109A	X				Field Meter
MW-109B	X		X	X	Field Meter
MW-110B	X				Field Meter
MW-111A	X				Field Meter
MW-111B	X		X	X	Field Meter
MW-112B	X				Field Meter
MW-112B2	X				Field Meter
MW-113B	X		X	X	Field Meter
MW-114B	X				Field Meter
MW-115B	X				Field Meter
MW-116B	X				Field Meter
MW-117B	X				Field Meter
MW-118B	X				Field Meter
MW-119B	X				Field Meter
MW-120B	X				Field Meter
MW-121B	X				Field Meter
MW-123B	X				Field Meter
MW-124B	X				Field Meter
MW-125B	X		X	X	Field Meter
MW-126B	X				Field Meter

TABLE 2
ANNUAL GROUNDWATER SAMPLING AND ANALYSIS SCHEDULE
Former El Campo Aluminum Facility
El Campo, Texas

Well ID	VOCs (8260B)	TDS (2540C)	TOC (9060)	Methane (RSK 175)	Temp, pH, Cond, DO, ORP
MW-127B	X				Field Meter
MW-128B	X				Field Meter
MW-129C	X				Field Meter
MW-130C	X				Field Meter
MW-131B	X				Field Meter
MW-132B	X				Field Meter
MW-133B	X				Field Meter
MW-134B	X				Field Meter
MW-135B	X				Field Meter
MW-136B	X				Field Meter
MW-137B	X				Field Meter
MW-138B	X				Field Meter
MW-139B	X				Field Meter
MW-140B	X				Field Meter
MW-141B	X		X	X	Field Meter
MW-142B	X				Field Meter
MW-143B	X				Field Meter
MW-144B	X				Field Meter
MW-145B	X				Field Meter
Plant Production Well 1	X				Field Meter
Plant Production Well 2	X				Field Meter
PSRW-1	X				Field Meter
VFW-MW-1	X				Field Meter

Notes:

1. **Shaded and Bold** indicates UIC compliance wells and analyses to be sampled and analyzed monthly when injection is performed at the associated gallery. This schedule assumes that no injection has taken place at Injection Gallery 2.

TABLE 3
GROUNDWATER ELEVATIONS - A-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
MW-2A	2/2/2015	102.40	37.15	65.25
MW-4A	2/2/2015	102.48	36.93	65.55
MW-6A	2/4/2015	101.65	37.64	64.01
MW-7A	2/3/2015	99.61	36.04	63.57
MW-8A	2/5/2015	102.91	38.92	63.99
MW-9A	2/4/2015	100.72	37.21	63.51
MW-10A	2/3/2015	99.86	34.71	65.15
MW-12A	2/2/2015	99.62	35.90	63.72
MW-13A	2/3/2015	99.38	35.48	63.90
MW-14A	2/3/2015	100.27	36.45	63.82
MW-18A	2/5/2015	102.26	38.69	63.57
MW-19A	2/3/2015	103.20	38.41	64.79
MW-21A	2/3/2015	99.56	36.08	63.48
MW-22A	2/3/2015	102.72	39.03	63.69
MW-23A	2/3/2015	102.78	39.49	63.29
MW-25A	2/5/2015	100.52	36.55	63.97
MW-109A	2/5/2015	101.20	39.59	61.61
MW-111A	2/4/2015	101.22	40.23	60.99
VFW-MW-1	2/4/2015	101.80	39.69	62.11

Notes:
TOC = Top of casing
ft AMSL = Feet above mean sea level
DTW = Depth to water

TABLE 4
GROUNDWATER ELEVATIONS - B-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
IG1-MW-1	2/5/2015	104.37	42.63	61.74
	5/18/2015	104.37	42.34	62.03
	8/17/2015	104.37	41.96	62.41
	11/3/2015	104.37	41.67	62.70
IG1-MW-3	2/5/2015	104.42	42.65	61.77
	5/19/2015	104.42	42.34	62.08
	8/11/2015	104.42	41.98	62.44
	10/28/2015	104.42	41.67	62.75
IG1-MW-4	2/6/2015	103.98	43.00	60.98
	6/9/2015	103.98	42.18	61.80
	8/25/2015	103.98	41.96	62.02
	11/11/2015	103.98	41.54	62.44
IG1-MW-5	2/6/2015	104.27	42.59	61.68
	6/10/2015	104.27	42.61	61.66
	8/19/2015	104.27	42.28	61.99
	11/11/2015	104.27	41.94	62.33
IG1-MW-6B1	2/4/2015	104.00	42.50	61.50
	6/10/2015	104.00	42.16	61.84
	8/19/2015	104.00	41.78	62.22
	11/12/2015	104.00	41.59	62.41
IG1-MW-6B2	2/4/2015	104.15	42.59	61.56
	8/19/2015	104.15	42.15	62.00
	11/12/2015	104.15	41.97	62.18
IG1-MW-6B3	2/4/2015	104.13	42.53	61.60
	6/10/2015	104.13	42.16	61.97
	8/19/2015	104.13	41.90	62.23
	11/12/2015	104.13	41.55	62.58
IG1-MW-7	2/6/2015	103.29	42.13	61.16
	6/10/2015	103.29	41.70	61.59
	8/18/2015	103.29	41.30	61.99
	11/12/2015	103.29	41.13	62.16
IG2-MW-1	2/3/2015	100.75	37.33	63.42
	5/18/2015	100.75	37.52	63.23
	8/17/2015	100.75	36.65	64.10
	11/3/2015	100.75	36.48	64.27
IG2-MW-2	2/3/2015	101.87	35.54	66.33
	2/11/2015	101.87	38.47	63.40
	5/18/2015	101.87	39.32	62.55
	8/17/2015	101.87	37.80	64.07
	11/3/2015	101.87	37.68	64.19
IG2-MW-3	2/3/2015	99.75	36.05	63.70
	5/19/2015	99.75	35.68	64.07
	11/3/2015	99.75	35.17	64.58
IG2-MW-4	2/3/2015	102.31	39.04	63.27
	5/19/2015	102.31	38.78	63.53
	8/17/2015	102.31	38.41	63.90
	11/4/2015	102.31	38.70	63.61
IG3-IW-1	11/11/2015	103.09	39.86	63.23

TABLE 4
GROUNDWATER ELEVATIONS - B-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
IG4-MW-1	2/4/2015	101.73	40.83	60.90
	6/2/2015	101.73	40.48	61.25
	8/26/2015	101.74	40.09	61.65
	11/6/2015	101.74	39.85	61.89
IG4-MW-2	2/6/2015	104.63	44.12	60.51
	6/9/2015	104.63	43.67	60.96
	8/25/2015	104.63	43.31	61.32
	11/13/2015	104.63	43.15	61.48
IG4-MW-3	2/6/2015	104.04	43.42	60.62
	6/9/2015	104.04	43.05	60.99
	8/25/2015	104.04	42.73	61.31
	11/12/2015	104.04	42.53	61.51
PSRW-1	2/4/2015	101.20	37.18	64.02
MW-4B	2/2/2015	102.31	38.08	64.23
MW-5B	2/3/2015	103.93	39.97	63.96
	5/18/2015	103.93	39.58	64.35
	8/17/2015	103.93	39.24	64.69
	11/4/2015	103.93	39.11	64.82
MW-6B	2/2/2015	101.87	37.88	63.99
	5/18/2015	101.87	37.54	64.33
	8/18/2015	101.87	37.24	64.63
	11/4/2015	101.87	37.10	64.77
MW-7B	2/3/2015	99.07	35.38	63.69
	8/18/2015	99.07	34.68	64.39
	11/5/2015	99.07	34.57	64.50
MW-10B	2/3/2015	99.88	35.75	64.13
	5/13/2015	99.88	35.45	64.43
	8/13/2015	99.88	34.50	65.38
	10/28/2015	99.88	34.94	64.94
MW-11B	2/2/2015	101.76	37.46	64.30
MW-12B	2/2/2015	99.75	36.21	63.54
MW-13B	2/4/2015	99.78	34.52	65.26
	2/9/2015	99.78	35.90	63.88
MW-14B	2/3/2015	100.18	36.40	63.78
MW-17B	2/3/2015	99.01	35.67	63.34
MW-19B	2/3/2015	102.95	38.77	64.18
MW-21B	2/3/2015	99.62	36.38	63.24
	5/19/2015	99.62	35.90	63.72
	8/18/2015	99.62	35.52	64.10
	11/5/2015	99.62	35.39	64.23
MW-24B	2/4/2015	98.91	35.61	63.30
MW-25B	2/2/2015	100.27	36.61	63.66
MW-26B	2/5/2015	100.65	35.67	64.98
MW-100B	2/3/2015	99.68	37.29	62.39
	5/13/2015	99.68	36.98	62.70
	8/12/2015	99.68	36.70	62.98
	10/29/2015	99.68	36.47	63.21

TABLE 4
GROUNDWATER ELEVATIONS - B-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
MW-101B	2/4/2015	101.78	38.52	63.26
	5/13/2015	101.78	38.23	63.55
	8/13/2015	101.78	37.90	63.88
	10/23/2015	101.78	38.18	63.60
MW-102B	2/3/2015	100.48	37.73	62.75
	5/14/2015	100.48	37.44	63.04
	8/14/2015	100.48	37.10	63.38
	10/29/2015	100.48	36.92	63.56
MW-103B	2/2/2015	99.79	39.51	60.28
MW-104B	2/2/2015	102.16	38.49	63.67
MW-108B	2/3/2015	100.51	36.41	64.10
	6/2/2015	100.51	35.93	64.58
	8/14/2015	100.51	35.63	64.88
	10/29/2015	100.51	35.43	65.08
MW-109B	2/2/2015	101.00	39.43	61.57
	6/11/2015	101.00	39.04	61.96
	8/25/2015	101.00	38.70	62.30
	11/10/2015	101.00	38.44	62.56
MW-110B	2/3/2015	101.29	38.95	62.34
	5/14/2015	101.29	38.62	62.67
	8/13/2015	101.29	38.36	62.93
	10/29/2015	101.29	38.10	63.19
MW-111B	2/4/2015	101.16	40.20	60.96
	5/21/2015	101.16	39.93	61.23
	8/25/2015	101.16	39.56	61.60
	11/11/2015	101.16	39.30	61.86
MW-112B	2/4/2015	96.64	37.33	59.31
	5/14/2015	96.64	37.07	59.57
	8/12/2015	96.64	36.30	60.34
	10/23/2015	96.64	36.19	60.45
MW-112B2	2/4/2015	96.33	37.03	59.30
	5/14/2015	96.33	36.78	59.55
	8/12/2015	96.33	36.01	60.32
	10/23/2015	96.33	35.94	60.39
MW-113B	2/5/2015	101.81	39.37	62.44
	6/2/2015	101.81	38.93	62.88
	8/25/2015	101.81	38.62	63.19
	10/22/2015	101.81	38.93	62.88
MW-114B	2/4/2015	100.96	40.35	60.61
	5/14/2015	100.96	40.07	60.89
	8/11/2015	100.96	40.39	60.57
	10/30/2015	100.96	39.40	61.56
MW-115B	2/2/2015	100.60	38.81	61.79
MW-116B	2/4/2015	99.40	35.06	64.34
	5/15/2015	99.40	34.79	64.61
	8/14/2015	99.40	34.47	64.93
	10/23/2015	99.40	34.36	65.04
MW-117B	2/4/2015	102.69	39.26	63.43

TABLE 4
GROUNDWATER ELEVATIONS - B-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
MW-118B	2/4/2015	100.23	36.34	63.89
	5/14/2015	100.23	36.02	64.21
	8/13/2015	100.23	35.75	64.48
	10/30/2015	100.23	35.55	64.68
MW-119B	2/4/2015	99.78	36.11	63.67
	5/15/2015	99.78	36.01	63.77
	8/13/2015	99.78	35.74	64.04
	10/28/2015	99.78	37.73	62.05
MW-120B	2/5/2015	100.61	37.82	62.79
	6/2/2015	100.61	37.38	63.23
	8/14/2015	100.61	37.09	63.52
	10/22/2015	100.61	36.97	63.64
MW-121B	2/3/2015	100.15	37.95	62.20
MW-123B	2/2/2015	98.98	37.43	61.55
MW-124B	2/4/2015	97.27	37.63	59.64
	5/15/2015	97.27	37.44	59.83
	8/13/2015	97.27	37.02	60.25
	10/22/2015	97.27	36.72	60.55
MW-125B	2/5/2015	101.52	39.75	61.77
	5/19/2015	101.52	39.42	62.10
	8/25/2015	101.52	38.97	62.55
	11/11/2015	101.52	38.79	62.73
MW-126B	2/4/2015	100.71	39.80	60.91
	5/20/2015	100.71	39.52	61.19
	8/17/2015	100.71	39.15	61.56
	11/5/2015	100.71	38.96	61.75
MW-127B	2/4/2015	99.31	39.38	59.93
	6/10/2015	99.31	39.04	60.27
	8/11/2015	99.31	39.33	59.98
	11/3/2015	99.31	38.44	60.87
MW-128B	2/4/2015	96.30	36.89	59.41
	6/11/2015	96.30	36.50	59.80
	8/17/2015	96.30	36.00	60.30
	10/23/2015	96.30	35.85	60.45
MW-131B	2/6/2015	99.04	40.72	58.32
	6/10/2015	99.04	40.17	58.87
	8/18/2015	99.04	39.39	59.65
	10/22/2015	99.04	39.41	59.63
MW-132B	2/4/2015	100.23	42.50	57.73
	6/10/2015	100.23	42.07	58.16
	8/14/2015	100.23	40.96	59.27
	10/22/2015	100.23	41.10	59.13
MW-133B	2/4/2015	97.45	39.68	57.77
	6/10/2015	97.45	39.28	58.17
	8/18/2015	97.45	38.55	58.90
	10/22/2015	97.45	38.58	58.87
MW-134B	2/6/2015	100.88	43.24	57.64
	6/9/2015	100.88	42.64	58.24
	8/13/2015	100.88	42.30	58.58
	10/23/2015	100.88	42.28	58.60

TABLE 4
GROUNDWATER ELEVATIONS - B-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
MW-135B	2/6/2015	102.95	45.92	57.03
	5/20/2015	102.95	45.41	57.54
	8/14/2015	102.95	45.24	57.71
	10/21/2015	102.95	45.04	57.91
MW-136B	2/5/2015	101.23	46.81	54.42
	5/20/2015	101.23	45.97	55.26
	8/14/2015	101.23	47.11	54.12
	10/21/2015	101.23	46.31	54.92
MW-137B	2/5/2015	99.61	42.43	57.18
	5/20/2015	99.61	41.83	57.78
	8/15/2015	99.61	41.00	58.61
	10/22/2015	99.61	41.08	58.53
MW-138B	2/5/2015	99.07	44.15	54.92
MW-139B	2/5/2015	96.58	41.70	54.88
MW-140B	2/5/2015	100.17	43.78	56.39
	5/20/2015	100.17	43.18	56.99
	8/14/2015	100.17	42.77	57.40
	10/21/2015	100.17	42.66	57.51
MW-141B	2/4/2015	103.87	42.42	61.45
	6/2/2015	103.87	42.16	61.71
	8/18/2015	103.87	41.79	62.08
	10/30/2015	103.87	41.54	62.33
MW-142B	2/6/2015	104.73	43.56	61.17
	6/9/2015	104.73	43.15	61.58
	8/14/2015	104.73	42.89	61.84
	11/4/2015	104.73	42.66	62.07
MW-143B	2/5/2015	104.29	43.24	61.05
	6/9/2015	104.29	42.79	61.50
	8/15/2015	104.29	42.56	61.73
	10/29/2015	104.29	42.35	61.94

Notes:

TOC = Top of casing
ft AMSL = Feet above mean sea level
DTW = Depth to water

TABLE 5
GROUNDWATER ELEVATIONS - C-ZONE
Former El Campo Aluminum Facility
El Campo, Texas

Well	Measurement Date	TOC (ft AMSL)	DTW (ft)	Groundwater Elevation (ft AMSL)
Plant Production 1	2/4/2015	101.48	54.85	46.63
Plant Production 2	2/4/2015	101.57	54.03	47.54
MW-5C	2/3/2015	100.60	53.31	47.29
MW-6C	2/5/2015	101.74	52.34	49.40
MW-7C	2/3/2015	99.28	52.98	46.30
MW-11C	2/2/2015	102.54	53.04	49.50
MW-17C	2/3/2015	98.85	52.81	46.04
MW-22C	2/3/2015	102.18	56.31	45.87
MW-23C	2/4/2015	102.93	57.08	45.85
MW-129C	2/2/2015	99.46	54.01	45.45
MW-130C	2/2/2015	99.65	54.33	45.32

Notes:

TOC = Top of casing
ft AMSL = Feet above mean sea level
DTW = Depth to water

TABLE 6
GROUNDWATER ANALYTICAL RESULTS – A-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS

Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	cis-1,2-Dichloroethene	1,2,4-Trimethylbenzene	1,2-Dichlorobenzene	o-Xylene	Other VOCs
PCL			5.0	70	12,000	600	10,000	Various
Units:			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A	MW-2A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	ND
A	MW-4A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-6A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-7A	02/10/15	**1.96**	<0.500	<0.820	<0.500	<0.600	
A	MW-8A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-9A	02/10/15	**2.52**	<0.500	<0.820	<0.500	<0.600	
A	MW-10A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-12A	02/04/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-13A	02/04/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-14A	02/04/15	<0.500	<0.500	**1.43**	**1.12**	**0.901 J**	
A	MW-18A	02/05/15	<0.500	<0.500	<0.820	**0.618 J**	<0.600	
A	MW-19A	02/04/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-21A	02/10/15	**3.79**	<0.500	<0.820	<0.500	<0.600	
A	MW-22A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-23A	02/04/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-25A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-109A	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	
A	MW-111A	02/10/15	**0.920 J**	**0.548 J**	<0.820	<0.500	<0.600	
A	VFW-MW-1	02/05/15	<0.500	<0.500	<0.820	<0.500	<0.600	

Abbreviations:
µg/L = micrograms per liter
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
PCL = Protective Concentration Level
VOCs = volatile organic compounds

Notes:
1. Samples collected by AMEC Environment & Infrastructure, Inc. and analyzed for VOCs using U.S. EPA Method 8260B.
2. Groundwater PCLs ($^{GW}GW_{Ing}$) are from Texas
3. Highlighted results exceed the respective PCL.

TABLE 7
GROUNDWATER ANALYTICAL RESULTS – B-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS
Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	Benzene	Bromodichloromethane	Carbon tetrachloride	Chloroform	Chloromethane	m-Xylene & p-Xylene	Naphthalene	o-Xylene	Toluene	1,2-Dichloroethene, Total
		PCL	5.0	7.0	70	100	2.0	35	5.0	4,900	5.0	5.0	5.0	15	5.0	240	70	10,000	490	10,000	1,000	70
		Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
B	IG1-MW-1	02/10/15	**68.2**	**19.4**	**196 J**	**4.73**	**1.50**	<0.520	<0.500	**0.868 J**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-1	05/18/15	**23.4**	**2.81**	**13.5**	<0.500	<0.500	<0.520	<0.500	**2.34**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-1	08/17/15	**4.97**	**15.1**	**242**	**3.48**	**7.74**	<0.178	<0.209	**0.853 J**	**0.415 J**	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-1	11/03/15	**47.4**	**11.0**	**127**	**2.38**	**1.12 J**	<0.178	<0.209	**0.614 J**	**0.275 J**	**0.231 J**	<0.176	**0.680 J**	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-2	02/10/15	**66.4**	**8.70**	**67.2**	**1.50**	**21.7**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-2	05/19/15	<0.500 UJ	**1.30 J**	**14.4 J**	**2.27 J**	**16.1 J**	<0.520 UJ	<0.500 UJ	<0.500 UJ	<0.500 UJ	<0.500 UJ	<0.380 UJ	<0.500 UJ	<0.500 UJ	<0.600 UJ	<0.830 UJ	<1.60 UJ	<1.00 UJ	<0.600 UJ	<0.700 UJ	--
B	IG1-MW-3	02/10/15	<0.500	**1.42**	**16.1**	<0.500	**145**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	**1.33**	--
B	IG1-MW-3	05/19/15	<0.500	**0.682 J**	**7.33**	<0.500	**68.8**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-3	08/11/15	<0.138	**0.940 J**	**16.1**	<0.192	**44.9**	<0.178	<0.209	<0.168	<0.116	<0.136	**0.382 J**	<0.153	<0.183	<0.151	**0.476 J**	**0.310 J**	<0.129	**0.257 J**	**0.348 J**	--
B	IG1-MW-3	10/28/15	<0.138	**0.360 J**	**5.93**	<0.192	**18.5**	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-4	02/12/15	**718**	**40.6**	**38.3**	<0.500	**0.569 J**	<0.520	<0.500	**1.47**	<0.500	<0.500	<0.380	<0.500	<0.500	**0.746 J**	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-4	06/09/15	**551**	**32.5**	**39.3**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-4	08/25/15	**528**	**34.1**	**83.8**	<0.192	**1.36 J**	<0.178	<0.209	**1.31**	<0.116	**3.46**	<0.176	**11.0**	<0.183	**0.365 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-4	11/11/15	**440**	**29.5**	**73.7**	<0.192	**0.448 J**	<0.178	<0.209	**0.985 J**	**0.293 J**	<0.136	<0.176	<0.153	<0.183	**0.454 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-5	02/12/15	**623**	**30.5**	**4.69 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-5	06/10/15	**384**	**23.0**	**4.05 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-5	08/19/15	**525**	**28.3**	**6.28**	<0.192	**0.273 J**	<0.178	<0.209	**0.980 J**	**0.223 J**	<0.136	<0.176	<0.153	<0.183	**0.385 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-5	08/19/15	**521**	**26.7**	**6.41**	**0.245 J**	**0.344 J**	<0.178	<0.209	**1.02**	**0.278 J**	<0.136	<0.176	<0.153	<0.183	**0.339 J**	**0.240 J**	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-5	11/11/15	**538**	**27.5 J**	**6.14 J**	<0.192	<0.248	<0.178	<0.209	**0.886 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.614 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-5	11/11/15	**514**	<0.192 UJ	<0.157 UJ	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-6B1	02/12/15	**124**	**1.39**	**18.3**	<0.500	**9.87**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-6B1	06/10/15	**74.6**	<0.500	**14.5**	<0.500	**6.54**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-MW-6B1	07/28/15	**48.0**	**0.610 J**	**4.17**	<0.500	**2.72**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	**4.17**
B	IG1-MW-6B1	08/19/15	**36.1**	**0.568 J**	**3.78**	<0.192	**0.618 J**	<0.178	<0.209	<0.168	<0.116	**0.193 J**	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-6B1	11/12/15	**22.4**	**0.458 J**	**9.82**	<0.192	**2.87**	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-6B2	02/12/15	**884**	**14.5**	**60.3**	<2.50	**3.34 J**	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-6B2	08/19/15	**595**	**13.1**	**142**	**0.738 J**	**9.79**	<0.178	**0.290 J**	**0.723 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.249 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-6B2	11/12/15	**361**	**7.44**	**135**	<0.192	**7.18**	<0.178	<0.209	**0.436 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.297 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-6B3	02/12/15	**1,370**	**19.1**	**10.2**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-6B3	06/10/15	**709**	**13.4**	**8.10**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-6B3	07/28/15	**867**	**16.7**	**8.41**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	**8.41**
B	IG1-MW-6B3	08/19/15	**1,110**	**24.1**	**12.8**	**0.815 J**	<0.248	**0.226 J**	**0.593 J**	**1.55**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.589 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-6B3	11/12/15	**925**	<0.192	<0.157	<0.192	<0.248	**0.221 J**	**0.478 J**	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-7	02/13/15	**1,100 J**	<2.50	**4.74 J**	<2.50	<2.50	<2.60	<2.50 UJ	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-7	02/13/15	**1,210 J**	<2.50	**4.95 J**	<2.50	<2.50	<2.60	<2.50 UJ	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-7	06/10/15	**507**	<2.50	**2.71 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG1-MW-7	07/28/15	**605**	<1.00	**2.14**	<1.00	<1.00	<1.04	<1.00	<1.00	<1.00	<1.00	<0.760	<1.00	<1.00	<1.20	<1.66	<3.20	<2.00	<1.20	<1.40	**2.14**
B	IG1-MW-7	08/18/15	**961**	**1.11**	**4.53**	**0.867 J**	<0.248	<0.178	**0.318 J**	<0.168	<0.116	**5.17**	<0.176	**17.7**	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-7	11/12/15	**781**	<0.192	**3.48**	**0.638 J**	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.359 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-MW-7	11/12/15	**734**	<0.192	**3.33**	**0.623 J**	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.315 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-RW-4	02/13/15	**341**	**7.76**	**1.27**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-RW-4	05/20/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-RW-4	06/10/15	**136**	**4.57**	**0.860 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG1-RW-4	08/25/15	**313**	**9.08 J**	**1.63**	<0.192	<0.248	<0.178	<0.209	**0.264 J**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-RW-4	08/26/15	**261**	**4.62 J**	**1.57**	<0.192	<0.248	<0.178	<0.209	**0.269 J**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-RW-4	11/06/15	**242**	**6.59**	**1.23**	<0.192	<0.248	<0.178	<0.209	**0.235 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.232 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG1-RW-4	11/06/15	**210 J**	**7.06**	**1.15**	<0.192	<0.248	<0.178	<0.209	**0.224 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.268 J**	**0.395 J**	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-1	02/11/15	**26.6**	**3.96**	**18.0**	<0.500	<0.500	<0.520	<0.500	**2.94**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-1	05/18/15	**24.0**	**3.55**	**15.6**	<0.500	<0.500	<0.520	<0.500	**2.93**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-1	08/17/15	**0.285 J**	**0.450 J**	**6.44**	<0.192	**40.8**	<0.178	**0.397 J**	**2.47**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	**0.140 J**	<0.192	<0.198	--
B	IG2-MW-1	11/03/15	**9.98**	**2.71**	**24.3**	<0.192	<0.248	<0.178	<0.209	**2.16**	**0.250 J**	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-2	02/11/15	**29.7**	**6.06**	**20.9**	<0.500	<0.500	<0.520	<0.500	**4.82**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-2	05/18/15	**27.6**	**4.21**	**16.8**	<0.500	<0.500	<0.520	<0.500	**3.28**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-2	08/17/15	**30.7**	**5.91**	**26.8**	<0.192	<0.248	<0.178	<0.209	**5.09**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151 U	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-2	11/03/15	**28.9**	**5.60**	**21.0**	<0.192	<0.248	<0.178	**0.414 J**	**4.42**	**0.197 J**	**0.188 J**	<0.176	**0.408 J**	<0.183	**0.386 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-3	02/13/15	**105**	**21.2**	**27.4**	<0.500	<0.500	<0.520	**1.08 J**	**9.99**	<0.500	<0.500	<0.380	<0.500	<0.500	**0.768 J**	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-3	02/13/15	**99.1**	**18.0**	**29.2**	<0.500	<0.500	<0.520	<0.500	**10.3**	<0.500	<0.500	<0.380	<0.500	<0.500	**0.730 J**	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-3	05/19/15	**102**	**20.6**	**18.8**	<0.500	<0.500	<0.520	**0.953 J**	**10.5**	<0.500	<0.500	<0.380	<0.500	<0.500	**0.846 J**	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-3	08/25/15	<0.138 U	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-3	11/05/15	**88.6**	**15.4**	**38.5**	<0.192	<0.248	<0.178	**0.886 J**	**10.3**	**0.428 J**	**0.413 J**	<0.176	**1.23**	<0.183	**0.670 J**	**0.440 J**	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-4	02/11/15	**35.1**	**6.94**	**6.20**	<0.500	<0.500	<0.520	<0.500	**2.22**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--

TABLE 7
GROUNDWATER ANALYTICAL RESULTS – B-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS

Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	Benzene	Bromodichloromethane	Carbon tetrachloride	Chloroform	Chloromethane	m-Xylene & p-Xylene	Naphthalene	o-Xylene	Toluene	1,2-Dichloroethene, Total
		PCL	5.0	7.0	70	100	2.0	35	5.0	4,900	5.0	5.0	5.0	15	5.0	240	70	10,000	490	10,000	1,000	70
		Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
B	IG2-MW-4	02/11/15	**40.6**	**7.55**	**7.37**	<0.500	<0.500	<0.520	<0.500	**2.52**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-4	05/19/15	**79.7**	**11.0**	**13.2**	<0.500	<0.500	<0.520	**0.795 J**	**4.64**	<0.500	<0.500	<0.380	<0.500	<0.500	**0.650 J**	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG2-MW-4	08/17/15	**53.7**	**7.62**	**12.4**	**0.200 J**	<0.248	<0.178	<0.209	**3.43**	<0.116	**0.300 J**	<0.176	<0.153	<0.183	<0.151 U	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG2-MW-4	11/04/15	**61.8**	**9.65**	**9.71**	<0.192	<0.248	<0.178	**0.425 J**	**3.23**	**0.237 J**	<0.136	<0.176	<0.153	<0.183	**0.697 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG3-IW-1	08/19/15	**186**	**0.738 J**	**4.79**	**0.588 J**	<0.248	<0.178	<0.209	**0.225 J**	<0.116	<0.136	**0.426 J**	<0.153	<0.183	**0.168 J**	<0.209	<0.205	<0.129	<0.192	**7.25**	--
B	IG3-IW-1	11/11/15	**459**	**0.724 J**	**6.59**	**0.995 J**	<0.248	<0.178	<0.209	**0.328 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.471 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG4-MW-1	02/13/15	**916**	<2.50	**7.40**	<2.50	<2.50	<2.60	<2.50 UJ	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-1	05/21/15	**10.7**	<0.500	**69.0**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	IG4-MW-1	06/09/15	**712**	<2.50	**12.9**	<2.50	**2.67 J**	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-1	07/29/15	**737**	<2.50	**19.9**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	**19.9**
B	IG4-MW-1	08/26/15	**836**	**1.61**	**11.5**	**1.58**	**0.472 J**	<0.178	<0.209	**0.352 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.255 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG4-MW-1	11/06/15	**767**	**1.36**	**8.47**	**1.12**	<0.248	<0.178	<0.209	**0.247 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.367 J**	<0.209	<0.205	**0.149 J**	<0.192	<0.198	--
B	IG4-MW-2	02/13/15	**613**	<2.50	**2.67 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-2	02/13/15	**616**	<2.50	**2.75 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-2	06/09/15	**762**	**4.98 J**	**3.38 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-2	07/28/15	**854**	**4.84 J**	**3.40 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	**3.40 J**
B	IG4-MW-2	08/25/15	**735**	**6.31**	**4.61**	**0.567 J**	<0.248	<0.178	<0.209	**0.272 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.304 J**	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	IG4-MW-2	11/13/15	**750**	**5.73**	**3.61**	**0.435 J**	<0.248	<0.178	<0.209	**0.216 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.432 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG4-MW-3	02/13/15	**627**	<2.50	**2.66 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-3	02/13/15	**695**	<2.50	**2.96 J**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	IG4-MW-3	06/09/15	**207**	**6.74**	**1.33 J**	<1.00	<1.00	<1.04	<1.00	<1.00	<1.00	<1.00	<0.760	<1.00	<1.00	<1.20	<1.66	<3.20	<2.00	<1.20	<1.40	--
B	IG4-MW-3	07/29/15	**423**	**11.9**	**1.92 J**	<1.00	<1.00	<1.04	<1.00	<1.00	<1.00	<1.00	<0.760	<1.00	<1.00	<1.20	<1.66	<3.20	<2.00	<1.20	<1.40	**1.92 J**
B	IG4-MW-3	08/25/15	**488**	**7.61**	**2.51**	<0.192	<0.248	<0.178	<0.209	**0.451 J**	<0.116	**3.47**	<0.176	**11.5**	<0.183	**0.223 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG4-MW-3	11/12/15	**333**	**11.1**	**1.89**	<0.192	<0.248	<0.178	<0.209	**0.364 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.349 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG4-RW-1	07/28/15	**372**	**6.82**	**1.25 J**	<1.00	<1.00	<1.04	<1.00	<1.00	<1.00	<1.00	<0.760	<1.00	<1.00	<1.20	<1.66	<3.20	<2.00	<1.20	<1.40	**1.25 J**
B	IG4-RW-1	08/17/15	**435**	**10.1**	**2.04**	<0.192	<0.248	<0.178	<0.209	**0.270 J**	<0.116	**2.48**	<0.176	<0.153	<0.183	<0.151	**0.226 J**	<0.205	<0.129	<0.192	<0.198	--
B	IG4-RW-1	10/23/15	**453**	**10.3**	**2.02**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.316 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	IG4-RW-1	10/23/15	**528**	**10.1**	**1.91**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.314 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-4B	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-5B	02/10/15	**2.10**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-5B	05/18/15	**1.97**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-5B	08/17/15	**2.46**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	**0.188 J**	<0.151 U	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-5B	11/04/15	**3.14**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	**0.355 J**	**0.707 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-6B	02/11/15	**10.0**	<0.500	**3.94**	<0.500	<0.500	<0.520	<0.500	**0.647 J**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-6B	05/18/15	**6.30**	<0.500	**2.27**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-6B	08/18/15	**7.23**	**0.481 J**	**3.53**	<0.192	<0.248	<0.178	<0.209	**0.624 J**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-6B	11/04/15	**7.15**	**0.301 J**	**1.76**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.401 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-7B	02/11/15	**13.7**	**1.69**	**2.98**	<0.500	<0.500	<0.520	<0.500	**1.63**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-7B	05/19/15	**11.7**	**1.25**	**1.95**	<0.500	<0.500	<0.520	<0.500	**1.20**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-7B	08/18/15	**12.9**	**1.23**	**3.13**	<0.192	<0.248	<0.178	<0.209	**1.40**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-7B	11/05/15	**20.6**	**1.79**	**2.95**	<0.192	<0.248	<0.178	<0.209	**1.36**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.285 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-10B	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-10B	05/13/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-10B	08/13/15	**0.615 J**	<0.192	**0.604 J**	<0.192	<0.248	<0.178	<0.209	**0.280 J**	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-10B	10/28/15	**0.349 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-11B	02/02/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-12B	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-13B	02/09/15	**1.67**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-14B	02/11/15	**20.4**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-17B	02/10/15	**40.1**	<0.500	**3.56**	<0.500	<0.500	<0.520	<0.500	**0.526 J**	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-19B	02/06/15	**1.38**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-21B	02/11/15	**104**	**32.9**	**56.4**	<0.500	<0.500	<0.520	**0.625 J**	**6.71**	**0.831 J**	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-21B	05/19/15	**105**	**21.1**	**48.8**	<0.500	<0.500	<0.520	**0.784 J**	**5.60**	**0.692 J**	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-21B	08/18/15	**120**	**24.3**	**76.9**	<0.192	<0.248	<0.178	**0.913 J**	**7.14**	**0.899 J**	<0.136	<0.176	<0.153	<0.183	**0.241 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-21B	11/05/15	**47.7**	**4.18**	**30.7**	<0.192	<0.248	<0.178	<0.209	**1.88**	<0.116	**0.250 J**	<0.176	**0.364 J**	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-24B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-25B	02/02/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-26B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-100B	02/06/15	**2.56**	<0.500	**1.86 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-100B	02/06/15	**2.29**	<0.500	**4.86 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-100B	05/13/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--

TABLE 7
GROUNDWATER ANALYTICAL RESULTS – B-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS

Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	Benzene	Bromodichloromethane	Carbon tetrachloride	Chloroform	Chloromethane	m-Xylene & p-Xylene	Naphthalene	o-Xylene	Toluene	1,2-Dichloroethene, Total
		PCL	5.0	7.0	70	100	2.0	35	5.0	4,900	5.0	5.0	5.0	15	5.0	240	70	10,000	490	10,000	1,000	70
		Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
B	MW-100B	08/12/15	<0.138	<0.192	**2.12**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	**63.1**	--
B	MW-100B	10/29/15	**0.765 J**	<0.192	**0.871 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-101B	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-101B	05/13/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-101B	08/13/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-101B	10/23/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-102B	02/06/15	**6.08**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-102B	05/14/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-102B	08/14/15	**4.09**	<0.192	**1.63**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	**0.475 J**	--
B	MW-102B	10/29/15	**11.4**	<0.192	**0.646 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.249 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-103B	02/02/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-104B	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-108B	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-108B	06/02/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-108B	08/14/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-108B	10/29/15	**0.318 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.186 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-109B	02/13/15	**1,220**	<2.50	**8.92**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	MW-109B	05/19/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-109B	06/11/15	**687**	<2.50	**7.34**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	MW-109B	06/11/15	**674**	<2.50	**7.31**	<2.50	<2.50	<2.60	<2.50	<2.50	<2.50	<2.50	<1.90	<2.50	<2.50	<3.00	<4.15	<8.00	<5.00	<3.00	<3.50	--
B	MW-109B	08/25/15	**66.3**	<0.192	**3.93**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	**0.403 J**	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-109B	08/25/15	**49.5**	<0.192	**3.58**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-109B	11/10/15	**1,070**	**2.11**	**9.28**	**1.67**	<0.248	<0.178	<0.209	**0.348 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.496 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-109B	11/10/15	**1,030**	**2.09**	**8.77**	**1.48**	<0.248	<0.178	<0.209	**0.375 J**	<0.116	<0.136	<0.176	<0.153	<0.183	**0.483 J**	**0.521 J**	<0.205	<0.129	<0.192	<0.198	--
B	MW-110B	02/10/15	**3.33**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-110B	05/14/15	**0.685 J**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-110B	08/13/15	**3.74**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-110B	10/29/15	**2.43**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-111B	02/13/15	**124**	**1.64**	**1.22**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-111B	05/21/15	**95.3**	**0.837 J**	**0.718 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-111B	08/25/15	**91.7**	**1.32**	**1.26**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-111B	11/11/15	**74.7**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-112B	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-112B	05/14/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-112B	08/12/15	<0.138	<0.192	**0.173 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-112B	10/23/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-112B2	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-112B2	05/14/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-112B2	08/12/15	<0.138	<0.192	**0.190 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-112B2	10/23/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-113B	02/12/15	**50.2 J**	**1.69**	**1.27 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-113B	02/12/15	**13.3 J**	**0.852 J**	**11.3 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-113B	06/02/15	**32.6**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-113B	08/25/15	**42.2**	**1.65**	**1.15**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-113B	10/22/15	**60.1 J**	**1.62 J**	**0.238 J**	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-114B	02/06/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-114B	05/14/15	**0.950 J**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-114B	08/11/15	**1.46**	<0.192	**0.371 J**	<0.192	**0.356 J**	<0.178	<0.209	<0.168	<0.116	<0.136	**0.579 J**	<0.153	<0.183	<0.151	<0.209 U	**0.236 J**	<0.129	**0.208 J**	<0.198	--
B	MW-114B	10/30/15	**3.10**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-115B	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-116B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-116B	05/15/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-116B	08/14/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151 U	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-116B	10/23/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.341 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-117B	02/10/15	**4.15**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-118B	02/12/15	<0.500 U	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-118B	05/14/15	**1.36**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-118B	08/13/15	**2.15**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.336 J**	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-118B	10/30/15	**2.38**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.372 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-119B	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-119B	05/15/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--

TABLE 7
GROUNDWATER ANALYTICAL RESULTS – B-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS

Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	Benzene	Bromodichloromethane	Carbon tetrachloride	Chloroform	Chloromethane	m-Xylene & p-Xylene	Naphthalene	o-Xylene	Toluene	1,2-Dichloroethene, Total
		PCL	5.0	7.0	70	100	2.0	35	5.0	4,900	5.0	5.0	5.0	15	5.0	240	70	10,000	490	10,000	1,000	70
		Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
B	MW-119B	08/14/15	**0.412 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.225 J**	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-119B	10/28/15	**0.311 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-120B	02/10/15	**2.69**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-120B	06/02/15	**2.06**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-120B	08/14/15	**2.82**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151 U	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-120B	10/22/15	2.05 UJ	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	**0.286 J**	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-121B	02/10/15	**5.61**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-123B	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-124B	02/04/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	**0.706 J**	--
B	MW-124B	05/15/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-124B	08/13/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-124B	10/22/15	<0.138 UJ	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-125B	02/13/15	**86.7**	**4.55**	**17.9**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-125B	05/19/15	**36.5**	**3.54**	**35.0**	<0.500	**1.80**	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-125B	08/25/15	**36.4**	**5.33**	**75.4**	<0.192	**16.3**	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-125B	11/11/15	**16.4**	**2.47**	**30.6**	**0.243 J**	**48.2**	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-126B	02/12/15	**82.7**	<0.500	**1.36**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-126B	02/12/15	**79.3**	<0.500	**1.25**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-126B	05/20/15	**25.3**	<0.500	**0.676 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-126B	05/20/15	**24.3**	<0.500	**0.660 J**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-126B	08/17/15	**68.1**	<0.192	**1.44**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-126B	08/17/15	**62.9**	<0.192	**1.59**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	**0.311 J**	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-126B	11/05/15	**89.1**	<0.192	**1.35**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.227 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-127B	02/06/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-127B	06/10/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-127B	08/12/15	<0.138	<0.192	**0.252 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-127B	11/03/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-128B	02/13/15	**50.7**	<0.500	**1.81**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-128B	02/13/15	**49.9**	<0.500	**1.19**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-128B	06/11/15	**89.8**	**1.67**	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-128B	08/17/15	**148**	**1.58**	**0.552 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-128B	08/17/15	**135**	**1.52**	**0.496 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	**0.665 J**	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-128B	10/23/15	**104**	**1.06**	**0.776 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.206 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-128B	10/23/15	**109**	**1.11**	**0.768 J**	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	**0.522 J**	<0.176	<0.153	<0.183	**0.191 J**	<0.209	<0.205	<0.129 UJ	<0.192	<0.198	--
B	MW-131B	02/13/15	**47.2**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-131B	06/10/15	**26.7**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-131B	08/18/15	**32.0**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-131B	10/22/15	**54.2 J**	**0.301 J**	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	**0.174 J**	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-132B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-132B	06/10/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-132B	08/14/15	**0.429 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-132B	10/22/15	<0.138 UJ	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-133B	02/12/15	**16.1**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-133B	06/10/15	**6.49**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-133B	08/18/15	**8.06**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	**0.329 J**	<0.205	<0.129	<0.192	<0.198	--
B	MW-133B	10/22/15	**11.2 J**	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-134B	02/09/15	**0.901 J**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-134B	06/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-134B	08/13/15	**0.234 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-134B	10/23/15	**0.229 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-135B	02/10/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-135B	05/20/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-135B	08/14/15	**0.211 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-135B	10/21/15	**0.365 J**	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-136B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-136B	05/20/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-136B	08/14/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-136B	10/21/15	**0.464 J**	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-137B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-137B	05/20/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-137B	08/15/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--

TABLE 7
GROUNDWATER ANALYTICAL RESULTS – B-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS
Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	Benzene	Bromodichloromethane	Carbon tetrachloride	Chloroform	Chloromethane	m-Xylene & p-Xylene	Naphthalene	o-Xylene	Toluene	1,2-Dichloroethene, Total
		PCL	5.0	7.0	70	100	2.0	35	5.0	4,900	5.0	5.0	5.0	15	5.0	240	70	10,000	490	10,000	1,000	70
		Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
B	MW-137B	10/22/15	<0.138 UJ	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-138B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-139B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-140B	02/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-140B	05/20/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-140B	08/14/15	**0.155 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-140B	10/21/15	<0.138 UJ	<0.192 UJ	<0.157 UJ	<0.192 UJ	<0.248 UJ	<0.178 UJ	<0.209 UJ	<0.168 UJ	<0.116 UJ	<0.136 UJ	<0.176 UJ	<0.153 UJ	<0.183 UJ	<0.151 UJ	<0.209 UJ	<0.205 UJ	<0.129 UJ	<0.192 UJ	<0.198 UJ	--
B	MW-141B	02/13/15	**65.9**	<0.500	**2.72**	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-141B	06/02/15	**15.4 J**	<0.500 UJ	**1.75 J**	<0.500 UJ	<0.500 UJ	<0.520 UJ	<0.500 UJ	<0.500 UJ	<0.500 UJ	<0.500 UJ	<0.380 UJ	<0.500 UJ	<0.500 UJ	<0.600 UJ	<0.830 UJ	<1.60 UJ	<1.00 UJ	<0.600 UJ	<0.700 UJ	--
B	MW-141B	08/18/15	**63.0**	<0.192	**3.48**	**0.242 J**	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-141B	10/30/15	**169**	<0.192	**3.64**	**0.353 J**	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.231 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-141B	10/30/15	**171**	<0.192	**3.81**	**0.406 J**	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	**0.241 J**	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-142B	02/10/15	**6.22**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-142B	06/09/15	**6.81**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-142B	08/14/15	**7.09**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209 U	<0.205	<0.129	<0.192	<0.198	--
B	MW-142B	11/04/15	**8.66**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-143B	02/11/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-143B	06/09/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	MW-143B	08/15/15	<0.138	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-143B	10/29/15	**0.188 J**	<0.192	<0.157	<0.192	<0.248	<0.178	<0.209	<0.168	<0.116	<0.136	<0.176	<0.153	<0.183	<0.151	<0.209	<0.205	<0.129	<0.192	<0.198	--
B	MW-145B	01/12/15	**1.26**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--
B	PSRW-1	02/09/15	**0.985 J**	<0.500	<0.500	<0.500	<0.500	<0.520	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.500	<0.600	<0.830	<1.60	<1.00	<0.600	<0.700	--

Abbreviations:
µg/L = micrograms per liter
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
PCL = Protective Concentration Level
VOCs = volatile organic compounds

Notes:
1. Samples collected by AMEC Environment & Infrastructure, Inc. and analyzed for VOCs using U.S. EPA Method 8260B.
2. Groundwater PCLs ($^{GW}GW_{Ing}$) are from Texas Commission on Environmental Quality, 2014, Texas Risk Reduction Program PCL Table 3, November 12.
3. Highlighted results exceed the respective PCL.

TABLE 8
GROUNDWATER ANALYTICAL RESULTS – C-ZONE
DETECTED VOLATILE ORGANIC COMPOUNDS

Former El Campo Aluminum Facility
El Campo, Texas

Zone	Location	Sample Date	Trichloroethene	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane	Benzene	Ethylbenzene	p-Isopropyltoluene	Toluene	Other VOCs
		PCL	5.0	7.0	70	100	2.0	4,900	5.0	700	2,400	1,000	Various
		Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
C	MW-5C	02/06/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	ND
C	MW-6C	02/06/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	
C	MW-7C	02/12/15	**16.8**	<0.500	**3.54**	<0.500	<0.500	**1.28**	<0.380	<0.500	<0.710	<0.700	
C	MW-7C	02/12/15	**19.3**	**2.39**	**3.94**	<0.500	<0.500	**1.53**	<0.380	<0.500	<0.710	<0.700	
C	MW-11C	02/02/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	
C	MW-17C	02/05/15	**1.23**	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	
C	MW-22C	02/05/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	
C	MW-23C	02/11/15	**36.2**	**4.56**	**4.38**	**1.58**	**0.596 J**	**1.43**	<0.380	<0.500	**0.952 J**	<0.700	
C	MW-129C	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	
C	MW-130C	02/03/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	
C	PPW-1	02/06/15	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	**0.823 J**	**0.599 J**	<0.710	**0.916 J**	
C	PPW-2	02/10/15	**2.63**	<0.500	<0.500	<0.500	<0.500	<0.500	<0.380	<0.500	<0.710	<0.700	

Abbreviations:
µg/L = micrograms per liter
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
PCL = Protective Concentration Level
VOCs = volatile organic compounds

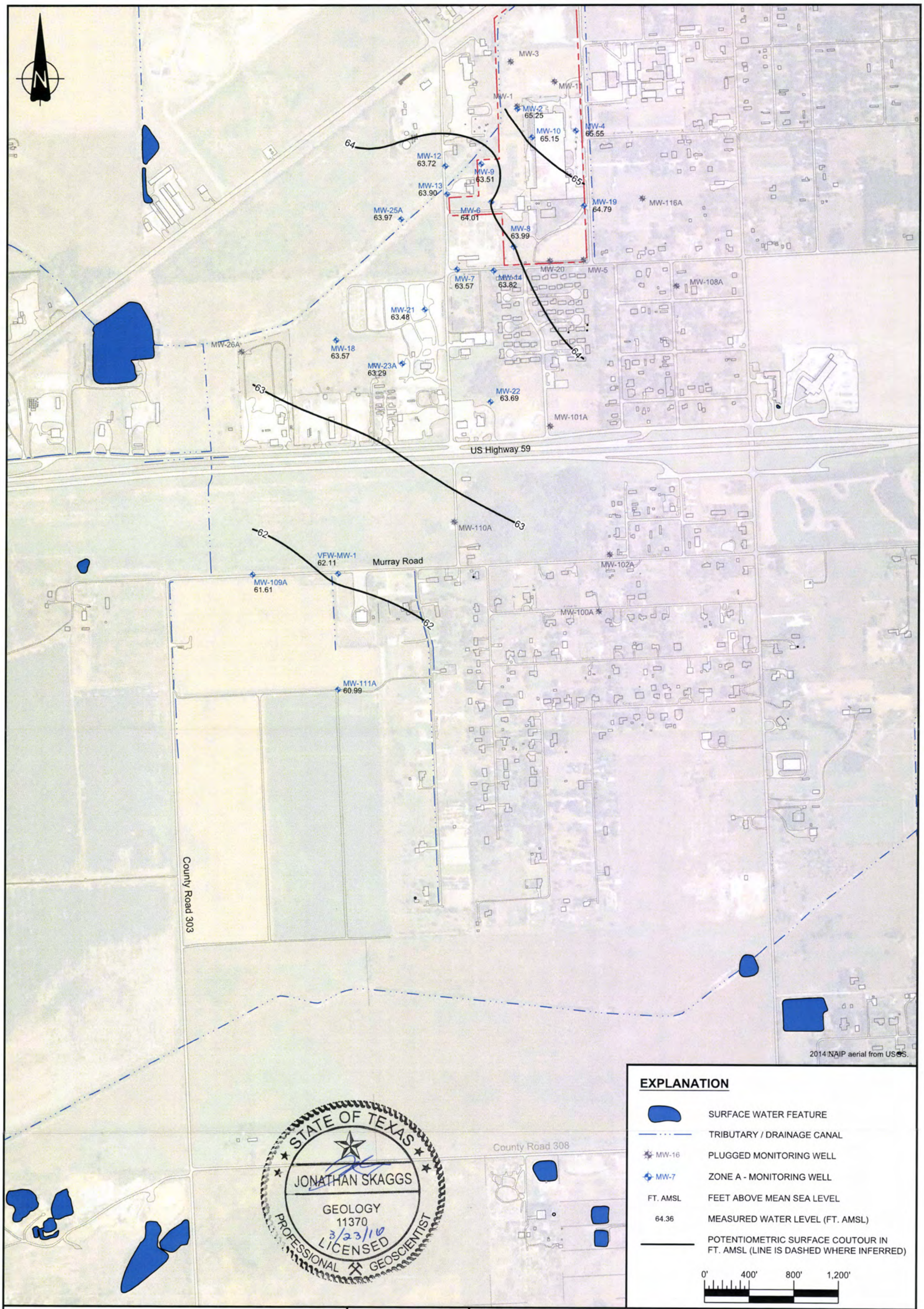
Notes:
1. Samples collected by AMEC Environment & Infrastructure, Inc. and analyzed for VOCs using U.S. EPA Method 8260B.
2. Groundwater PCLs (${}^{GW}GW_{Ing}$) are from Texas Commission on Environmental Quality, 2014, Texas Risk Reduction Program PCL Table 3, November 12.
3. Highlighted results exceed the respective PCL.

TABLE 9
DEPTH-DISCRETE GROUNDWATER SAMPLE ANALYTICAL RESULTS
Former El Campo Aluminum Facilty
El Campo, Texas

Sample Location	Ground water Sample Depth Interval	Sample Date	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	Vinyl Chloride	1,1,2-Trichloroethane	1,1-Dichloroethane	1,2-Dichloropropane	Benzene	Bromodichloromethane	Chloroform	Methylene chloride	Naphthalene	Tetrachloroethene	Toluene	Chloromethane	All Other VOCs
		PCL	5.0	70	100	7.0	2.0	5.0	4,900	5.0	5.0	15	240	5.0	490	5.0	1,000	70	Various
		Units									µg/L								
IG3-B-01	43-45	07/30/15	<0.138	<0.157	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	**0.940 J**	<0.153	<0.151	<0.176	**0.200 J**	<0.514	**0.728 J**	**0.266 J**	ND
IG3-B-01	75-76	08/02/15	**4.70**	<0.157	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	**0.235 J**	<0.153	<0.151	<0.176	<0.129	<0.514	**0.206 J**	<0.209	ND
IG3-B-01	90-91	08/02/15	**1,090**	**8.72**	**1.89**	**0.687 J**	**0.258 J**	<0.280	<0.168	**1.90**	<0.176	**5.66**	**0.471 J**	<0.176	<0.129	<0.514	<0.198	0.238 UJ	ND
IG3-B-01	115-116	08/02/15	**120**	**3.08**	**0.264 J**	**0.396 J**	<0.248	<0.280	<0.168	<0.136	**0.516 J**	**1.04**	<0.151	<0.176	<0.129	<0.514	**0.315 J**	<0.209	ND
IG3-B-02	44-46	07/31/15	<0.138	<0.157	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	<0.176	<0.153	<0.151	**1.81 J**	<0.129	<0.514	<0.198	<0.209	ND
IG3-B-02	79-80	08/01/15	<0.138	**0.975 J**	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	<0.176	<0.153	<0.151	<0.176	<0.129	**0.660 J**	<0.198	0.356 UJ	ND
IG3-B-02	91-92	08/01/15	**43.8**	**1.68**	<0.192	**1.58**	<0.248	<0.280	<0.168	<0.136	**0.186 J**	<0.153	<0.151	<0.176	<0.129	<0.514	<0.198	<0.209	ND
IG3-B-02	103-104	08/01/15	**64.0**	**1.25**	<0.192	**1.23**	<0.248	<0.280	<0.168	<0.136	**0.190 J**	<0.153	<0.151	<0.176	<0.129	<0.514	<0.198	<0.209	ND
IG3-B-02	115-116	08/01/15	**240**	**13.0**	**0.213 J**	**21.9**	<0.248	**0.574 J**	**2.85**	<0.136	<0.176	<0.153	**0.454 J**	<0.176	<0.129	<0.514	<0.198	0.497 UJ	ND
IG3-B-03	46-47	08/04/15	<0.317 UJ	<0.121 UJ	<0.200 UJ	<0.300 UJ	<0.300 UJ	<0.173 UJ	<0.168 UJ	<0.173 UJ	<0.330 UJ	<0.175 UJ	<0.173 UJ	<2.00 UJ	<0.200 UJ	<0.189 UJ	<0.495 UJ	<0.390 UJ	ND
IG3-B-03	74-75	08/04/15	<0.317	<0.121	<0.200	<0.300	<0.300	<0.173	<0.168	<0.173	<0.330	<0.175	<0.173	<2.00	<0.200	<0.189	<0.495	<0.390	ND
IG3-B-03	95-96	08/04/15	<0.317	<0.121	<0.200	<0.300	<0.300	<0.173	<0.168	<0.173	<0.330	<0.175	<0.173	<2.00	<0.200	<0.189	<0.495	<0.390	ND
IG3-B-03	104-105	08/04/15	**49.1**	**1.27**	<0.200	**3.36**	<0.300	<0.173	<0.168	<0.173	<0.330	<0.175	<0.173	<2.00	<0.200	<0.189	<0.495	<0.390	ND
IG3-B-04	43-44	08/05/15	<0.138	<0.157	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	<0.176	<0.153	<0.151	<0.176	<0.129	<0.514	<0.198	**0.505 J**	ND
IG3-B-04	79-80	08/05/15	**37.8**	**1.37**	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	**0.513 J**	**0.339 J**	**0.344 J**	<0.176	<0.129	<0.514	**0.597 J**	**0.560 J**	ND
IG3-B-04	94-95	08/06/15	**50.9**	**1.64**	**0.220 J**	<0.192	<0.248	<0.280	<0.168	<0.136	**0.502 J**	<0.153	**0.156 J**	<0.176	<0.129	<0.514	**0.396 J**	**0.423 J**	ND
IG3-B-04	115-116	08/06/15	**45.2**	**1.27**	<0.192	<0.192	<0.248	<0.280	<0.168	<0.136	<0.176	**0.382 J**	<0.151	<0.176	<0.129	<0.514	<0.198	**0.367 J**	ND

Abbreviations:
µg/L = micrograms per liter
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
ND = Not detected. Specific detection limits for constituents not detected can be found in the analytical laboratory reports.
PCL = Protective Concentration Level
UJ = The analyte was not detected above the reported sample quantitation limit.
However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample
VOCs = volatile organic compounds

Notes:
1. Samples collected by AMEC Environment & Infrastructure, Inc. and analyzed for VOCs using U.S. EPA Method 8260B.
2. Groundwater PCLs ($^{GW}GW_{Ing}$) are from Texas Commission on Environmental Quality, 2014, Texas Risk Reduction Program PCL Table 3, November 12.
3. Highlighted results exceed the respective PCL.



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 1

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

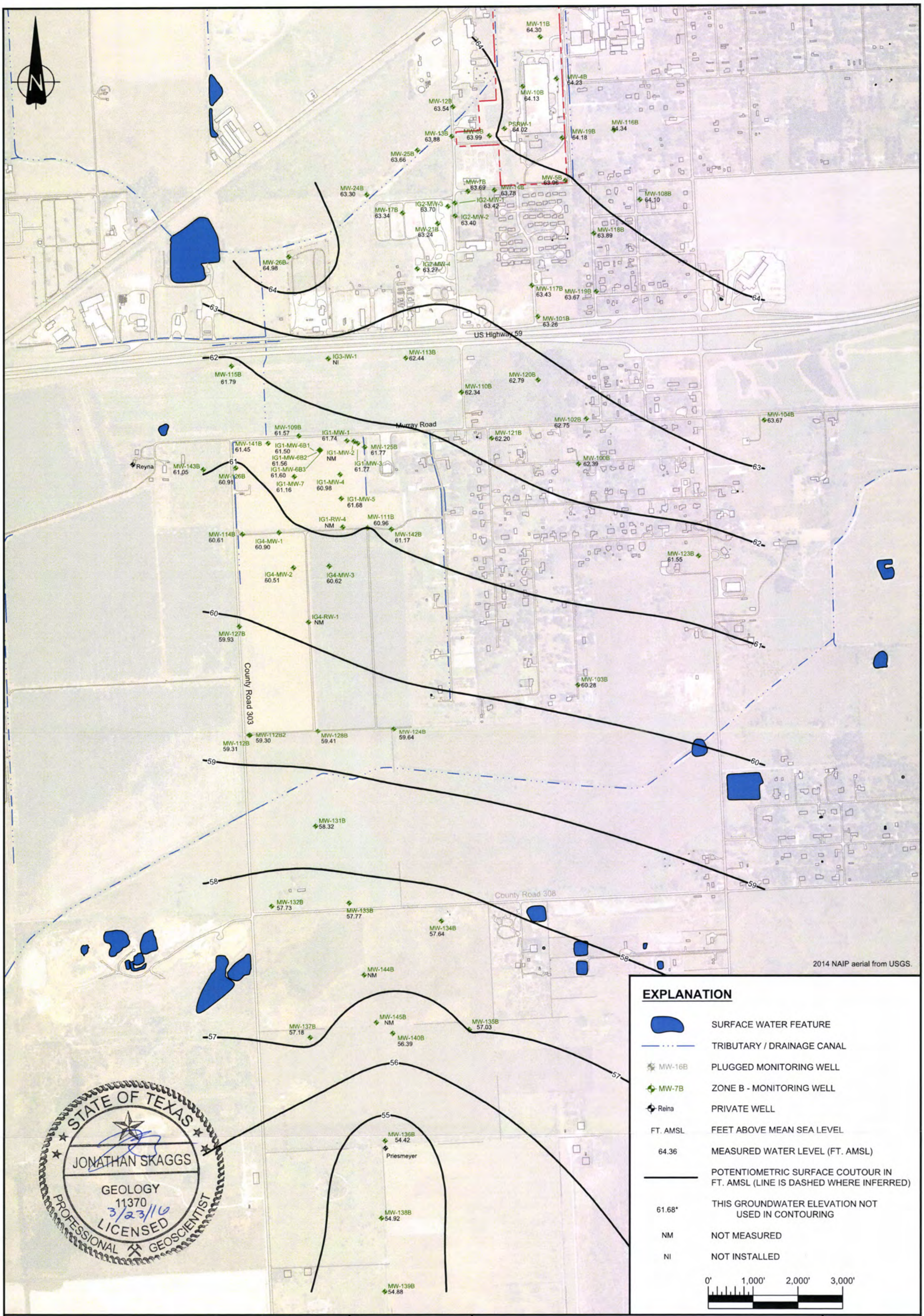
El Campo Aluminum Facility
El Campo, Texas

GROUNDWATER POTENTIOMETRIC
SURFACE MAP - A-ZONE
FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	1

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 1-4 Potentiometric Surface Maps.dwg - 1 - ZONE A(Q1) - Dec. 09, 2015 2:03pm - brian.johnson



EXPLANATION

●	SURFACE WATER FEATURE
—··—	TRIBUTARY / DRAINAGE CANAL
✲ MW-16B	PLUGGED MONITORING WELL
✲ MW-7B	ZONE B - MONITORING WELL
✲ Reina	PRIVATE WELL
FT. AMSL	FEET ABOVE MEAN SEA LEVEL
64.36	MEASURED WATER LEVEL (FT. AMSL)
——	POTENTIOMETRIC SURFACE COUTOUR IN FT. AMSL (LINE IS DASHED WHERE INFERRED)
61.68*	THIS GROUNDWATER ELEVATION NOT USED IN CONTOURING
NM	NOT MEASURED
NI	NOT INSTALLED

JONATHAN SKAGGS
11370
3/23/16

FIGURE 2

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

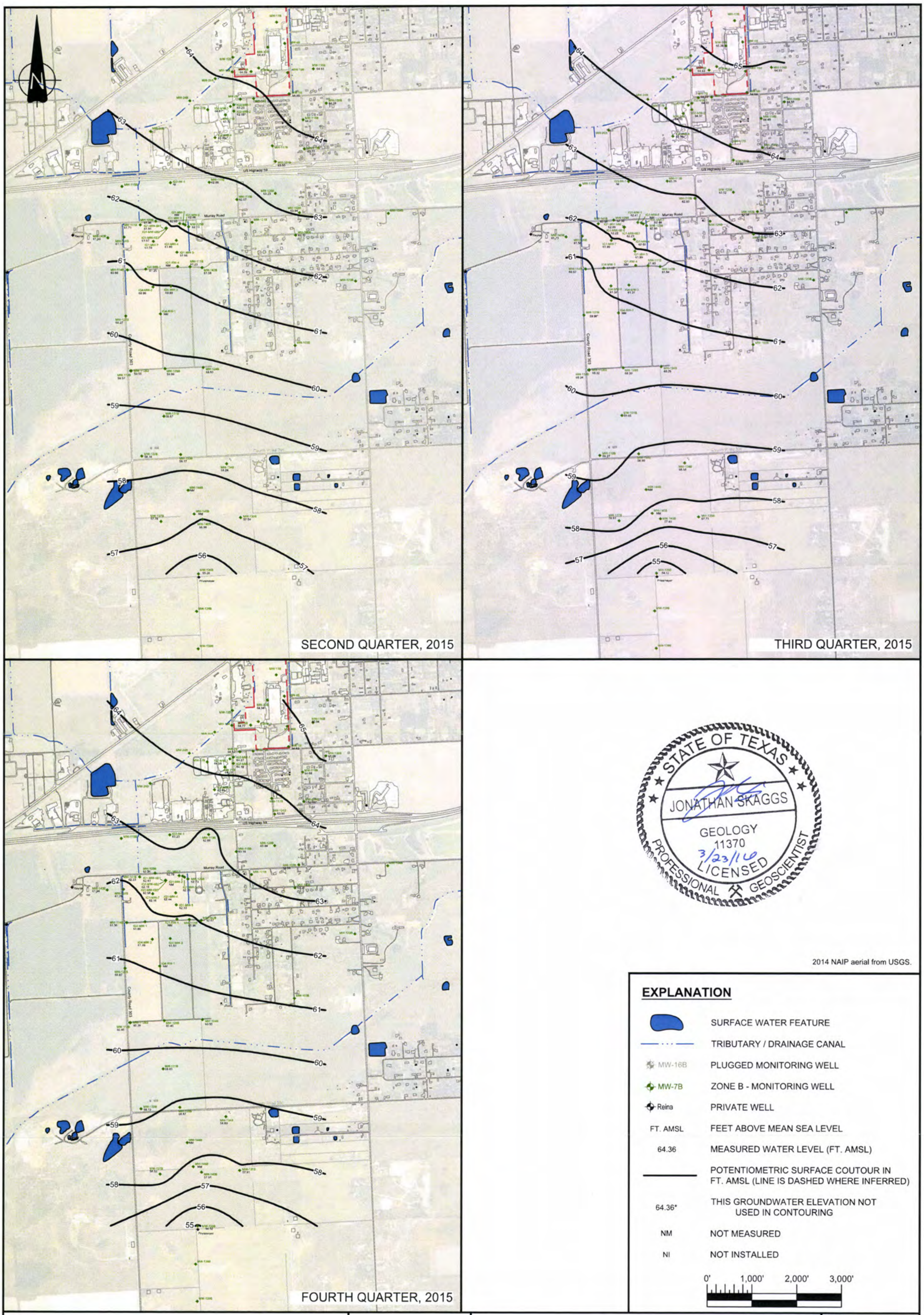
El Campo Aluminum Facility
El Campo, Texas

GROUNDWATER POTENTIOMETRIC
SURFACE MAP - B-ZONE
FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1,000'
PROJECT NO.	0126200001
FIGURE	2

DRAWN BY: BRJ CHECKED BY:

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 1-4 Potentiometric Surface Maps.dwg - 2 - ZONE B (Q1) - Dec. 16, 2015 9:47am - brian.johnson



2014 NAIP aerial from USGS.

JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 3

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

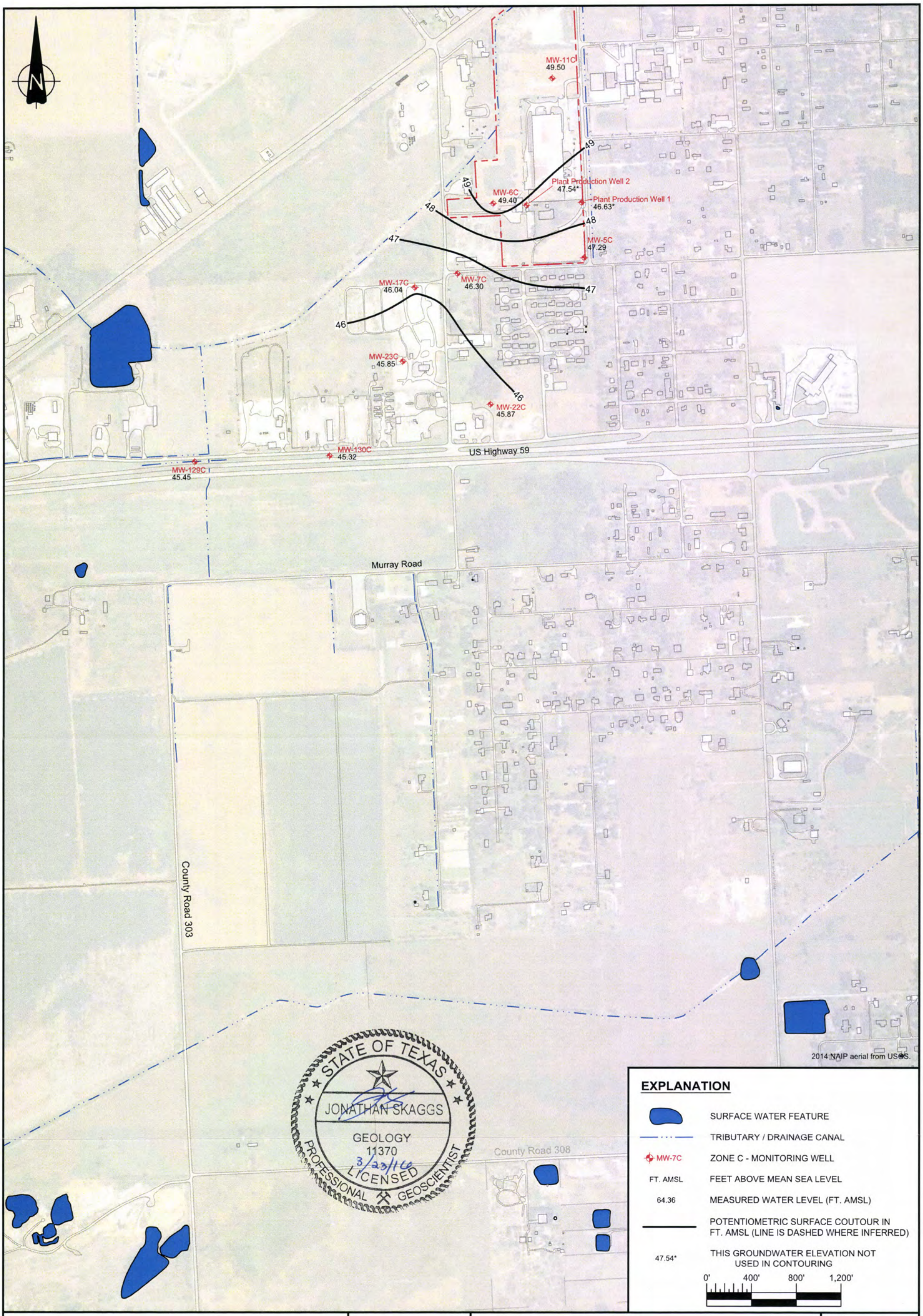
El Campo Aluminum Facility
El Campo, Texas

GROUNDWATER POTENTIOMETRIC
SURFACE MAP - B-ZONE
SECOND THROUGH FOURTH QUARTERS 2015

DATE	DECEMBER 2015
SCALE	1" = 2,000'
PROJECT NO.	0126200001
FIGURE	3

DRAWN BY: BRJ CHECKED BY:

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 1-4 Potentionmetric Surface Maps.dwg - 3 - ZONE B (Q2-3-4) - Feb. 19, 2016 11:11am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
LICENSED
PROFESSIONAL GEOSCIENTIST
3/23/16

FIGURE 4

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

El Campo Aluminum Facility
El Campo, Texas

GROUNDWATER POTENTIOMETRIC
SURFACE MAP - C-ZONE
FIRST QUARTER 2015

DATE
DECEMBER 2015

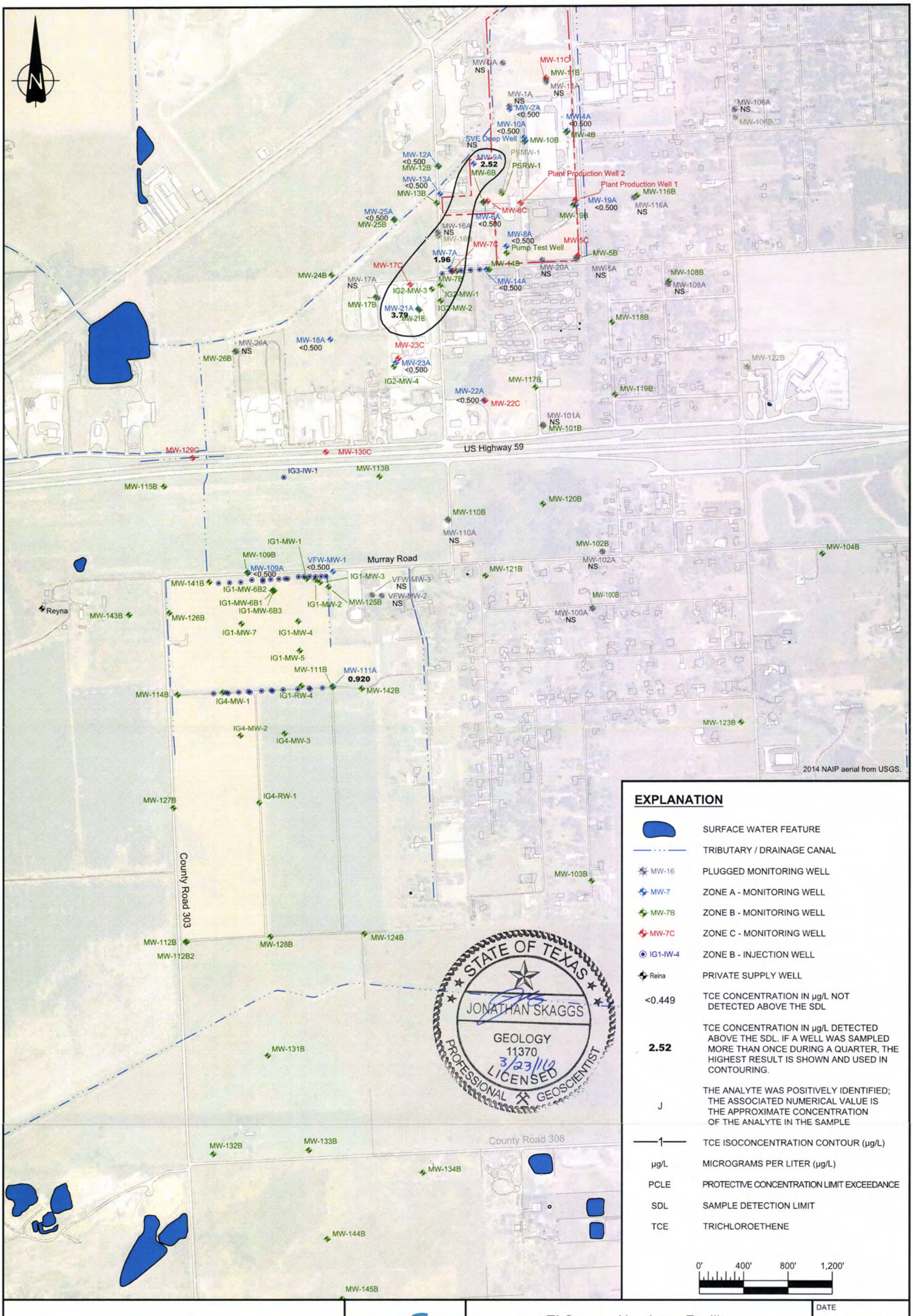
SCALE
1" = 800'

PROJECT NO.
0126200001

FIGURE
4

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 1-4 Potentionmetric Surface Maps.dwg - 4 - ZONE C(Q1) - Feb. 19, 2016 11:11am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

FIGURE 5

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec
foster
wheeler

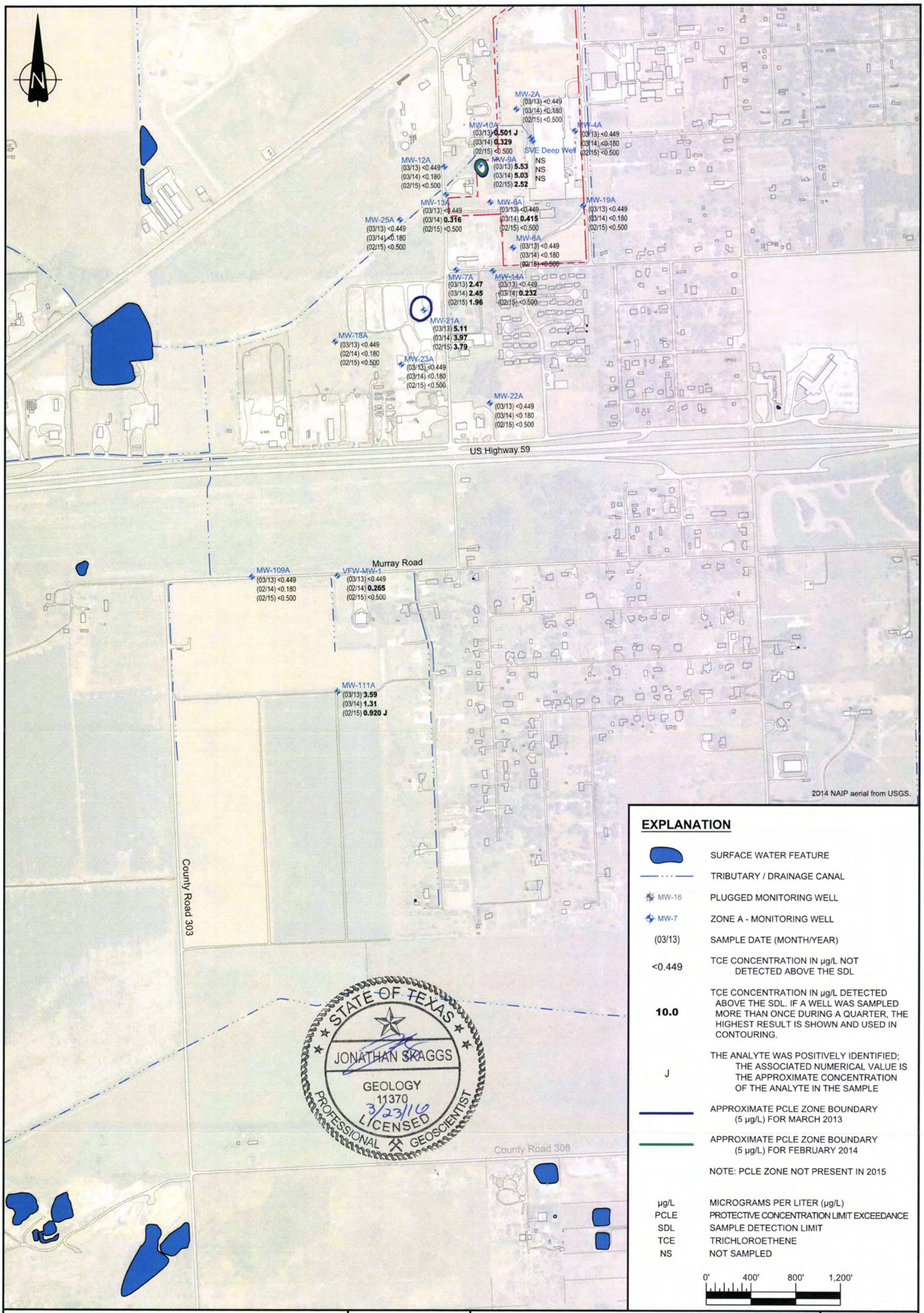
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - A-ZONE
FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	5

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 5-7-8-9-10-25 TCE Isoconcentration Maps.dwg - 5 - ZONE A - Dec. 11, 2015 11:07am - brian.johnson



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 6

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

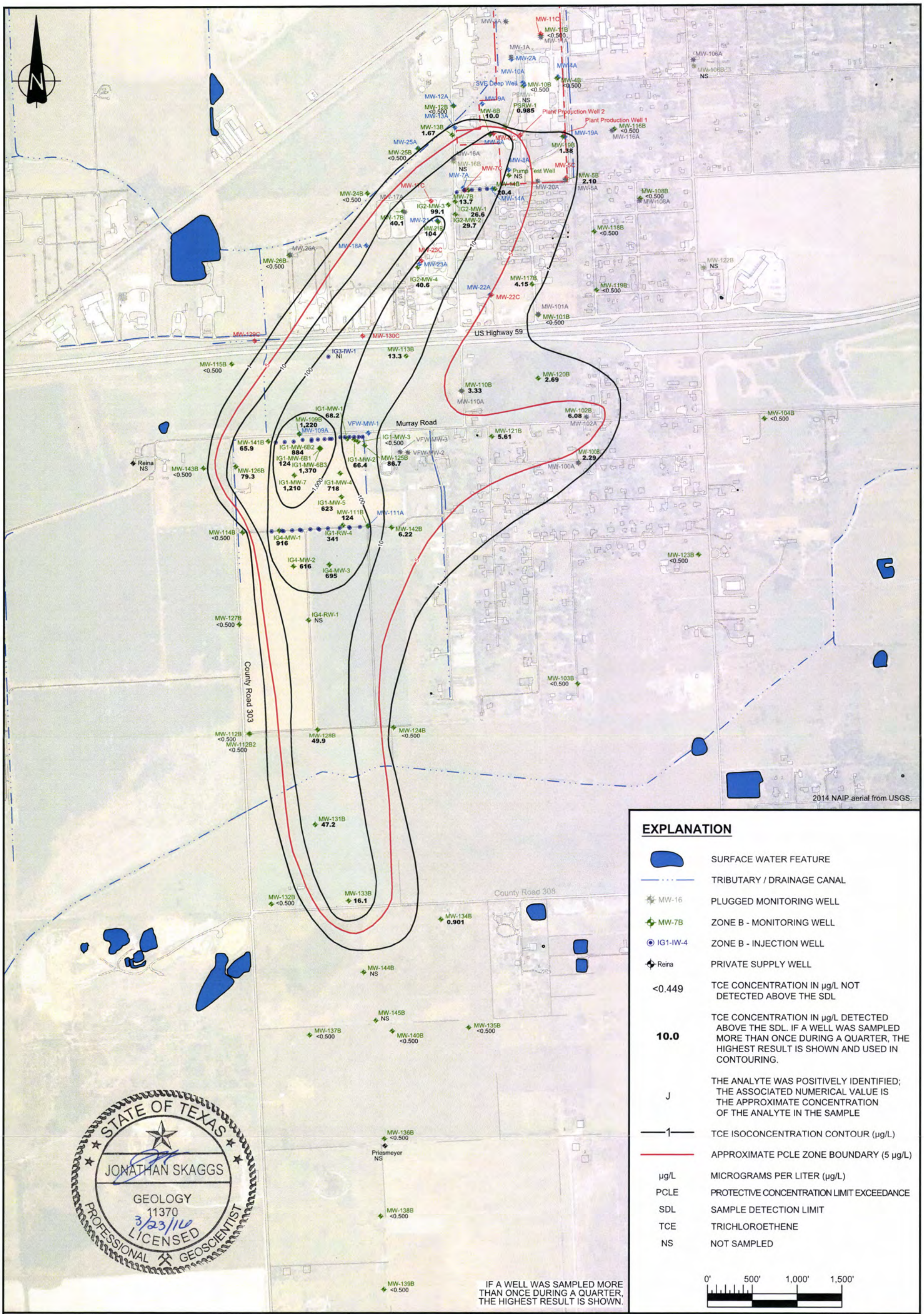
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE
GROUNDWATER PCLE ZONE
BETWEEN 2013 and 2015 - A-ZONE

DATE DECEMBER 2015
SCALE 1" = 800'
PROJECT NO. 0126200001
FIGURE 6

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 6-23-26 TCE Isoconcentration Maps PCLE Zone 2012-2014.dwg - 6 - ZONE A - Dec. 17, 2015 1:32pm - brian.johnson



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN.

EXPLANATION

●	SURFACE WATER FEATURE
— · · —	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	TCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE
NS	NOT SAMPLED

0' 500' 1,000' 1,500'

FIGURE 7

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

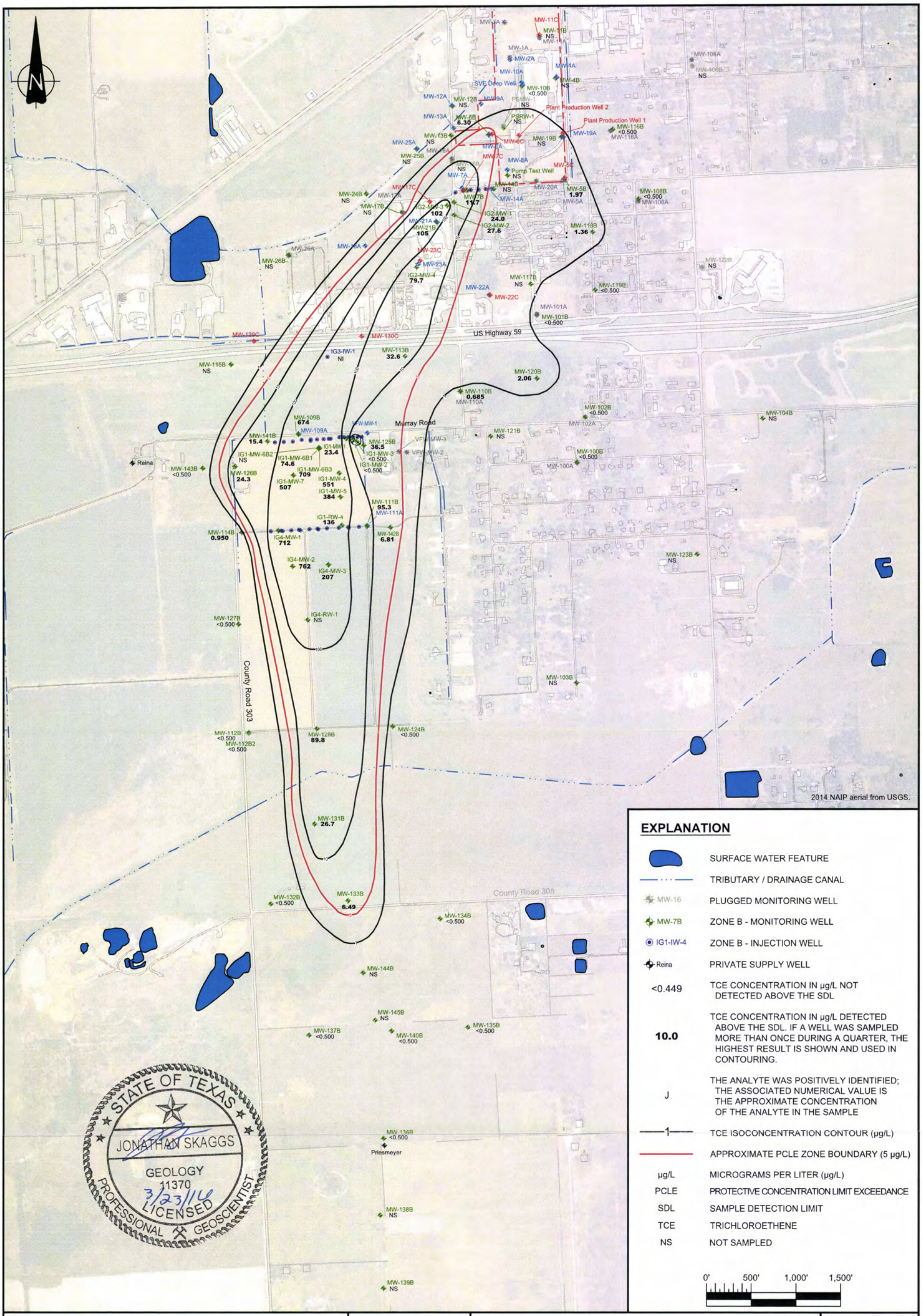
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	7

DRAWN BY: BRJ CHECKED BY:

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 5-7-8-9-10-25 TCE Isoconcentration Maps.dwg - 7 - ZONE B Q1 - Dec. 11, 2015 10:46am - brian johnson



JONATHAN SKAGGS
GEOLOGY
11370
LICENSED
3/23/16

FIGURE 8

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

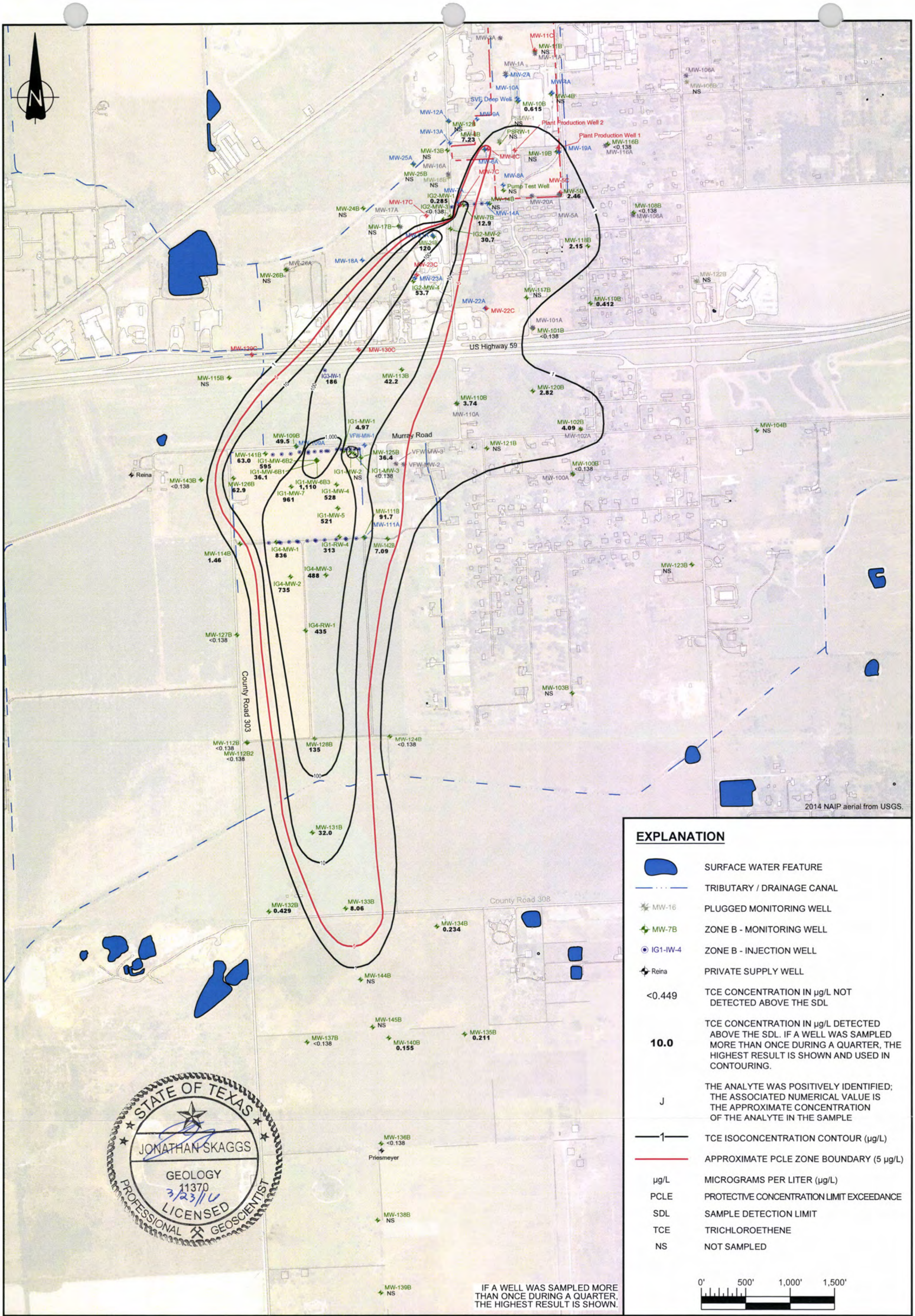
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE SECOND QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1,000'
PROJECT NO.	0126200001
FIGURE	8

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 5-7-8 9-10-25 TCE Isoconcentration Maps.dwg - 8 - ZONE B Q2 - Feb. 19, 2016 11:33am - brian johnson



IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN.

EXPLANATION

🟦	SURFACE WATER FEATURE
— · · · —	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	TCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE
NS	NOT SAMPLED

JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 9

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

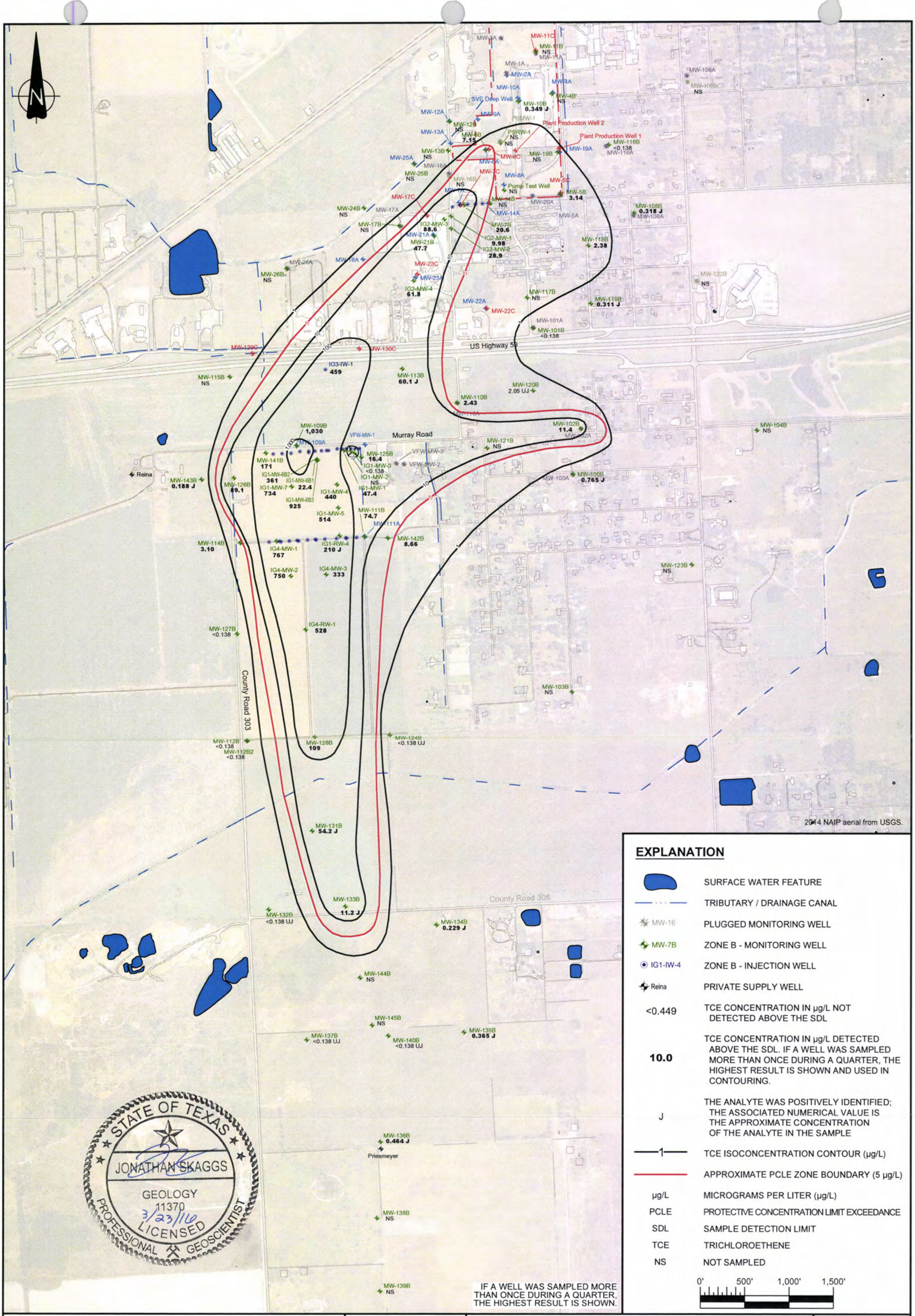
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE THIRD QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1,000'
PROJECT NO.	0126200001
FIGURE	9

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 5-7-8-9-10-25 TCE Isoconcentration Maps.dwg - 9 - ZONE B Q3 - Feb. 19, 2016 11:17am - brian.johnson



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN.

EXPLANATION

●	SURFACE WATER FEATURE
- · · -	TRIBUTARY / DRAINAGE CANAL
✳ MW-16	PLUGGED MONITORING WELL
✦ MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
✦ Reina	PRIVATE SUPPLY WELL
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	TCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE
NS	NOT SAMPLED

0' 500' 1,000' 1,500'

FIGURE 10

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

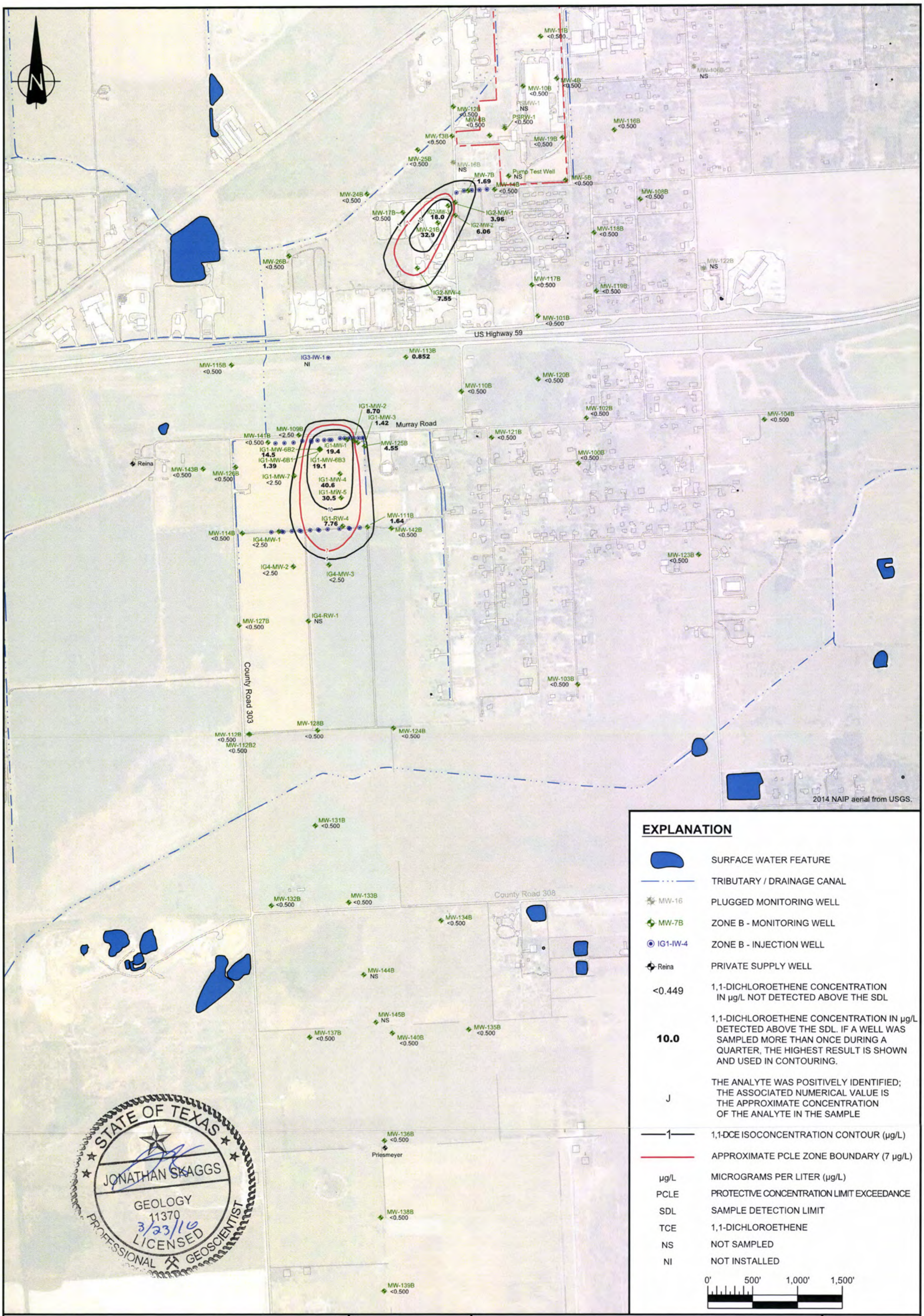
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
FOURTH QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1,000'
PROJECT NO.	0126200001
FIGURE	10

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 5-7-8-9-10-25 TCE Isoconcentration Maps.dwg - 10 - ZONE B Q4 - Jan. 19, 2016 9:02am - brian.johnson



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED

EXPLANATION

●	SURFACE WATER FEATURE
— · · · —	TRIBUTARY / DRAINAGE CANAL
✱ MW-16	PLUGGED MONITORING WELL
◆ MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
✦ Reina	PRIVATE SUPPLY WELL
<0.449	1,1-DICHLOROETHENE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	1,1-DICHLOROETHENE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	1,1-DCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (7 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	1,1-DICHLOROETHENE
NS	NOT SAMPLED
NI	NOT INSTALLED

0' 500' 1,000' 1,500'

FIGURE 11

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

El Campo Aluminum Facility
El Campo, Texas

1,1-DICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	11

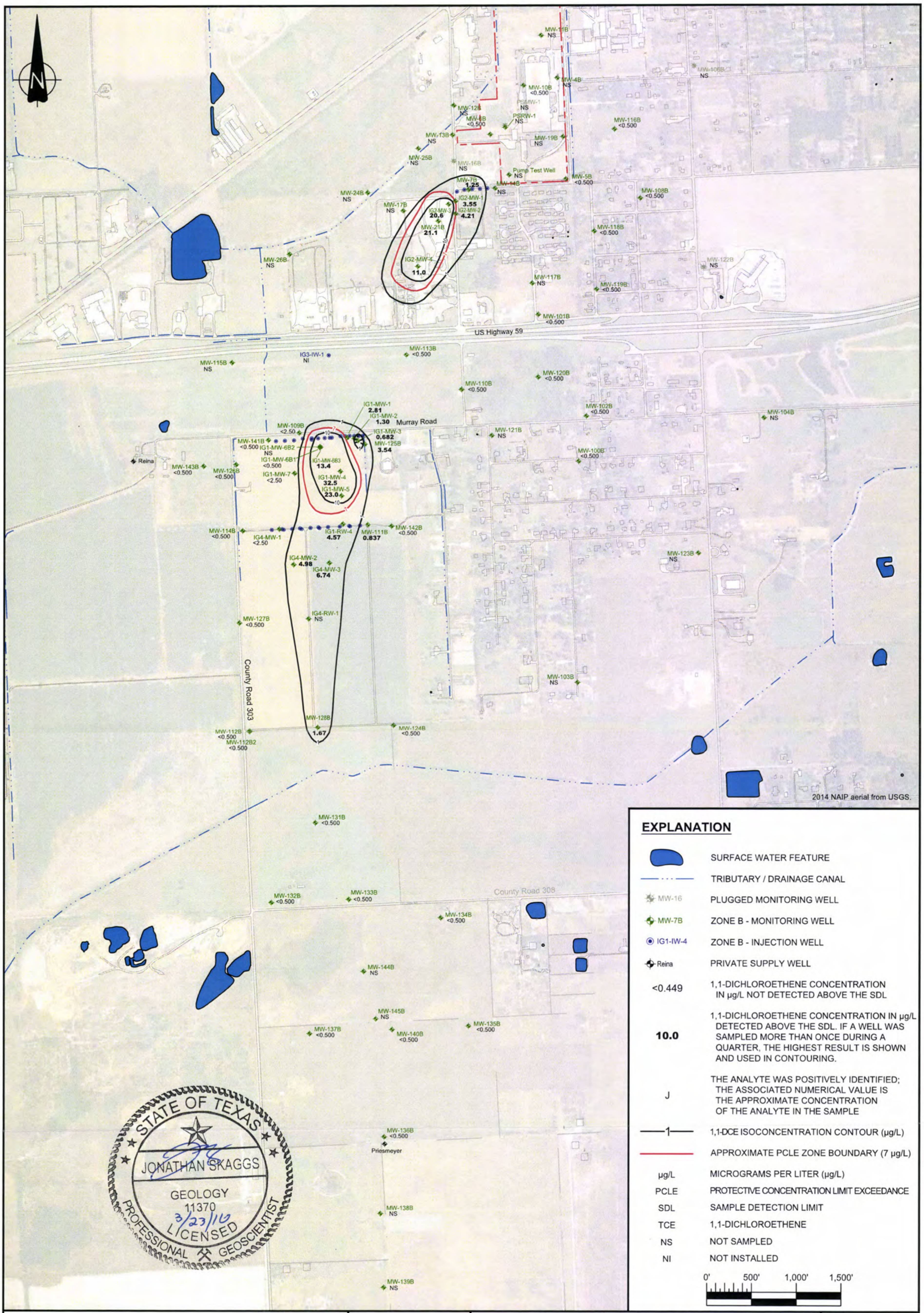
DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 11-12-13-14 1,1-DCE Isoconcentration Maps.dwg - 11 - ZONE B Q1 - Dec. 18, 2015 10:29am - brian.johnson

Figures

Appendix A

Notification Certification and Table



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

EXPLANATION

●	SURFACE WATER FEATURE
— · · · —	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	1,1-DICHLOROETHENE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	1,1-DICHLOROETHENE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	1,1-DCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (7 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	1,1-DICHLOROETHENE
NS	NOT SAMPLED
NI	NOT INSTALLED

0' 500' 1,000' 1,500'

FIGURE 12

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

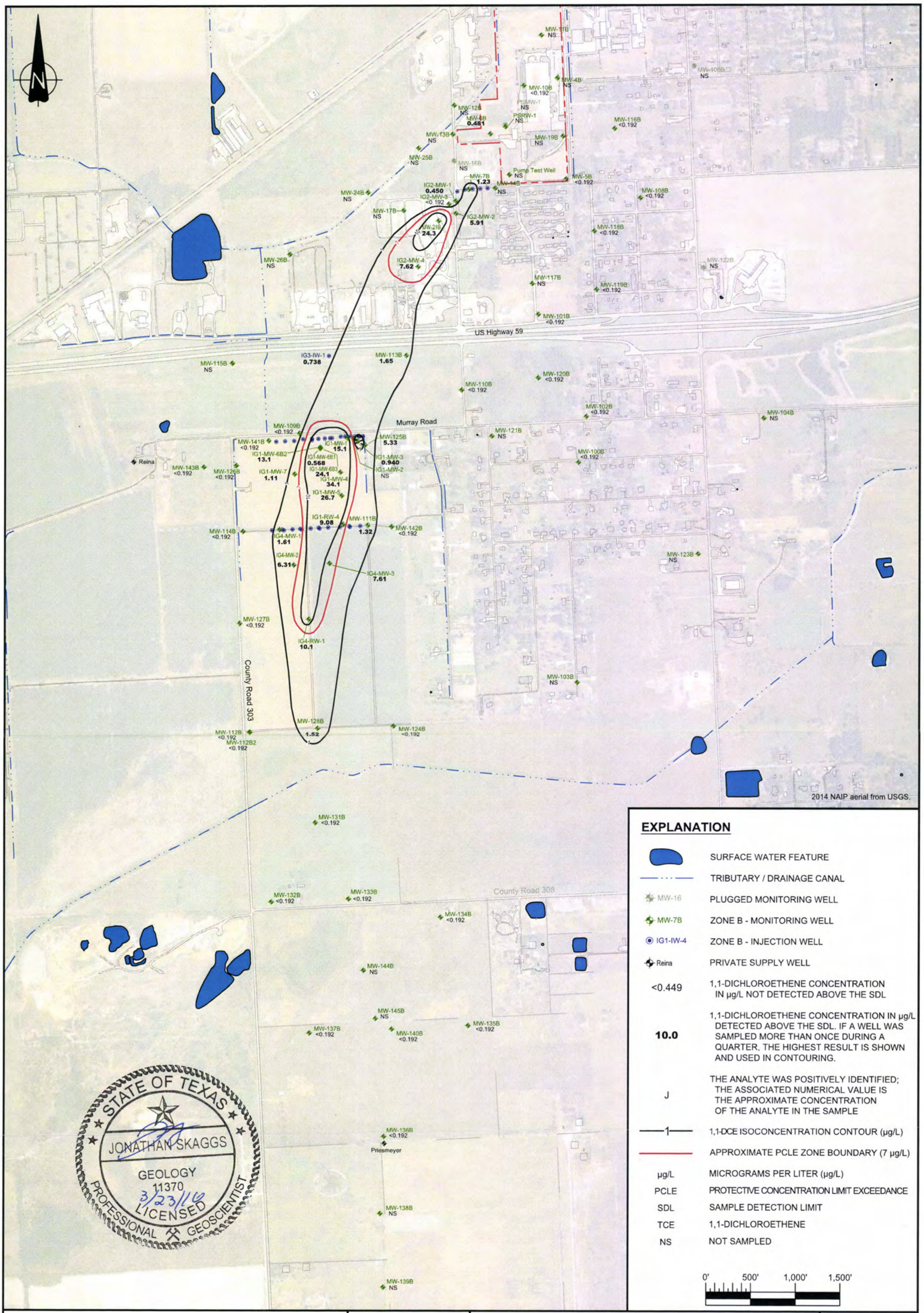
El Campo Aluminum Facility
El Campo, Texas

1,1-DICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE SECOND QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	12

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 11-12-13-14 1,1-DCE Isoconcentration Maps.dwg - 12 - ZONE B Q2 - Dec. 18, 2015 10:30am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

EXPLANATION

	SURFACE WATER FEATURE
	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	1,1-DICHLOROETHENE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	1,1-DICHLOROETHENE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	1,1-DCE ISOCONCENTRATION CONTOUR (µg/L)
	APPROXIMATE PCLE ZONE BOUNDARY (7 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	1,1-DICHLOROETHENE
NS	NOT SAMPLED

0' 500' 1,000' 1,500'

FIGURE 13

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

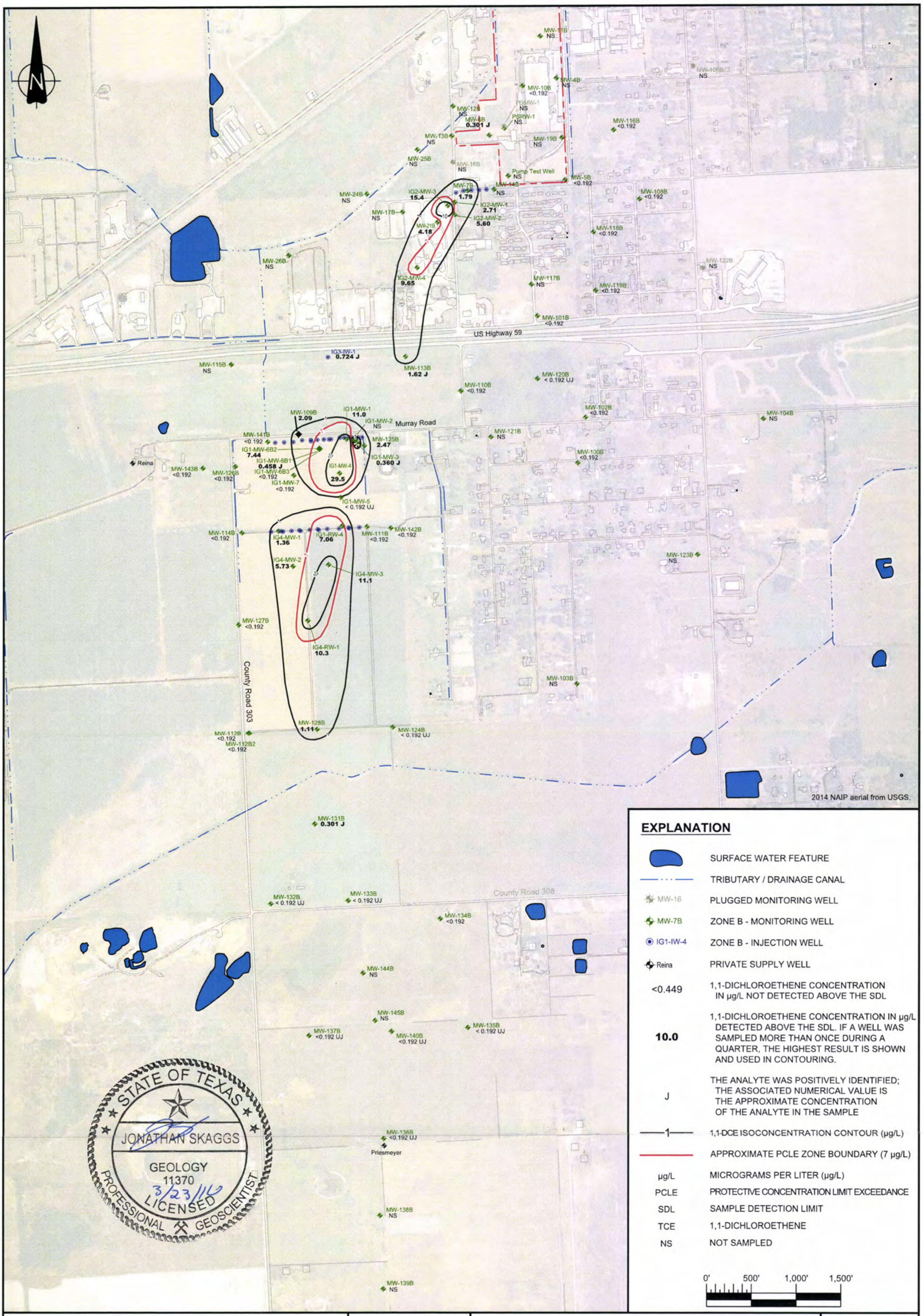
El Campo Aluminum Facility
El Campo, Texas

1,1-DICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
THIRD QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	13

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 11-12-13-14 1,1-DCE Isoconcentration Maps.dwg - 13 - ZONE B Q3 - Dec. 18, 2015 10:30am - brian.johnson

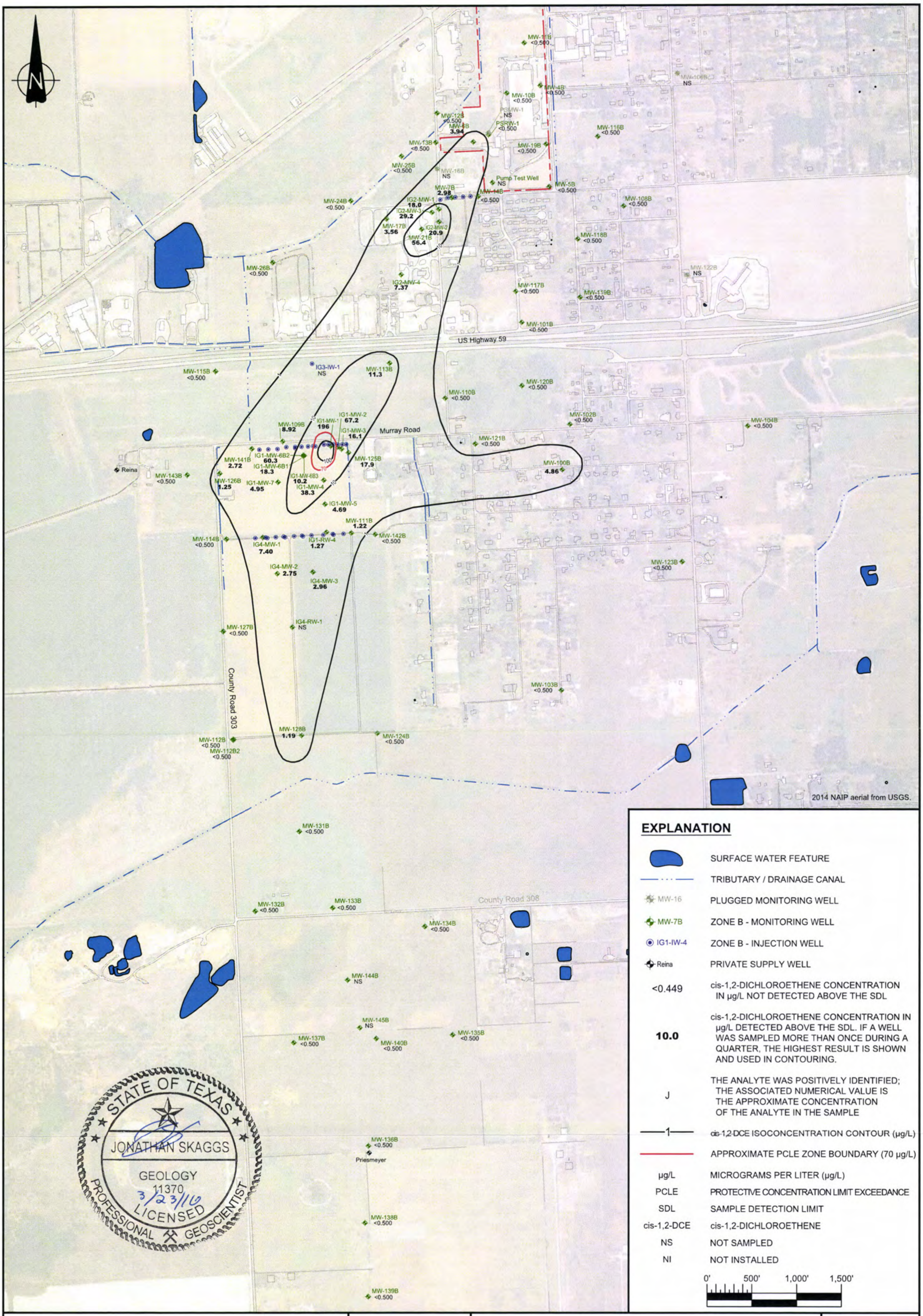


JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 14	amec foster wheeler	El Campo Aluminum Facility El Campo, Texas	DATE DECEMBER 2015 SCALE 1" = 800'
Amec Foster Wheeler Environment & Infrastructure, Inc. 3520 Executive Center Drive, Suite 200 Austin, TX 78731		1,1-DICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE FOURTH QUARTER 2015	PROJECT NO. 0126200001 FIGURE 14

DRAWN BY: BRJ CHECKED BY:

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 11-12-13-14 1,1-DCE Isoconcentration Maps.dwg - 14 - ZONE B Q4 - Feb. 19, 2016 11:21am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
LICENSED
PROFESSIONAL GEOSCIENTIST
3/23/16

EXPLANATION

	SURFACE WATER FEATURE
— · · · —	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	cis-1,2-DICHLOROETHENE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	cis-1,2-DICHLOROETHENE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	cis-1,2-DCE ISOCONCENTRATION CONTOUR (µg/L)
—	APPROXIMATE PCLE ZONE BOUNDARY (70 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
cis-1,2-DCE	cis-1,2-DICHLOROETHENE
NS	NOT SAMPLED
NI	NOT INSTALLED

FIGURE 15

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

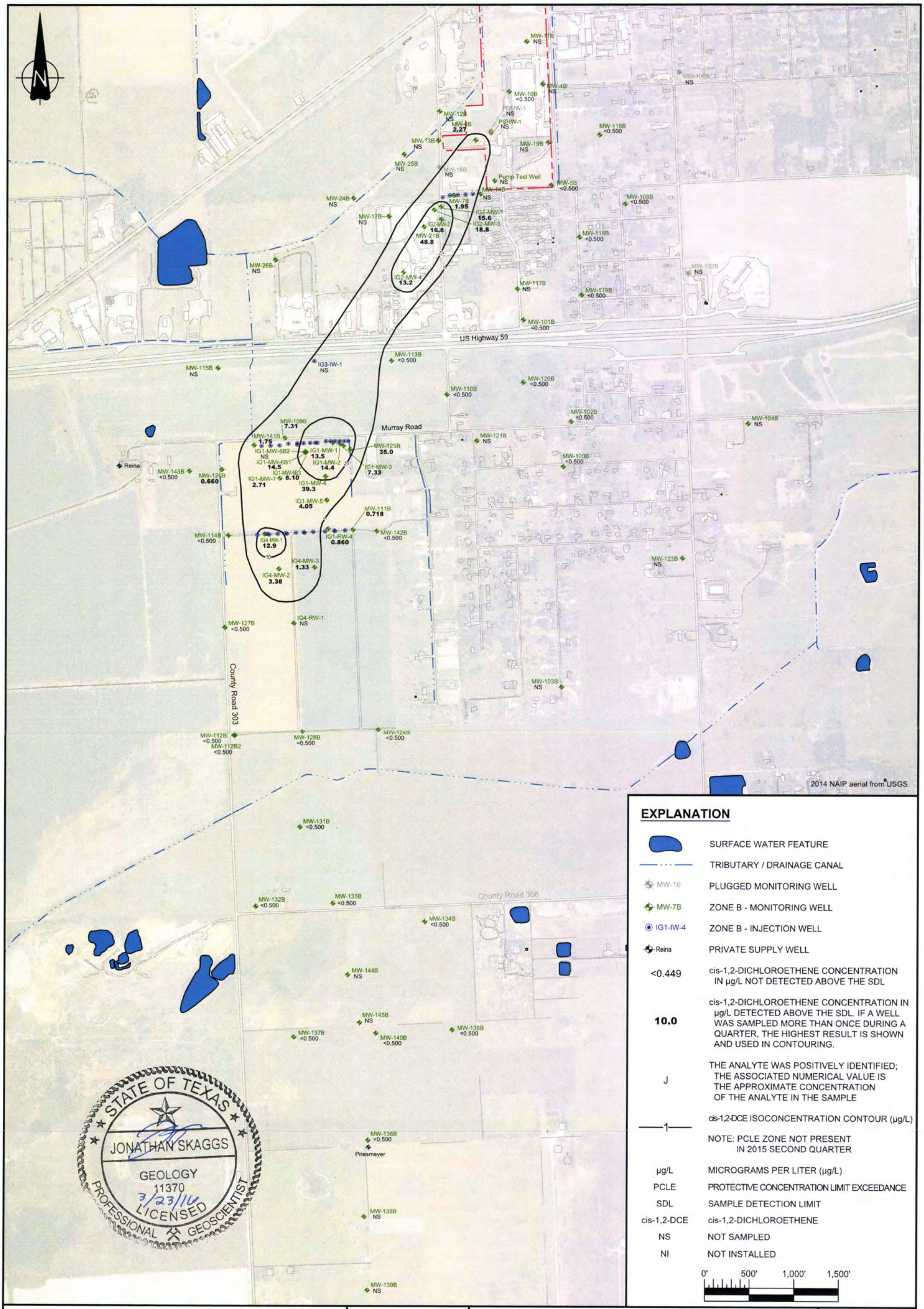
El Campo Aluminum Facility
El Campo, Texas

cis-1,2-DICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	15

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 15-16-17-18 cis-1,2-DCE Isoconcentration Maps.dwg - 15 - ZONE B Q1 - Dec. 18, 2015 11:34am - brian.johnson



EXPLANATION

⬮	SURFACE WATER FEATURE
—··—	TRIBUTARY / DRAINAGE CANAL
✳ MW-16	PLUGGED MONITORING WELL
◈ MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
◆ Reina	PRIVATE SUPPLY WELL
<0.449	cis-1,2-DICHLOROETHENE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	cis-1,2-DICHLOROETHENE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	cis-1,2-DCE ISOCONCENTRATION CONTOUR (µg/L)
	NOTE: PCLE ZONE NOT PRESENT IN 2015 SECOND QUARTER
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
cis-1,2-DCE	cis-1,2-DICHLOROETHENE
NS	NOT SAMPLED
NI	NOT INSTALLED

STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

FIGURE 16

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

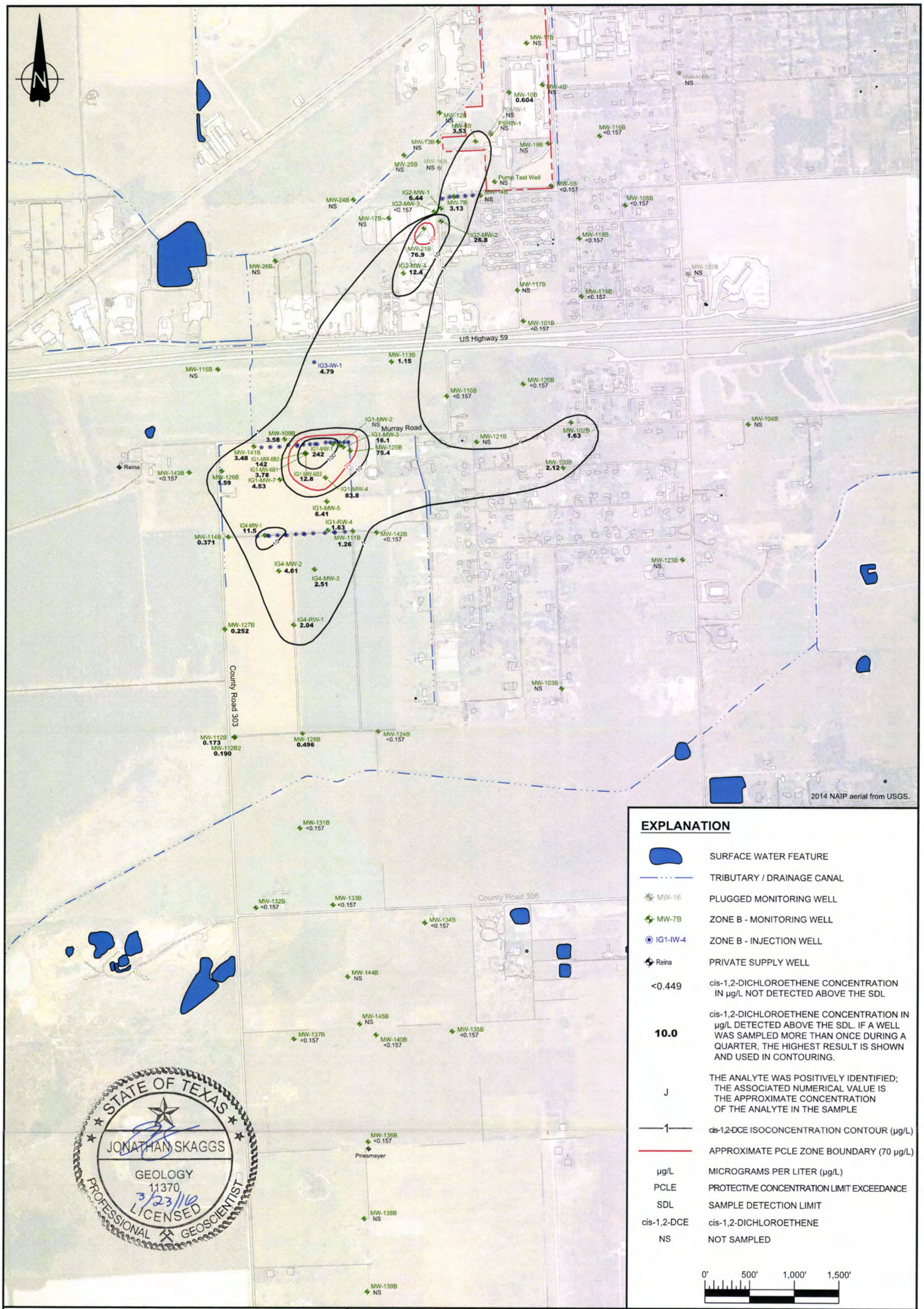
El Campo Aluminum Facility
El Campo, Texas

cis-1,2-DICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
SECOND QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	16

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 15-16-17-18 cis-1,2-DCE Isoconcentration Maps.dwg - 16 - ZONE B Q2 - Dec. 18, 2015 11:35am - brian.johnson



JONATHAN SKAGGS
11370
3/23/16

EXPLANATION

●	SURFACE WATER FEATURE
—··—··—	TRIBUTARY / DRAINAGE CANAL
✳ MW-16	PLUGGED MONITORING WELL
◆ MW-7B	ZONE B - MONITORING WELL
⊙ IG1-IW-4	ZONE B - INJECTION WELL
◆ Reina	PRIVATE SUPPLY WELL
<0.449	cis-1,2-DICHLOROETHENE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	cis-1,2-DICHLOROETHENE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
——1——	cis-1,2-DCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (70 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
cis-1,2-DCE	cis-1,2-DICHLOROETHENE
NS	NOT SAMPLED

0' 500' 1,000' 1,500'

FIGURE 17

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

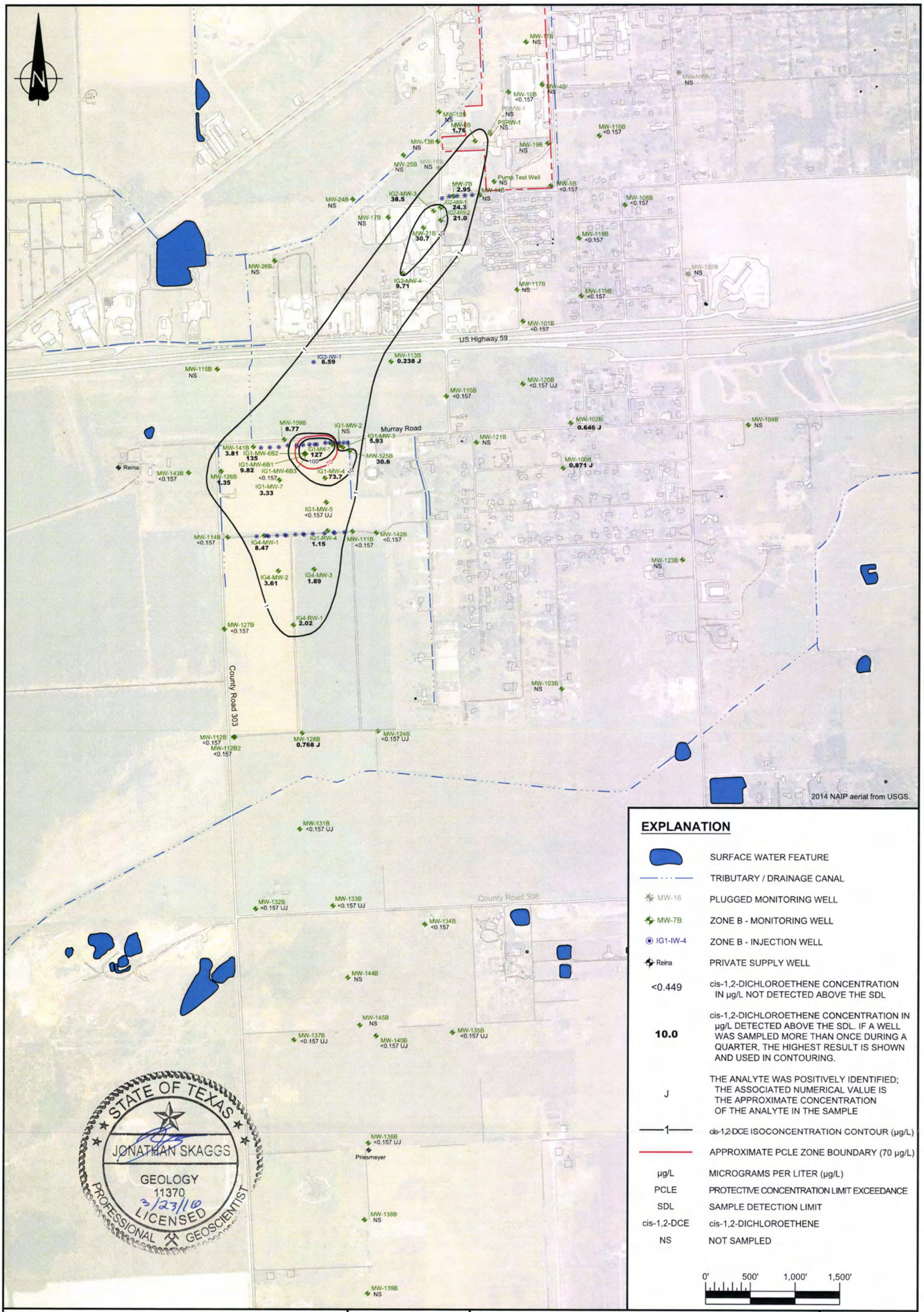
El Campo Aluminum Facility
El Campo, Texas

cis-1,2-DICHLOROETHENE GROUNDWATER ISOCONCENTRATION MAP - B-ZONE THIRD QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	17

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 15-16-17-18 cis-1,2-DCE Isoconcentration Maps.dwg - 17 - ZONE B Q3 - Feb. 19, 2016 11:39am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

FIGURE 18

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

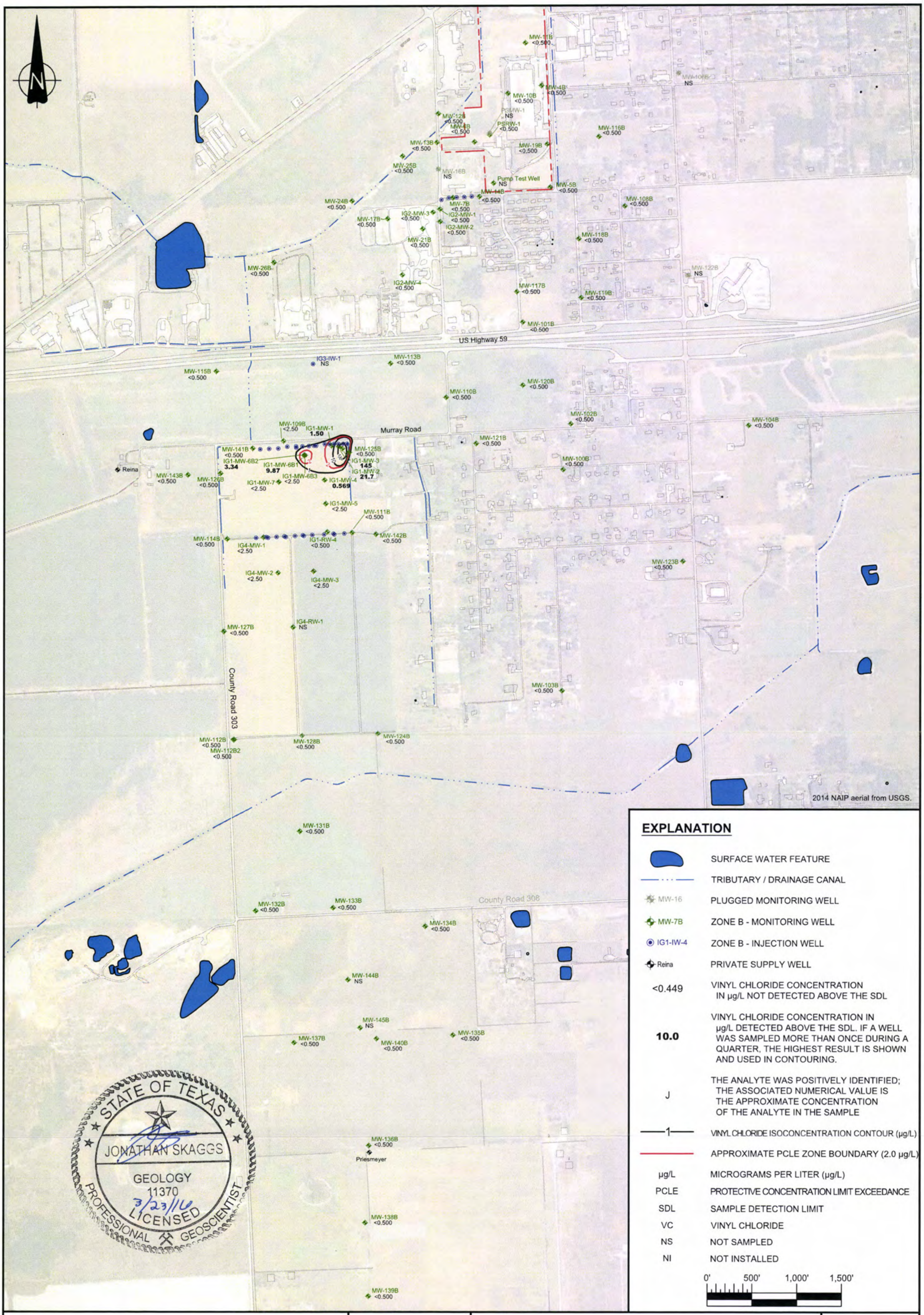
El Campo Aluminum Facility
El Campo, Texas

cis-1,2-DICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
FOURTH QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	18

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 15-16-17-18 cis-1,2-DCE Isoconcentration Maps.dwg - 18 - ZONE B Q4 - Feb. 19, 2016 11:39am - brian.johnson



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

EXPLANATION

▬	SURFACE WATER FEATURE
- · · · -	TRIBUTARY / DRAINAGE CANAL
✱ MW-16	PLUGGED MONITORING WELL
◆ MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
◆ Reina	PRIVATE SUPPLY WELL
<0.449	VINYL CHLORIDE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	VINYL CHLORIDE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	VINYL CHLORIDE ISOCONCENTRATION CONTOUR (µg/L)
—	APPROXIMATE PCLE ZONE BOUNDARY (2.0 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
VC	VINYL CHLORIDE
NS	NOT SAMPLED
NI	NOT INSTALLED

0' 500' 1,000' 1,500'

FIGURE 19

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

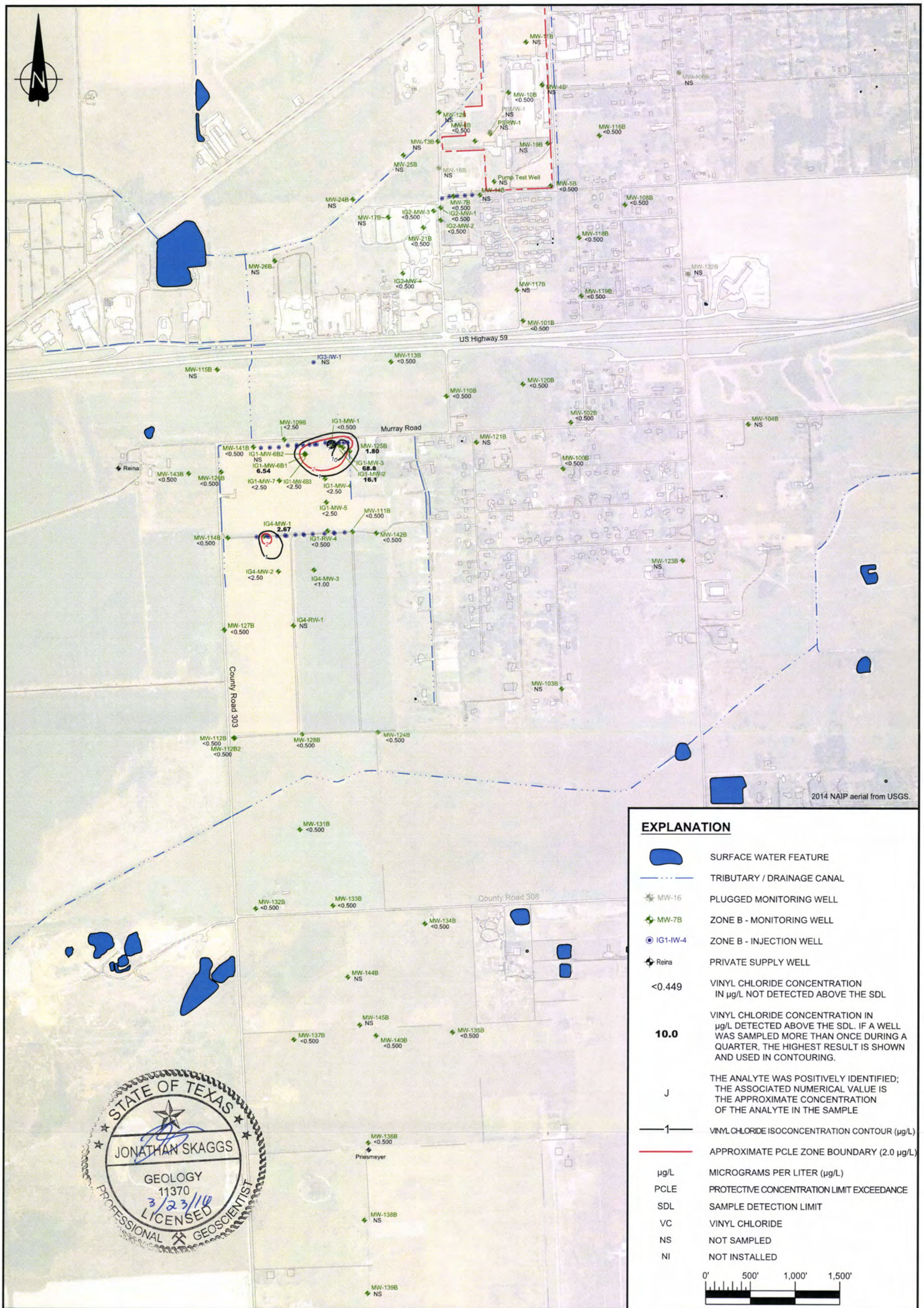
El Campo Aluminum Facility
El Campo, Texas

VINYL CHLORIDE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	19

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 19-20-21-22 Vinyl Chloride Isoconcentration Maps.dwg - 19 - ZONE B Q1 - Feb. 19, 2016 11:47am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

EXPLANATION

●	SURFACE WATER FEATURE
— · · —	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	VINYL CHLORIDE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	VINYL CHLORIDE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	VINYL CHLORIDE ISOCONCENTRATION CONTOUR (µg/L)
—	APPROXIMATE PCLE ZONE BOUNDARY (2.0 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
VC	VINYL CHLORIDE
NS	NOT SAMPLED
NI	NOT INSTALLED

0' 500' 1,000' 1,500'

FIGURE 20

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

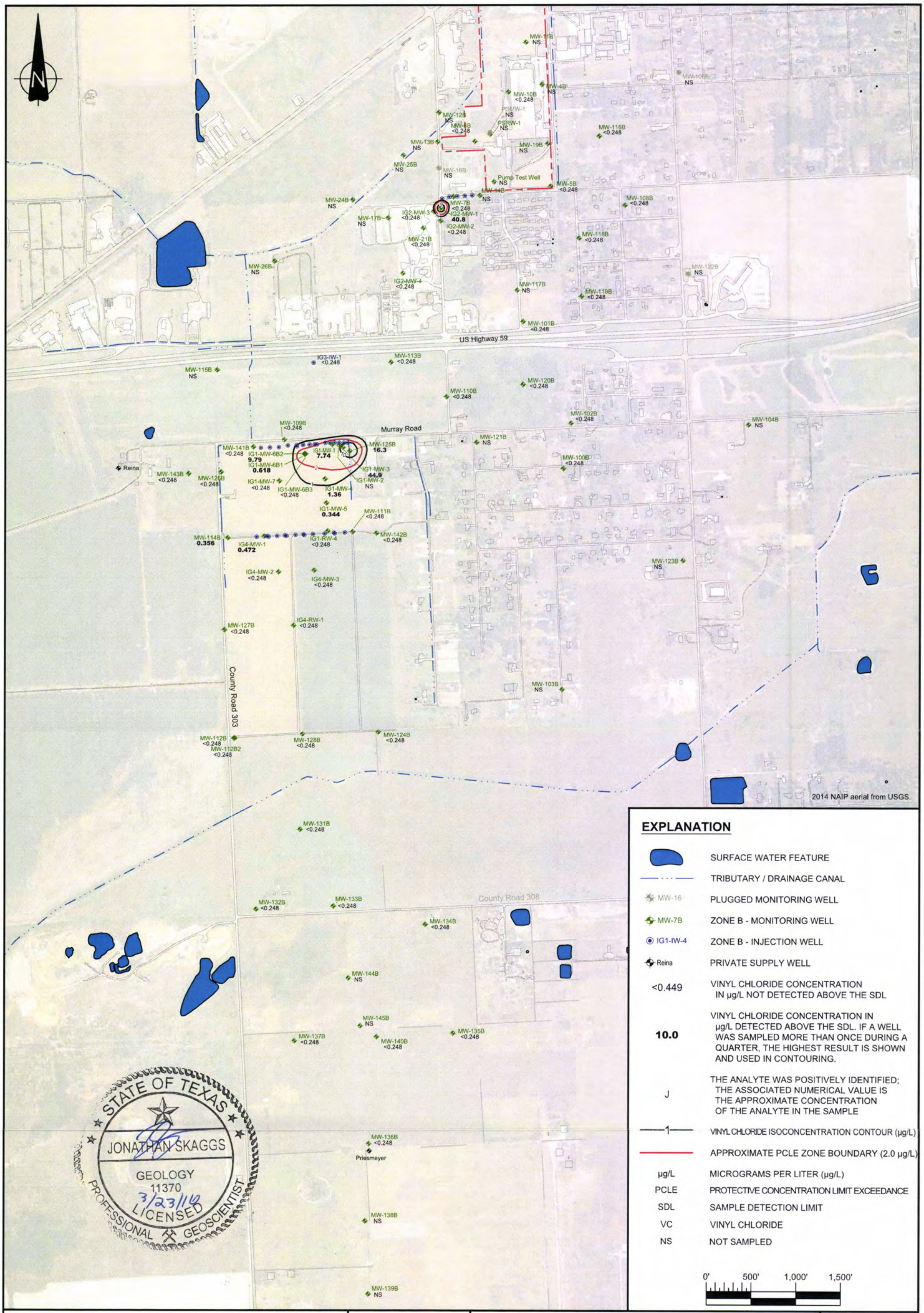
El Campo Aluminum Facility
El Campo, Texas

VINYL CHLORIDE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
SECOND QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	20

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 19-20-21-22 Vinyl Chloride Isoconcentration Maps.dwg - 20 - ZONE B Q2 - Feb. 19, 2016 11:53am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

FIGURE 21

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

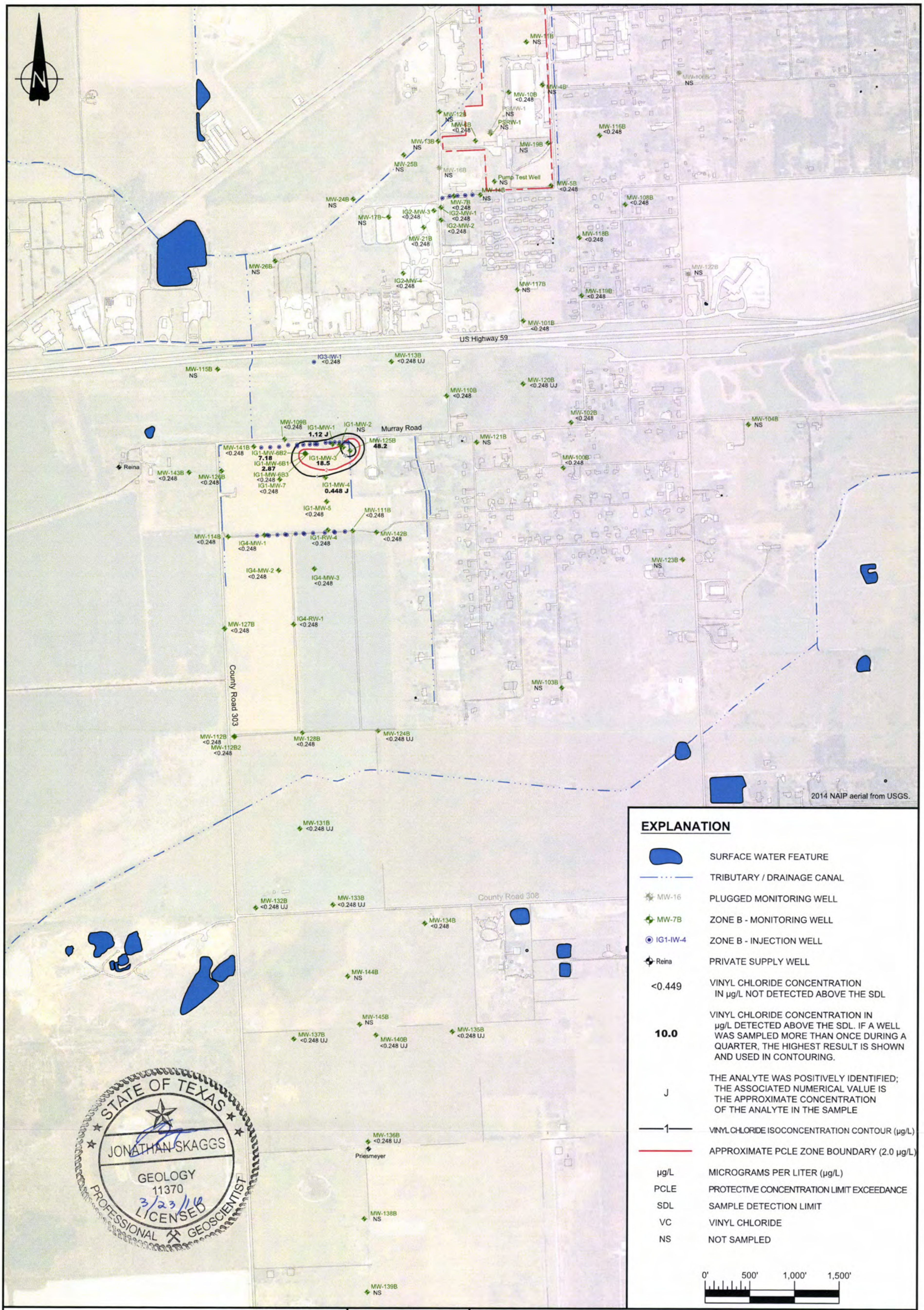
El Campo Aluminum Facility
El Campo, Texas

VINYL CHLORIDE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
THIRD QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 1000'
PROJECT NO.	0126200001
FIGURE	21

DRAWN BY: BRJ CHECKED BY:

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 19-20-21-22 Vinyl Chloride Isoconcentration Maps.dwg - 21 - ZONE B Q3 - Feb. 19, 2016 12:00pm - brian.johnson



EXPLANATION

●	SURFACE WATER FEATURE
—··	TRIBUTARY / DRAINAGE CANAL
✱ MW-16	PLUGGED MONITORING WELL
◆ MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
◆ Reina	PRIVATE SUPPLY WELL
<0.449	VINYL CHLORIDE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	VINYL CHLORIDE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	VINYL CHLORIDE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (2.0 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
VC	VINYL CHLORIDE
NS	NOT SAMPLED

JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 22

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

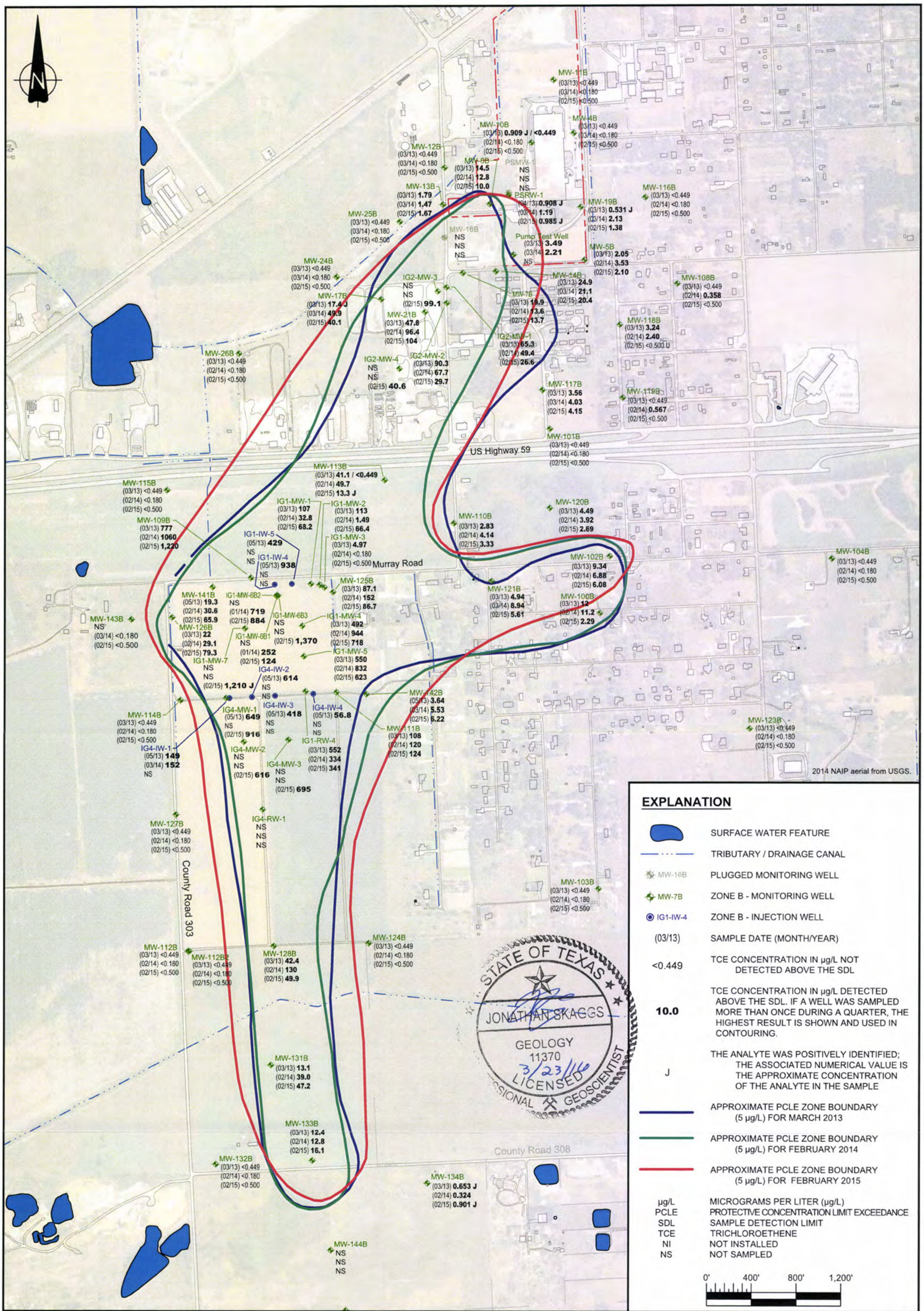
El Campo Aluminum Facility
El Campo, Texas

VINYL CHLORIDE GROUNDWATER
ISOCONCENTRATION MAP - B-ZONE
FOURTH QUARTER 2015

DATE DECEMBER 2015
SCALE 1" = 1000'
PROJECT NO. 0126200001
FIGURE 22

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 19-20-21-22 Vinyl Chloride Isoconcentration Maps.dwg - 22 - ZONE B Q4 - Jan. 19, 2016 9:21am - brian.johnson



JONATHAN SKAGGS
GEOLOGY
11370
LICENSED
3/23/16

EXPLANATION

●	SURFACE WATER FEATURE
-··-	TRIBUTARY / DRAINAGE CANAL
✳ MW-16B	PLUGGED MONITORING WELL
◆ MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
(03/13)	SAMPLE DATE (MONTH/YEAR)
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
🟦	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L) FOR MARCH 2013
🟩	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L) FOR FEBRUARY 2014
🟥	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L) FOR FEBRUARY 2015
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE
NI	NOT INSTALLED
NS	NOT SAMPLED

FIGURE 23

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

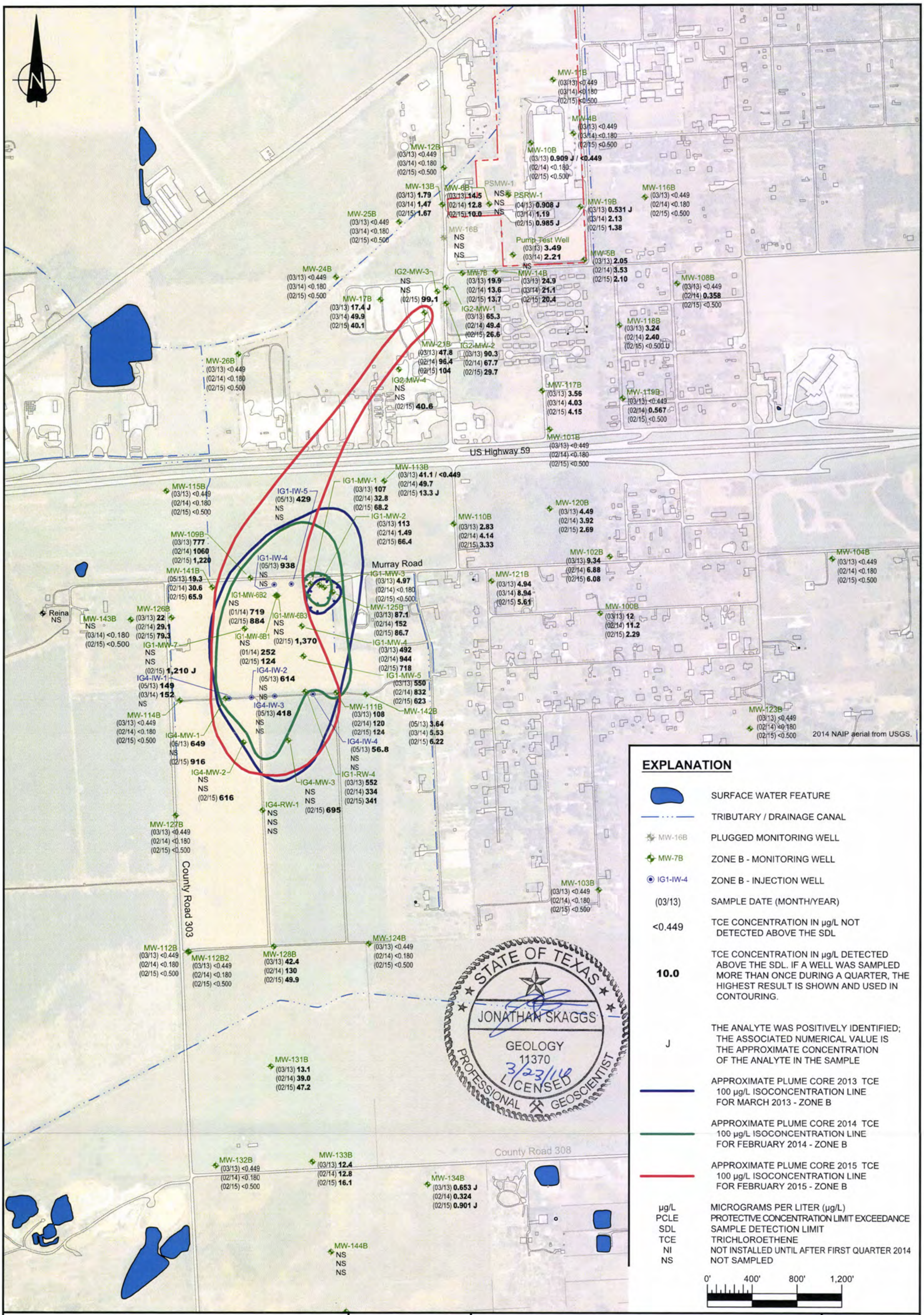
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE
GROUNDWATER PCLE ZONE
BETWEEN 2013 and 2015 - B-ZONE

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	23

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 6-23-26 TCE Isoconcentration Maps PCLE Zone 2012-2014.dwg - 23 - ZONE B - Feb. 19, 2016 12:10pm - brian.johnson



2014 NAIP aerial from USGS.

EXPLANATION

●	SURFACE WATER FEATURE
-·-·-	TRIBUTARY / DRAINAGE CANAL
MW-16B	PLUGGED MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
(03/13)	SAMPLE DATE (MONTH/YEAR)
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
🟦	APPROXIMATE PLUME CORE 2013 TCE 100 µg/L ISOCONCENTRATION LINE FOR MARCH 2013 - ZONE B
🟩	APPROXIMATE PLUME CORE 2014 TCE 100 µg/L ISOCONCENTRATION LINE FOR FEBRUARY 2014 - ZONE B
🟥	APPROXIMATE PLUME CORE 2015 TCE 100 µg/L ISOCONCENTRATION LINE FOR FEBRUARY 2015 - ZONE B
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE
NI	NOT INSTALLED UNTIL AFTER FIRST QUARTER 2014
NS	NOT SAMPLED

JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

FIGURE 24

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

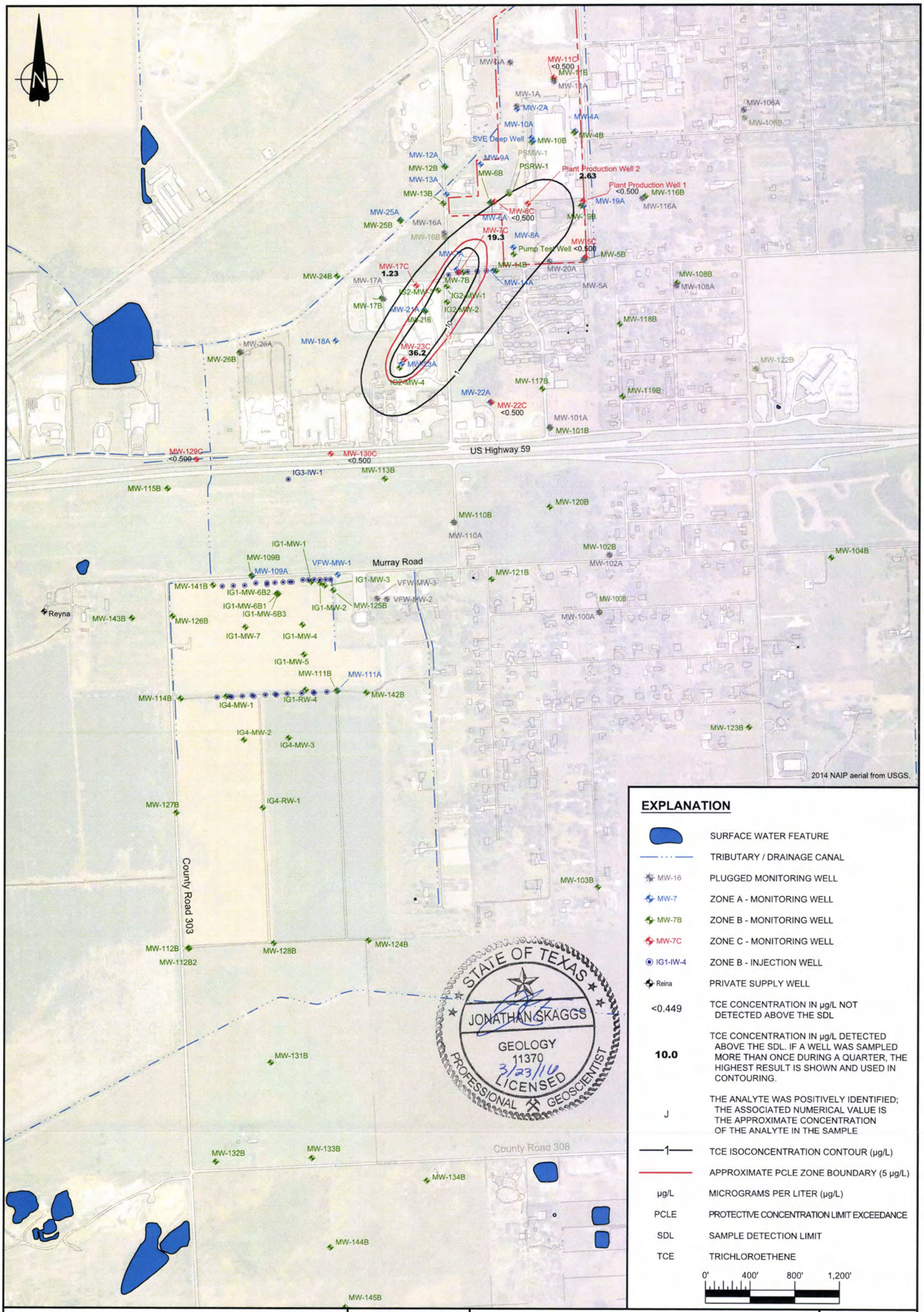
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER
100 MICROGRAMS PER LITER CONTOUR
BETWEEN 2013 AND 2015 - B-ZONE

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	24

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 24 B Zone TCE Above 100 ugL Previous 3 Years.dwg - 24 ZONE B North - Dec. 14, 2015 11:10am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED
PROFESSIONAL GEOSCIENTIST

EXPLANATION

▬	SURFACE WATER FEATURE
—·—·—	TRIBUTARY / DRAINAGE CANAL
MW-16	PLUGGED MONITORING WELL
MW-7	ZONE A - MONITORING WELL
MW-7B	ZONE B - MONITORING WELL
MW-7C	ZONE C - MONITORING WELL
◉ IG1-IW-4	ZONE B - INJECTION WELL
Reina	PRIVATE SUPPLY WELL
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—1—	TCE ISOCONCENTRATION CONTOUR (µg/L)
——	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L)
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE

0' 400' 800' 1,200'

FIGURE 25

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

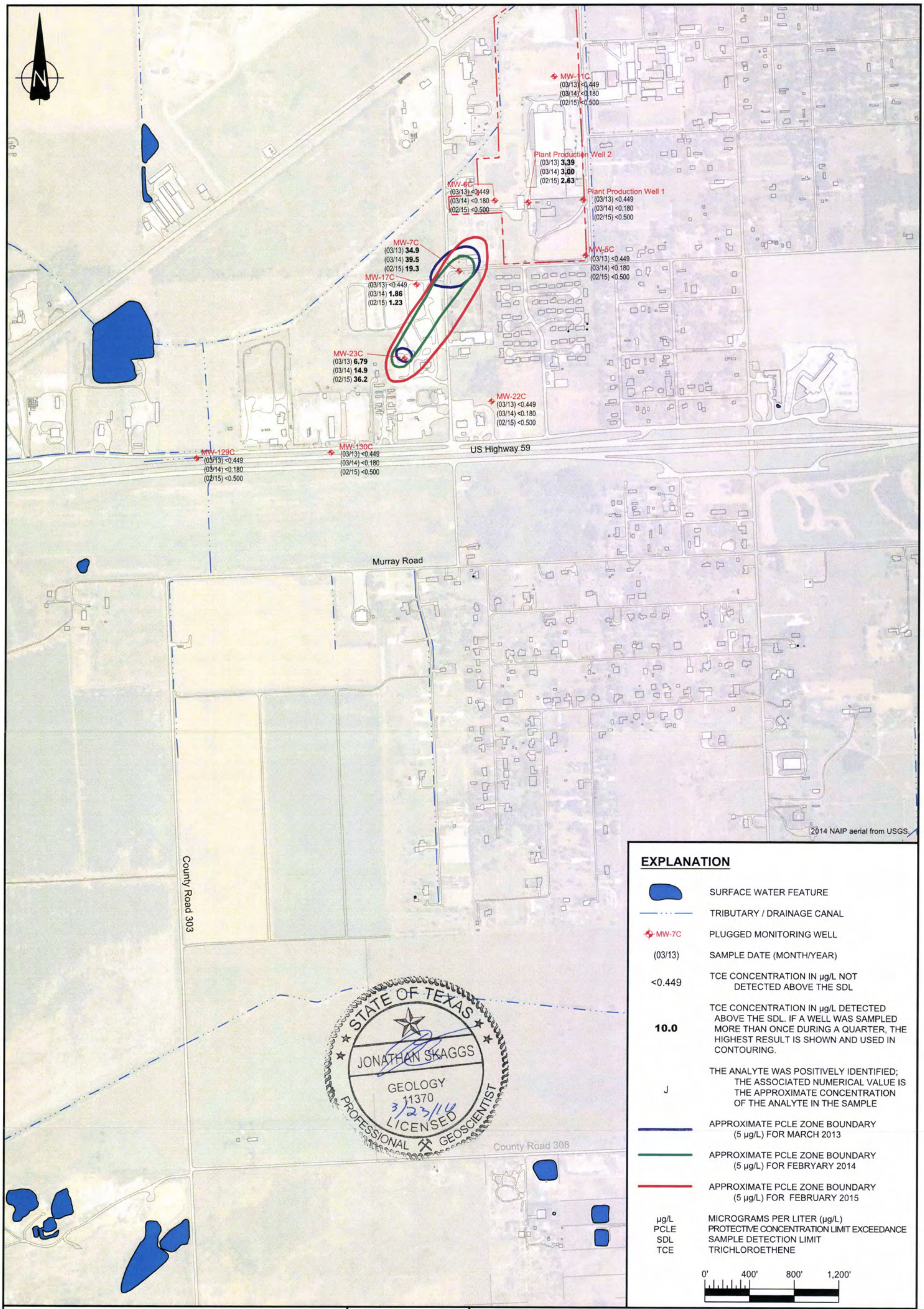
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER
ISOCONCENTRATION MAP - C-ZONE
FIRST QUARTER 2015

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	25

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 5-7-8-9-10-25 TCE Isoconcentration Maps.dwg - 25 - ZONE C - Dec. 16, 2015 10:29am - brian.johnson



EXPLANATION

●	SURFACE WATER FEATURE
— · · —	TRIBUTARY / DRAINAGE CANAL
✦ MW-7C	PLUGGED MONITORING WELL
(03/13)	SAMPLE DATE (MONTH/YEAR)
<0.449	TCE CONCENTRATION IN µg/L NOT DETECTED ABOVE THE SDL
10.0	TCE CONCENTRATION IN µg/L DETECTED ABOVE THE SDL. IF A WELL WAS SAMPLED MORE THAN ONCE DURING A QUARTER, THE HIGHEST RESULT IS SHOWN AND USED IN CONTOURING.
J	THE ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE
—	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L) FOR MARCH 2013
—	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L) FOR FEBRYARY 2014
—	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L) FOR FEBRUARY 2015
µg/L	MICROGRAMS PER LITER (µg/L)
PCLE	PROTECTIVE CONCENTRATION LIMIT EXCEEDANCE
SDL	SAMPLE DETECTION LIMIT
TCE	TRICHLOROETHENE

STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
LICENSED PROFESSIONAL GEOSCIENTIST

FIGURE 26

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

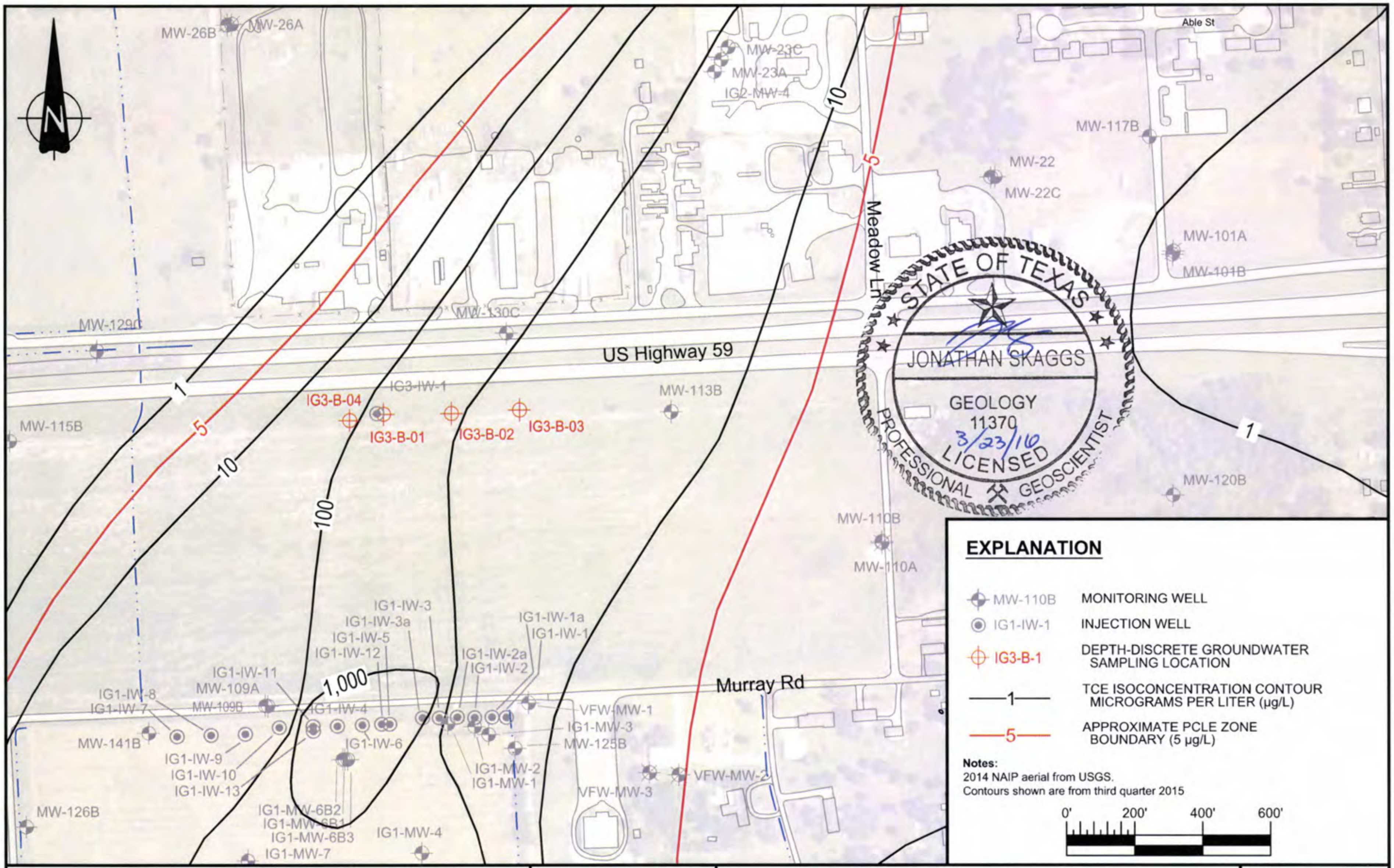
El Campo Aluminum Facility
El Campo, Texas

TRICHLOROETHENE GROUNDWATER PCLE ZONE BETWEEN 2013 and 2015 - C-ZONE

DATE	DECEMBER 2015
SCALE	1" = 800'
PROJECT NO.	0126200001
FIGURE	26

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report_Figures 6-23-26 TCE Isoconcentration Maps PCLE Zone 2012-2014.dwg - 26 - ZONE C - Dec. 16, 2015 10:02am - brian.johnson



STATE OF TEXAS
JONATHAN SKAGGS
GEOLOGY
11370
3/23/16
PROFESSIONAL GEOSCIENTIST
LICENSED

EXPLANATION

MW-110B	MONITORING WELL
IG1-IW-1	INJECTION WELL
IG3-B-1	DEPTH-DISCRETE GROUNDWATER SAMPLING LOCATION
—1—	TCE ISOCONCENTRATION CONTOUR MICROGRAMS PER LITER (µg/L)
—5—	APPROXIMATE PCLE ZONE BOUNDARY (5 µg/L)

Notes:
2014 NAIP aerial from USGS.
Contours shown are from third quarter 2015

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

amec foster wheeler

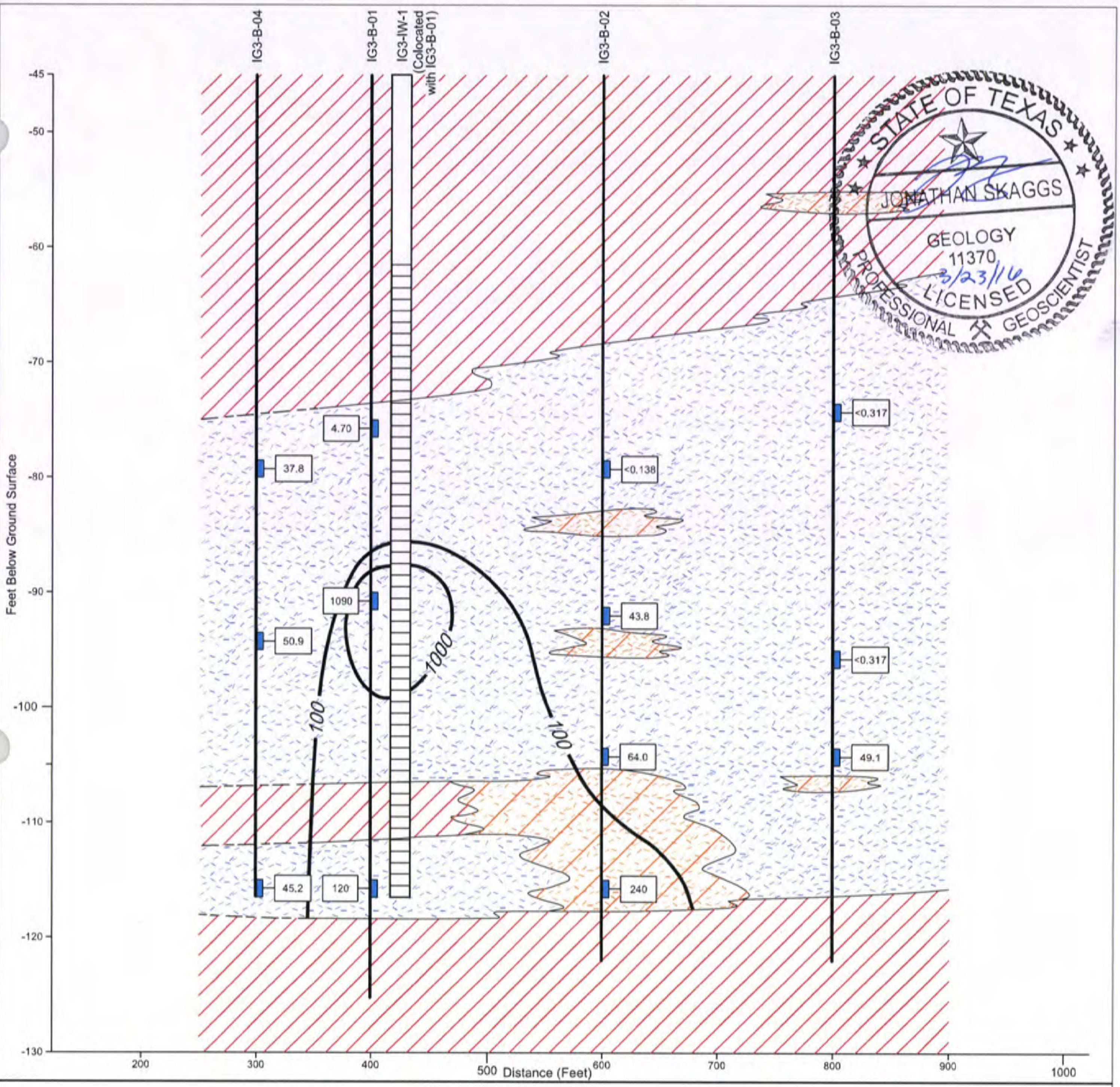
El Campo Aluminum Facility
El Campo, Texas

DEPTH-DISCRETE
GROUNDWATER SAMPLING LOCATIONS

DATE	DECEMBER 2015
SCALE	1" = 400'
PROJECT NO.	0126200001
FIGURE	27

DRAWN BY: BRJ CHECKED BY: -

K:\AMEC US OFFICES\Austin\0126200001 - El Campo Aluminum\dwg_2015_Annual_Report\Figure 27 Depth-Discrete Groundwater Sampling Locations.dwg - Figure 27 - Dec. 17, 2015 1:25pm - brian johnson



JONATHAN SKAGGS
GEOLOGY
11370
3/23/16

10 Feet
10x Vertical Exaggeration
0 100 Feet

ABBREVIATIONS

<	less than the indicated reporting limit
µg/L	micrograms per liter
TCE	trichloroethene

LEGEND

▨ Predominantly sandy units (SP)
▨ Mixed units (SC, SM)
▨ Predominantly fine-grained units (ML, CL, CH)

37.4 TCE concentration in groundwater (µg/L) detected at the interval shown. Well concentration are results from first quarter of 2014.

— 100 — TCE isoconcentration contour (µg/L) dashed where interpolated.

* TCE concentration from October 2013
** TCE concentration from February 2015

amec foster wheeler

B-ZONE GEOLOGIC CROSS-SECTION
INJECTION GALLERY 3

El Campo Aluminum Facility
El Campo, Texas

Amec Foster Wheeler
Environment & Infrastructure, Inc.
3520 Executive Center Drive, Suite 200
Austin, TX 78731

DATE	10/20/2015
SCALE	As Shown
PROJECT NO.	0126200001
FIGURE	28

I:\12620 - El 5000 INVESTIGATION\2015 Cross-Sections\Figures\Figure 28 - Injection Gallery 3 - Litho

APPENDIX A

STATEMENT OF NOTIFICATION
2015 Annual Groundwater Monitoring Report

Former El Campo Aluminum Facility
El Campo, Texas

Pursuant to the Texas Risk Reduction Program (TRRP), Section 350.55(a) of the Texas Administrative Code, notification letters were sent via Certified U. S. Mail with Return Receipt Requested to off-site property owners listed in the attached table on March 31, 2016. The recipients own property in or near the affected groundwater zone described in the attached groundwater monitoring report.

Jonathan M. Skaggs, PG

SWORN TO AND SUBSCRIBED before me on this the 31 day of March 2016.

Notary Public in and for State of Texas

REBECCA LYNN OROZCO
NOTARY PUBLIC
State of Texas
Comm. Exp. 01-20-2019

Parties Receiving Direct Notice

	Property Owner Last Name	Property Owner First Name	Physical Property Address	City and Zip	Property Owner Mailing Address	Property Owner City, State, Zip	2015 Report Notification Letter Sent
1	Allgayer	David	902 Gladys St.	El Campo, TX 77437	13031 FM 2546 Road	El Campo, TX 77437	3/31/2016
2	Swanson	Delbur	CR 308	El Campo, TX 77437	4366 N SH 71 HWY	El Campo, TX 77437	3/31/2016
3	Key Energy Services, Inc/Brooks Well Service	Daniel Gibson	26700 US 59	El Campo, TX 77437	6 Desta Drive, Suite 4400	Midland, TX 79705	3/31/2016
4	Outdoor Depot LLC		408 S Meadow Lane	El Campo, TX 77437	P.O. Box 1574	El Campo, TX 77437	3/31/2016
5	Vincent J. Reina Family Trust		Hwy 59/CR 306	El Campo, TX 77437	580 Maxim Dr.	Boling, TX 77420	3/31/2016
6	Doyle	Charles	413 S Meadow LN	El Campo, TX 77437	413 South Meadow Lane	El Campo, TX 77437	3/31/2016
7	Glaze	C E	Hwy 59	El Campo, TX 77437	609 Alvin Ave	El Campo, TX 77437	3/31/2016
8	Gomez	Mateo	Murray Road	El Campo, TX 77437	721 Alice St.	El Campo, TX 77437	3/31/2016
9	Gwosdz	Ronald	918 Palacios St.	El Campo, TX 77437	PO Box 1263	El Campo, TX 77437	3/31/2016
10	Ellis	Margaret	1548 Thrift St.	El Campo, TX 77437	PO Box 1425	El Campo, TX 77437	3/31/2016
11	Keton	Pat	Palacios St.	El Campo, TX 77437	550 W. Milam	Wharton, TX 77488	3/31/2016
12	Powers	David & Donna	737 Charlene St.	El Campo, TX 77437	737 Charlene St.	El Campo, TX 77437	3/31/2016
13	Rodriguez	Ray & Juanita	Agnes St.	El Campo, TX 77437	906 CR 255	Ganado, TX 77962	3/31/2016
14	Estrada	Elisa	FM 1163	El Campo, TX 77437	P.O. Box 1151	El Campo, TX 77437	3/31/2016
15	Everts	Tomi Jo	1218 John	El Campo, TX 77437	254 Brent	El Campo, TX 77437	3/31/2016
16	El Campo Cap LLC		S Meadow LN	El Campo, TX 77437	13903 Drakewood Dr.	Sugar Land, TX 77498	3/31/2016
17	Malik	Augie	102 Henson St.	El Campo, TX 77437	102 Henson St.	El Campo, TX 77437	3/31/2016
18	Duran	Jesse & Ramona	Henson St.	El Campo, TX 77437	8533 Saratoga Dr.	El Campo, TX 77437	3/31/2016
19	Hopper	Robert, Jr.	174 Henson St.	El Campo, TX 77437	174 Henson St.	El Campo, TX 77437	3/31/2016
20	Marek	Patrick C	202 Henson St.	El Campo, TX 77437	202 Henson St.	El Campo, TX 77437	3/31/2016
21	Debo	Arturo & Robyn	568 Becky St.	El Campo, TX 77437	PO Box 403	El Campo, TX 77437	3/31/2016
22	Escamilla	Tony	Henson St.	El Campo, TX 77437	410 E Watt Blvd.	El Campo, TX 77437	3/31/2016
23	Newton	Gordon	264 Henson St.	El Campo, TX 77437	264 Henson St.	El Campo, TX 77437	3/31/2016
24	Kulcak	Edwin	288 Henson St.	El Campo, TX 77437	788 Charlene St.	El Campo, TX 77437	3/31/2016
25	Lyford	Stephen	332 Henson St.	El Campo, TX 77437	332 Henson St.	El Campo, TX 77437	3/31/2016
26	Laitkep	Allen & Pamela	538 Becky St.	El Campo, TX 77437	538 Becky St.	El Campo, TX 77437	3/31/2016
27	Drapela	Ned & Carol	510 Becky St.	El Campo, TX 77437	510 Becky St.	El Campo, TX 77437	3/31/2016
28	Garcia	Daniel & Belinda	472 Becky St.	El Campo, TX 77437	472 Becky St.	El Campo, TX 77437	3/31/2016
29	LaBay	Brent	406 Becky St.	El Campo, TX 77437	P.O. Box 934	El Campo, TX 77437	3/31/2016
30	Cantu	Armando & Maria	310 Becky St.	El Campo, TX 77437	P.O. Box 802	El Campo, TX 77437	3/31/2016
31	Molina	Joe	343 Agnes St.	El Campo, TX 77437	1216 Williams	El Campo, TX 77437	3/31/2016
32	Anguiano	Janie	1318 Muncy St.	El Campo, TX 77437	1318 Muncy St.	El Campo, TX 77437	3/31/2016
33	Garza	Antonio	385 Agnes St.	El Campo, TX 77437	385 Agnes St.	El Campo, TX 77437	3/31/2016
34	Castro	Rosalinda	457 Agnes St.	El Campo, TX 77437	457 Agnes St.	El Campo, TX 77437	3/31/2016
35	Debo	Jesus	495 Agnes St.	El Campo, TX 77437	618 Depot St	El Campo, TX 77437	3/31/2016
36	Hackfeld	David & Katie	Agnes St.	El Campo, TX 77437	P.O. Box 227	El Campo, TX 77437	3/31/2016
37	Samaripas	Jose	Agnes	El Campo, TX 77437	2609 Benchmark St.	El Campo, TX 77437	3/31/2016
38	Perez	Juan & Mary	536 Agnes St.	El Campo, TX 77437	536 Agnes St.	El Campo, TX 77437	3/31/2016
39	Jonsvoll	Claudia	Agnes St.	El Campo, TX 77437	32614 Westminster Dr	Fulshear, TX 77441	3/31/2016
40	Cano	Richard & Gertrude	Agnes St.	El Campo, TX 77437	405 Ave E	El Campo, TX 77437	3/31/2016
41	Thonsgaard	Kathleen	410 Agnes St.	El Campo, TX 77437	P,O. Box 671	El Campo, TX 77437	3/31/2016
42	Cadriel	Bobby & Delores	368 Agnes St.	El Campo, TX 77437	368 Agnes St.	El Campo, TX 77437	3/31/2016
43	Ochoa	Irma	336 Agnes St.	El Campo, TX 77437	336 Agnes St.	El Campo, TX 77437	3/31/2016
44	Sliva	Terry & Leticia	314 Agnes St.	El Campo, TX 77437	618 Depot	El Campo, TX 77437	3/31/2016
45	Gallardo	Alfredo	Agnes St.	El Campo, TX 77437	1218 Muncy St.	El Campo, TX 77437	3/31/2016
46	Anguiano	Salvador	Murray Road	El Campo, TX 77437	16811 Finewood Way	Houston, TX 77058-	3/31/2016
47	Anguiano	Arthur	Murray Road	El Campo, TX 77437	1754 Triple Crown Dr.	Corpus Christi, TX78417	3/31/2016
48	Orsak	Kimberly	295 Murray Rd	El Campo, TX 77437	295 CR 306	El Campo, TX 77437	3/31/2016
49	Kahanek	Dwayne	345 Murray Rd.	El Campo, TX 77437	345 CR306	El Campo, TX 77437	3/31/2016
50	Bernal	Roman	Murray Road	El Campo, TX 77437	PO Box 1972	Victoria, TX 77902	3/31/2016
51	Welcome	Annette	433 Murray Rd	El Campo, TX 77437	433 CR 306*	El Campo, TX 77437	3/31/2016
52	Martinez	Venserlado &	467 Murray Rd	El Campo, TX 77437	467 Cr 306	El Campo, TX 77437	3/31/2016
53	Schnurpel	Martin	527 Murray Rd.	El Campo, TX 77437	602 Peach St.	El Campo, TX 77437	3/31/2016
54	Atchetee	Evon	619 CR 306	El Campo, TX 77437	619 CR 306	El Campo, TX 77437	3/31/2016
55	Socha	Kenneth	671 Murray Rd	El Campo, TX 77437	111 Turek St	El Campo, TX 77437	3/31/2016
56	Allen	Reggie & Laverne	101 White Wing Trail	El Campo, TX 77437	101 White Wing Trail	El Campo, TX 77437	3/31/2016
57	Kennedy	Gene	103 White Wing Trail	El Campo, TX 77437	103 White Wing Trail	El Campo, TX 77437	3/31/2016
58	Baklik	Brian	107 White Wing Trail	El Campo, TX 77437	107 White Wing Trail	El Campo, TX 77437	3/31/2016
59	Wied	Kevin	201 White Wing Trail	El Campo, TX 77437	109 White Wing Trail	El Campo, TX 77437	3/31/2016
60	Knudsen	John & Barbara	102 White Wing Trail	El Campo, TX 77437	PO Box 1447	El Campo, TX 77437	3/31/2016
61	Martinez	Raul	White Wing Trail	El Campo, TX 77437	PO Box 1456	El Campo, TX 77437	3/31/2016
62	Leopold	Greg & Amanda	106 White Wing Trail	El Campo, TX 77437	P.O. Box 452	El Campo, TX 77437	3/31/2016
63	Garcia	Phillip	Thrift Street	El Campo, TX 77437	2313 Colgate	Lubbock, TX 79415	3/31/2016
64	Gentry	Mitchell& Yesenia	110 White Wing Trail	El Campo, TX 77437	110 White Wing Trail	El Campo, TX 77437	3/31/2016
65	Roades	Herbert	1403 Lily St.	El Campo, TX 77437	PO Box 398	Louise, TX 77455	3/31/2016
66	Alvarez	Hector & Ignacia	1102 Thrift St.	El Campo, TX 77437	1102 Thrift St.	El Campo, TX 77437	3/31/2016
67	Jaramillo	Jose & Maria	1405 Thrift St.	El Campo, TX 77437	1405 Thrift St.	El Campo, TX 77437	3/31/2016
68	Bullock	Sally	1407 Thrift St.	El Campo, TX 77437	407-a Ricebird Lane	El Campo, TX 77437	3/31/2016
69	Johnson	Rosa	1411 Thrift St.	El Campo, TX 77437	1411 Thrift St.	El Campo, TX 77437	3/31/2016
70	Miller	Doris	1310 Vallejo St.	El Campo, TX 77437	1310 Vallejo St.	El Campo, TX 77437	3/31/2016
71	Alquisira	Victor	1318 Vallejo St.	El Campo, TX 77437	834 CR 408	El Campo, TX 77437	3/31/2016
72	Garcia	Raul	1478 Prosperity St.	El Campo, TX 77437	502 South Liberty St.	El Campo, TX 77437	3/31/2016
73	Reyna	Robert	Thrift St.	El Campo, TX 77437	26532 US 59	El Campo, TX 77437	3/31/2016
74	Bellard	Desmond	1421 Thrift St., Murray	El Campo, TX 77437	12314 Glenmeadow Dr.	Stafford, TX 77477-2239	3/31/2016
75	Hawkins	Tanda	1329 Vallejo St.	El Campo, TX 77437	1329 Vallejo St.	El Campo, TX 77437	3/31/2016
76	Hawkins	Jimmy	1309 Vallejo St.	El Campo, TX 77437	1329 Vallejo St.	El Campo, TX 77437	3/31/2016
77	Jones	Dianne	Vallejo St.	El Campo, TX 77437	RT. 1 Box 306-E	El Campo, TX 77437	3/31/2016
78	Williams	Mickey	1305 Vallejo St.	El Campo, TX 77437	2703 Knoxville Dr.	El Campo, TX 77437	3/31/2016
79	Johnson	Ira	1504 Prosperity St.	El Campo, TX 77437	10834 Bradford Way	Houston, TX 77075	3/31/2016
80	Williams	Naomi	1304 Murray Rd.	El Campo, TX 77437	228 CR 306	El Campo, TX 77437	3/31/2016
81	Murray	Elmer	Murray Rd.	El Campo, TX 77437	P.O. Box 298	Louise, TX 77455	3/31/2016
82	Sauls	Athylene	Murray Rd.	El Campo, TX 77437	1218 Lilly St.	El Campo, TX 77437	3/31/2016
83	Hudlin	Jacquelin	Murray Rd.	El Campo, TX 77437	305 S Mechanic St.	El Campo, TX 77437	3/31/2016
84	Soliz	Joe and Patricia	Thrift St.	El Campo, TX 77437	3411 Colonel Crt Dr	Richmond, TX 77469	3/31/2016

Parties Receiving Direct Notice

	Property Owner Last Name	Property Owner First Name	Physical Property Address	City and Zip	Property Owner Mailing Address	Property Owner City, State, Zip	2015 Report Notification Letter Sent
85	Soliz	Josephine	1426 Thrift St.	El Campo, TX 77437	1426 Thrift St.	El Campo, TX 77437	3/31/2016
86	Soliz	Joe	1414 Thrift St.	El Campo, TX 77437	1414 Thrift St.	El Campo, TX 77437	3/31/2016
87	Ellis	Craig & Margaret	1540 Thrift St.220	El Campo, TX 77437	PO Box 1425	El Campo, TX 77437	3/31/2016
88	Sanders	Lydia	1601 Palacios St.	El Campo 77437	1629 FM 1163	El Campo, TX 77437	3/31/2016
89	Hargrove	Aaron	Thrift St.	El Campo, TX 77437	4375 Lancaster St	Lancaster, TX 75134	3/31/2016
90	Swanson	M.C.	Hwy 59	El Campo, TX 77437	2204 Hutchins Ln.	El Campo, TX 77437	3/31/2016
91	Hoffman	Sheila	303 South Meadow Ln	El Campo, TX 77437	219 E. Milam, Ste A	Wharton, TX 77488	3/31/2016
92	Fitzpatrick	Larry	311 S Meadow LN	El Campo, TX 77437	PO Box 1672	El Campo, TX 77437	3/31/2016
93	Alvarez	Jesus & Maria	Gladys St.	El Campo, TX 77437	PO Box 120	Louise, TX 77455	3/31/2016
94	Vanek	August	1312 Lily St.	El Campo, TX 77437	1312 Lily St.	El Campo, TX 77437	3/31/2016
95	Dos Ninos, LLC		601 S Meadow Ln.	El Campo,TX 77437	P.O. Box 1645	El Campo, TX 77437	3/31/2016
96	Housing Authority of El Campo		1303 Delta St.	El Campo, TX 77437	1303 Delta St.	El Campo, TX 77437	3/31/2016
97	Swedish Lutheran Church		S Meadow LN	El Campo, TX 77437	304 Oscar	El Campo, TX 77437	3/31/2016
98	Cormier	David	26544 S Hwy 59	El Campo, TX 77437	PO Box 327	El Campo, TX 77437	3/31/2016
99	Reyna	Remigia	1702 Hwy 59	El Campo, TX 77437	26532 US 59 Rd	El Campo, TX 77437	3/31/2016
100	Diamond Cleaning Equip.	John Knudsen	603 South Meadow Ln	El Campo, TX 77437	PO Box 1512	El Campo, TX 77437	3/31/2016
101	McCarty Acres LLC		South Meadow Lane,	El Campo, TX 77437	10516 Kipp Way Dr. Unit D	Houston, TX 77099	3/31/2016
102	Holmes	Linda	1307 Vallejo St.	El Campo, TX 77437	PO Box 159	Louise, TX 77455	3/31/2016
103	Hardeway	Larry	212 Murray Rd.	El Campo, TX 77437	1218 Lily St.	El Campo, TX 77437	3/31/2016
104	Luycx	Mark	1320 John St.	El Campo, TX 77437	P.O. Box 142	El Campo, TX 77437	3/31/2016
105	Ortiz	Raul & Maria	1317 Lilly St.	El Campo, TX 77437	1317 Lilly St.	El Campo, TX 77437	3/31/2016
106	Martinez	Rudy & Mary	Agnes & CR 306, 720 S.	El Campo, TX 77437	PO Box 244	El Campo, TX 77437	3/31/2016
107	Vasquez	Teresa & Lupe	249 Agnes	El Campo, TX 77437	249 Agnes	El Campo, TX 77437	3/31/2016
108	Gulf Coast Ready Mix Co		720 S Meadow Ln	El Campo, TX 77437	720 S Meadow Ln	El Campo, TX 77437	3/31/2016
109	Hernandez	Ricardo M	S Meadow LN	El Campo, TX 77437	PO Box 10	Glen Flora, TX 77437	3/31/2016
110	Haynes	Larry	S Meadow LN	El Campo, TX 77437	1069 Loose Cow Road	Garwood, TX 77442	3/31/2016
111	Webe Trucking, Inc		26292 Hwy 59	El Campo, TX 77437	P.O.Box 1631	El Campo, TX 77437	3/31/2016
112	Garcia	Manuel	8926 Path Green Dr.	Houston, TX 77095	586 Agnes St.	El Campo, TX 77437	3/31/2016
113	Mollnar & Bouligny	R & J	CR 303	El Campo, TX 77437	PO Box 1567	El Campo, TX 77437	3/31/2016
114	Abshire	Mary	Hwy 59	El Campo, TX 77437	2409 Hutchins LN	El Campo, TX 77437	3/31/2016
115	Rodriguez	Aaron R & Rosa I	Hwy 59	El Campo, TX 77437	11033 Christian Dr.	Houston, Texas 77044	3/31/2016
116	Trejo	Gabriel & Maria	382 Henson St.	El Campo, TX 77437	382 Henson St.	El Campo, TX 77437	3/31/2016
117	Manzano	Paul	406 Candy St.	El Campo, TX 77437	472 Candy St.	El Campo, TX 77437	3/31/2016
118	Garcia	Phillip	Thrift Ave	El Campo, TX 77437	2313 Colgate	Lubbock, TX 79415	3/31/2016
119	Kyle	Jahn	404 Candy	El Campo, TX 77437	452 Candy St.	El Campo, TX 77437	3/31/2016
120	Gonzalez	Raul	White Wing Trail	El Campo, TX 77437	202 Whitewing Trail	El Campo, TX 77437	3/31/2016
121	Hermis	Mary Ester	507 Becky St.	El Campo, TX 77437	1605 Michael	El Campo, TX 77437	3/31/2016
122	Corporon	Carl & Katherine	508 Candy St	El Campo, TX 77437	P.O. Box 1593	El Campo, TX 77437	3/31/2016
123	Kirchner	Geraldine	548 Henson St.	El Campo, TX 77437	548 Henson St.	El Campo, TX 77437	3/31/2016
124	Soliz	Christine	Whitewing Trail	El Campo, TX 77437	206 Whitewing Trail	El Campo, TX 77437	3/31/2016
125	Montavalo	Robert	307 Agmes	El Campo, TX 77437	301 Agnes St.	El Campo, TX 77437	3/31/2016
126	Nettle	Teresa	467 Candy St.	El Campo, TX 77437	467 Candy St.	El Campo, TX 77437	3/31/2016
127	Poncik	Clinton	464 Henson St.	El Campo, TX 77437	464 Henson St.	El Campo, TX 77437	3/31/2016
128	Poncik	Ronald	247 Henson St.	El Campo, TX 77437	PO Box 445	El Campo, TX 77437	3/31/2016
129	Ramos, Jr.	Joe	519 Becky St.	El Campo, TX 77437	519 Becky St.	El Campo, TX 77437	3/31/2016
130	Rodriguez	Ray	Agnes St.	El Campo, TX 77437	906 CR 255	Ganado, TX 77962	3/31/2016
131	Bell	Wade & Brittany	303 Whitewing Trail	El Campo, TX 77437	303 Whitewing Trail	El Campo, TX 77437	3/31/2016
132	Ryan Services, Inc.	Michael Ryan	26620 US 59	El Campo, TX 77437	PO Box 348	El Campo, TX 77437	3/31/2016
133	Stepan	Emil	1601 Palacios St.	El Campo, TX 77437	P.O. Box 304	El Campo, TX 77437	3/31/2016
134	Smith	Larry & Erica	Becky St.	El Campo, TX 77437	496 Candy St.	El Campo, TX 77437	3/31/2016
135	Staff	Tommy & Elizabeth	306 White Wing Trail	El Campo, TX 77437	306 White Wing Trail	El Campo, TX 77437	3/31/2016
136	Staff Family Living Trust		White Wing Trail	El Campo, TX 77437	586 Henson St.	El Campo, TX 77437	3/31/2016
137	Rock N Properties		528 Charlene	El Campo, TX 77437	P.O. Box 27	El Campo, TX 77437	3/31/2016
138	VFW Post 2786	Elvie Bram	773 Murray Rd	El Campo, TX 77437	PO BOX 709	El Campo, TX 77437	3/31/2016
139	Wall	Mike	210 White Wing Trail	El Campo, TX 77437	210 White Wing Trail	El Campo, TX 77437	3/31/2016
140	Cochrum	Jerry	Whitewing Trail	El Campo 77437	203 Whitewing Trail	El Campo, TX 77437	3/31/2016
141	Priesmeyer	Arthur	FM1163	El Campo, TX 77437	2636 S SH 71 Hwy	El Campo, TX 77437	3/31/2016
142	Bard	John	CR303	El Campo, TX 77437	P.O Box 86	Wharton, TX 77488	3/31/2016
143	Ott	Monica & Ott	221 Whitewing Trail	El Campo 77437	211 Whitewing Trail	El Campo, TX 77437	3/31/2016
144	Matlock	Patrick & Crystall	156 Whitewing Trail	El Campo 77437	156 Whitewing Trail	El Campo, TX 77437	3/31/2016
145	Seaman	Douglas	207 Whitewing Trail	El Campo 77437	207 Whitewing Trail	El Campo, TX 77437	3/31/2016
146	Bard	Wayne	CR303	El Campo, TX 77437	1310 Linnwood	El Campo, TX 77437	3/31/2016
147	Von Tress	Lila Rae Bard	CR303	El Campo, TX 77437	#2 Palm Place	Angleton, TX 77515	3/31/2016
148	Newton	Norma Bard	CR303	El Campo, TX 77437	706 Spruce Ave	El Campo, TX 77437	3/31/2016
149	Carl O' Neil Branch Manager Pollution Prevention and Abatement Branch Environmental Affairs, TxDOT				125 E. 11th Street	Austin, Texas 78701	3/31/2016
150	Rodney T. Concienne Branch Manager Pollution Prevention and Abatement Branch Environmental Affairs, TxDOT 125 E.				125 E. 11th Street	Austin, Texas 78701	3/31/2016
151	Ms. Mindi Snyder, City Manager City of El Campo				315 East Jackson	El Campo, TX 77437	3/31/2016
152	Mr. Andy Orrell Wharton County Electric Cooperative				P.O. Box 31	El Campo, TX 77437	3/31/2016
153	Mr. Justin Suchecki, Environmental Programs CenterPoint Energy				1111 Louisiana Street	Houston, TX 77002-5230	3/31/2016
154	Ms. Cindy Cerney, City Secretary City of El Campo				315 East Jackson	El Campo, TX 77437	3/31/2016
155	Ms. Sandra K. Sanders, County Clerk Wharton County				P.O. Box 69	Wharton, TX 77488	3/31/2016
156	Nancy Hutton, Environmental American Electric Power				PO Box 2121	Corpus Christi, TX 78403	3/31/2016
157	Mr. Steven Goetsch Commissioner of Precinct 3 Wharton County				1271 CR 358	El Campo, TX 77437	3/31/2016

Appendix B

Groundwater Analytical Laboratory Reports

Appendix C

Analytical Data Usability Summary

DATA USABILITY SUMMARY

Former El Campo Aluminum Facility

El Campo, Texas

Samples Collected January 12 through February 13, 2015

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.

7376 SW Durham Road
Portland, Oregon 97224
(503) 639-3400

August 2015

Project No. 0126200001.03.010

TABLE OF CONTENTS

Page

TABLES

APPENDIX

ACRONYMS

Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
CLP	Contract Laboratory Program
COC	chemical of concern
DUS	data usability summary
EPA	United States Environmental Protection Agency
ER	exception report
GC/MS	gas chromatography-mass spectrometry
ID	identification
LCS	laboratory control sample
LRC	laboratory review checklist
mg/L	milligrams per liter
MQL	method quantitation limit
MS	matrix spike
MSD	matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SDL	sample detection limit
SM	standard method
SOP	standard operating procedure
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
TestAmerica	TestAmerica, Inc.
TOC	total organic carbon
TRRP	Texas Risk Reduction Program
VOC	volatile organic compound

DATA USABILITY SUMMARY
Former El Campo Aluminum Facility
El Campo, Texas

1.0 DATA USABILITY SUMMARY

Amec Foster Wheeler Environmental & Infrastructure, Inc. (Amec Foster Wheeler) reviewed four data packages from TestAmerica Laboratories, Inc. (TestAmerica) for the analysis of groundwater samples collected January 12 through February 13, 2015 at the former El Campo Aluminum Facility in El Campo, Texas. Data were reviewed for conformance to the requirements of the guidance document *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. Amec Foster Wheeler certifies that at the time the laboratory data were generated for the project, TestAmerica Pensacola and TestAmerica Houston were National Environmental Laboratory Accreditation Program (NELAP) - accredited under the Texas Laboratory Accreditation Program for the matrices, analytes, and methods of analysis requested on the chain-of-custody documentation, except analyte 1,3,5-trimethylbenzene, for which no NELAP certification is available. A copy of TestAmerica's NELAP certificates applicable to the period during which the laboratory generated the data in this report are included in Appendix A of this Data Usability Summary (DUS).

1.1 INTENDED USE OF DATA

To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the affected property.

Analyses requested included:

- SW 846 8260B - Volatile Organic Compounds (VOCs) by Gas Chromatography Mass Spectrometry (GC/MS),
- SW 846 9060 - Total Organic Carbon (TOC),
- RSK-175 - Methane by GC Headspace Equilibrium.

2.0 INTRODUCTION

Amec Foster Wheeler collected 148 aqueous samples, including 10 field duplicates, 29 equipment blanks, and 6 trip blanks, between January 12 and February 13, 2015 from the Former El Campo

Aluminum Facility, located in El Campo, Texas. Amec Foster Wheeler submitted these samples to TestAmerica, located in Austin, Texas, where they were assigned to sample delivery groups (SDGs) J105026-1, J106394-1, J106731-1, and J-106781-1. The samples were subcontracted to TestAmerica in Pensacola, Florida, where they were analyzed for VOCs by United States Environmental Protection Agency (EPA) Method 8260B, and TestAmerica in Houston, Texas, where they were analyzed for TOC by EPA Method 9060, and/or Methane by Standard Operating Procedure (SOP) RSK-175 A list of these samples by field sample identification (ID), and TestAmerica sample ID is presented in Table 1.

3.0 Data Validation Methodology

Amec Foster Wheeler performed Level II validation on these samples. This data validation has been performed in general accordance with:

- EPA, 2014a. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.
- EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.
- TCEQ, 2010. Texas Commission on Environmental Quality (TCEQ) Review and Reporting of COC Concentration Data under Texas Risk Reduction Program (TRRP), RG-366/TRRP-13.

The CLP guidelines were written specifically for the CLP, and have been modified for the purposes of this data review where they differ from method-specific quality control (QC) requirements.

The following laboratory submittals and field data were examined:

- the reportable data,
- the laboratory review checklists (LRCs) and associated exception reports (ERs), and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting QC analyses were summarized on the LRCs and ERs, and in the case narratives, all of which were included in this review.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness
- Chain of custody compliance
- Preservation and holding time compliance
- Presence or absence of laboratory contamination as demonstrated by method blanks
- Accuracy and precision as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates or MS/MS duplicate (MSD)
- Sampling and analytical precision as RPD of analyte concentration between field duplicates
- Assessment of field contamination as demonstrated by equipment, and trip blanks
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

4.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

4.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte-free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany. LCS recovery is an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix.

4.2 MS RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

4.3 SURROGATE SPIKE RECOVERIES

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process.

4.4 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Trip blanks are vials of analyte free water that accompany sample bottles shipped to the field and back to the laboratory with field samples. Trip blanks assess contamination attributed to shipping and handling procedures, as well as contamination from containers. Target analytes should not be found in trip blanks.

Laboratory blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in associated samples less than five times the concentration detected in the blank will be U qualified as being not detected.

4.5 LABORATORY DUPLICATES

Laboratory and field duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

5.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

U	The analyte was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

6.0 DEFINITIONS OF BIAS CODES AND REASON CODES THAT MAY BE ADDED DURING DATA VALIDATION

H	Bias in the sample result is likely to be high.
L	Bias in the sample result is likely to be low.
DL	The analyte concentration is between the sample detection limit (SDL) and the method quantitation limit (MQL). The result is an estimated concentration.
FD	High RPD between parent sample and field duplicate results. Potential analytical or sampling imprecision.
RB	The result was qualified as not detected because of a detection in an equipment blank.

7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described Sections 7.1 through 8.0

Non-detected results are reported as less than the value of the sample detection limit SDL as defined by the TRRP rule.

7.1 SAMPLE COLLECTION, PRESERVATION, AND RECEIPT

Samples were properly preserved in the field according to method specifications. The samples were received at the laboratory under proper chain of custody, intact, properly preserved, and at temperatures less than the EPA-recommended maximum of 6 degrees Celsius, with the following exceptions:

- The laboratory reported that one vial from sample PSRW-1 and three vials from sample DUP-4 arrived broken or leaking. There was sufficient sample remaining in intact vials for all requested analyses.
- The laboratory received fewer sample containers than were listed on the chain of custody for several samples in SDG J106731-1. There was sufficient volume for the laboratory to perform the requested analyses.
- The laboratory received sample MW-19B, which was not listed on the chain of custody, with SDG J106394-1. The laboratory analyzed this sample for VOCs.
- The chain of custody requested TOC analysis of sample MW-141B from SDG J106781-1, but the sample container was not received by the laboratory and the analysis was not performed.
- The laboratory received samples DUP-7 and DUP-8, which were not listed on the chain of custody, with SDG J106781-1. The laboratory was instructed to analyze these samples for VOCs.
- Amec Foster Wheeler requested the following modifications to the analyses of samples listed on the chain of custody in SDG J106781-1:
  - Samples DUP-8 and DUP-9 were analyzed for VOCs only.
  - Samples IG1-MW-7 and IG2-MW-3 were analyzed for VOCs, methane, and TOC, and MS/MSDs were performed on these samples for VOC and methane analyses.

7.2 VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B

The VOC results generated by TestAmerica may be considered usable with the limitations described in sections 7.2.1 through 7.2.7.

7.2.1 Holding Times

All samples were analyzed for VOC within the EPA-recommended maximum holding time of 14 days from sample collection for preserved samples and 7 days for unpreserved samples.

7.2.2 Initial and Continuing Calibration Verification

According to the LRCs, initial calibration and continuing calibration data met SW-846 method requirements for VOC analyses. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for VOC analyses.

7.2.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks, equipment blanks, and trip blanks, with the following exceptions:

- Trichloroethene (TCE) was detected at a concentration of 0.000573 milligrams per liter (mg/L) in equipment blank EQBK-DBH-2-12-15, associated with the following samples from SDG J106731-1, collected on February 12, 2015: DUP-2, DUP-4, DUP-5, IG1-MW-4, IG1-MW-5, IG1-MW6 B1, IG1-MW6 B2, IG1-MW6-B3, MW-113B, MW-118B, MW-126B, MW-133B, and MW-7C. Data limitations are summarized below.
  - Amec Foster Wheeler U qualified the detected TCE result from sample MW-118B because the detected result was less than five times the concentration detected in the associated blank. (U-RB)
  - TCE results from the remaining samples were greater than five times the concentration detected in the blank, and data usability is not adversely affected by the detection in the associated blank.
- TCE was detected at a concentration of 0.000894 mg/L in equipment blank EQBK-DBH-2-13-15 and 1,2-dichlorobenzene was detected at a concentration of 0.000536 mg/L in equipment blank EQBK-KS-2-13-15. Both equipment blanks are associated with the following samples from SDG J106781-1, collected on February 13, 2015: DUP-6, DUP-7, DUP-8, DUP-9, DUP-10, IG1-MW-7, IG1-RW-4, IG2-MW-3, IG4-MW-1, IG4-MW-2, IG4-MW-3, MW-109B, MW-111B, MW-125B, MW-128B, MW-131B, and MW-141B. The TCE results from these samples were greater than five times the

concentration detected in the blank, 1,2-dichlorobenzene was not detected in these samples. Data usability is not adversely affected by the detections in the associated blanks.

- TCE was detected at a concentration of 0.0127 mg/L in equipment blank EQBK-CR-2-2-15, associated with the following samples from SDG J106394-1, collected on February 2, 2015: MW-11B, MW-11C, MW-25B, and MW-103B. TCE was not detected in these samples and data usability is not adversely affected by the detection in the associated blank.

7.2.4 Internal Standards and Surrogate Recoveries

According to the LRCs, internal standard data met SW-846 method requirements for VOC analyses. Surrogate compound recoveries were within laboratory-specified limits, with the following exceptions:

- Recoveries of the surrogate compound dibromofluoromethane were high in samples MW-11C (121%), MW-108B (127%), EQBK-CE4-2-3-15 (126%) from SDG J106394-1. No VOCs were detected in any of these samples and data usability is not adversely affected by the potential high analytical bias.

7.2.5 Laboratory Control Sample Accuracy

LCS recoveries were within the more stringent of either the 60 to 140% TCEQ guidance limits or laboratory-specified limits. Exceptions are noted below.

- Bromobenzene and 4-chlorotoluene recoveries were both low at 79% in the LCS associated with the analysis of samples MW-109A, MW-10A, MW-112B2, MW-12A, MW-12B, MW-13A, MW-14A, MW-19A, MW-2A, MW-4A, MW-6A, MW-8A, and VFW-MW-1, from SDG J106394-1. Amec Foster Wheeler UJ qualified the nondetected bromobenzene and 4-chlorotoluene results from these samples because of potential low analytical bias. (UJ-L)
- Bromomethane recovery was low at 51% in the LCS associated with the analysis of samples IG1-MW-1, IG1-MW-2, MW-111A, MW-117B, MW-142B, MW-21A, MW-7A, MW-9A, and PLANT PROD. #2, from SDG J106731-1. Amec Foster Wheeler UJ qualified the nondetected bromomethane results from these samples because of potential low analytical bias. (UJ-L)
- Bromobenzene (78%), 4-chlorotoluene (71%), 1,1,2-trichloroethane (76%), 1,2,3-trichloropropane (76%), 1,2,4-trimethylbenzene (74%), and 1,3,5-trimethylbenzene (75%) recoveries were low in the LCS associated with the analysis of samples DUP-7, DUP-8, IG1-MW-7, and IG4-MW-1, from SDG J106781-1. Amec Foster Wheeler J qualified

the detected results and UJ qualified the nondetected results for these analytes in these samples because of potential low analytical bias. (J/UJ-L)

- Bromobenzene recovery was low at 79% in the LCS associated with the analysis of samples IG2 MW-3 and MW131B, from SDG J10678-1. Amec Foster Wheeler UJ qualified the nondetected bromobenzene results from these samples because of potential low analytical bias. (UJ-L)
- 1,1,-Dichloropropene recovery was high at 123% in the LCS associated with the analysis of samples MW-100B, MW-101B, MW-112B, MW-119B, MW-124B, MW-17C, MW-18A, MW-22A, MW-22C, MW-23A, MW-25A, MW-5C, MW-6C, and PRODUCTION WELL #1, from SDG J106394-1. 1,1-Dichloropropene was not detected in these samples and data usability is not adversely affected by the potential high analytical bias.

7.2.6 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples IG1-MW-1, IG1-MW-7, IG2-MW-3, MW-7C, MW-25B, MW-100B, MW-101B, MW-112B2, MW-113B, MW-128B, MW-139B, and MW-145B. The MS/MSD performed on sample MW-101B was for the analyte naphthalene only, because it was the only analyte reported from that particular run. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima. When laboratory limits were less stringent than TCEQ guidance, recoveries were within TCEQ guidance limits of 60 to 140% recovery and RPDs were less than the TCEQ-specified maximum of 40%. Exceptions are noted below.

- Bromochloromethane (126%), bromoform (129%), dibromochloromethane (136%), 1,1-dichloropropene (135%), and 1,1,1,2-tetrachloroethane (136%) recoveries were high in the MS performed on sample IG1-MW-1. Additionally, cis-1,2-dichloroethene recovery was low at 52% in the MSD performed on this sample. Data limitations are summarized below:
  - Amec Foster Wheeler J qualified the detected cis-1,2-dichloroethene result from sample IG1-MW-1 because of potential low analytical bias. (J-L)
  - The remaining analytes were not detected in this sample and data usability is not adversely affected by the potential high analytical bias.
- Bromomethane recoveries were high at 152% and 154%, respectively, in the MS and MSD performed on sample IG1-MW-7 and TCE recovery was low at 47% in the MS performed on this sample. Data limitations are summarized below.
  - Amec Foster Wheeler J qualified the detected TCE results from sample IG1-MW-7 and its field duplicate, DUP-7, because of potential low analytical bias. (J-L)
  - Bromomethane was not detected in this sample and data usability is not adversely affected by the potential high analytical bias.

- Bromochloromethane recovery was high at 123% in the MSD performed on sample MW-100B. Bromochloromethane was not detected in this sample and data usability is not adversely affected by the potential high analytical bias.
- Bromochloromethane and 1,1-dichloropropene recoveries were high at 126% and 127%, respectively, in the MS performed on sample MW-113B. These analytes were not detected in sample MW-113B and data usability is not adversely affected by the potential high analytical bias.
- Dichlorodifluoromethane recoveries were high at 154% and 156%, respectively, in the MS and MSD performed on sample MW-145B. Dichlorodifluoromethane was not detected in sample MW-145B and data usability is not adversely affected by the potential high analytical bias.

7.2.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J-DL)

7.3 GENERAL CHEMISTRY

Methane and TOC results generated by TestAmerica may be considered usable within the limitations described in Sections 7.3.1 through 7.3.6.

7.3.1 Holding times

All samples were analyzed within the method-specified holding times of 14 days for methane and 28 days for TOC.

7.3.2 Initial and Continuing Calibration

According to the LRCs, initial calibration and continuing calibration data met method requirements for general chemistry analyses. The LRCs also document satisfactory instrument performance and calibrations.

7.3.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks and target analytes were not detected in the equipment and trip blanks.

7.3.4 Laboratory Control Sample Accuracy

LCS recoveries were within laboratory-specified limits of 70 to 130% for methane and 85 to 115% for TOC.

7.3.5 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples MW-6B, IG1-MW-7, and IG2-MW-3 for methane, and samples IG1-MW-1, IG1-MW-7, and IG2-MW-3 for TOC. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima, with the following exceptions:

- Methane recoveries were low at 57% and 60%, respectively, in the MS and MSD performed on sample MW-6B. Amec Foster Wheeler J qualified the detected methane result from this sample because of potential low analytical bias. (J-L)
- Methane recoveries were low at 6% and 28%, respectively in the MS and MSD performed on sample IG2-MW-3. Amec Foster Wheeler J qualified the detected methane result from this sample because of potential low analytical bias. (J-L)

7.3.6 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J DL)

8.0 FIELD PRECISION

Amec Foster Wheeler collected a field duplicates of samples MW-100B (DUP-1), MW-7C (DUP-2), IG2-MW-4 (DUP-3), MW-113B (DUP-4), MW-126B (DUP-5), MW-128B (DUP-6), IG1-MW-7 (DUP-7), IG2-MW-3 (DUP-8), IG4-MW-2 (DUP-9), and IG4-MW-3 (DUP-10). RPDs between field duplicate results were less than the TCEQ-recommended maximum of 30% for concentrations greater than five times the MQL, or the difference between concentrations was less than twice the MQL for analytes with concentrations less than five times the SDL. Exceptions are noted below.

- The RPD between cis-1,2-dichloroethene results from sample MW-100B and its field duplicate DUP-1 was high at 89%. Amec Foster Wheeler J qualified the cis-1,2-dichloroethene results from these samples because of potential analytical or sampling imprecision. (J-FD)
- RPDs between cis-1,2-dichloroethene and trichloroethene results from sample MW113B and its field duplicate DUP-4 were high at 160% and 116%, respectively. Amec Foster

Wheeler J qualified the cis-1,2-dicloroethene and trichloroethene results from these samples because of potential analytical or sampling imprecision. (J-FD)

Detected results in parent samples and field duplicates are shown in Table 2.

9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler reviewed 6,435 data records for target analytes in the field samples during this data validation. Of these, Amec Foster Wheeler J or UJ qualified 112 records (1.7%) as estimated because of potential low analytical bias from low LCS recovery and low MS and/or MSD recovery; and quantitative uncertainty because of high RPDs between parent samples and field duplicates, and results between the SDL and the MQL. One record (0.015%) was U qualified as not detected because of a detection in an associated equipment blank. Amec Foster Wheeler did not reject any results and all of the data should be considered fully usable with the addition of the qualifiers presented in this report.

Definitions of data qualifiers added during data validation are summarized in Section 5.0 and summaries of specific qualifiers added to each affected sample as a result of the validation findings are presented in Table 3.

REFERENCES

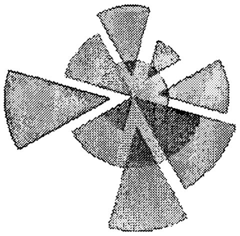
EPA, 2014a. EPA Contract Laboratory Program CLP National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.

EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.

TCEQ, 2010. TCEQ Review and Reporting of COC Concentration Data under TRRP, RG-366/TRRP-13.

LIMITATIONS

This report was prepared exclusively for the Former El Campo Aluminum Facility in El Campo, Texas by Amec Foster Wheeler Environment & Infrastructure, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Usability Summary is intended to be used by for the Former El Campo Aluminum Facility only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.



TABLES

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
MW-145B	1/12/2015	600-105026-1	MS/MSD VOCs
MW-25B	2/2/2015	600-106394-1	MS/MSD VOCs
MW-11B	2/2/2015	600-106394-2	
MW-103B	2/2/2015	600-106394-3	
MW-11C	2/2/2015	600-106394-4	
EQBK-DH-2-2-15	2/2/2015	600-106394-5	Equipment Blank
EQBK-CR-2-2-15	2/2/2015	600-106394-6	Equipment Blank
MW-123B	2/3/2015	600-106394-7	
MW-10B	2/3/2015	600-106394-8	
MW-115B	2/3/2015	600-106394-9	
MW-4B	2/3/2015	600-106394-10	
MW-108B	2/3/2015	600-106394-11	
EQBK-CE4-2-3-15	2/3/2015	600-106394-12	Equipment Blank
MW-129C	2/3/2015	600-106394-13	
MW-130C	2/3/2015	600-106394-14	
EQBK-DBH-2-3-15	2/3/2015	600-106394-15	Equipment Blank
MW-104B	2/4/2015	600-106394-16	
MW-101B	2/4/2015	600-106394-17	MS/MSD Naphthalene
MW-23A	2/4/2015	600-106394-18	
MW-119B	2/4/2015	600-106394-19	
MW-112B	2/4/2015	600-106394-20	
MW-112B2	2/4/2015	600-106394-21	MS/MSD VOCs
EQBK-CE4-2-4-15	2/4/2015	600-106394-22	Equipment Blank
MW-12A	2/4/2015	600-106394-23	
MW-12B	2/4/2015	600-106394-24	
MW-13A	2/4/2015	600-106394-25	
MW-14A	2/4/2015	600-106394-26	
MW-19A	2/4/2015	600-106394-27	
EQBK-DH-2-4-15	2/4/2015	600-106394-28	Equipment Blank
EQBK-CR-2-4-15	2/4/2015	600-106394-29	Equipment Blank
VFW-MW-1	2/5/2015	600-106394-30	
MW-6A	2/5/2015	600-106394-31	
MW-10A	2/5/2015	600-106394-32	
EQBK-CE4-2-5-15	2/5/2015	600-106394-33	Equipment Blank
MW-2A	2/5/2015	600-106394-34	
MW-4A	2/5/2015	600-106394-35	
MW-8A	2/5/2015	600-106394-36	
MW-109A	2/5/2015	600-106394-37	
EQBK-CR-2-5-15	2/5/2015	600-106394-38	Equipment Blank
MW-18A	2/5/2015	600-106394-39	
MW-22A	2/5/2015	600-106394-40	
MW-22C	2/5/2015	600-106394-41	
MW-17C	2/5/2015	600-106394-42	
MW-25A	2/5/2015	600-106394-43	
EQBK-DH-2-5-15	2/5/2015	600-106394-44	Equipment Blank
MW-124B	2/4/2015	600-106394-45	
PRODUCTION WELL #1	2/6/2015	600-106394-46	
MW-5C	2/6/2015	600-106394-47	
MW-6C	2/6/2015	600-106394-48	
EQBK-DH-2-6-15	2/6/2015	600-106394-49	Equipment Blank
MW-100B	2/6/2015	600-106394-50	MS/MSD VOCs
MW-102B	2/6/2015	600-106394-51	

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
EQBK-CR-2-6-15	2/6/2015	600-106394-52	Equipment Blank
MW-114B	2/6/2015	600-106394-53	
MW-127B	2/6/2015	600-106394-54	
EQBK-CE4-2-6-15	2/6/2015	600-106394-55	Equipment Blank
DUP-1	2/6/2015	600-106394-56	Field Duplicate of MW-100B
TRIP BLANK #1	2/6/2015	600-106394-57	Trip Blank
TRIP BLANK #2	2/6/2015	600-106394-58	Trip Blank
MW-19B	2/6/2015	600-106394-59	
MW-139B	2/9/2015	600-106731-1	MS/MSD VOCs
MW-137B	2/9/2015	600-106731-2	
MW-26B	2/9/2015	600-106731-3	
MW-116B	2/9/2015	600-106731-4	
MW-134B	2/9/2015	600-106731-5	
MW-132B	2/9/2015	600-106731-6	
MW-138B	2/9/2015	600-106731-7	
MW-136B	2/9/2015	600-106731-8	
MW-140B	2/9/2015	600-106731-9	
MW-24B	2/9/2015	600-106731-10	
MW-13B	2/9/2015	600-106731-11	
PSRW-1	2/9/2015	600-106731-12	
EQBK-KBS-2-9-15	2/9/2015	600-106731-13	Equipment Blank
EQBK-TM-2-9-15	2/9/2015	600-106731-14	Equipment Blank
EQBK-CR-2-9-15	2/9/2015	600-106731-15	Equipment Blank
IG1-MW-1	2/10/2015	600-106731-16	MS/MSD VOCs, TOC
IG1-MW-2	2/10/2015	600-106731-17	
MW-9A	2/10/2015	600-106731-18	
MW-21A	2/10/2015	600-106731-19	
PLANTPROD2	2/10/2015	600-106731-20	
MW-7A	2/10/2015	600-106731-21	
MW-111A	2/10/2015	600-106731-22	
MW-117B	2/10/2015	600-106731-23	
MW-142B	2/10/2015	600-106731-24	
MW-110B	2/10/2015	600-106731-25	
MW-120B	2/10/2015	600-106731-26	
MW-121B	2/10/2015	600-106731-27	
MW-135B	2/10/2015	600-106731-28	
MW-5B	2/10/2015	600-106731-29	
IG1-MW-3	2/10/2015	600-106731-30	
MW-17B	2/10/2015	600-106731-31	
EQBK-TM-2-10-15	2/10/2015	600-106731-32	Equipment Blank
EQBK-DBH 2-10-15	2/10/2015	600-106731-33	Equipment Blank
EQBK-CJR-2-10-15	2/10/2015	600-106731-34	Equipment Blank
EQBK-KS-2-10-15	2/10/2015	600-106731-35	Equipment Blank
MW-143B	2/11/2015	600-106731-36	
MW-23C	2/11/2015	600-106731-37	
IG2-MW-4	2/11/2015	600-106731-38	
MW-6B	2/11/2015	600-106731-39	MS/MSD Methane
MW-21B	2/11/2015	600-106731-40	
MW-7B	2/11/2015	600-106731-41	
DUP-3	2/11/2015	600-106731-42	Field Duplicate of IG2-MW-4
IG2-MW-2	2/11/2015	600-106731-43	
IG2-MW-1	2/11/2015	600-106731-44	

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
MW-14B	2/11/2015	600-106731-45	
EQBK-DBH-2-11-15	2/11/2015	600-106731-46	Equipment Blank
EQBK-CJR-2-11-15	2/11/2015	600-106731-47	Equipment Blank
EQBK-TM-2-11-15	2/11/2015	600-106731-48	Equipment Blank
MW-113B	2/12/2015	600-106731-49	MS/MSD VOCs
MW-126B	2/12/2015	600-106731-50	
MW-118B	2/12/2015	600-106731-51	
IG1-MW-4	2/12/2015	600-106731-52	
MW-133B	2/12/2015	600-106731-53	
DUP-4	2/12/2015	600-106731-55	Field Duplicate of MW-113B
DUP-5	2/12/2015	600-106731-56	Field Duplicate of MW-126B
IG1-MW-5	2/12/2015	600-106731-57	
EQBK-KS-2-12-15	2/12/2015	600-106731-58	Equipment Blank
EQBK-TM-2-12-15	2/12/2015	600-106731-59	Equipment Blank
IG1-MW6 B2	2/12/2015	600-106731-60	
IG1-MW6 B1	2/12/2015	600-106731-61	
IG1-MW6 B3	2/12/2015	600-106731-62	
MW-7C	2/12/2015	600-106731-63	MS/MSD VOCs
DUP-2	2/12/2015	600-106731-64	Field Duplicate of MW-7C
EQBK-DBH-2-12-15	2/12/2015	600-106731-65	Equipment Blank
TRIPBLANK_150212	2/12/2015	600-106731-66	Trip Blank
TRIPBLANK_150212	2/12/2015	600-106731-67	Trip Blank
MW-125B	2/13/2015	600-106781-1	
IG4-MW-2	2/13/2015	600-106781-2	
MW-109B	2/13/2015	600-106781-3	
IG4-MW-3	2/13/2015	600-106781-4	
IG1-RW-4	2/13/2015	600-106781-5	
MW-111B	2/13/2015	600-106781-6	
MW-141B	2/13/2015	600-106781-7	
DUP-9	2/13/2015	600-106781-8	Field Duplicate of IG4-MW-2
DUP-10	2/13/2015	600-106781-9	Field Duplicate of IG4-MW-3
MW-128B	2/13/2015	600-106781-10	MS/MSD VOCs
DUP-6	2/13/2015	600-106781-11	Field Duplicate of MW-128B
EQBK-KS-2-13-15	2/13/2015	600-106781-12	Equipment Blank
EQBK-TM-2-13-15	2/13/2015	600-106781-13	Equipment Blank
IG4-MW-1	2/13/2015	600-106781-14	
EQBK-DBH-2-13-15	2/13/2015	600-106781-15	Equipment Blank
MW-131B	2/13/2015	600-106781-16	
IG1-MW-7	2/13/2015	600-106781-17	MS/MSD VOCs and Methane
IG2-MW-3	2/13/2015	600-106781-18	MS/MSD VOCs and Methane
TRIP BLANK	2/13/2015	600-106781-19	Trip Blank
TRIP BLANK	2/13/2015	600-106781-20	Trip Blank
DUP-7	2/13/2015	600-106781-21	Field Duplicate of IG1-MW-7
DUP-8	2/13/2015	600-106781-22	Field Duplicate of IG2-MW-3

Notes:
MS/MSD = Matrix Spike/Matrix Spike Duplicate
TOC = Total Organic Carbon
VOCs = Volatile Organic Compounds

TABLE 2
Field Duplicate Detections
Former El Campo Aluminum Facility
El Campo, Texas

Method	Analyte	MQL (mg/L)	Primary Sample Result (mg/L)	Field Duplicate Result (mg/L)	Relative Percent Difference	Notes
Samples MW-100B and DUP-1						
8260	cis-1,2-Dichloroethene	0.00100	0.00486	0.00186	89%	J-FD
	Trichloroethene	0.00100	0.00229	0.00256	11%	
Samples MW-7C and DUP-2						
8260	1,1-Dichloroethane	0.00100	0.00153	0.00128	18%	
	1,1-Dichloroethene	0.00100	0.00239	0.00100 U	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00394	0.00354	11%	
	Trichloroethene	0.00100	0.0193	0.0168	14%	
Samples IG2-MW-4 and DUP-3						
8260	1,1-Dichloroethane	0.00100	0.00252	0.00222	13%	
	1,1-Dichloroethene	0.00100	0.00755	0.00694	8%	
	cis-1,2-Dichloroethene	0.00100	0.00737	0.00620	17%	
	Trichloroethene	0.00100	0.0406	0.0351	15%	
Samples MW-113B and DUP-4						
8260	1,1-Dichloroethene	0.00100	0.000852	0.00169	66%	±2 MQL
	cis-1,2-Dichloroethene	0.00100	0.0113	0.00127	160%	J-FD
	Trichloroethene	0.00100	0.0133	0.0502	116%	J-FD
Samples MW-126B and DUP-5						
8260	cis-1,2-Dichloroethene	0.00100	0.00125	0.00136	8%	
	Trichloroethene	0.00100	0.0793	0.0827	4%	
Samples MW-128B and DUP-6						
8260	cis-1,2-Dichloroethene	0.00100	0.00119	0.00181	41%	±2 MQL
	Trichloroethene	0.00100	0.0499	0.0507	2%	
Samples IG1-MW-7 and DUP-7						
8260	cis-1,2-Dichloroethene	0.00100	0.00495	0.00474	4%	
	Trichloroethene	0.00100	1.21	1.10	10%	
Samples IG2-MW-3 and DUP-8						
8260	1,1,2-Trichloroethane	0.00500	0.00500	0.00108	129%	±2 MQL
	1,1-Dichloroethane	0.00100	0.0103	0.00999	3%	
	1,1-Dichloroethene	0.00100	0.0180	0.02120	16%	
	Chloroform	0.00100	0.000730 J	0.000768 J	5%	
	cis-1,2-Dichloroethene	0.00100	0.0292	0.0274	6%	
	Trichloroethene	0.00100	0.0991	0.105	6%	
Samples IG4-MW-2 and DUP-9						
8260	cis-1,2-Dichloroethene	0.00500	0.00275	0.00267	3%	
	Trichloroethene	0.00500	0.616	0.613	0%	
Samples IG4-MW-3 and DUP-10						
8260	cis-1,2-Dichloroethene	0.00500	0.00296	0.00266	11%	
	Trichloroethene	0.00500	0.695	0.627	10%	

Notes:

±2MQL = the difference between the primary sample and field duplicate result is less than twice the MQL

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

mg/L = milligrams per liter

MQL = method quantitation limit

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
DUP-1	SW8260B	cis-1,2-Dichloroethene	0.00186	mg/l	J	FD
DUP-4	SW8260B	cis-1,2-Dichloroethene	0.00127	mg/l	J	FD
		Trichloroethene	0.0502	mg/l	J	FD
DUP-7	SW8260B	1,1,2-Trichloroethane	<0.0025	mg/l	UJ	L
		1,2,3-Trichloropropane	<0.0042	mg/l	UJ	L
		1,2,4-Trimethylbenzene	<0.0041	mg/l	UJ	L
		1,3,5-Trimethylbenzene	<0.0028	mg/l	UJ	L
		4-Chlorotoluene	<0.0028	mg/l	UJ	L
		Bromobenzene	<0.0027	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00474	mg/l	J	DL
		Trichloroethene	1.1	mg/l	J	L
DUP-8	SW8260B	1,1,2-Trichloroethane	0.00108	mg/l	J	L
		1,2,3-Trichloropropane	<0.00084	mg/l	UJ	L
		1,2,4-Trimethylbenzene	<0.00082	mg/l	UJ	L
		1,3,5-Trimethylbenzene	<0.00056	mg/l	UJ	L
		4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
		Chloroform	0.000768	mg/l	J	DL
DUP-9	SW8260B	cis-1,2-Dichloroethene	0.00267	mg/l	J	DL
DUP-10	SW8260B	cis-1,2-Dichloroethene	0.00266	mg/l	J	DL
IG1-MW-1	SW8260B	1,1-Dichloroethane	0.000868	mg/l	J	DL
		Bromomethane	<0.00098	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.196	mg/l	J	L
	SW 9060	TOC	0.799	mg/l	J	DL
IG1-MW-2	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
IG1-MW-4	SW8260B	Chloroform	0.000746	mg/l	J	DL
		Vinyl chloride	0.000569	mg/l	J	DL
IG1-MW-5	SW8260B	cis-1,2-Dichloroethene	0.00469	mg/l	J	DL
IG1-MW6 B1	SW 9060	TOC	0.767	mg/l	J	DL
IG1-MW6 B2	SW8260B	Vinyl chloride	0.00334	mg/l	J	DL
IG1-MW-7	RSK SOP-175	Methane	0.000545	mg/l	J	DL
	SW8260B	1,1,2-Trichloroethane	<0.0025	mg/l	UJ	L
		1,2,3-Trichloropropane	<0.0042	mg/l	UJ	L
		1,2,4-Trimethylbenzene	<0.0041	mg/l	UJ	L
		1,3,5-Trimethylbenzene	<0.0028	mg/l	UJ	L
		4-Chlorotoluene	<0.0028	mg/l	UJ	L
		Bromobenzene	<0.0027	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00495	mg/l	J	DL
		Trichloroethene	1.21	mg/l	J	L
	SW 9060	TOC	0.474	mg/l	J	DL
IG2-MW-3	RSK SOP-175	Methane	0.541	mg/l	J	L
	SW8260B	Bromobenzene	<0.00054	mg/l	UJ	L
		Chloroform	0.00073	mg/l	J	DL
IG2-MW-4	SW 9060	TOC	0.873	mg/l	J	DL

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
IG4-MW-1	SW8260B	1,1,2-Trichloroethane	<0.0025	mg/l	UJ	L
		1,2,3-Trichloropropane	<0.0042	mg/l	UJ	L
		1,2,4-Trimethylbenzene	<0.0041	mg/l	UJ	L
		1,3,5-Trimethylbenzene	<0.0028	mg/l	UJ	L
		4-Chlorotoluene	<0.0028	mg/l	UJ	L
		Bromobenzene	<0.0027	mg/l	UJ	L
IG4-MW-2	RSK SOP-175	Methane	0.000513	mg/l	J	DL
	SW8260B	cis-1,2-Dichloroethene	0.00275	mg/l	J	DL
IG4-MW-3	SW8260B	cis-1,2-Dichloroethene	0.00296	mg/l	J	DL
	SW 9060	TOC	0.668	mg/l	J	DL
MW-2A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-4A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-6A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-6B	RSK SOP-175	Methane	0.00374	mg/l	J	L
	SW8260B	1,1-Dichloroethane	0.000647	mg/l	J	DL
MW-7A	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-8A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-9A	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-10A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-12A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-13A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-12B	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-14A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
		o-Xylene	0.000901	mg/l	J	DL
MW-17B	SW8260B	1,1-Dichloroethane	0.000526	mg/l	J	DL
MW-18A	SW8260B	1,2-Dichlorobenzene	0.000618	mg/l	J	DL
MW-19A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-21A	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-21B	SW8260B	1,1,2-Trichloroethane	0.000625	mg/l	J	DL
		1,2-Dichloroethane	0.000831	mg/l	J	DL
MW-23C	SW8260B	4-Isopropyltoluene	0.000952	mg/l	J	DL
		Vinyl chloride	0.000596	mg/l	J	DL
MW-100B	SW8260B	cis-1,2-Dichloroethene	0.00486	mg/l	J	FD
MW-109A	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-109B	RSK SOP-175	Methane	0.000613	mg/l	J	DL
MW-111A	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.000548	mg/l	J	DL
		Trichloroethene	0.00092	mg/l	J	DL

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-112B2	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L
MW-113B	SW8260B	1,1-Dichloroethene	0.000852	mg/l	J	DL
		cis-1,2-Dichloroethene	0.0113	mg/l	J	FD
		Trichloroethene	0.0133	mg/l	J	FD
MW-117B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-118B	SW8260B	Trichloroethene	0.0025	mg/l	U	RB
MW-124B	SW8260B	Toluene	0.000706	mg/l	J	DL
MW-125B	SW 9060	TOC	0.517	mg/l	J	DL
MW-131B	SW8260B	Bromobenzene	<0.00054	mg/l	UJ	L
MW-134B	SW8260B	Trichloroethene	0.000901	mg/l	J	DL
MW-141B	RSK SOP-175	Methane	0.00067	mg/l	J	DL
MW-142B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
PLANTPROD2	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
PRODUCTION	SW8260B	Benzene	0.000823	mg/l	J	DL
		Ethylbenzene	0.000599	mg/l	J	DL
		Toluene	0.000916	mg/l	J	DL
PSRW-1	SW8260B	Trichloroethene	0.000985	mg/l	J	DL
VFW-MW-1	SW8260B	4-Chlorotoluene	<0.00056	mg/l	UJ	L
		Bromobenzene	<0.00054	mg/l	UJ	L

Notes:
mg/L = milligrams per liter
TOC = total organic carbon

Qualifier Definitions:
U = The analyte was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Bias and Reason Code Definitions:
L = Bias in the sample result is likely to be low.
DL = The analyte concentration is between the detection limit and the limit of quantification.
FD = High RPD between parent sample and field duplicate results.
RB = Qualified because the analyte was detected in an associated equipment blank.

APPENDIX A

NELAP CERTIFICATIONS – TestAmerica Penascola, TestAmerica Houston

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

TestAmerica Laboratories, Inc. - Houston

6310 Rothway Drive
Houston, TX 77040-5056

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Executive Director Texas Commission on Environmental Quality

Certificate Number: T104704223-15-16
Effective Date: 7/7/2015
Expiration Date: 10/31/2015

amec
foster
wheeler

DATA USABILITY SUMMARY

Former El Campo Aluminum Facility

El Campo, Texas

Samples Collected May 13 through June 11, 2015

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
7376 SW Durham Road
Portland, Oregon 97224
(503) 639-3400

July 2015

Project No. 0126200001.03.010

TABLE OF CONTENTS

TABLES

APPENDIX

ACRONYMS

Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
CLP	Contract Laboratory Program
COC	chemical of concern
DUS	data usability summary
EPA	United States Environmental Protection Agency
ER	exception report
GC/MS	gas chromatography-mass spectrometry
ID	identification
LCS	laboratory control sample
LRC	laboratory review checklist
mg/L	milligrams per liter
MQL	method quantitation limit
MS	matrix spike
MSD	matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SDL	sample detection limit
SM	standard method
SOP	standard operating procedure
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
TestAmerica	TestAmerica, Inc.
TOC	total organic carbon
TRRP	Texas Risk Reduction Program
VOC	volatile organic compound

DATA USABILITY SUMMARY
Former El Campo Aluminum Facility
El Campo, Texas

1.0 DATA USABILITY SUMMARY

Amec Foster Wheeler Environmental & Infrastructure, Inc. (Amec Foster Wheeler) reviewed five data packages from TestAmerica Laboratories, Inc. (TestAmerica) for the analysis of groundwater samples collected May 13 through June 11, 2015 at the former El Campo Aluminum Facility in El Campo, Texas. Data were reviewed for conformance to the requirements of the guidance document *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. Amec Foster Wheeler certifies that at the time the laboratory data were generated for the project, TestAmerica Pensacola and TestAmerica Houston were National Environmental Laboratory Accreditation Program (NELAP) - accredited under the Texas Laboratory Accreditation Program for the matrices, analytes, and methods of analysis requested on the chain-of-custody documentation, except analyte 1,3,5-trimethylbenzene, for which no NELAP certification is available. A copy of TestAmerica's NELAP certificates applicable to the period during which the laboratory generated the data in this report are included in Attachment 1 of this Data Usability Summary (DUS).

1.1 INTENDED USE OF DATA

To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the affected property.

Analyses requested included:

- SW 846 8260B - Volatile Organic Compounds (VOCs) by Gas Chromatography Mass Spectrometry (GC/MS),
- SW 846 9060 - Total Organic Carbon (TOC),
- Standard Method (SM) 2540C - Total Dissolved Solids (TDS), and
- RSK-175 - Methane by GC Headspace Equilibrium.

2.0 INTRODUCTION

Amec Foster Wheeler collected 84 aqueous samples, including three field duplicates, 18 equipment blanks, and three trip blanks, between May 13 and Jun 11, 2015 from the Former El Campo Aluminum Facility, located in El Campo, Texas. Amec Foster Wheeler submitted these samples to TestAmerica, located in Austin, Texas, where they were assigned to sample delivery groups (SDGs) J111635-1, J111782-1, J111962-1, J112809-1, and J-113229-1. The samples were subcontracted to TestAmerica in Pensacola, Florida, where they were analyzed for VOCs by United States Environmental Protection Agency (EPA) Method 8260B, and TestAmerica in Houston, Texas, where they were analyzed for TDS by SM 240C, TOC by EPA Method 9060, and Methane by Standard Operating Procedure (SOP) RSK-175 A list of these samples by field sample identification (ID), and TestAmerica sample ID is presented in Table 1.

3.0 Data Validation Methodology

Amec Foster Wheeler performed Level II validation on these samples. This data validation has been performed in general accordance with:

- EPA, 2014a. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.
- EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.
- TCEQ, 2010. Texas Commission on Environmental Quality (TCEQ) Review and Reporting of COC Concentration Data under Texas Risk Reduction Program (TRRP), RG-366/TRRP-13.

The CLP guidelines were written specifically for the CLP, and have been modified for the purposes of this data review where they differ from method-specific quality control (QC) requirements.

The following laboratory submittals and field data were examined:

- the reportable data,
- the laboratory review checklists (LRCs) and associated exception reports (ERs), and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting QC analyses were summarized on the LRCs and ERs, and in the case narratives, all of which were included in this review.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness
- Chain of custody compliance
- Preservation and holding time compliance
- Presence or absence of laboratory contamination as demonstrated by method blanks
- Accuracy and precision as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples;
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates or MS/MS duplicate (MSD)
- Sampling and analytical precision as RPD of analyte concentration between field duplicates
- Assessment of field contamination as demonstrated by equipment, and trip blanks
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

4.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

4.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte-free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany. LCS recovery is an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix.

4.2 MS RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

4.3 SURROGATE SPIKE RECOVERIES

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process.

4.4 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Trip blanks are vials of analyte free water that accompany sample bottles shipped to the field and back to the laboratory with field samples. Trip blanks assess contamination attributed to shipping and handling procedures, as well as contamination from containers. Target analytes should not be found in trip blanks.

Laboratory blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in associated samples less than five times the concentration detected in the blank will be U qualified as being not detected.

4.5 LABORATORY DUPLICATES

Laboratory and field duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

5.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

6.0 DEFINITIONS OF BIAS CODES AND REASON CODES THAT MAY BE ADDED DURING DATA VALIDATION

H	Bias in the sample result is likely to be high.
L	Bias in the sample result is likely to be low.
DL	The analyte concentration is between the sample detection limit (SDL) and the method quantitation limit (MQL). The result is an estimated concentration.
HT	The sample was analyzed outside of the method-specified hold time.

7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described Sections 7.1 through 8.0

Non-detected results are reported as less than the value of the sample detection limit SDL as defined by the TRRP rule.

7.1 SAMPLE COLLECTION, PRESERVATION, AND RECEIPT

Samples were properly preserved in the field according to method specifications. The samples were received at the laboratory under proper chain of custody, intact, properly preserved, and at temperatures less than the EPA-recommended maximum of 6 degrees Celsius, with the following exceptions:

- Upon receipt of samples from SDG J111635-1, the laboratory reported that six vials of sample 1G1 MW-3; one of three vials of sample MW-114b; and two of three vials of samples MW-110b, MW-124b, and MW-119b contained headspace greater than the EPA-recommended maximum of one quarter inch. Data limitations are summarized below.
  - VOC analysis of sample 1G1 MW-3 was cancelled. An additional sample was submitted in SDG J111782-1 for VOC analysis. Methane analysis of the original sample was not cancelled, and Amec Foster Wheeler J qualified the detected methane result from this sample because of potential low analytical bias. (J-L)
  - VOC analysis of the remaining samples was undiluted, and methane analysis was not requested. In validating this data, Amec Foster Wheeler has made the assumption that the lab did not use the vials containing headspace in VOC analysis. Data usability is not adversely affected.
- One vial of samples 1G2-MW1 and EQBK5-19-15/TB from SDG J111782-1 was received by the lab with headspace greater than the EPA-recommended maximum of one quarter inch. In validating this data, Amec Foster Wheeler has made the assumption that the lab did not use the vial containing headspace in VOC or methane analysis. Data usability is not adversely affected.
- One sample vial from each of samples IG4-MW-1 and MW135B from SDG J111962-1 was received by the lab with headspace greater than the EPA-recommended maximum of one quarter inch. Additionally, one vial from sample IG1-RW-4 arrived broken. Amec Foster Wheeler has made the assumption that the lab did not use the vials containing headspace in VOC or methane analysis, and the lab stated in their report that there was sufficient

volume of sample IG1-RW-4 remaining in the unbroken containers to perform requested analyses.

- Equipment blank EQBK-BJG was submitted to the laboratory in SDG J113229-1, but was not listed on the chain of custody. The laboratory analyzed the sample for VOCs.

7.2 VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B

The VOC results generated by TestAmerica may be considered usable with the limitations described in sections 8.2.1 through 8.2.7.

7.2.1 Holding Times

All samples were analyzed for VOC within the EPA-recommended maximum holding time of 14 days from sample collection for preserved samples and 7 days for unpreserved samples, with the following exceptions:

- VOC analysis of sample IG1-MW-2 occurred 15 days after sample collection. Amec Foster Wheeler J qualified the detected and UJ qualified the nondetected VOC results from this sample because of the missed analytical hold time. (J/UJ-HT)
- Sample MW-141b was initially analyzed at a 1:20 dilution within hold time, but no analytes were detected. The lab re-analyzed the sample, undiluted, outside of hold time, and reported both sets of results. Amec Foster Wheeler chose to validate the results from the undiluted sample because there were analyte detections at concentrations below the detection levels of the diluted analysis. Amec Foster Wheeler J qualified the detected and UJ qualified the nondetected VOC results from the undiluted analysis because of the missed analytical hold time. (J/UJ-HT)

7.2.2 Initial and Continuing Calibration Verification

According to the LRCs, initial calibration and continuing calibration data met SW-846 method requirements for VOC analyses. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for VOC analyses.

7.2.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks, equipment blanks, and trip blanks, with the following exception:

- Methylene chloride was detected at a concentration of 0.003348 milligrams per liter (mg/L) in a laboratory blank from SDG J111782-1. The blank was associated with a trip blank and data usability is not adversely affected.

7.2.4 Internal Standards and Surrogate Recoveries

According to the LRCs, internal standard data met SW-846 method requirements for VOC analyses and surrogate recoveries were within laboratory-specified limits.

7.2.5 Laboratory Control Sample Accuracy

LCS recoveries were within the more stringent of either the 60 to 140% TCEQ guidance limits or laboratory-specified limits. Exceptions are noted below.

- Bromomethane recovery was low at 55% and tert-butylbenzene recovery was high at 126% in the LCS associated with the analysis of samples DUP-1, IG1-RW-4 post carbon, MW-126b, MW-135b, MW-136b, MW137b, and MW-140b. Data limitations are summarized below.
    - Amec Foster Wheeler UJ qualified the nondetected bromomethane results from these samples because of potential low analytical bias. (J/UJ-L)
    - Tert-butylbenzene was not detected in these samples and data usability is not adversely affected by the potential high analytical bias.
- Bromomethane recovery was low at 57% in the LCS associated with the analysis of samples MW-108b, MW-113b, MW-120b, and MW-141b. Amec Foster Wheeler UJ qualified the nondetected bromomethane results from these samples because of potential low analytical bias. (UJ-L)
- Bromomethane recovery was low at 59% in the LCS associated with the analysis of samples IG1-MW-5, IG1-MW-6B1, IG1-MW-7, IG1-RW-4, IG4-MW-3, MW-127B, MW-128B, MW-131B, MW-132B, and MW-133B. Amec Foster Wheeler UJ qualified the nondetected bromomethane results from these samples because of potential low analytical bias. (UJ-L)
- Bromomethane recovery was low at 58% in the LCS associated with the analysis of samples DUP-3, IG1-MW-6B3, and MW-109b. Amec Foster Wheeler UJ qualified the nondetected bromomethane results from these samples because of potential low analytical bias. (UJL)

7.2.6 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples MW-108b, MW-114b, MW-119b, MW-125b, MW-127b, and MW-142b. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima. When laboratory limits were less stringent than TCEQ guidance, recoveries were within TCEQ guidance limits of 60 to 140% recovery and RPDs were less than the TCEQ-specified maximum of 40%. Exceptions are noted below.

- Bromomethane recovery was low at 53% in the MS performed on sample MW-108b. Amec Foster Wheeler UJ qualified the nondetected bromomethane result from this sample because of potential low analytical bias. (UJ-L)
- Hexachlorobutadiene recovery was low at 58% in the MSD performed on sample MW-127b. Amec Foster Wheeler UJ qualified the nondetected hexachlorobutadiene result from this sample because of potential low analytical bias. (UJ-L)
- RPDs were high for 1,1,1,2-tetrachloroethane (33%) , 1,1,1-trichloroethane (31%), 1,1,2,2-tetrachloroethane (33%), 1,1,2-trichloroethane (32%), 1,1-dichloroethane (33%), 1,1-dichloroethene (39%), 1,1-dichloropropene (32%), 1,2-dibromo-3-chloropropane (33%), 1,2-dibromoethane (31%), 1,2-dichloropropane (32%) , 1,3-dichloropropane (32%), 2,2-dichloropropane (32%), 2-chlorotoluene (31%), benzene (31%), bromobenzene (31%), bromodichloromethane (31%), bromoform (34%), bromomethane (46%), chlorodibromomethane (33%), cis-1,2-dichloroethene (32%), dibromomethane (32%), methylene chloride (33%), tetrachloroethene (33%), toluene (36%), trans-1,2-dichloroethene (31%), and trichloroethene (32%) in the MS/MSD performed on sample MW-108b. These analytes were not detected in the unspiked native sample and data usability is not adversely affected by the potential analytical imprecision.

7.2.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J-DL)

The laboratory reported two sets of VOC results for sample MW-141b, at 1:20 dilution and 1:1 dilution. Amec Foster Wheeler selected the results from undiluted analysis because there were positive analyte detections in this set of results. The diluted results were not validated.

Sample MW-128b and its field duplicate, DUP-2, were originally collected on May 20, 2015 and submitted to the laboratory with samples from SDG J111962-1. Results from these samples were not consistent with expected values. Amec Foster Wheeler collected a new sample from this location on May 11, 2015 and submitted it to the laboratory with samples from SDG J113229-1. Results from this sample were used, and the results from the parent and duplicate sample collected on May 20 were not used or validated.

7.3 GENERAL CHEMISTRY

Methane, TDS, and TOC results generated by TestAmerica may be considered usable within the limitations described in Sections 7.3.1 through 7.3.6.

7.3.1 Holding times

All samples were analyzed within the method-specified holding times of 14 days for methane, 7 days for TDS, and 28 days for TOC, with the following exception:

- Samples MW-113b and MW-141b were analyzed for methane 13 days after holding time expired. Amec Foster Wheeler J qualified the detected methane result from sample MW-141b and UJ qualified the nondetected methane result from sample MW-113b because of the missed analytical hold times. (J/UJ-HT)

7.3.2 Initial and Continuing Calibration

According to the LRCs, initial calibration and continuing calibration data met method requirements for general chemistry analyses. The LRCs also document satisfactory instrument performance and calibrations.

7.3.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks and target analytes were not detected in the equipment and trip blanks.

7.3.4 Laboratory Control Sample Accuracy

LCS recoveries were within laboratory-specified limits of 70 to 130% for methane, 90 to 110% for TDS, and 85 to 115% for TOC.

7.3.5 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples IG4-MW-2, IG1-RW-4 post carbon, and MW-6b for methane, and samples IG1-RW-4 post carbon, IG2-MW-2, IG4-MW-1, and MW10b for TOC. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima.

7.3.6 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J DL)

8.0 FIELD PRECISION

Amec Foster Wheeler collected a field duplicates of samples MW-126b (DUP-1) and MW-109b (DUP-3). RPDs between field duplicate results were less than the TCEQ-recommended maximum of 30% for concentrations greater than five times the SDL, or the difference between concentrations was less than two times the SDL for analytes with concentrations less than five times the SDL. Detected results in parent samples and field duplicates are shown in Table 2.

9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler reviewed 3,312 data records for target analytes in the field samples during this data validation. Of these, Amec Foster Wheeler J or UJ qualified 177 records (5.3%) as estimated because of potential low analytical bias from excess headspace, low LCS recovery, and low MS and/or MSD recovery; and quantitative uncertainty because of analysis occurring past hold time and results between the SDL and the MQL. All of the data should be considered fully usable with the addition of the qualifiers presented in this report.

Definitions of data qualifiers added during data validation are summarized in Section 5.0 and summaries of specific qualifiers added to each affected sample as a result of the validation findings are presented in Table 3.

REFERENCES

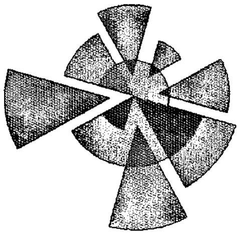
EPA, 2014a. EPA Contract Laboratory Program CLP National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.

EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.

TCEQ, 2010. TCEQ Review and Reporting of COC Concentration Data under TRRP, RG-366/TRRP-13.

LIMITATIONS

This report was prepared exclusively for the Former El Campo Aluminum Facility in El Campo, Texas by Amec Foster Wheeler Environment & Infrastructure, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Usability Summary is intended to be used by for the Former El Campo Aluminum Facility only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.



TABLES

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
1G1 MW-3	5/13/2015	600-111635-1	
MW-10b	5/13/2015	600-111635-2	MS/MSD TOC
MW-100b	5/13/2015	600-111635-3	
MW-101b	5/13/2015	600-111635-4	
EQBK 5-13-15/cey	5/13/2015	600-111635-5	Equipment Blank
MW-114b	5/14/2015	600-111635-6	MS/MSD VOCs
MW-118b	5/14/2015	600-111635-7	
EQBK 5-14-15/TB	5/14/2015	600-111635-8	Equipment Blank
MW-102b	5/14/2015	600-111635-9	
MW-110b	5/14/2015	600-111635-10	
MW-112b	5/14/2015	600-111635-11	
MW-112b2	5/14/2015	600-111635-12	
EQBK 5-14-15/cey	5/14/2015	600-111635-13	Equipment Blank
MW-119b	5/15/2015	600-111635-14	MS/MSD VOCs
MW-116b	5/15/2015	600-111635-15	
MW-124b	5/15/2015	600-111635-16	
EQBK 5-15-15/TB	5/15/2015	600-111635-17	Equipment Blank
EQBK 5-15-15/cey	5/15/2015	600-111635-18	Equipment Blank
Trip Blank	5/15/2015	600-111635-19	Trip Blank
IG2 MW-2	5/18/2015	600-111782-1	MS/MSD TOC
IG1 MW-1	5/18/2015	600-111782-2	
IG2 MW-1	5/18/2015	600-111782-3	
MW-6B	5/18/2015	600-111782-4	MS/MSD Methane
MW-5B	5/18/2015	600-111782-5	
EQBK-5-18-15/TB	5/18/2015	600-111782-6	Equipment Blank
EQBK-5-18-15/CEY	5/18/2015	600-111782-7	Equipment Blank
IG1 MW-3	5/19/2015	600-111782-8	
IG1 MW-2	5/19/2015	600-111782-9	
MW-125B	5/19/2015	600-111782-10	MS/MSD VOCs
MW-109B	5/19/2015	600-111782-11	
MW-21B	5/19/2015	600-111782-12	
IG2 MW-3	5/19/2015	600-111782-13	
MW-7B	5/19/2015	600-111782-14	
IG2 MW-4	5/19/2015	600-111782-15	
EQBK-5-19-15/TB	5/19/2015	600-111782-16	Equipment Blank
EQBK-5-19-15/CEY	5/19/2015	600-111782-17	Equipment Blank
Trip Blank	5/15/2015	600-111782-18	Trip Blank
MW- 136b	5/20/2015	600-111962-1	
MW- 135b	5/20/2015	600-111962-2	
MW-126b	5/20/2015	600-111962-3	
MW- 140b	5/20/2015	600-111962-4	
MW- 128b	5/20/2015	600-111962-5	Results not used, not validated.
MW- 137b	5/20/2015	600-111962-6	
DUP-1	5/20/2015	600-111962-7	Field Duplicate of MW-126b
DUP-2	5/20/2015	600-111962-8	Results not used, not validated.
IG1-RW-4 post carbon	5/20/2015	600-111962-9	MS/MSD Methane, TOC
EQBK 5-20-15/TB	5/20/2015	600-111962-10	Equipment Blank
EQBK 5-20-15/cey	5/20/2015	600-111962-11	Equipment Blank
IG-4 MW-1	5/21/2015	600-111962-12	
MW-111B	5/21/2015	600-111962-13	
EQBK-5-21-15/TB	5/21/2015	600-111962-14	Equipment Blank
Trip Blank	5/15/2015	600-111962-15	Trip Blank

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
MW-108B	6/2/2015	600-112809-1	MS/MSD VOCs
MW-120B	6/2/2015	600-112809-2	
MW-113B	6/2/2015	600-112809-3	
MW-141B	6/2/2015	600-112809-4	
Trip Blank	6/2/2015	600-112809-5	Trip Blank
EQBK-6-2-15/TB/CEY	6/2/2015	600-112809-6	Equipment Blank
IG4-MW-1	6/9/2015	600-113229-1	MS/MSD TOC
MW-142B	6/9/2015	600-113229-2	MS/MSD VOCs
IG4-MW-3	6/9/2015	600-113229-3	
MW-143B	6/9/2015	600-113229-4	
IG4-MW-2	6/9/2015	600-113229-5	MS/MSD Methane
MW-134B	6/9/2015	600-113229-6	
IG1-MW-4	6/9/2015	600-113229-7	
EQBK-BJG	6/9/2015	600-113229-8	Equipment Blank
EQBK-KRB	6/9/2015	600-113229-9	Equipment Blank
MW-127B	6/10/2015	600-113229-10	MS/MSD VOCs
IG1-MW-5	6/10/2015	600-113229-11	
MW-132B	6/10/2015	600-113229-12	
IG1-MW-7	6/10/2015	600-113229-13	
MW-133B	6/10/2015	600-113229-14	
IG1-MW-6B1	6/10/2015	600-113229-15	
MW-131B	6/10/2015	600-113229-16	
IG1-MW-6B3	6/10/2015	600-113229-17	
EQBK-SCT	6/10/2015	600-113229-18	Equipment Blank
IG1-RW-4	6/10/2015	600-113229-19	
MW-128B	6/11/2015	600-113229-20	
MW-109B	6/11/2015	600-113229-21	
EQBK-SCT	6/10/2015	600-113229-22	Equipment Blank
DUP-3	6/11/2015	600-113229-23	Field Duplicate of MW-109B
Trip Blank	6/2/2015	600-113229-24	Trip Blank
Trip Blank	6/2/2015	600-113229-25	Trip Blank
EQBK-BJG	6/9/2015	600-113229-26	Equipment Blank

Notes:

MS/MSD = Matrix Spike/Matrix Spike Duplicate
TOC = Total Organic Carbon
VOCs = Volatile Organic Compounds

TABLE 2
Field Duplicate Detections
Former El Campo Aluminum Facility
El Campo, Texas

Method	Analyte	Reporting Limit (mg/L)	Primary Sample (mg/L)	Field Duplicate (mg/L)	Relative Percent Difference	Notes
Samples MW-126b and DUP-1						
8260	cis-1,2-Dichloroethene	0.001	0.000660 J	0.000676 J	2%	
	Trichloroethene	0.001	0.0243	0.0253	4%	
Samples MW-109b and DUP-3						
8260	cis-1,2-Dichloroethene	0.005	0.00731	0.00734	0.4%	
	Trichloroethene	0.005	0.674	0.6870	2%	

Notes:

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
mg/L = milligrams per liter

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
DUP-1	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.000676	mg/l	J	DL
DUP-3	SW8260B	Bromomethane	<0.0049	mg/l	UJ	L
IG1 MW-1	9060	TOC	0.938	mg/l	J	DL
IG1 MW-2	SW8260B	1,1-Dichloroethene	0.00130	mg/l	J	HT
		cis-1,2-Dichloroethene	0.0144	mg/l	J	HT
		trans-1,2-Dichloroethene	0.00227	mg/l	J	HT
		Vinyl Chloride	0.0161	mg/l	J	HT
		1,1,1,2-Tetrachloroethane	<0.000520	mg/l	UJ	HT
		1,2,3-Trichlorobenzene	<0.000700	mg/l	UJ	HT
		1,2,3-Trichloropropane	<0.000840	mg/l	UJ	HT
		1,2,4-Trichlorobenzene	<0.000820	mg/l	UJ	HT
		1,2,4-Trimethylbenzene	<0.000820	mg/l	UJ	HT
		1,2-Dibromo-3-chloroprop	<0.00150	mg/l	UJ	HT
		1,3,5-Trimethylbenzene	<0.000560	mg/l	UJ	HT
		1,3-Dichlorobenzene	<0.000540	mg/l	UJ	HT
		1,4-Dichlorobenzene	<0.000640	mg/l	UJ	HT
		2-Chlorotoluene	<0.000570	mg/l	UJ	HT
		4-Chlorotoluene	<0.000560	mg/l	UJ	HT
		Benzene	<0.000380	mg/l	UJ	HT
		Bromobenzene	<0.000540	mg/l	UJ	HT
		Bromochloromethane	<0.000520	mg/l	UJ	HT
		Bromoform	<0.000710	mg/l	UJ	HT
		Bromomethane	<0.000980	mg/l	UJ	HT
		Chloroethane	<0.000760	mg/l	UJ	HT
		Chloroform	<0.000600	mg/l	UJ	HT
		Chloromethane	<0.000830	mg/l	UJ	HT
		Dibromomethane	<0.000590	mg/l	UJ	HT
		Dichlorodifluoromethane	<0.000850	mg/l	UJ	HT
		Hexachlorobutadiene	<0.000900	mg/l	UJ	HT
		Isopropylbenzene	<0.000530	mg/l	UJ	HT
		Methylene chloride	<0.00300	mg/l	UJ	HT
		m-Xylene & p-Xylene	<0.00160	mg/l	UJ	HT
		Naphthalene	<0.00100	mg/l	UJ	HT
		n-Butylbenzene	<0.000760	mg/l	UJ	HT
		n-Propylbenzene	<0.000690	mg/l	UJ	HT
		o-Xylene	<0.000600	mg/l	UJ	HT
		p-Isopropyltoluene	<0.000710	mg/l	UJ	HT
		sec-Butylbenzene	<0.000700	mg/l	UJ	HT
		Styrene	<0.00100	mg/l	UJ	HT
		tert-Butylbenzene	<0.000630	mg/l	UJ	HT
		Tetrachloroethene	<0.000580	mg/l	UJ	HT
		Toluene	<0.000700	mg/l	UJ	HT
		Trichlorofluoromethane	<0.000520	mg/l	UJ	HT
		Remaining VOCs	<0.000500	mg/l	UJ	HT
IG1 MW-3	SW8260B	1,1-Dichloroethene	0.000682	mg/l	J	DL
	RSK-175	Methane	26.2	mg/l	J	L

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
IG1-MW-5	9060	TOC	0.765	mg/l	J	DL
	SW8260B	Bromomethane	<0.0049	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00405	mg/l	J	DL
IG1-MW-6B1	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
IG1-MW-6B3	9060	TOC	0.936	mg/l	J	DL
	SW8260B	Bromomethane	<0.0049	mg/l	UJ	L
IG1-MW-7	9060	TOC	0.817	mg/l	J	DL
	SW8260B	Bromomethane	<0.0049	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00271	mg/l	J	DL
IG1-RW-4	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00086	mg/l	J	DL
IG1-RW-4 post carbon	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
IG2 MW-1	9060	TOC	0.853	mg/l	J	DL
IG2 MW-3	9060	TOC	0.656	mg/l	J	DL
	SW8260B	1,1,2-Trichloroethane	0.000953	mg/l	J	DL
		Chloroform	0.000846	mg/l	J	DL
IG2 MW-4	9060	TOC	0.75	mg/l	J	DL
	SW8260B	1,1,2-Trichloroethane	0.000795	mg/l	J	DL
		Chloroform	0.00065	mg/l	J	DL
IG4-MW-1	9060	TOC	0.606	mg/l	J	DL
	SW8260B	Vinyl chloride	0.00267	mg/l	J	DL
IG4-MW-2	9060	TOC	0.585	mg/l	J	DL
	SW8260B	1,1-Dichloroethene	0.00498	mg/l	J	DL
		cis-1,2-Dichloroethene	0.00338	mg/l	J	DL
IG4-MW-3	9060	TOC	0.868	mg/l	J	DL
	SW8260B	Bromomethane	<0.00196	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00133	mg/l	J	DL
MW-6B	9060	TOC	0.826	mg/l	J	DL
MW-7B	9060	TOC	0.564	mg/l	J	DL
	RSK-175	Methane	0.000866	mg/l	J	DL
MW-10b	9060	TOC	0.693	mg/l	J	DL
MW-21B	SW8260B	1,1,2-Trichloroethane	0.000784	mg/l	J	DL
		1,2-Dichloroethane	0.000692	mg/l	J	DL
MW-108B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-109B	SW8260B	Bromomethane	<0.0049	mg/l	UJ	L
	9060	TOC	0.772	mg/l	J	DL
MW-110b	SW8260B	Trichlorofluoromethane	<0.000520	mg/l	J	DL
MW-111B	SW8260B	1,1-Dichloroethene	0.000837	mg/l	J	DL
		cis-1,2-Dichloroethene	0.000718	mg/l	J	DL
MW-113B	RSK-175	Methane	<0.000357	mg/l	UJ	HT
	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-114b	SW8260B	Trichloroethene	0.000950	mg/l	J	DL
MW-120B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-125B	9060	TOC	0.682	mg/l	J	DL
MW-126b	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
		cis-1,2-Dichloroethene	0.00066	mg/l	J	DL
MW-127B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
		Hexachlorobutadiene	<0.0009	mg/l	UJ	L
MW-128B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-131B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-132B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-133B	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW- 135b	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW- 136b	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW- 137b	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW- 140b	SW8260B	Bromomethane	<0.00098	mg/l	UJ	L
MW-141B	RSK-175	Methane	0.00299	mg/l	J	HT
	SW8260B	cis-1,2-Dichloroethene	0.00175	mg/l	J	HT
		Trichloroethene	0.0154	mg/l	J	HT
		1,1,1,2-Tetrachloroethane	<0.000520	mg/l	UJ	HT
		1,2,3-Trichlorobenzene	<0.000700	mg/l	UJ	HT
		1,2,3-Trichloropropane	<0.000840	mg/l	UJ	HT
		1,2,4-Trichlorobenzene	<0.000820	mg/l	UJ	HT
		1,2,4-Trimethylbenzene	<0.000820	mg/l	UJ	HT
		1,2-Dibromo-3-chloroprop	<0.00150	mg/l	UJ	HT
		1,3,5-Trimethylbenzene	<0.000560	mg/l	UJ	HT
		1,3-Dichlorobenzene	<0.000540	mg/l	UJ	HT
		1,4-Dichlorobenzene	<0.000640	mg/l	UJ	HT
		2-Chlorotoluene	<0.000570	mg/l	UJ	HT
		4-Chlorotoluene	<0.000560	mg/l	UJ	HT
		Benzene	<0.000380	mg/l	UJ	HT
		Bromobenzene	<0.000540	mg/l	UJ	HT
		Bromochloromethane	<0.000520	mg/l	UJ	HT
		Bromoform	<0.000710	mg/l	UJ	HT
		Bromomethane	<0.000980	mg/l	UJ	HT, L
		Chloroethane	<0.000760	mg/l	UJ	HT
		Chloroform	<0.000600	mg/l	UJ	HT
		Chloromethane	<0.000830	mg/l	UJ	HT
		Dibromomethane	<0.000590	mg/l	UJ	HT
		Dichlorodifluoromethane	<0.000850	mg/l	UJ	HT
		Hexachlorobutadiene	<0.000900	mg/l	UJ	HT
		Isopropylbenzene	<0.000530	mg/l	UJ	HT
		Methylene chloride	<0.00300	mg/l	UJ	HT
		m-Xylene & p-Xylene	<0.00160	mg/l	UJ	HT
		Naphthalene	<0.00100	mg/l	UJ	HT
		n-Butylbenzene	<0.000760	mg/l	UJ	HT
		n-Propylbenzene	<0.000690	mg/l	UJ	HT
		o-Xylene	<0.000600	mg/l	UJ	HT
		p-Isopropyltoluene	<0.000710	mg/l	UJ	HT
		sec-Butylbenzene	<0.000700	mg/l	UJ	HT
		Styrene	<0.00100	mg/l	UJ	HT
		tert-Butylbenzene	<0.000630	mg/l	UJ	HT
		Tetrachloroethene	<0.000580	mg/l	UJ	HT
		Toluene	<0.000700	mg/l	UJ	HT
		Trichlorofluoromethane	<0.000520	mg/l	UJ	HT
		Remaining VOCs	<0.000500	mg/l	UJ	HT

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration	Qualifiers and Bias/Reason Codes

Notes:

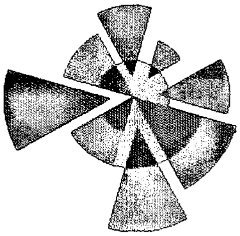
mg/L = milligrams per liter
TOC = total organic carbon
VOCs = Volatile Organic Compounds

Qualifier Definitions:

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Bias and Reason Code Definitions:

L = Bias in the sample result is likely to be low.
DL = The analyte concentration is between the detection limit and the limit of quantification.
HT = Hold time exceedance.



APPENDIX A

NELAP CERTIFICATIONS – TestAmerica Penascola, TestAmerica Houston

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 16, 2014

CERTIFIED MAIL

Ms. Maria Bundy
TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514-7045

Dear Ms. Bundy:

I am writing to congratulate you and the staff of TestAmerica Pensacola. Based on your application and primary NELAP accreditation from the state of Florida, pursuant to authorization from the Executive Director of the Texas Commission on Environmental Quality, the Program Manager of the Quality Assurance Section has issued your laboratory secondary NELAP accreditation according to the attached Fields of Accreditation.

I am enclosing the accreditation certificate and Fields of Accreditation listing. Please review the enclosures for accuracy and completeness. Your laboratory's accreditation is valid for one year, contingent on continued compliance with the requirements of the state of Texas as well as those of your primary accreditation body.

In the meantime, please contact me by telephone at (512) 239–3754 or electronic-mail at frank.jamison@tceq.texas.gov if I can provide any additional information or assistance.

Sincerely,

Frank Jamison
Data and Records Specialist

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

How is our customer service? tceq.texas.gov/customersurvey

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

TestAmerica Pensacola

3355 McLemore Drive
Pensacola, FL 32514-7045

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Executive Director Texas Commission on Environmental Quality

Certificate Number: T104704286-14-7
Effective Date: 10/1/2014
Expiration Date: 9/30/2015

DATA USABILITY SUMMARY

Former El Campo Aluminum Facility

El Campo, Texas

Samples Collected July 28 through August 26, 2015

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
7376 SW Durham Road
Portland, Oregon 97224
(503) 639-3400

November 2015

Project No. 0126200001.03.005

TABLE OF CONTENTS

Page

TABLES

APPENDIX

ACRONYMS

Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
CCV	continuing calibration verification
CLP	Contract Laboratory Program
COC	chemical of concern
DUS	data usability summary
EPA	United States Environmental Protection Agency
ER	exception report
GC/MS	gas chromatography-mass spectrometry
ID	identification
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LRC	laboratory review checklist
mg/L	milligrams per liter
MQL	method quantitation limit
MS	matrix spike
MSD	matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SDL	sample detection limit
SM	standard method
SOP	standard operating procedure
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
TestAmerica	TestAmerica, Inc.
TOC	total organic carbon
TRRP	Texas Risk Reduction Program
VOC	volatile organic compound

DATA USABILITY SUMMARY
Former El Campo Aluminum Facility
El Campo, Texas

1.0 DATA USABILITY SUMMARY

Amec Foster Wheeler Environmental & Infrastructure, Inc. (Amec Foster Wheeler) reviewed five data packages from TestAmerica Laboratories, Inc. (TestAmerica) for the analysis of groundwater samples collected July 28 through August 26, 2015 at the former El Campo Aluminum Facility in El Campo, Texas. Data were reviewed for conformance to the requirements of the guidance document *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. Amec Foster Wheeler certifies that at the time the laboratory data were generated for the project, TestAmerica Pensacola and TestAmerica Houston were National Environmental Laboratory Accreditation Program (NELAP) - accredited under the Texas Laboratory Accreditation Program for the matrices, analytes, and methods of analysis requested on the chain-of-custody documentation, except analyte 1,3,5-trimethylbenzene, for which no NELAP certification is available. A copy of TestAmerica's NELAP certificates applicable to the period during which the laboratory generated the data in this report are included in Appendix A of this Data Usability Summary (DUS).

1.1 INTENDED USE OF DATA

To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the affected property.

Analyses requested included:

- SW 2540C - Total Dissolved Solids (TDS)
- SW 846 8260B - Volatile Organic Compounds (VOCs) by Gas Chromatography Mass Spectrometry (GC/MS),
- SW 846 9060 - Total Organic Carbon (TOC),
- RSK-175 - Methane by GC Headspace Equilibrium.

2.0 INTRODUCTION

Amec Foster Wheeler collected 90 aqueous samples, including 5 field duplicates, 20 equipment blanks, and 4 trip blanks, between July 28 and August 26, 2015 from the Former El Campo Aluminum Facility, located in El Campo, Texas. Amec Foster Wheeler submitted these samples to TestAmerica, located in Houston, Texas, where they were assigned to sample delivery groups (SDGs) J115578-1, J116361-1, J116362-1, J116722-1, and J117081-1. In Houston, the samples were analyzed for TDS by United States Environmental Protection Agency (EPA) Method 2540C, VOCs by EPA Method 8260B, TOC by EPA Method 9060, and/or Methane by Standard Operating Procedure (SOP) RSK-175. Samples from work order J115578-1 were subcontracted to TestAmerica in Pensacola, Florida, where they were analyzed for VOCs by EPA Method 8260B. A list of these samples by field sample identification (ID), and TestAmerica sample ID is presented in Table 1.

3.0 DATA VALIDATION METHODOLOGY

Amec Foster Wheeler performed Level II validation on these samples. This data validation has been performed in general accordance with:

- EPA, 2014a. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.
- EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.
- TCEQ, 2010. Texas Commission on Environmental Quality (TCEQ) Review and Reporting of COC Concentration Data under Texas Risk Reduction Program (TRRP), RG-366/TRRP-13.

The CLP guidelines were written specifically for the CLP, and have been modified for the purposes of this data review where they differ from method-specific quality control (QC) requirements.

The following laboratory submittals and field data were examined:

- the reportable data,
- the laboratory review checklists (LRCs) and associated exception reports (ERs), and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting QC analyses were summarized on the LRCs and ERs, and in the case narratives, all of which were included in this review.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness
- Chain of custody compliance
- Preservation and holding time compliance
- Presence or absence of laboratory contamination as demonstrated by method blanks
- Accuracy and precision as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, LCS/LCS duplicates (LCSD) or MS/MS duplicates (MSD)
- Sampling and analytical precision as RPD of analyte concentration between field duplicates
- Assessment of field contamination as demonstrated by equipment, and trip blanks
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

4.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

4.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte-free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany. LCS recovery is an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix.

4.2 MS RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

4.3 SURROGATE SPIKE RECOVERIES

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process.

4.4 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Trip blanks are vials of analyte free water that accompany sample bottles shipped to the field and back to the laboratory with field samples. Trip blanks assess contamination attributed to shipping and handling procedures, as well as contamination from containers. Target analytes should not be found in trip blanks.

Laboratory blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in associated samples less than five times the concentration detected in the blank will be U qualified as being not detected.

4.5 LABORATORY DUPLICATES

Laboratory and field duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

5.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

U	The analyte was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

6.0 DEFINITIONS OF BIAS CODES AND REASON CODES THAT MAY BE ADDED DURING DATA VALIDATION

H	Bias in the sample result is likely to be high.
L	Bias in the sample result is likely to be low.
DL	The analyte concentration is between the sample detection limit (SDL) and the method quantitation limit (MQL). The result is an estimated concentration.
FD	High RPD between parent sample and field duplicate results. Potential analytical or sampling imprecision.

HD High RPD between laboratories duplicate results. Potential analytical imprecision.

MB The result was qualified as not detected because of a detection in a laboratory blank.

RB The result was qualified as not detected because of a detection in an equipment blank.

TB The result was qualified as not detected because of a detection in a trip blank.

7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described Sections 7.1 through 8.0

Non-detected results are reported as less than the value of the sample detection limit SDL as defined by the TRRP rule.

7.1 SAMPLE COLLECTION, PRESERVATION, AND RECEIPT

Samples were properly preserved in the field according to method specifications. The samples were received at the laboratory under proper chain of custody, intact, properly preserved, and at temperatures less than the EPA-recommended maximum of 6 degrees Celsius, with the following exceptions:

- The laboratory received two vials of IG1-MW-3 with headspace greater than the EPA-recommended maximum of one quarter inch. The lab did not use the vials containing headspace in VOC or methane analysis and data usability is not adversely affected.
- The laboratory received 3 extra vials of sample IG4-MW-1, which were not listed on the chain of custody. The vials were labeled to indicate they were for methane analysis, which was not requested. The laboratory did not perform methane analysis on this sample.
- The laboratory received samples MW-101B, MW-110B, and MW-118B, which were not listed on the chain of custody, with SDG J116362-1. The laboratory analyzed these samples for VOCs.
- The laboratory noted the following discrepancies between the chain of custody and samples received with SDG J116722-1:
  - The laboratory received sample MW-132B, which was not listed on the chain of custody. The laboratory analyzed this sample for VOCs.

  - The laboratory did not receive sample DUP-2, which was listed on the chain of custody, but did receive sample MW 16B DUP 2, which was not listed on the chain of custody. The sample was logged as MW 16B DUP 2, consistent with the label. Amec Foster Wheeler has made the assumption this was the sample referred to as DUP-2 on the chain of custody.
  - The laboratory did not receive sample DUP-4, which was listed on the chain of custody, but did receive sample IG1-MW5-DUP, which was not listed on the chain of custody. The sample was logged as DUP-4, consistent with the chain of custody. Amec Foster Wheeler concurs with the laboratory's assumption that the vials labeled IG1-MW5-DUP are sample DUP-4.
  - The LRC for SDG J1167222-1 states that there were discrepancies between the chain of custody and the container labels for samples IG2-MW-1, IG2-MW-2, and IG2-MW-4. No further information is given and data usability is not adversely affected.

- The laboratory could not analyze sample IG1 MW-4 for TOC or TDS and could not analyze sample DUP-5 for TOC because the samples were submitted in inappropriate containers and/or with improper preservatives for these analyses.

7.2 VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B

The VOC results generated by TestAmerica may be considered usable with the limitations described in sections 7.2.1 through 7.2.7.

7.2.1 Holding Times

All samples were analyzed for VOC within the EPA-recommended maximum holding time of 14 days from sample collection for preserved samples and 7 days for unpreserved samples.

7.2.2 Initial and Continuing Calibration Verification

According to the LRCs, initial calibration and continuing calibration data met SW-846 method requirements for VOC analyses. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for VOC analyses. Exceptions are noted below.

- According to the LRC for SDG J116361-1, the percent difference for dichlorodifluoromethane was low at -42.7% in the continuing calibration verification (CCV) associated with the analysis of samples IG1-MW-3 and MW-10B. Amec Foster Wheeler UJ qualified the nondetected dichlorodifluoromethane results from these samples because of potential low analytical bias. (UJ-L)

- According to the LRC for SDG J116362-1, the percent difference for dichlorodifluoromethane was below the ±35% limit in the CCVs associated with all analytical batches. Dichlorodifluoromethane was not detected in any samples from this SDG, and Amec Foster Wheeler UJ qualified the nondetected dichlorodifluoromethane results from these samples because of potential low analytical bias. (UJ-L)
- According to the LRC for SDG J116362-1, the percent difference for chloroethane was outside the ±35% limits in the CCV associated with the analysis of samples MW-119B, MW-136B, MW-135B, and MW-140B. The LRC does not specify whether the %D was positive or negative. Amec Foster Wheeler UJ qualified the nondetected chloroethane results from these samples because it is not clear whether potential analytical bias is high or low. (UJ-L)
- According to the LRC for SDG J117081-1, the percent difference for trichlorofluoromethane was high at 36.4% in the CCV associated with samples IG1-MW-4, IG4-MW-3, MW-109B, MW-111B, and MW-125B. Trichlorofluoromethane was not detected in these samples and data usability is not adversely affected by the potential high analytical bias.

7.2.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks, equipment blanks, and trip blanks, with the following exceptions:

- Bromomethane (0.001867 milligrams per liter [mg/L]), chloromethane (0.0002517 mg/L) and naphthalene (0.001611 mg/L) were detected in the method blank associated with the analysis of samples MW-101B, MW-102B, MW-108B, MW-110B, MW-116B, MW-118B, MW-120B, MW-134B, and MW-142B from SDG J116362-1. Data limitations are summarized below.
  - Amec Foster Wheeler U qualified the bromomethane results from these samples because the detected results were less than five times the concentration detected in the associated blank. (U-MB)
  - Chloromethane was not detected in sample MW-102B and data usability is not adversely affected by the detection in the associated blank.
  - Amec Foster Wheeler U qualified the chloromethane results from the remaining samples because the detected results were less than five times the concentration detected in the associated blank. (U-MB)

  - Naphthalene was not detected in these samples and data usability is not adversely affected by the detection in the associated blank.

- Bromomethane (0.001979 mg/L) and chloromethane (0.0002264 mg/L) were detected in the method blank associated with the analysis of samples MW-119B, MW-135B, MW-136B, and MW-140B, from SDG J116362-1. Data limitations are summarized below.
  - Amec Foster Wheeler U qualified the bromomethane results from these samples because the detected results were less than five times the concentration detected in the associated blank. (U-MB)
  - Amec Foster Wheeler U qualified the chloromethane results from samples MW-119B, MW-135B, and MW-140B because the detected results were less than five times the concentration detected in the associated blank. (U-MB)
  - Chloromethane was not detected in sample MW-136B and data usability is not adversely affected by the detection in the associated blank.

- Bromodichloromethane (0.00175 mg/L), bromomethane (0.00195 mg/L, 0.00192 mg/L), chloroform (0.0112 mg/L), chloromethane (0.000290 mg/L, 0.000311 mg/L), and dibromochloromethane (0.000154 mg/L) were detected in the equipment blanks associated with the analysis of samples MW-102B, MW-108B, MW-116B, MW-120B, MW-135B, MW-136B, MW-140B, and MW-142B from SDG J116362-1. Data limitations are summarized below.
  - Amec Foster Wheeler U qualified the detected bromomethane results from these samples; the detected chloroform from samples MW-116B and MW-120B; and the detected chloromethane results from samples MW-108B, MW-116B, MW-120B, MW-135B, MW-140B, and MW-142B because the detected results of these analytes were less than five times the detections in the associated equipment blanks. (U-RB)
  - Bromodichloromethane and dibromochloromethane were not detected in these samples; chloroform was not detected in samples MW-102B, MW-108B, MW-135B, MW-136B, MW-140B, and MW-142B; and chloromethane was not detected in samples MW-102B and MW-136B, and data usability is not adversely affected.

- Bromomethane (0.00194 mg/L, 0.00195 mg/L) was detected in the equipment blanks associated with the analysis of samples MW-101B, MW-110B, MW-118B, MW-119B, MW-124B, and MW-134B. Data limitations are summarized below.
  - Bromomethane was not detected in sample MW-124B.

  - Amec Foster Wheeler U qualified the detected bromomethane results in the remaining samples because the detected results were less than five times the concentration detected in the associated blank. (U-RB)

- Bromomethane (0.00195 mg/L) and chloromethane (0.000323 mg/L) were detected in the trip blank associated with the analysis of samples from SDG J116362-1. Data limitations are summarized below.
  - Bromomethane was not detected in samples MW-100B, MW-112B, MW-112B2, MW-114B, MW-124B, and MW-127B, and data usability is not adversely affected by the detection in the associated blank.
  - Amec Foster Wheeler U qualified the detected bromomethane results from the remaining samples because the detected results were less than five times the concentration detected in the associated blank. (U-TB)
  - Chloromethane was not detected in samples MW-100B, MW-112B, MW-112B2, MW-124B, MW-127B, MW-102B, and MW-136B, and data usability is not adversely affected by the detection in the associated blank.
  - Amec Foster Wheeler U qualified the detected chloromethane results from the remaining samples because the detected results were less than five times the concentration detected in the associated blank. (U-TB)

- Bromodichloromethane (0.00219 mg/L) and chloroform (0.0155 mg/L) were detected in the equipment blank associated with the analysis of samples IG1-MW-1, IG2-MW-1, IG2-MW-2, IG2-MW-4, IG4-RW-1, DUP-2, DUP-3, MW-126B, MW-128B, and MW-5B from SDG J116722-1. Data limitations are summarized below.
  - Amec Foster Wheeler U qualified the detected chloroform results from samples IG2-MW-2, IG2-MW-4, and MW-5B because the detected results were less than five times the concentration detected in the associated equipment blank. (U-RB)
  - Chloroform was not detected in the remaining samples and bromodichloromethane was not detected in any of these samples, and data usability is not adversely affected by the detection in the associated equipment blank.

- Chloromethane (0.000803 mg/L) and trichloroethene (TCE, 0.000353 mg/L) were detected in the equipment blank associated with the analysis of samples IG1-MW-4, IG1-RW-1, IG2-MW-3, IG4-MW-2, IG4-MW-3, MW-109B, MW-109B, MW-111B, MW-113B, and MW-125B from SDG J117081-1. Data limitations are summarized below.

- Amec Foster Wheeler U qualified the chloromethane result from sample IG4MW-2 and the TCE result from sample IG2MW-3 because the results in these samples were less than five times the results in the associated blank. (U-RB)
- Chloromethane was not detected in the remaining samples and the detected concentration of TCE in the remaining samples was greater than five times the detection in the associated blank, and data usability is not adversely affected.

- Bromodichloromethane (0.00214 mg/L), chloroform (0.0131 mg/L), and TCE (0.000250 mg/L, 0.000371 mg/L) were detected in the equipment blanks associated with the analysis of samples MW 143B and MW 137B from SDG J116722 1.These analytes were not detected in samples MW 143B and MW 137B, and data usability is not adversely affected.
- Bromomethane (0.00192 mg/L, 0.00200 mg/L) and chloromethane (0.000311 mg/L, 0.000371 mg/L) were detected in the equipment blanks associated with the analysis of sample MW 114B. Bromomethane and chloromethane were not detected in sample MW-114B and data usability is not adversely affected.
- Methylene chloride (0.000396 mg/L) and TCE (0.000758 mg/L, 0.000200 mg/L) were detected in the equipment and trip blanks associated with the analysis of samples IG4-MW-4 and DUP-8 from SDG J117081-1. Methylene chloride was not detected in these samples and TCE was detected at a concentration greater than five times the detection in the associated blanks, and data usability is not adversely affected.
- Naphthalene was detected at a concentration of 0.0001615 mg/L in the method blank associated with the dilute analysis of samples DUP-4, IG1-MW-6B, and IG1-MW-6B3 1from SDG J116722-1. Naphthalene was not reported from the dilute analysis of these samples and data usability is not adversely affected.
- Acetone (0.318 mg/L) and methylene chloride (0.00307 mg/L) were detected in the trip blank associated with samples from SDG J115578-1. These analytes were not detected in the associated samples and data usability is not adversely affected.

7.2.4 Internal Standards and Surrogate Recoveries

According to the LRCs, internal standard data met SW-846 method requirements for VOC analyses and surrogate compound recoveries were within laboratory-specified limits.

7.2.5 Laboratory Control Sample Accuracy and Precision

LCS/LCSD recoveries were within the laboratory specified limits and RPDs between LCS and LCSD results were less than the laboratory specified maxima. When laboratory limits were less stringent than TCEQ guidance, recoveries were within TCEQ guidance limits of 60 to 140%

recovery and RPDs were less than the TCEQ-specified maximum of 40%. Exceptions are noted below.

- Dichlorodifluoromethane recoveries were low at 35% and 34% in the LCS and LCSD, respectively, associated with the analysis of samples MW-101B, MW-102B, MW-108B, MW-110B, MW-116B, MW-118B, MW-120B, MW-134B, and MW-142B from SDG J116362-1. Amec Foster Wheeler UJ qualified the nondetected dichlorodifluoromethane results from these samples because of potential low analytical bias. (UJ-L)
- Dichlorodifluoromethane recoveries were low at 47% and 43%, and methylene chloride recoveries were high at 163% and 156% in the LCS and LCSD, respectively, associated with the analysis of samples MW-119B, MW-135B, MW-136B, and MW-140B from SDG J116362-1. Data limitations are summarized below.
  - Amec Foster Wheeler UJ qualified the nondetected dichlorodifluoromethane results from these samples because of potential low analytical bias. (UJ-L)
  - Methylene chloride was not detected in these samples and data usability is not adversely affected by the potential high analytical bias.
- Hexachlorobutadiene (141% LCS) and methylene chloride (181%, 162%) recoveries were high in the LCS and/or LCSD associated with the dilute analysis of sample MW-100B from SDG J116362-1. Hexachlorobutadiene was not reported from the dilute analysis and data usability is not adversely affected by the potential low analytical bias.
- The RPDs for bromomethane and chloromethane were high at 22% and 24%, respectively in the LCS/LCSD associated with the dilute analysis of samples DUP-4, IG1 MW 6B2, and IG1-MW-6B3 from SDG J116722-1. Additionally, trichlorofluoromethane recovery was high at 144% in the LCSD. These analytes were not reported from the dilute analysis of these samples and data usability is not adversely affected by the potential analytical imprecision and high analytical bias.

7.2.6 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples IG1-MW6-B1, IG4-RW-1, and IG1-RW-4. The MS/MSD performed on sample MW-101B was for the analyte naphthalene only, because it was the only analyte reported from that particular run. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima. When laboratory limits were less stringent than TCEQ guidance, recoveries were within TCEQ guidance limits of 60 to 140% recovery and RPDs were less than the TCEQ-specified maximum of 40%.

7.2.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J-DL)

7.3 GENERAL CHEMISTRY

Methane, TDS, and TOC results generated by TestAmerica may be considered usable within the limitations described in Sections 7.3.1 through 7.3.6.

7.3.1 Holding times

All samples were analyzed within the method-specified holding times of 14 days for methane, 7 days for TDS, and 28 days for TOC.

7.3.2 Initial and Continuing Calibration

According to the LRCs, initial calibration and continuing calibration data met method requirements for general chemistry analyses. The LRCs also document satisfactory instrument performance and calibrations.

7.3.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks and target analytes were not detected in the equipment and trip blanks.

7.3.4 Laboratory Control Sample Accuracy

LCS recoveries were within laboratory-specified limits of 70 to 130% for methane, 90 to 110% for TDS, and 85 to 115% for TOC.

7.3.5 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples IG1-RW-4, IG2-MW-4, and MW-10B for methane; IG1-MW-5, IG2-MW-2, and MW-113B for TOC. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima.

7.3.6 Laboratory Duplicate Precision

TestAmerica performed duplicate analysis on sample MW-113B for TOC and samples IG1-MW-6B1, IG1-MW-6B2, and IG4-MW-2 for TDS. The RPD between results was less than laboratory-specified limits, with the following exceptions:

- The RPD between TDS results was high at 19% in the duplicate analysis performed on sample IG2-MW-6B2. Amec Foster Wheeler J qualified the TDS result from this sample because of potential analytical imprecision. (J-HD)
- The RPD between TOC results was high at 63% in the duplicate analysis performed on sample MW-113B. Amec Foster Wheeler J qualified the TOC result from this sample because of potential analytical imprecision. (J-HD)

7.3.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J DL)

8.0 FIELD PRECISION

Amec Foster Wheeler collected a field duplicates of samples MW-126B (DUP-2), MW-128B (DUP-3), IG1-MW-5 (DUP-4), and IG1-RW-4 (DUP-5). RPDs between field duplicate results were less than the TCEQ-recommended maximum of 30% for concentrations greater than five times the MQL, or the difference between concentrations was less than twice the MQL for analytes with concentrations less than five times the SDL. Exceptions are noted below.

- The RPD between 1,1-dichloroethene results from sample IG1-RW-4 and its field duplicate, DUP-5, was high at 65%. Amec Foster Wheeler J qualified the 1,1- dichloroethene results from these samples because of potential analytical or sampling imprecision. (J-FD)

Detected results in parent samples and field duplicates are shown in Table 2.

9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler reviewed 3,902 data records for target analytes in the field samples during this data validation. Of these, Amec Foster Wheeler J or UJ qualified 137 records (3.5%) as estimated because of potential low analytical bias from low LCS recovery and/or low continuing calibration verification recovery; and quantitative uncertainty because of high RPDs between laboratory duplicate analyses, high RPDs between parent samples and field duplicates, and/or results between the SDL and the MQL. Amec Foster Wheeler U qualified 32 records (0.8%) as not detected because of a detection in an associated equipment blank, laboratory blank, and/or trip blank. Amec Foster Wheeler did not reject any results and all of the data should be considered fully usable with the addition of the qualifiers presented in this report.

Definitions of data qualifiers added during data validation are summarized in Section 5.0 and summaries of specific qualifiers added to each affected sample as a result of the validation findings are presented in Table 3.

REFERENCES

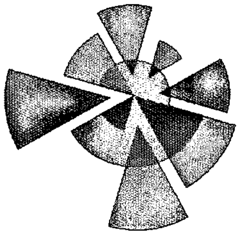
EPA, 2014a. EPA Contract Laboratory Program CLP National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.

EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.

TCEQ, 2010. TCEQ Review and Reporting of COC Concentration Data under TRRP, RG-366/TRRP-13.

LIMITATIONS

This report was prepared exclusively for the Former El Campo Aluminum Facility in El Campo, Texas by Amec Foster Wheeler Environment & Infrastructure, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Usability Summary is intended to be used by for the Former El Campo Aluminum Facility only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.



TABLES

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
IG1-MW6-B1	7/28/2015	600-115578-1	
IG1-MW6-B3	7/28/2015	600-115578-2	
IG1-MW-7	7/28/2015	600-115578-3	
IG4-MW-2	7/28/2015	600-115578-4	
IG4-RW-1	7/28/2015	600-115578-5	
IG4-MW-3	7/29/2015	600-115578-6	
IG4 MW-1	7/29/2015	600-115578-7	
EQBK-7-28-15/CE4	7/28/2015	600-115578-8	Equipment Blank
EQBK7-29-15/CE4	7/29/2015	600-115578-9	Equipment Blank
TRIP BLANK	7/28/2015	600-115578-10	Trip Blank
IG1-MW-3	8/11/2015	600-116361-1	
MW-10B	8/13/2015	600-116361-2	
MW-114B	8/11/2015	600-116362-1	
MW-127B	8/12/2015	600-116362-2	
MW-112B	8/12/2015	600-116362-3	
MW-112B2	8/12/2015	600-116362-4	
MW-100B	8/12/2015	600-116362-5	
MW-124B	8/13/2015	600-116362-6	
EQBK-8-13-15/TB	8/13/2015	600-116362-7	Equipment Blank
EQBK-8-14-15/SCT	8/14/2015	600-116362-8	Equipment Blank
EQBK-8-12-15/SCT	8/12/2015	600-116362-9	Equipment Blank
EQBK-8-10-15/SCT	8/10/2015	600-116362-10	Equipment Blank
EQBK-8-11-15/SCT	8/11/2015	600-116362-11	Equipment Blank
MW-119B	8/13/2015	600-116362-12	
MW-136B	8/14/2015	600-116362-13	
MW-135B	8/14/2015	600-116362-14	
MW-140B	8/14/2015	600-116362-15	
MW-142B	8/14/2015	600-116362-16	
MW-102B	8/14/2015	600-116362-17	
MW-134B	8/13/2015	600-116362-18	
MW-108B	8/14/2015	600-116362-19	
MW-120B	8/14/2015	600-116362-20	
MW-116B	8/14/2015	600-116362-21	
EQBK-1/8/14/15/CEY	8/14/2015	600-116362-22	Equipment Blank
EQBK-1-8-13-15/SCT	8/13/2015	600-116362-23	Equipment Blank
EQBK-1-8-13-15/SCT	8/13/2015	600-116362-24	Equipment Blank
EQBK-1-8-14-15/TB	8/14/2015	600-116362-25	Equipment Blank
TRIP BLANK	8/15/2015	600-116362-26	Trip Blank
MW-118B	8/13/2015	600-116362-27	
MW-110B	8/13/2015	600-116362-28	
MW-101B	8/13/2015	600-116362-29	
IG2-MW-2	8/17/2015	600-116722-1	
IG2-MW-1	8/17/2015	600-116722-2	
IG2-MW-4	8/17/2015	600-116722-3	
MW-5B	8/17/2015	600-116722-4	
IG4-RW-1	8/17/2015	600-116722-5	
EQBK-8-17-15/CEY	8/17/2015	600-116722-6	Equipment Blank
MW-6B	8/18/2015	600-116722-7	
MW-7B	8/18/2015	600-116722-8	
IG1-MW-7	8/18/2015	600-116722-9	
MW-21B	8/18/2015	600-116722-10	
EQBK-8-15-15/CEY	8/18/2015	600-116722-11	Equipment Blank

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
MW-143B	8/15/2015	600-116722-12	
MW-137B	8/15/2015	600-116722-13	
IG1-MW-1	8/17/2015	600-116722-14	
MW-126B	8/17/2015	600-116722-15	
MW-128B	8/17/2015	600-116722-16	
MW-141B	8/18/2015	600-116722-18	
MW-131B	8/18/2015	600-116722-19	
MW-133B	8/18/2015	600-116722-20	
IG1-MW-5	8/19/2015	600-116722-21	
IG1-MW-6B2	8/19/2015	600-116722-22	
IG1-MW-6B1	8/19/2015	600-116722-23	
DUP-4	8/19/2015	600-116722-24	Field Duplicate of IG1 MW-5
IG1-MW-6B3	8/19/2015	600-116722-25	
IG3-IW-1	8/19/2015	600-116722-26	
EQBK-8-15	8/15/2015	600-116722-27	Equipment Blank
EQBK-8-17	8/17/2015	600-116722-28	Equipment Blank
EQBK-8-18	8/18/2015	600-116722-29	Equipment Blank
EQBK-8-19	8/19/2015	600-116722-30	Equipment Blank
TRIP BLANK	8/17/2015	600-116722-31	Trip Blank
MW-132B	8/14/2015	600-116722-32	
DUP-3	8/17/2015	600-116722-33	Field Duplicate of MW 128B
DUP-2	8/17/2015	600-116722-34	Field Duplicate of MW 126B
MW-113B	8/25/2015	600-117081-1	
MW-109B	8/25/2015	600-117081-2	
IG4-MW-2	8/25/2015	600-117081-3	
IG2-MW-3	8/25/2015	600-117081-4	
DUP-6	8/25/2015	600-117081-5	Field Duplicate of MW-109B
IG1RW-4	8/25/2015	600-117081-6	
IG1MW-4	8/25/2015	600-117081-7	
EQBK-825-15/CEY	8/25/2015	600-117081-8	Equipment Blank
MW-125B	8/25/2015	600-117081-9	
MW-111B	8/25/2015	600-117081-10	
IG4-MW-3	8/25/2015	600-117081-11	
EQBK-8-25-15/MS	8/25/2015	600-117081-12	Equipment Blank
IG4-MW-1	8/26/2015	600-117081-13	
EQBK-8-26-15/CEY	8/26/2015	600-117081-14	Equipment Blank
TRIP BLANK	8/26/2015	600-117081-15	Trip Blank
DUP-5	8/26/2015	600-117081-16	Field Duplicate of IG1RW-4

Notes:

MS/MSD = Matrix Spike/Matrix Spike Duplicate

TABLE 2
Field Duplicate Detections
Former El Campo Aluminum Facility
El Campo, Texas

Method	Analyte	Average MQL (mg/L)	Primary Sample Result (mg/L)	Field Duplicate Result (mg/L)	Relative Percent Difference	Notes
Samples MW-126B and DUP-2						
SW8260B	1,2-Dichloropropane	0.00100	0.000311 J	0.00100 U	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00159	0.00144	10%	
	Trichloroethene	0.02000	0.0629	0.0681	8%	
Samples MW-128B and DUP-3						
SW8260B	1,1-Dichloroethene	0.00100	0.00152	0.00158	4%	
	1,2-Dichloropropane	0.00100	0.000665 J	0.00100 U	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.000496 J	0.000552 J	11%	
	Trichloroethene	0.01500	0.135	0.1480	9%	
Samples IG1-MW-5 and DUP-4						
SW8260B	1,1-Dichloroethane	0.00100	0.00102	0.00098 J	4%	
	1,1-Dichloroethene	0.00100	0.0267	0.0283	6%	
	1,2-Dichloroethane	0.00100	0.000278 J	0.000223 J	22%	
	Chloroform	0.00100	0.000339 J	0.000385 J	13%	
	Chloromethane	0.00200	0.00024 J	0.00200 U	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00641	0.00628	2%	
	trans-1,2-Dichloroethene	0.00100	0.000245 J	0.00100 U	NC	± 2MQL
	Trichloroethene	0.05000	0.521	0.525	1%	
	Vinyl Chloride	0.00200	0.000344 J	0.000273 J	23%	
RSK 175	Methane	0.0500	0.000621 J	0.000667 J	7%	
Samples IG1-RW-4 and DUP-5						
8260	1,1-Dichloroethane	0.00100	0.000264 J	0.000269 J	2%	
	1,1-Dichloroethene	0.00100	0.00908	0.00462	65%	J-FD
	cis-1,2-Dichloroethene	0.00100	0.00163	0.00157	4%	
	Trichloroethene	0.0250	0.313	0.261	18%	
Samples MW-109B and DUP-6						
SW8260B	1,2-Dichloropropane	0.00100	0.00100 U	0.000403 J	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00358	0.00393	9%	
	Trichloroethene	0.05000	0.0495	0.0663	29%	
SW9060	Total Organic Carbon	1.00	3.91	3.90	0%	
RSK 175	Methane	0.00100	0.00447	0.005790	26%	

Notes:

±2MQL = the difference between the primary sample and field duplicate result is less than twice the MQL
SW8260 = volatile organic compounds
SW9060 = total organic carbon
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
mg/L = milligrams per liter
MQL = method quantitation limit
RSK 175 = methane

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
DUP-3	SW8260B	cis-1,2-Dichloroethene	0.000552	mg/L	J	DL
DUP-4	SW8260B	1,1-Dichloroethane	0.000980	mg/L	J	DL
		1,2-Dichloroethane	0.000223	mg/L	J	DL
		Chloroform	0.000385	mg/L	J	DL
		Vinyl Chloride	0.000273	mg/L	J	DL
	RSK 175	Methane	0.000667	mg/L	J	DL
DUP-5	SW8260B	1,1-Dichloroethane	0.000269	mg/L	J	DL
		1,1-Dichloroethene	0.00462	mg/L	J	FD
DUP-6	SW8260B	1,2-Dichloropropane	0.000403	mg/L	J	DL
IG1-MW-1	SW8260B	1,1-Dichloroethane	0.000853	mg/L	J	DL
		1,2-Dichloroethane	0.000415	mg/L	J	DL
IG1-MW-3	SW8260B	1,1-Dichloroethene	0.000940	mg/L	J	DL
		Benzene	0.000382	mg/L	J	DL
		Chloromethane	0.000476	mg/L	J	DL
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		m-Xylene & p-Xylene	0.000310	mg/L	J	DL
		o-Xylene	0.000257	mg/L	J	DL
		Toluene	0.000348	mg/L	J	DL
IG1-MW-4	SW8260B	Chloroform	0.000365	mg/L	J	DL
		Vinyl Chloride	0.00136	mg/L	J	DL
IG1-MW-5	SW8260B	1,2-Dichloroethane	0.000278	mg/L	J	DL
		Chloroform	0.000339	mg/L	J	DL
		Chloromethane	0.000240	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000245	mg/L	J	DL
		Vinyl Chloride	0.000344	mg/L	J	DL
	RSK 175	Methane	0.000621	mg/L	J	DL
IG1-MW-6B1	SW8260B	1,1-Dichloroethane	0.000568	mg/L	J	DL
		1,1-Dichloroethene	0.000610	mg/L	J	DL
		1,2-Dichloropropane	0.000193	mg/L	J	DL
		Vinyl Chloride	0.000618	mg/L	J	DL
	SW9060	Total Organic Carbon	0.815	mg/L	J	DL
IG1-MW-6B2	SW8260B	1,1,2-Trichloroethane	0.000290	mg/L	J	DL
		1,1-Dichloroethane	0.000723	mg/L	J	DL
		Chloroform	0.000249	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000738	mg/L	J	DL
	SM 2540C	Total Dissolved Solids	1390	mg/L	J	HD
IG1-MW-6B3	SW8260B	1,1,1,2-Tetrachloroethane	0.000226	mg/L	J	DL
		1,1,2-Trichloroethane	0.000593	mg/L	J	DL
		Chloroform	0.000589	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000815	mg/L	J	DL
IG1-MW-7	SW8260B	1,1,2-Trichloroethane	0.000318	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000867	mg/L	J	DL
	SW9060	Total Organic Carbon	0.722	mg/L	J	DL
IG1-RW-4	SW8260B	1,1-Dichloroethane	0.000264	mg/L	J	DL
		1,1-Dichloroethene	0.00908	mg/L	J	FD
	SW9060	Total Organic Carbon	0.606	mg/L	J	DL
IG2 MW-2	SW8260B	Chloroform	0.00100	mg/L	U	RB
	SW9060	Total Organic Carbon	0.550	mg/L	J	DL

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
IG2 MW-4	SW8260B	1,2-Dichloropropane	0.000300	mg/L	J	DL
		Chloroform	0.00100	mg/L	U	RB
		trans-1,2-Dichloroethene	0.000200	mg/L	J	DL
IG2-MW-1	SW8260B	1,1,2-Trichloroethane	0.000397	mg/L	J	DL
		1,1-Dichloroethene	0.000450	mg/L	J	DL
		Naphthalene	0.000140	mg/L	J	DL
		Trichloroethene	0.000285	mg/L	J	DL
IG2MW-3	SW8260B	Trichloroethene	0.00132	mg/L	U	RB
IG3-IW-1	SW8260B	1,1-Dichloroethane	0.000225	mg/L	J	DL
		1,1-Dichloroethene	0.000738	mg/L	J	DL
		Benzene	0.000426	mg/L	J	DL
		Chloroform	0.000168	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000588	mg/L	J	DL
IG4-MW-1	SW8260B	1,1-Dichloroethane	0.000352	mg/L	J	DL
		Chloroform	0.000255	mg/L	J	DL
		Vinyl Chloride	0.000472	mg/L	J	DL
	RSK 175	Methane	0.000384	mg/L	J	DL
IG4-MW-2	SW8260B	1,1-Dichloroethane	0.000272	mg/L	J	DL
		1,1-Dichloroethene	0.00484	mg/L	J	DL
		1,2-Dichloroethene, Total	0.00340	mg/L	J	DL
		Chloroform	0.000304	mg/L	J	DL
		Chloromethane	0.00200	mg/L	U	RB
		cis-1,2-Dichloroethene	0.00340	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000567	mg/L	J	DL
	SW9060	Total Organic Carbon	0.492	mg/L	J	DL
IG4-MW-3	SW8260B	1,1-Dichloroethane	0.000451	mg/L	J	DL
		1,2-Dichloroethene, Total	0.00192	mg/L	J	DL
		Chloroform	0.000223	mg/L	J	DL
		cis-1,2-Dichloroethene	0.00192	mg/L	J	DL
IG4-RW-1	SW8260B	1,1-Dichloroethane	0.000270	mg/L	J	DL
		1,2-Dichloroethene, Total	0.00125	mg/L	J	DL
		Chloromethane	0.000226	mg/L	J	DL
		cis-1,2-Dichloroethene	0.00125	mg/L	J	DL
MW-100B	SW8260B	Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-101B	SW8260B	Bromomethane	0.00204	mg/L	U	MB, RB, TB
		Chloromethane	0.00200	mg/L	U	MB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-102B	SW8260B	Bromomethane	0.00200	mg/L	U	MB, RB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		Toluene	0.000475	mg/L	J	DL
MW-108B	SW8260B	Bromomethane	0.00216	mg/L	U	MB, RB, TB
		Chloromethane	0.00200	mg/L	U	MB, RB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-10B	SW8260B	1,1-Dichloroethane	0.000280	mg/L	J	DL
		cis-1,2-Dichloroethene	0.000604	mg/L	J	DL
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		Trichloroethene	0.000615	mg/L	J	DL
	RSK 175	Methane	0.000557	mg/L	J	DL

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-110B	SW8260B	Bromomethane	0.00200	mg/L	U	MB, RB, TB
		Chloromethane	0.00200	mg/L	U	MB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-112B	SW8260B	cis-1,2-Dichloroethene	0.000173	mg/L	J	DL
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-112B2	SW8260B	cis-1,2-Dichloroethene	0.000190	mg/L	J	DL
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-113B	SW9060	Total Organic Carbon	1.16	mg/L	J	HD
MW-114B	SW8260B	Benzene	0.000579	mg/L	J	DL
		Chloromethane	0.00200	mg/L	U	RB, TB
		cis-1,2-Dichloroethene	0.000371	mg/L	J	DL
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		m-Xylene & p-Xylene	0.000236	mg/L	J	DL
		o-Xylene	0.000208	mg/L	J	DL
		Vinyl Chloride	0.000356	mg/L	J	DL
MW-116B	SW8260B	Bromomethane	0.00208	mg/L	U	MB, RB, TB
		Chloroform	0.00100	mg/L	U	RB
		Chloromethane	0.00200	mg/L	U	MB, RB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-118B	SW8260B	Bromomethane	0.00200	mg/L	U	MB, RB, TB
		Chloroform	0.000336	mg/L	J	DL
		Chloromethane	0.00200	mg/L	U	MB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-119B	SW8260B	Bromomethane	0.00202	mg/L	U	MB, RB, TB
		Chloroethane	0.00200	mg/L	UJ	L
		Chloroform	0.000225	mg/L	J	DL
		Chloromethane	0.00200	mg/L	U	MB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		Trichloroethene	0.000412	mg/L	J	DL
MW-120B	SW8260B	Bromomethane	0.00212	mg/L	U	MB, RB, TB
		Chloroform	0.00100	mg/L	U	RB
		Chloromethane	0.00200	mg/L	U	MB, RB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-124B	SW8260B	Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-126B	SW8260B	1,2-Dichloropropane	0.000311	mg/L	J	DL
MW-127B	SW8260B	cis-1,2-Dichloroethene	0.000252	mg/L	J	DL
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-128B	SW8260B	1,2-Dichloropropane	0.000665	mg/L	J	DL
		cis-1,2-Dichloroethene	0.000496	mg/L	J	DL
MW-132B	SW8260B	Trichloroethene	0.000429	mg/L	J	DL
MW-133B	SW8260B	Chloromethane	0.000329	mg/L	J	DL
MW-134B	SW8260B	Bromomethane	0.00212	mg/L	U	MB, RB, TB
		Chloromethane	0.00200	mg/L	U	MB, TB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		Trichloroethene	0.000234	mg/L	J	DL
MW-135B	SW8260B	Bromomethane	0.00200	mg/L	U	MB, RB, TB
		Chloroethane	0.00200	mg/L	UJ	L
		Chloromethane	0.00200	mg/L	U	MB, RB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		Trichloroethene	0.000211	mg/L	J	DL
MW-136B	SW8260B	Bromomethane	0.00201	mg/L	U	MB, RB, TB
		Chloroethane	0.00200	mg/L	UJ	L
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-140B	SW8260B	Bromomethane	0.00200	mg/L	U	MB, RB, TB
		Chloroethane	0.00200	mg/L	UJ	L
		Chloromethane	0.00200	mg/L	U	MB, RB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
		Trichloroethene	0.000155	mg/L	J	DL
MW-141B	SW8260B	trans-1,2-Dichloroethene	0.000242	mg/L	J	DL
	SW9060	Total Organic Carbon	0.955	mg/L	J	DL
MW-142B	SW8260B	Bromomethane	0.00200	mg/L	U	MB, RB, TB
		Chloromethane	0.00200	mg/L	U	MB, RB
		Dichlorodifluoromethane	0.00100	mg/L	UJ	L
MW-21B	SW8260B	1,1,2-Trichloroethane	0.000913	mg/L	J	DL
		1,2-Dichloroethane	0.000899	mg/L	J	DL
		Chloroform	0.000241	mg/L	J	DL
MW-5B	SW8260B	Carbon tetrachloride	0.000188	mg/L	J	DL
		Chloroform	0.00100	mg/L	U	RB
MW-6B	SW8260B	1,1-Dichloroethane	0.000624	mg/L	J	DL
		1,1-Dichloroethene	0.000481	mg/L	J	DL
	SW9060	Total Organic Carbon	0.650	mg/L	J	DL
MW-7B	SW9060	Total Organic Carbon	0.762	mg/L	J	DL
	RSK 175	Methane	0.000368	mg/L	J	DL

Notes:

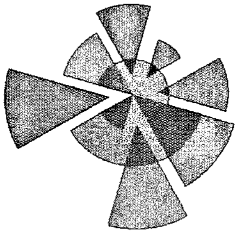
mg/L = milligrams per liter
RSK 175 = methane
SW8260B = volatile organic compounds
SW9060 = total organic carbon

Qualifier Definitions:

U = The analyte was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Bias and Reason Code Definitions:

L = Bias in the sample result is likely to be low.
DL = The analyte concentration is between the detection limit and the limit of quantification.
FD = High RPD between parent sample and field duplicate results.
HD = High RPD between laboratory duplicate results.
MB = Qualified because the analyte was detected in an associated laboratory blank.
RB = Qualified because the analyte was detected in an associated equipment blank.
TB = Qualified because the analyte was detected in an associated trip blank.



APPENDIX A

NELAP CERTIFICATIONS – TestAmerica Penascola, TestAmerica Houston

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 23, 2015

CERTIFIED MAIL

Ms. Maria Bundy
TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514-7045

Ms. Bundy:

I am writing to congratulate you and the staff of TestAmerica Pensacola. Based on your application and primary NELAP accreditation from the state of Florida, pursuant to authorization from the Executive Director of the Texas Commission on Environmental Quality, the Program Manager of the Quality Assurance Section has issued your laboratory secondary NELAP accreditation according to the attached Fields of Accreditation.

I am enclosing the accreditation certificate and Fields of Accreditation listing. Please review the enclosures for accuracy and completeness. Your laboratory's accreditation is valid for one year, contingent on continued compliance with the requirements of the state of Texas as well as those of your primary accreditation body.

In the meantime, please contact me by telephone at (512) 239–3754 or electronic-mail at frank.jamison@tceq.texas.gov if I can provide any additional information or assistance.

Sincerely,

Frank Jamison
Data and Records Specialist

Enclosures

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

How is our customer service? tceq.texas.gov/customersurvey
printed on recycled paper

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

TestAmerica Pensacola

3355 McLemore Drive
Pensacola, FL 32514-7045

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Executive Director Texas Commission on Environmental Quality

Certificate Number: **T104704286-15-9**
Effective Date: **10/1/2015**
Expiration Date: **9/30/2016**

amec
foster
wheeler

DATA USABILITY SUMMARY

Former El Campo Aluminum Facility

El Campo, Texas

Samples Collected October 21 through November 13, 2015

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
7376 SW Durham Road
Portland, Oregon 97224
(503) 639-3400

January 2016

Project No. 0126200001.03.010

TABLE OF CONTENTS

TABLES

APPENDIX

ACRONYMS

%D	Percent difference
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
CCV	continuing calibration verification
CLP	Contract Laboratory Program
COC	chemical of concern
DUS	data usability summary
EPA	United States Environmental Protection Agency
ER	exception report
GC/MS	gas chromatography-mass spectrometry
ID	identification
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LRC	laboratory review checklist
mg/L	milligrams per liter
MQL	method quantitation limit
MS	matrix spike
MSD	matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
PCE	tetrachloroethene
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SDL	sample detection limit
SM	standard method
SOP	standard operating procedure
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
TestAmerica	TestAmerica, Inc.
TOC	total organic carbon

TRRP	Texas Risk Reduction Program
VOC	volatile organic compound

DATA USABILITY SUMMARY
Former El Campo Aluminum Facility
El Campo, Texas

1.0 DATA USABILITY SUMMARY

Amec Foster Wheeler Environmental & Infrastructure, Inc. (Amec Foster Wheeler) reviewed five data packages from TestAmerica Laboratories, Inc. (TestAmerica) for the analysis of groundwater samples collected October 21 through November 13, 2015 at the former El Campo Aluminum Facility in El Campo, Texas. Data were reviewed for conformance to the requirements of the guidance document *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. Amec Foster Wheeler certifies that at the time the laboratory data were generated for the project, TestAmerica Pensacola and TestAmerica Houston were National Environmental Laboratory Accreditation Program (NELAP) - accredited under the Texas Laboratory Accreditation Program for the matrices, analytes, and methods of analysis requested on the chain-of-custody documentation, except analyte 1,3,5-trimethylbenzene, for which no NELAP certification is available. A copy of TestAmerica's NELAP certificates applicable to the period during which the laboratory generated the data in this report are included in Appendix A of this Data Usability Summary (DUS).

1.1 INTENDED USE OF DATA

To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the affected property.

Analyses requested included:

- SW 2540C - Total Dissolved Solids (TDS)
- SW 846 8260B - Volatile Organic Compounds (VOCs) by Gas Chromatography Mass Spectrometry (GC/MS),
- SW 846 9060 - Total Organic Carbon (TOC),
- RSK-175 - Methane by GC Headspace Equilibrium.

2.0 INTRODUCTION

Amec Foster Wheeler collected 81 aqueous samples, including 6 field duplicates, 17 equipment blanks, and 3 trip blanks, between October 21 and November 13, 2015 from the Former El Campo Aluminum Facility, located in El Campo, Texas. Amec Foster Wheeler submitted these samples to TestAmerica, located in Houston, Texas, where they were assigned to sample delivery groups (SDGs) J120356-1, J120781-1, J121259-1, and J121669-1. In Houston, the samples were analyzed for TDS by United States Environmental Protection Agency (EPA) Method 2540C, VOCs by EPA Method 8260B, TOC by EPA Method 9060, and/or Methane by Standard Operating Procedure (SOP) RSK-175. A list of these samples by field sample identification (ID), and TestAmerica sample ID is presented in Table 1.

3.0 DATA VALIDATION METHODOLOGY

Amec Foster Wheeler performed Level II validation on these samples. This data validation has been performed in general accordance with:

- EPA, 2014a. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.
- EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.
- TCEQ, 2010. Texas Commission on Environmental Quality (TCEQ) Review and Reporting of COC Concentration Data under Texas Risk Reduction Program (TRRP), RG-366/TRRP-13.

The CLP guidelines were written specifically for the CLP, and have been modified for the purposes of this data review where they differ from method-specific quality control (QC) requirements.

The following laboratory submittals and field data were examined:

- the reportable data,
- the laboratory review checklists (LRCs) and associated exception reports (ERs), and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting QC analyses were summarized on the LRCs and ERs, and in the case narratives, all of which were included in this review.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness
- Chain of custody compliance
- Preservation and holding time compliance
- Presence or absence of laboratory contamination as demonstrated by method blanks
- Accuracy and precision as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples
- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates, LCS/LCS duplicates (LCSD) or MS/MS duplicates (MSD)
- Sampling and analytical precision as RPD of analyte concentration between field duplicates
- Assessment of field contamination as demonstrated by equipment, and trip blanks
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

4.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

4.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte-free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany. LCS recovery is an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix.

4.2 MS RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

4.3 SURROGATE SPIKE RECOVERIES

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process.

4.4 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are analyzed for the analytical suite required for the project. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Trip blanks are vials of analyte free water that accompany sample bottles shipped to the field and back to the laboratory with field samples. Trip blanks assess contamination attributed to shipping and handling procedures, as well as contamination from containers. Target analytes should not be found in trip blanks.

Laboratory blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in associated samples less than five times the concentration detected in the blank will be U qualified as being not detected.

4.5 LABORATORY DUPLICATES

Laboratory and field duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

5.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

U	The analyte was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

6.0 DEFINITIONS OF BIAS CODES AND REASON CODES THAT MAY BE ADDED DURING DATA VALIDATION

H	Bias in the sample result is likely to be high.
L	Bias in the sample result is likely to be low.
DL	The analyte concentration is between the sample detection limit (SDL) and the method quantitation limit (MQL). The result is an estimated concentration.
FD	High RPD between parent sample and field duplicate results. Potential analytical or sampling imprecision.

RB The result was qualified as not detected because of a detection in an equipment blank.

RT The sample receipt temperature exceeded the EPA-recommended maximum.

7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described Sections 7.1 through 8.0

Non-detected results are reported as less than the value of the sample detection limit SDL as defined by the TRRP rule.

7.1 SAMPLE COLLECTION, PRESERVATION, AND RECEIPT

Samples were properly preserved in the field according to method specifications. The samples were received at the laboratory under proper chain of custody, intact, properly preserved, and at temperatures less than the EPA-recommended maximum of 6 degrees Celsius, with the following exceptions:

- The laboratory received the sample cooler for SDG J120356-1 at a temperature of 12.6 degrees Celsius. Data limitations are summarized below.
  - Amec Foster Wheeler J qualified the detected results and UJ qualified the nondetected results from samples MW-113B, MW-120B, MW-124B, MW-131B, MW-132B, MW-133B, MW-135B, MW-136B, MW-137B, and MW-140B because they were collected more than eight hours prior to sample receipt and had not been sufficiently cooled. (J/UJ - RT)
  - The remaining samples from this SDG were collected within eight hours of sample receipt and there is evidence the cooling process had begun, and data usability is not adversely affected.
- The laboratory received sample MW-101B, equipment blank EQBK-BJG, and a trip blank, which were not listed on the chain of custody, with SDG J120356-1. The laboratory analyzed these samples for VOCs.
- The laboratory noted the following discrepancies between the chain of custody and sample received with SDG J121259-1:
  - The laboratory received equipment blank EQB 110315 DHB, which was not listed on the chain of custody. The laboratory analyzed this sample for VOCs.

  - The laboratory did not receive sample DUP-2, which was listed on the chain of custody for SDG J121259-1. Instead, Dup-2 was submitted with SDG J121669-1.
- The case narrative for SDG J121259-1 indicates that Amec Foster Wheeler cancelled the methane and TOC analysis of sample IG1-RW4. However, the laboratory reported these results.
- The laboratory noted the following discrepancies between the chain of custody and samples received with SDG J121669-1:
  - The laboratory indicates that sample IG4-MW4 was not listed on the chain of custody, but was received by the lab. This sample ID was not listed elsewhere in the laboratory report, and the laboratory ID indicated in the case narrative (600-121669-18) is associated with sample IG4-MW2, which was correctly identified on the chain of custody.
  - The laboratory noted that the sampler's name was not included on the chain of custody. This information is required on chain of custody forms.

7.2 VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B

The VOC results generated by TestAmerica may be considered usable with the limitations described in sections 7.2.1 through 7.2.7.

7.2.1 Holding Times

All samples were analyzed for VOC within the EPA-recommended maximum holding time of 14 days from sample collection for preserved samples and 7 days for unpreserved samples.

7.2.2 Initial and Continuing Calibration Verification

According to the LRCs, initial calibration and continuing calibration data met SW-846 method requirements for VOC analyses. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for VOC analyses. Exceptions are noted below.

- According to the LRC for SDG J120356-1, the percent difference (%D) for bromomethane, chloromethane, and tetrachloroethene (PCE) were high in the CCV associated with the analysis of samples IG4RW-1 TREATMENT STUB, IG4RW-1 WELL HEAD, MW-113B, MW-120B, MW-135B, MW-136B, MW-137B, and equipment blank EQBK-10-22-15 CEY. These analytes were not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.

- According to the LRC for SDG J120356-1, the %D for PCE was outside the ±35% limit in the CCV associated with the analysis of samples IG4RW-1 TREATMENT STUB, MW-101B, MW-112B, MW-112B2, MW-113B, MW-116B, MW-124B, MW-128B, MW-131B, MW-132B, MW-133B, MW-134B, and MW-140B; field duplicate DUP-3; equipment blanks EQBK-10-23-CEY, EQBK-10-23-KRB, and EQBK-BJG_151022; and a trip blank. The LRC does not specify whether the %D was positive or negative. Data limitations are summarized below.
  - Amec Foster Wheeler does not qualify field blanks such as the associated trip and equipment blanks.
  - Tetrachloroethane results for samples IG4RW-1 TREATMENT STUB and MW-113B were reported from separate analysis and data usability is not adversely affected by the potential analytical bias.
  - Amec Foster Wheeler UJ qualified the nondetected PCE results from the remaining samples because it is unclear whether the potential analytical bias is high or low. (UJ-L)
- According to the LRC for SDG J120356-1, the %Ds for 1,1,1,2-tetrchloroethane (42.4%), carbon tetrachloride (41.5%), dibromochloromethane, (41.1%) and PCE (38.6%) were high in the CCV associated with the dilution analysis of sample MW-131B and DUP-3, and equipment blank EQBK-10-23-BJG. These analytes were not detected in either sample, Amec Foster Wheeler does not qualify field blanks, and data usability is not adversely affected by the potentially high analytical bias.
- According to the LRC for SDG J120781-1, recoveries were high for carbon tetrachloride, chloromethane, and hexachlorobutadiene in the CCV associated with the analysis of samples IGI MW-3, MW-10 B, MW-100 B, MW-102 B, MW-119 B, MW-143 B; and equipment blanks EQBK-102815-BJG and EQBK-10-29-15-BJG. These analytes were not detected in any of the associated samples, Amec Foster Wheeler does not qualify field blanks, and data usability is not adversely affected by the potentially high analytical bias.
- According to the LRC for SDG J120781-1, recoveries were high for carbon tetrachloroethene, dibromochloromethane, 1,1,1,2-tetrachloroethene, and PCE, in the CCV associated with the analysis of samples MW-108 B, MW-110 B, MW-114 B, MW-118 B, and MW-141 B; field duplicate DUP-1; equipment blank EQBK-10-30-15 DBH; and the associated trip blank. These analytes were not detected in the associated samples and Amec Foster Wheeler does not qualify field blanks, and data usability is not adversely affected by the potentially high analytical bias.

- According to the LRC for SDG J121259-1, recoveries were high for "a few compounds" in the CCV associated with the analysis of samples IG2-MW4, MW-126B, MW-127B, MW-142B, MW-21B, MW-5B, MW-6B, and MW-7B; and equipment blank EQBK110415DBH. The laboratory did not specify which compounds exceeded control limits, but indicated that all associated results were nondetected, and data usability is not adversely affected by the potential high analytical bias.
- According to the LRC for SDG J121259-1, the %D for dichlorodifluoromethane was high at 39.3% in the CCV associated with the analysis of samples IG1 MW-1, IG1-RW4, IG2 MW-2, IG2MW-1, IG2-MW3, and IG4-MW1; sample duplicate DUP-5; equipment blanks EQBK 110315 DBH, EQBK110515DBH, EQBK110615DBH, and EQBK-11-3-15-CEY; and the associated trip blank. Additionally, the %D for dichlorodifluoromethane was high at 45.8% in the CCV associated with the analysis of diluted samples IG1 MW-1, IG2-MW3, IG4-MW1, and field duplicate DUP-5. Dichlorodifluoromethane was not detected in the associated samples and data usability is not adversely affected by the potentially high analytical bias.
- According to the LRC for SDG J121669-1, dichlorodifluoromethane recovery was high in the CCVs associated with the analysis of all samples in the SDG. Dichlorodifluoromethane was not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.
- According to the LRC for SDG J121669-1, the %D for carbon tetrachloride was high at 39.9% in the CCV associated with the analysis of diluted samples IG3-IW1, IG4-MW2, MW-109B, and field duplicate DUP-6. Carbon tetrachloride was not reported from the dilute analysis and data usability is not adversely affected by the potentially high analytical bias.

7.2.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks, equipment blanks, and trip blanks, with the following exceptions:

- Methylene chloride was detected at an estimated concentration 0.0009667 milligrams per liter (mg/L) in the laboratory blank associated with the analysis of sample MW-131B, field duplicate DUP-3, and equipment blank EQBK-10-23-BJG from SDG J120356-1. Methylene chloride was not detected in these samples and data usability is not adversely affected by the detection in the associated laboratory blank.
- Methylene chloride was detected at an estimated concentration of 0.0008246 mg/L in the laboratory blank associated with the analysis of samples MW-108 B, MW-110 B, MW-114 B, MW-118 B, and MW-141 B; field duplicate DUP-1; equipment blank

EQBK-10-30-15 DBH; and the associated trip blank from SDG J120781-1. Methylene chloride was not detected in the associated samples, Amec Foster Wheeler does not qualify field blanks, and data usability is not adversely affected by the detection in the associated laboratory blank.

- Methylene chloride was detected at an estimated concentration of 0.002130 mg/L in the laboratory blank associated with the analysis of samples IG2-MW4, MW-126B, MW-127B, MW-142B, MW-21B, MW-5B, MW-6B, MW-7B, and equipment blank EQBK110415DBH from SDG J121259-1. Methylene chloride was not detected in the associated samples and data usability is not adversely affected by the detection in the associated laboratory blank.
- Naphthalene was detected at an estimated concentration of 0.0001753 mg/L in the laboratory blank associated with the analysis of samples IG1-MW4, IG1-MW5, IG1-MW6B1, IG1-MW6B2, IG1-MW6B3, IG1-MW7, IG4-MW3, MW-111B, MW-125B; field duplicates DUP-2 and DUP-4; and equipment blanks EQBK 111115 DBH and EQBK 111215DBH. Naphthalene was not detected in these samples and data usability is not adversely affected by the detection in the associated laboratory blanks.
- Toluene was detected in equipment blanks EQBK-10-22-15 CEY (0.000340 mg/L), EQBK-10-23-BJG (0.000228 mg/L), EQBK-10-23-CEY (0.000238 mg/L), and EQBK-BJG_151022 (0.000252 mg/L), associated with the analysis of samples collected on October 22 and 23, 2015, from SDG J120356-1. Additionally, trichloroethene (TCE) was detected at a concentration of 0.000415 mg/L in equipment blank EQBK-10-22-15 CEY, associated with samples collected October 22, 2015; and m&p-xylene and o-xylene were detected at concentrations of 0.000431 mg/L and 0.000337 mg/L, respectively in equipment blank EQBK-10-23-KRB, associated with samples collected on October 23. Data limitations are summarized below.
    - Amec Foster Wheeler U qualified the TCE result from sample MW-120B because it was less than five times the concentration detected in the associated equipment blank. (U-RB)
    - TCE was not detected in the remaining samples collected October 22, and data usability is not adversely affected by the detection in the associated equipment blank.
    - m&p-Xylene and o-xylene were not detected in the samples collected October 23, and data usability is not adversely affected by the detections in the associated equipment blank.
    - Toluene was not detected in these samples and data usability is not adversely affected by the detections in the associated equipment blanks.

- Chloromethane was detected at a concentration of 0.000438 mg/L in equipment blank EQBK-102515-BJG, associated with samples collected on October 28; and methylene chloride was detected at a concentration of 0.000203 mg/L in the trip blank associated with the analysis of samples from SDG J120781-1. Chloromethane and methylene chloride were not detected in these samples and data usability is not adversely affected by the detections in the associated equipment and trip blanks.
- TCE was detected at a concentration of 0.000340 mg/L in equipment blank EQBK110615DBH, associated with samples collected on November 6 from SDG J121259-1. TCE was detected in the associated samples at concentrations greater than five times the detection in the equipment blank, and data usability is not adversely affected.
- TCE was detected in equipment blanks EQBK 111015 DBH (0.000904 mg/L), EQBK 111115 DBH (0.000692 mg/L), EQBK 111215DBH (0.000239 mg/L), and EQBK111315 DBH (0.000643 mg/L), associated with samples from SDG J121669-1 collected on November 10, 11, 12, and 13, respectively. TCE was detected in the associated samples at concentrations greater than five times the detections in the equipment blanks, and data usability is not adversely affected.

7.2.4 Internal Standards and Surrogate Recoveries

According to the LRCs, internal standard data met SW-846 method requirements for VOC analyses and surrogate compound recoveries were within laboratory-specified limits.

7.2.5 Laboratory Control Sample Accuracy and Precision

LCS/LCSD recoveries were within the laboratory specified limits and RPDs between LCS and LCSD results were less than the laboratory specified maxima. When laboratory limits were less stringent than TCEQ guidance, recoveries were within TCEQ guidance limits of 60 to 140% recovery and RPDs were less than the laboratory limit. Exceptions are noted below.

- n-Butylbenzene (136% LCS), p-isopropyltoluene (134% LCS), sec-butylbenzene (132% LCS), tert-butylbenzene (132% LCS) recoveries were high and methylene chloride (55%, 56%) recoveries were low in the LCS and/or LCSD associated with the analysis of samples IG1-MW4, IG1-MW5, IG1-MW6B1, IG1-MW6B2, IG1-MW6B3, IG1-MW7, IG4--MW3, MW-111B, and MW-125B; field duplicates DUP-2 and DUP-4; and equipment blanks EQBK 111115 DBH and EQBK 111215DBH in SDG J121669-1. Data limitations are summarized below.
  - Amec Foster Wheeler UJ qualified the nondetected methylene chloride results from these samples because of potential low analytical bias. (UJ-L)

  - The remaining analytes were not detected in these samples and data usability is not adversely affected by the potential high analytical bias.

- Dichlorodifluoromethane recovery was high at 144% in the LCSD and methylene chloride recovery was low at 55% in the LCS associated with the analysis of samples IG3-IW1, IG4-MW2, MW-109B, and field duplicate DUP-6; and equipment blanks EQBK 111015 DBH and EQBK111315 DBH; and the analysis of dilute samples IG1-MW4, IG1-MW5, IG1-MW6B2, IG1-MW6B3, IG1-MW7, IG4-MW3, MW-111B, and field duplicates DUP-2 and DUP-4 in SDG J121669-1. Data limitations are summarized below.
  - Amec Foster Wheeler UJ qualified the nondetected methylene chloride results from samples IG3-IW1, IG4-MW2, MW-109B, and field duplicate DUP-6 because of potential low analytical bias. (UJ-L)
  - Dichlorodifluoromethane was not detected in samples IG3-IW1, IG4-MW2, MW-109B, and field duplicate DUP-6; and equipment blanks EQBK 111015 DBH and EQBK111315 DBH and data usability is not adversely affected by the potential high analytical bias.
  - Dichlorodifluoromethane and methylene chloride were not reported from the dilute analysis of samples IG1-MW4, IG1-MW5, IG1-MW6B2, IG1-MW6B3, IG1-MW7, IG4-MW3, MW-111B, and field duplicates DUP-2 and DUP-4, and data usability is not adversely affected by the potential analytical bias.

- Bromomethane (172%, 166%) and chloromethane (156%, 154%) recoveries were high in the LCS and LCSD associated with the analysis of samples IG4RW-1 TREATMENT STUB, IG4RW-1 WELL HEAD, MW-113B, MW-120B, MW-135B, MW-136B, and MW-137B; and equipment blank EQBK-10-22-15 CEY in SDG J120356-1. Additionally, bromomethane recovery was high at 143% in the LCSD associated with the remaining samples in SDG J120356-1. Bromomethane and chloromethane were not detected in these samples and data usability is not adversely affected by the potential high analytical bias.

- Bromomethane recovery was high at 143% in the LCSD associated with the dilution analysis of sample MW-131B, field duplicate DUP-3, and equipment blank EQBK10-23-BJG in SDG J120356-1. Bromomethane was not reported from the dilution analysis and data usability is not adversely affected by the potential high analytical bias.

- Chloromethane recoveries were high at 149% and 145% in the LCS and LCSD associated with the analysis of samples IGI MW-3, MW-10 B, MW-100 B, MW-102 B, MW-119 B, and MW-143 B; and equipment blank sEQBK-102815-BJG and EQBK-10-29-15-BJG from SDG J120781-1. Chloromethane was not detected in the field samples, Amec Foster Wheeler does not qualify equipment blanks, and data usability is not adversely affected by the potential high analytical bias.

- Bromomethane (147% LCS), carbon tetrachloride (143% LCS), dichlorobromomethane (137%, 131%), chloromethane (146%, 145%), and 1,1,1,2-tetrachloroethane (136% LCS) recoveries were high in the LCS and/or LCSD associated with the analysis of samples MW-108 B, MW-110 B, MW-114 B, MW-118 B, and MW-141 B; field duplicate DUP-1; equipment blank EQBK-10-30-15 DBH; and the associated trip blank from SDG J120781-1. These analytes were not detected in the associated samples, and data usability is not adversely affected by the potential high analytical bias.
- Bromomethane (172%, 162%), carbon tetrachloride (142% LCS), and chloromethane (174%, 175%) recoveries were high in the LCS and/or LCSD associated with the dilute analysis of samples MW-108B and MW-141B. These results were not reported from the dilute analysis and data usability is not adversely affected by the potential high analytical bias.
- Dichlorodifluoromethane recovery was high at 145% in the LCSD associated with the analysis of samples IG1 MW-1, IG1-RW4, IG2 MW-2, IG2MW-1, IG2-MW3, and IG4-MW1; field duplicate DUP-5; equipment blank EQBK 110315 DBH, EQBK110515DBH, EQBK110615DBH, and EQBK-11-3-15-CEY; and the associated trip blank from SDG J121259-1. Dichlorodifluoromethane was not detected in these samples and data usability is not adversely affected by the potential high analytical bias.
- Bromomethane (174%, 180%) and chloromethane (172%, 173%) recoveries were high in the LCS and LCSD associated with the analysis of samples IG2-MW4, MW-126B, MW-127B, MW-142B, MW-21B, MW-5B, MW-6B, MW-7B, and equipment blank EQBK110415DBH in SDG J121259-1. Bromomethane and chloromethane were not detected in these samples and data usability is not adversely affected by the potential high analytical bias.
- Bromomethane (186%, 184%), chloromethane (171%, 164%), and dichlorodifluoromethane (57%, 56%) recoveries were outside acceptable limits in the LCS and LCSD associated with the dilute analysis of samples IG2-MW4 and MW-26B in SDG J121259-1. Additionally, methylene chloride recovery was low at 57% in the LCS associated with the analysis of samples IG1 MW-1, IG2-MW3, IG4-MW1, and field duplicate DUP-5. These analytes were not reported from the dilute analyses of these samples, and data usability is not adversely affected by the potential analytical bias.
- Dichlorodifluoromethane (141%), n-butylbenzene (132%), and p-isopropyltoluene (131%), recoveries were high in the LCS associated with the dilute analysis of samples IG3-IW1,

IG4-MW2, MW-109B, and field duplicate DUP-6 in SDG J121669-1. These analytes were not reported from the dilute analysis of these samples and data usability is not adversely affected by the potential high analytical bias.

7.2.6 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples IG1-RW4, IG4RW-1 WELL HEAD, and MW-128B. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima. When laboratory limits were less stringent than TCEQ guidance, recoveries were within TCEQ guidance limits of 60 to 140% recovery and RPDs were less than the TCEQ-specified maximum of 40%. Exceptions are noted below.

- Naphthalene recovery was low at 57% in the MS and bromomethane and chloromethane recoveries were high at 141% and 151%, respectively in the MSD performed on sample MW-128B. Data limitations are summarized below.
  - Amec Foster Wheeler UJ qualified the nondetected naphthalene result from sample MW-128B because of potential low analytical bias. (UJ-L)
  - Bromomethane and chloromethane were not detected in this sample and data usability is not adversely affected.
- TCE recovery was low at 65% in the MS and dichlorodifluoromethane recovery was high at 143% in the MSD performed on sample IG1-RW4. Data limitations are summarized below.
  - Amec Foster Wheeler J qualified the detected TCE result from sample IG1-RW4 because of potential low analytical bias. (J-L)
  - Dichlorodifluoromethane was not detected in this sample and data usability is not adversely affected by the potential high analytical bias.
- Bromomethane (157%, 157%) and chloromethane (140%, 158%) recoveries were high in the MS/MSD performed on sample IG4RW-1 WELL HEAD. These analytes were not detected in this sample and data usability is not adversely affected by the potentially high analytical bias.

7.2.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J-DL)

7.3 GENERAL CHEMISTRY

Methane, TDS, and TOC results generated by TestAmerica may be considered usable within the limitations described in Sections 7.3.1 through 7.3.6.

7.3.1 Holding times

All samples were analyzed within the method-specified holding times of 14 days for methane, seven days for TDS, and 28 days for TOC.

7.3.2 Initial and Continuing Calibration

According to the LRCs, initial calibration and continuing calibration data met method requirements for general chemistry analyses. The LRCs also document satisfactory instrument performance and calibrations.

7.3.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks and target analytes were not detected in the equipment and trip blanks.

7.3.4 Laboratory Control Sample Accuracy

LCS recoveries were within laboratory-specified limits of 70 to 130% for methane, 90 to 110% for TDS, and 85 to 115% for TOC.

7.3.5 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica performed MS and MSD analyses on samples IG4RW-1 WELL HEAD, IG4-MW3, and MW-10B for methane; and IG1-MW7 for TOC. MS/MSD recoveries were within the laboratory-specified limits and RPDs between MS and MSD results were less than the laboratory-specified maxima. Exceptions are noted below.

- The RPD between methane results was high at 32% in the MS/MSD performed on sample IG4-MW3. Methane was not detected in the unspiked native sample and data usability is not adversely affected by the potential analytical imprecision.

7.3.6 Laboratory Duplicate Precision

TestAmerica performed duplicate analysis on sample IG4-MW3 for TDS. The RPD between results was less than laboratory-specified limits.

7.3.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J DL)

8.0 FIELD PRECISION

Amec Foster Wheeler collected a field duplicates of samples MW-141B (DUP-1), IG1-MW-7 (DUP-2), MW-128B (DUP-3), IG1-MW-5 (DUP-4), IG1-RW-4 (DUP-5), and MW-109B (DUP-6). RPDs between field duplicate results were less than the TCEQ-recommended maximum of 30% for concentrations greater than five times the MQL, or the difference between concentrations was less than twice the MQL for analytes with concentrations less than five times the SDL. Exceptions are noted below.

- 1,1-Dichloroethene (0.0275 mg/L) and cis-1,2-dichloroethene (0.00614 mg/L) were detected in field duplicate DUP-4 at concentrations more than twice the MQL, but were not detected in the parent sample, IG1-MW-5. Amec Foster Wheeler J qualified these results in the field duplicate and UJ qualified the nondetected results in the parent sample because of potential analytical or sampling imprecision. (J/UJ-FD)

Detected results in parent samples and field duplicates are shown in Table 2.

9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler reviewed 3,542 data records for target analytes in the field samples during this data validation. Of these, Amec Foster Wheeler J or UJ qualified 699 records (19.7%) as estimated because of potential low analytical bias from low continuing calibration recovery, low LCS recovery, or low MS recovery; and quantitative uncertainty because of high sample receipt temperatures, high RPDs between parent samples and field duplicates, and/or results between the SDL and the MQL. Amec Foster Wheeler U qualified 1 records (0.03%) as not detected because of a detection in an associated equipment blank. Amec Foster Wheeler did not reject any results and all of the data should be considered fully usable with the addition of the qualifiers presented in this report.

Definitions of data qualifiers added during data validation are summarized in Section 5.0 and summaries of specific qualifiers added to each affected sample as a result of the validation findings are presented in Table 3.**REFERENCES**

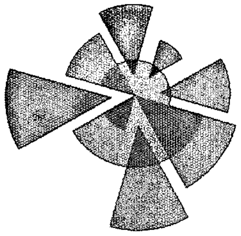
EPA, 2014a. EPA Contract Laboratory Program CLP National Functional Guidelines for Inorganic Superfund Data Review, EPA-540-R-013-001.

EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.

TCEQ, 2010. TCEQ Review and Reporting of COC Concentration Data under TRRP, RG-366/TRRP-13.

LIMITATIONS

This report was prepared exclusively for the Former El Campo Aluminum Facility in El Campo, Texas by Amec Foster Wheeler Environment & Infrastructure, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Usability Summary is intended to be used by for the Former El Campo Aluminum Facility only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.



TABLES

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
MW-135B	10/21/2015	600-120356-1	
MW-136B	10/21/2015	600-120356-2	
MW-137B	10/22/2015	600-120356-3	
MW-120B	10/22/2015	600-120356-4	
MW-113B	10/22/2015	600-120356-5	
EQBK-10-22-15 CEY	10/22/2015	600-120356-6	Equipment Blank
IG4RW-1 WELL HEAD	10/23/2015	600-120356-7	MS/MSD
IG4RW-1 TREATMENT ST	10/23/2015	600-120356-8	
MW-140B	10/21/2015	600-120356-11	
MW-132B	10/22/2015	600-120356-12	
MW-133B	10/22/2015	600-120356-13	
MW-131B	10/22/2015	600-120356-14	
MW-112B	10/23/2015	600-120356-15	
MW-112B2	10/23/2015	600-120356-16	
MW-128B	10/23/2015	600-120356-17	MS/MSD
DUP-3	10/23/2015	600-120356-18	Field Duplicate of MW-128B
MW-124B	10/22/2015	600-120356-19	
MW-134B	10/23/2015	600-120356-20	
MW-116B	10/23/2015	600-120356-21	
EQBK-10-23-KRB	10/23/2015	600-120356-22	Equipment Blank
EQBK-10-23-CEY	10/23/2015	600-120356-23	Equipment Blank
EQBK-10-23-BJG	10/23/2015	600-120356-24	Equipment Blank
TRIP BLANK	10/23/2015	600-120356-25	Trip Blank
EQBK-BJG_151022	10/22/2015	600-120356-26	Equipment Blank
MW-101B	10/23/2015	600-120356-27	
MW-10 B	10/28/2015	600-120781-1	MS/MSD
MW-119 B	10/28/2015	600-120781-2	
IGI MW-3	10/28/2015	600-120781-3	
EQBK-102815-BJG	10/28/2015	600-120781-4	Equipment Blank
MW-143 B	10/29/2015	600-120781-5	
MW-102 B	10/29/2015	600-120781-6	
MW-100 B	10/29/2015	600-120781-7	
EQBK-10-29-15-BJG	10/29/2015	600-120781-8	Equipment Blank
MW-110 B	10/29/2015	600-120781-9	
MW-108 B	10/29/2015	600-120781-10	
MW-141 B	10/30/2015	600-120781-11	
DUP-1	10/30/2015	600-120781-12	Field Duplicate of MW-141B
MW-114 B	10/30/2015	600-120781-13	
MW-118 B	10/30/2015	600-120781-14	
EQBK-10-30-15 DBH	10/30/2015	600-120781-15	Equipment Blank
TRIP BLANK	10/30/2015	600-120781-16	Trip Blank
MW-127B	11/3/2015	600-121259-1	
MW-142B	11/4/2015	600-121259-2	
MW-5B	11/4/2015	600-121259-3	
MW-6B	11/4/2015	600-121259-4	
IG2-MW4	11/4/2015	600-121259-5	
EQBK110415DBH	11/4/2015	600-121259-6	Equipment Blank
MW-126B	11/5/2015	600-121259-7	
MW-7B	11/5/2015	600-121259-9	
MW-21B	11/5/2015	600-121259-10	
IG2-MW3	11/5/2015	600-121259-11	
EQBK110515DBH	11/5/2015	600-121259-12	Equipment Blank

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
IG4-MW1	11/6/2015	600-121259-13	
IG1-RW4	11/6/2015	600-121259-14	MS/MSD
DUP-5	11/6/2015	600-121259-15	Field Duplicate of IG1-RW-4
EQBK110615DBH	11/6/2015	600-121259-16	Equipment Blank
IG1 MW-1	11/3/2015	600-121259-17	
IG2 MW-2	11/3/2015	600-121259-18	
IG2MW-1	11/3/2015	600-121259-19	
EQBK-11-3-15-CEY	11/3/2015	600-121259-20	Equipment Blank
TRIP BLANK	11/6/2015	600-121259-21	Trip Blank
EQBK 110315 DBH	11/3/2015	600-121259-22	Equipment Blank
IG4-MW3	11/12/2015	600-121669-1	MS/MSD
IG1-MW7	11/12/2015	600-121669-2	MS/MSD
IG1-MW6B1	11/12/2015	600-121669-3	
EQBK 111215DBH	11/12/2015	600-121669-4	Equipment Blank
IG1-MW6B2	11/12/2015	600-121669-5	
IG1-MW6B3	11/12/2015	600-121669-6	
DUP-2	11/12/2015	600-121669-7	Field Duplicate of IG1-MW-7
EQBK 111115 DBH	11/11/2015	600-121669-8	Equipment Blank
DUP-4	11/11/2015	600-121669-9	Field Duplicate of IG1-MW-5
MW-125B	11/11/2015	600-121669-10	
MW-111B	11/11/2015	600-121669-11	
IG1-MW4	11/11/2015	600-121669-12	
IG1-MW5	11/11/2015	600-121669-13	
IG3-IW1	11/11/2015	600-121669-14	
MW-109B	11/10/2015	600-121669-15	
DUP-6	11/10/2015	600-121669-16	Field Duplicate of MW-109B
EQBK 111015 DBH	11/10/2015	600-121669-17	Equipment Blank
IG4-MW2	11/13/2015	600-121669-18	
EQBK111315 DBH	11/13/2015	600-121669-19	Equipment Blank

Notes:
MS/MSD = Matrix Spike/Matrix Spike Duplicate

TABLE 2
Field Duplicate Detections
Former El Campo Aluminum Facility
El Campo, Texas

Method	Analyte	Average MQL (mg/L)	Primary Sample Result (mg/L)	Field Duplicate Result (mg/L)	Relative Percent Difference	Notes
Samples MW-141B and DUP-1						
SW8260B	Chloroform	0.00100	0.000241 J	0.000231 J	4%	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00381	0.00364	5%	± 2MQL
	trans-1,2-Dichloroethene	0.00100	0.000406 J	0.000353 J	14%	± 2MQL
	Trichloroethene	0.0200	0.171	0.169	1%	
Samples IG1-MW-7 and DUP-2						
SM2540C	Total Dissolved Solids	10.0	549	537	2%	
SW8260B	Chloroform	0.00100	0.000315 J	0.000359 J	13%	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00333	0.00348	4%	± 2MQL
	trans-1,2-Dichloroethene	0.00100	0.000623 J	0.000638 J	2%	± 2MQL
	Trichloroethene	0.0750	0.734	0.781	6%	
SW9060	Total Organic Carbon	1.000	0.598 J	1.00 U	NC	± 2MQL
Samples MW-128B and DUP-3						
SW8260B	1,1-Dichloroethene	0.00100	0.00111	0.00106	5%	± 2MQL
	1,2-Dichloropropane	0.00100	0.000522 J	0.00100 U	NC	± 2MQL
	Chloroform	0.00100	0.000191 J	0.000206 J	8%	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.000768 J	0.000776 J	1%	± 2MQL
	Trichloroethene	0.0100	0.109	0.104	5%	
Samples IG1-MW-5 and DUP-4						
SW8260B	1,1-Dichloroethane	0.00100	0.00100 U	0.000886 J	NC	± 2MQL
	1,1-Dichloroethene	0.00100	0.00100 U	0.0275	NC	J/UJ-FD
	Chloroform	0.00100	0.00100 U	0.000614 J	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00100 U	0.00614	NC	J/UJ-FD
	Trichloroethene	0.0500	0.514	0.538	5%	
Samples IG1-RW-4 and DUP-5						
SW8260B	1,1-Dichloroethane	0.00100	0.000224 J	0.000235 J	5%	± 2MQL
	1,1-Dichloroethene	0.00100	0.00706	0.00659	7%	
	Chloroform	0.00100	0.000268 J	0.000232 J	14%	± 2MQL
	Chloromethane	0.00200	0.000395 J	0.00200 U	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00115	0.00123	7%	± 2MQL
	Trichloroethene	0.0225	0.210	0.242	14%	
SW9060	Total Organic Carbon	1.000	0.480 J	1.00 U	NC	± 2MQL
Samples MW-109B and DUP-6						
SW8260B	1,1-Dichloroethane	0.00100	0.000375 J	0.000348 J	7%	± 2MQL
	1,1-Dichloroethene	0.00100	0.00209	0.00211	1%	± 2MQL
	Chloroform	0.00100	0.000483 J	0.000496 J	3%	± 2MQL
	Chloromethane	0.00200	0.000521 J	0.00200 U	NC	± 2MQL
	cis-1,2-Dichloroethene	0.00100	0.00877	0.00928	6%	
	cis-1,2-Dichloroethene	0.00100	0.00148	0.00167	12%	± 2MQL
	Trichloroethene	0.0500	1.03	1.07	4%	
SW9060	Total Organic Carbon	1.00	0.45 J	1.00 U	NC	± 2MQL

Notes:

±2MQL = the results are less than five times the MQL, and the difference between the primary sample and field duplicate result is less than twice the MQL

SW8260 = volatile organic compounds

SW9060 = total organic carbon

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

mg/L = milligrams per liter

MQL = method quantitation limit

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
DUP-1	SW8260B	Chloroform	0.000231	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000353	mg/L	J	DL
DUP-2	SW8260B	Chloroform	0.000359	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
		trans-1,2-Dichloroethene	0.000638	mg/L	J	DL
DUP-3	SW8260B	Chloroform	0.000206	mg/L	J	DL
		cis-1,2-Dichloroethene	0.000776	mg/L	J	DL
		Tetrachloroethene	0.00100	mg/L	UJ	L
DUP-4	SW8260B	1,1-Dichloroethane	0.000886	mg/L	J	DL
		1,1-Dichloroethene	0.0275	mg/L	J	FD
		Chloroform	0.000614	mg/L	J	DL
		cis-1,2-Dichloroethene	0.00614	mg/L	J	FD
		Methylene chloride	0.00500	mg/L	UJ	L
DUP-5	SW8260B	1,1-Dichloroethane	0.000235	mg/L	J	DL
		Chloroform	0.000232	mg/L	J	DL
DUP-6	SW8260B	1,1-Dichloroethane	0.000348	mg/L	J	DL
		Chloroform	0.000496	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
IG1 MW-1	SW8260B	1,1-Dichloroethane	0.000614	mg/L	J	DL
		1,2-Dichloroethane	0.000275	mg/L	J	DL
		1,2-Dichloropropane	0.000231	mg/L	J	DL
		Bromodichloromethane	0.000680	mg/L	J	DL
		Vinyl Chloride	0.00112	mg/L	J	DL
	SW9060	Total Organic Carbon	0.757	mg/L	J	DL
IG1-MW4	SW8260B	1,1-Dichloroethane	0.000985	mg/L	J	DL
		1,2-Dichloroethane	0.000293	mg/L	J	DL
		Chloroform	0.000454	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
		Vinyl Chloride	0.000448	mg/L	J	DL
IG1-MW5	SW8260B	1,1-Dichloroethene	0.00100	mg/L	UJ	FD
		cis-1,2-Dichloroethene	0.00100	mg/L	UJ	FD
		Methylene chloride	0.00500	mg/L	UJ	L
IG1-MW6B1	SW8260B	1,1-Dichloroethene	0.000458	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
IG1-MW6B2	SW8260B	1,1-Dichloroethane	0.000436	mg/L	J	DL
		Chloroform	0.000297	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
IG1-MW6B3	SW8260B	1,1,1,2-Tetrachloroethan	0.000221	mg/L	J	DL
		1,1,2-Trichloroethane	0.000478	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
	SW9060	Total Organic Carbon	0.717	mg/L	J	DL
IG1-MW7	SW8260B	Chloroform	0.000315	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
		trans-1,2-Dichloroethene	0.000623	mg/L	J	DL
	SW9060	Total Organic Carbon	0.598	mg/L	J	DL
IG1-RW4	SW8260B	1,1-Dichloroethane	0.000224	mg/L	J	DL
		Chloroform	0.000268	mg/L	J	DL
		Chloromethane	0.000395	mg/L	J	DL
		Trichloroethene	0.210	mg/L	J	L
	SW9060	Total Organic Carbon	0.480	mg/L	J	DL

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
IG2 MW-2	SW8260B	1,1,2-Trichloroethane	0.000414	mg/L	J	DL
		1,2-Dichloroethane	0.000197	mg/L	J	DL
		1,2-Dichloropropane	0.000188	mg/L	J	DL
		Bromodichloromethane	0.000408	mg/L	J	DL
		Chloroform	0.000386	mg/L	J	DL
	SW9060	Total Organic Carbon	0.746	mg/L	J	DL
IG2MW-1	SW8260B	1,2-Dichloroethane	0.000250	mg/L	J	DL
IG2-MW3	SW8260B	1,1,2-Trichloroethane	0.000886	mg/L	J	DL
		1,2-Dichloroethane	0.000428	mg/L	J	DL
		1,2-Dichloropropane	0.000413	mg/L	J	DL
		Chloroform	0.000670	mg/L	J	DL
		Chloromethane	0.000440	mg/L	J	DL
IG2-MW4	SW8260B	1,1,2-Trichloroethane	0.000425	mg/L	J	DL
		1,2-Dichloroethane	0.000237	mg/L	J	DL
		Chloroform	0.000697	mg/L	J	DL
	SW9060	Total Organic Carbon	0.629	mg/L	J	DL
IG3-IW1	SW8260B	1,1-Dichloroethane	0.000328	mg/L	J	DL
		1,1-Dichloroethene	0.000724	mg/L	J	DL
		Chloroform	0.000471	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
		trans-1,2-Dichloroethene	0.000995	mg/L	J	DL
IG4-MW1	RSK SOP-175	Methane	0.000386	mg/L	J	DL
	SW8260B	1,1-Dichloroethane	0.000247	mg/L	J	DL
		Chloroform	0.000367	mg/L	J	DL
		Naphthalene	0.000149	mg/L	J	DL
IG4-MW2	SW8260B	1,1-Dichloroethane	0.000216	mg/L	J	DL
		Chloroform	0.000432	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
		trans-1,2-Dichloroethene	0.000435	mg/L	J	DL
IG4-MW3	SW8260B	1,1-Dichloroethane	0.000364	mg/L	J	DL
		Chloroform	0.000349	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
	SW9060	Total Organic Carbon	0.511	mg/L	J	DL
IG4RW-1 TREATMENT STUB	SW8260B	Chloroform	0.000316	mg/L	J	DL
IG4RW-1 WELL HEAD	SW8260B	Chloroform	0.000314	mg/L	J	DL
IGI MW-3	SW8260B	1,1-Dichloroethene	0.000360	mg/L	J	DL
MW-10 B	SW8260B	Trichloroethene	0.000349	mg/L	J	DL
MW-100 B	SW8260B	cis-1,2-Dichloroethene	0.000871	mg/L	J	DL
		Trichloroethene	0.000765	mg/L	J	DL
MW-101B	SW8260B	Tetrachloroethene	0.00100	mg/L	UJ	L
MW-102 B	SW8260B	Chloroform	0.000249	mg/L	J	DL
		cis-1,2-Dichloroethene	0.000646	mg/L	J	DL
MW-108 B	SW8260B	Chloroform	0.000186	mg/L	J	DL
		Trichloroethene	0.000318	mg/L	J	DL

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-109B	SW8260B	1,1-Dichloroethane	0.000375	mg/L	J	DL
		Chloroform	0.000483	mg/L	J	DL
		Chloromethane	0.000521	mg/L	J	DL
		Methylene chloride	0.00500	mg/L	UJ	L
	SW9060	Total Organic Carbon	0.450	mg/L	J	DL
MW-111B	SW8260B	Methylene chloride	0.00500	mg/L	UJ	L
MW-112B	SW8260B	Tetrachloroethene	0.00100	mg/L	UJ	L
MW-112B2	SW8260B	Tetrachloroethene	0.00100	mg/L	UJ	L
MW-113B	RSK SOP-175	Methane	0.00100	mg/L	UJ	RT
	SW8260B	1,1-Dichloroethene	0.00162	mg/L	J	RT
		Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		cis-1,2-Dichloroethene	0.000238	mg/L	J	DL, RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Trichloroethene	0.0601	mg/L	J	RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
	SW9060	Total Organic Carbon	0.466	mg/L	J	DL, RT
MW-116B	SW8260B	Chloroform	0.000341	mg/L	J	DL
		Tetrachloroethene	0.00100	mg/L	UJ	L
MW-118 B	SW8260B	Chloroform	0.000372	mg/L	J	DL
MW-119 B	SW8260B	Trichloroethene	0.000311	mg/L	J	DL
MW-120B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloroform	0.000286	mg/L	J	DL, RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Trichloroethene	0.00205	mg/L	UJ	RB, RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-124B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Tetrachloroethene	0.00100	mg/L	UJ	L, RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-125B	SW8260B	Methylene chloride	0.00500	mg/L	UJ	L
		trans-1,2-Dichloroethene	0.000243	mg/L	J	DL
MW-126B	SW8260B	Chloroform	0.000227	mg/L	J	DL
MW-128B	SW8260B	1,2-Dichloropropane	0.000522	mg/L	J	DL
		Chloroform	0.000191	mg/L	J	DL
		cis-1,2-Dichloroethene	0.000768	mg/L	J	DL
		Naphthalene	0.00200	mg/L	UJ	L
		Tetrachloroethene	0.00100	mg/L	UJ	L

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-131B	SW8260B	1,1-Dichloroethene	0.000301	mg/L	J	DL, RT
		Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloroform	0.000174	mg/L	J	DL, RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Tetrachloroethene	0.00100	mg/L	UJ	L, RT
		Trichloroethene	0.0542	mg/L	J	RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-132B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Tetrachloroethene	0.00100	mg/L	UJ	L, RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-133B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Tetrachloroethene	0.00100	mg/L	UJ	L, RT
		Trichloroethene	0.0112	mg/L	J	RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-134B	SW8260B	Tetrachloroethene	0.00100	mg/L	UJ	L
		Trichloroethene	0.000229	mg/L	J	DL
MW-135B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Trichloroethene	0.000365	mg/L	J	DL, RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-136B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Trichloroethene	0.000464	mg/L	J	DL, RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-137B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT

TABLE 3
Qualifiers Added During Data Usability Review
Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analytical Method	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
MW-140B	SW8260B	Bromomethane	0.00200	mg/L	UJ	RT
		Chloroethane	0.00200	mg/L	UJ	RT
		Chloromethane	0.00200	mg/L	UJ	RT
		Methylene chloride	0.00500	mg/L	UJ	RT
		Naphthalene	0.00200	mg/L	UJ	RT
		Tetrachloroethene	0.00100	mg/L	UJ	L, RT
		Vinyl Chloride	0.00200	mg/L	UJ	RT
		Remaining VOCs	0.00100	mg/L	UJ	RT
MW-141 B	SW8260B	Chloroform	0.000241	mg/L	J	DL
		trans-1,2-Dichloroethene	0.000406	mg/L	J	DL
MW-143 B	SW8260B	Trichloroethene	0.000188	mg/L	J	DL
MW-21B	SW8260B	1,2-Dichloropropane	0.000250	mg/L	J	DL
		Bromodichloromethane	0.000364	mg/L	J	DL
MW-5B	SW8260B	Carbon tetrachloride	0.000355	mg/L	J	DL
MW-5B		Chloroform	0.000707	mg/L	J	DL
MW-6B	SW8260B	1,1-Dichloroethene	0.000301	mg/L	J	DL
MW-6B		Chloroform	0.000401	mg/L	J	DL
MW-7B	SW8260B	Chloroform	0.000285	mg/L	J	DL
MW-7B	SW9060	Total Organic Carbon	0.502	mg/L	J	DL

Notes:
mg/L = milligrams per liter
RSK 175 = methane
SW8260B = volatile organic compounds
SW9060 = total organic carbon

Qualifier Definitions:
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is

Bias and Reason Code Definitions:
L = Bias in the sample result is likely to be low.
DL = The analyte concentration is between the detection limit and the limit of quantification.
FD = High RPD between parent sample and field duplicate results.
RB = Qualified because the analyte was detected in an associated equipment blank.
RT = The sample receipt temperature exceeded the EPA-recommended maximum.

APPENDIX A

NELAP CERTIFICATIONS – TestAmerica Houston

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

TestAmerica Laboratories, Inc. - Houston

6310 Rothway Drive
Houston, TX 77040-5056

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704223-15-18
Effective Date: 11/3/2015
Expiration Date: 10/31/2016

Executive Director Texas Commission on Environmental Quality

DATA USABILITY SUMMARY

Former El Campo Aluminum Facility

El Campo, Texas

Samples Collected from Injection Galleries 3 and 4

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
7376 SW Durham Road
Portland, Oregon 97224
(503) 639-3400

October 2015

Project No. 0126200001.03.005

TABLE OF CONTENTS

Page

TABLES

APPENDIX

ACRONYMS

Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
CLP	Contract Laboratory Program
COC	chemical of concern
DUS	data usability summary
EPA	United States Environmental Protection Agency
ER	exception report
GC/MS	gas chromatography-mass spectrometry
ID	identification
LCS	laboratory control sample
LRC	laboratory review checklist
MQL	method quantitation limit
MS	matrix spike
MSD	matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
SDL	sample detection limit
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TestAmerica	TestAmerica, Inc.
TRRP	Texas Risk Reduction Program
VOC	volatile organic compound

DATA USABILITY SUMMARY
Former El Campo Aluminum Facility
El Campo, Texas

1.0 DATA USABILITY SUMMARY

Amec Foster Wheeler Environmental & Infrastructure, Inc. (Amec Foster Wheeler) reviewed five data packages from TestAmerica Laboratories, Inc. (TestAmerica) for the analysis of groundwater samples collected July 30 through September 29, 2015 from Injection Galleries 3 and 4 at the former El Campo Aluminum Facility in El Campo, Texas. Data were reviewed for conformance to the requirements of the guidance document *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. Amec Foster Wheeler certifies that at the time the laboratory data were generated for the project, TestAmerica Houston was National Environmental Laboratory Accreditation Program (NELAP) - accredited under the Texas Laboratory Accreditation Program for the matrices, analytes, and methods of analysis requested on the chain-of-custody documentation, except analyte 1,3,5-trimethylbenzene, for which no NELAP certification is available. A copy of TestAmerica's NELAP certificates applicable to the period during which the laboratory generated the data in this report are included in Appendix A of this Data Usability Summary (DUS).

1.1 INTENDED USE OF DATA

To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the affected property.

Analyses requested included:

- SW 846 8260B - Volatile Organic Compounds (VOCs) by Gas Chromatography Mass Spectrometry (GC/MS).

2.0 INTRODUCTION

Amec Foster Wheeler collected 21 aqueous samples, including 2 trip blanks, between July 30 and September 29, 2015 from Injection Gallery 3 at the Former El Campo Aluminum Facility, located in El Campo, Texas. Amec Foster Wheeler submitted these samples to TestAmerica, located in Houston, Texas, where they were assigned to sample delivery groups (SDGs) J115585-1, J115727-1, J115792-1, J115939-1, and J119082-1 and analyzed for VOCs by United States Environmental Protection Agency (EPA) Method 8260B. Samples from SDG J115792-1 were subcontracted to TestAmerica in Corpus Christi, Texas, where they were analyzed for VOCs by EPA Method 8260B. A list of these samples by field sample identification (ID), and TestAmerica sample ID is presented in Table 1.

3.0 DATA VALIDATION METHODOLOGY

Amec Foster Wheeler performed Level II validation on these samples. This data validation has been performed in general accordance with:

- EPA, 2014b. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.
- TCEQ, 2010. Texas Commission on Environmental Quality (TCEQ) Review and Reporting of COC Concentration Data under Texas Risk Reduction Program (TRRP), RG-366/TRRP-13.

The CLP guidelines were written specifically for the CLP, and have been modified for the purposes of this data review where they differ from method-specific quality control (QC) requirements.

The following laboratory submittals and field data were examined:

- the reportable data,
- the laboratory review checklists (LRCs) and associated exception reports (ERs), and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting QC analyses were summarized on the LRCs and ERs, and in the case narratives, all of which were included in this review.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness
- Chain of custody compliance
- Preservation and holding time compliance
- Presence or absence of laboratory contamination as demonstrated by method blanks
- Accuracy and precision as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples;

- Analytical precision as relative percent difference (RPD) of analyte concentration between laboratory duplicates or MS/MS duplicate (MSD)
- Sampling and analytical precision as RPD of analyte concentration between field duplicates
- Assessment of field contamination as demonstrated by equipment, and trip blanks
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

4.0 EXPLANATION OF DATA QUALITY INDICATORS

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

4.1 LABORATORY CONTROL SAMPLE RECOVERIES

LCSs are aliquots of analyte-free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany. LCS recovery is an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix.

4.2 MATRIX SPIKE RECOVERIES

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

4.3 SURROGATE SPIKE RECOVERIES

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process.

4.4 BLANK CONCENTRATIONS

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Trip blanks are vials of analyte free water that accompany sample bottles shipped to the field and back to the laboratory with field samples. Trip blanks assess contamination attributed to shipping and handling procedures, as well as contamination from containers. Target analytes should not be found in trip blanks.

Laboratory blanks are processed by the laboratory using exactly the same procedures as the field samples. Target analytes should not be found in laboratory blanks.

When target analytes are detected in blanks, analyte concentrations in associated samples less than five times the concentration detected in the blank will be U qualified as being not detected.

4.5 LABORATORY DUPLICATES

Laboratory and field duplicate analysis verifies acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

5.0 DEFINITIONS OF QUALIFIERS THAT MAY BE ADDED DURING DATA VALIDATION

U	The analyte was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

6.0 DEFINITIONS OF BIAS CODES AND REASON CODES THAT MAY BE ADDED DURING DATA VALIDATION

H	Bias in the sample result is likely to be high.
L	Bias in the sample result is likely to be low.
DL	The analyte concentration is between the sample detection limit (SDL) and the method quantitation limit (MQL). The result is an estimated concentration.
TB	The result was qualified as not detected because of a detection in a trip blank.

7.0 SPECIFIC DATA VALIDATION FINDINGS

Results from these samples may be considered usable with the limitations and exceptions described Sections 7.1 through 8.0

Non-detected results are reported as less than the value of the sample detection limit SDL as defined by the TRRP rule.

7.1 SAMPLE COLLECTION, PRESERVATION, AND RECEIPT

Samples were properly preserved in the field according to method specifications. The samples were received at the laboratory under proper chain of custody, intact, properly preserved, and at temperatures less than the EPA-recommended maximum of 6 degrees Celsius, with the following exceptions:

- Upon receipt of samples from SDG J115792-1, the laboratory reported that all vials of sample IG3-B-3 (46'-47') and two vials of sample IG3-B-3 (104'-105') contained headspace greater than the EPA-recommended maximum of one quarter inch. Data limitations are summarized below.

  - VOCs were not detected in sample IG3-B-3 (46'-47'). Amec Foster Wheeler UJ qualified the VOC results from this sample because of potential low analytical bias. (UJ-L)
  - Dilutions were not performed for the VOC analysis of sample IG3-B-3 (104'-105'). Amec Foster Wheeler has made the assumption that the laboratory did not analyze the vials containing headspace and data usability is not adversely affected.

7.2 VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B

The VOC results generated by TestAmerica may be considered usable with the limitations described in sections 7.2.1 through 7.2.7.

7.2.1 Holding Times

All samples were analyzed for VOC within the EPA-recommended maximum holding time of 14 days from sample collection for preserved samples and 7 days for unpreserved samples.

7.2.2 Initial and Continuing Calibration Verification

According to the LRCs, initial calibration and continuing calibration data met SW-846 method requirements for VOC analyses. The LRCs also document satisfactory instrument performance calibrations (GC/MS tunes) for VOC analyses. Exceptions are noted below.

- According to the LRC for SDG J115585-1, chloromethane recovery was high (recovery not specified) and bromomethane recovery was very low at -44.9% in the CCV associated with the analysis of sample IG3-B-1 (43'-45'). Data limitations are summarized below.
  - Amec Foster Wheeler J qualified the detected chloromethane result from this sample because of potential high analytical bias. (J-H)
  - Amec Foster Wheeler R qualified and rejected the nondetected bromomethane result from this sample because of the very low CCV recovery. (R-L)
- According to the LRC for SDG J115727-1, chloromethane recovery was high (recovery not specified) in the CCV associated with the analysis of samples IG3-B-1 (75'-76'), IG3-B-1 (90'-91'), IG3-B-1 (115'-116'), IG3-B-2 (44'-46'), IG3-B-2 (79'-80'), IG3-B-2 (91'-92'), IG3-B-2 (103'-104'), IG3-B-2 (115'-116'), and the trip blank associated with these samples. Data limitations are summarized below.
  - Amec Foster Wheeler J qualified the detected chloromethane results from samples IG3-B-1 (90'-91'), IG3-B-2 (79'-80'), and IG3-B-2 (115'-116') because of potential high analytical bias. (J-H)
  - Amec Foster Wheeler does not qualify trip blanks. Chloromethane was not detected in the remaining samples, and data usability is not adversely affected by the potential high analytical bias.

- According to the LRC for SDG J115936-1, chloromethane recovery was high (recovery not specified) in the CCV associated with the analysis of samples IG3-B-4 (94'-95'), IG3-B-4 (115'116'), IG3-B-4 (43'-44'), and IG3-B-4 (79'-80'). Amec Foster Wheeler J qualified the detected chloromethane results from these samples because of potential high analytical bias. (J-H)

7.2.3 Blanks

Target analytes were not detected at concentrations greater than the SDL in the laboratory blanks and trip blanks associated with these samples, with the following exceptions:

- Chloromethane and trichloroethene (TCE) were detected in the trip blank from SDG J115727-1, associated with samples IG3-B-1 (75'-76'), IG3-B-1 (90'-91'), IG3-B-1 (115'-116'), IG3-B-2 (44'-46'), IG3-B-2 (79'-80'), IG3-B-2 (91'-92'), IG3-B-2 (103'-104'), and IG3-B-2 (115'-116') from SDG J115727-1. Data limitations are summarized below.
    - Amec Foster Wheeler U qualified the detected chloromethane results from samples IG3-B-1 (90'-91'), IG3-B-2 (79'-80'), and IG3-B-2 (115'-116') because the sample results were less than five times the concentration detected in the blank. These samples were previously J qualified because of potential high analytical bias. Qualifiers were combined into UJ, with reason codes for both qualifiers included. (UJ-H,TB)
        - Chloromethane was not detected in the remaining samples and data usability is not adversely affected.
    - Amec Foster Wheeler U qualified the detected TCE result from sample IG3-B-2 (79'-80') because the sample result was less than five times the concentration detected in the blank. (U-TB)
    - TCE was not detected in sample IG3-B-2 (44'-46'). TCE was detected in the remaining samples at concentrations greater than five times the detection in the associated blank, and data usability is not adversely affected.

7.2.4 Internal Standards and Surrogate Recoveries

According to the LRCs, internal standard data met SW-846 method requirements for VOC analyses. Surrogate compound recoveries were within laboratory-specified limits.

7.2.5 Laboratory Control Sample Accuracy and Precision

LCS recoveries were more within the stringent of either the 60 to 140% TCEQ guidance limits or laboratory-specified limits and RPDs between LCS and LCSD results were less than the laboratory specified maxima. Exceptions are noted below.

- Chloromethane recoveries were high at 175% and 160%, respectively in the LCS and LCSD associated with the analysis of sample IG3-B-1 (43'-45') from SDG J115585-1. The chloromethane result from this sample was previously J qualified because of potential high bias from high recovery in the associated CCV. Further qualification is not warranted by the high LCS and LCSD recovery.
- Chloromethane recoveries were high at 178% and 187%, respectively in the LCS and LCSD associated with the analysis of samples IG3-B-2 (79'-80') and IG3-B-2 (91'-92') from SDG J115727-1. Data limitations are summarized below.
  - Amec Foster Wheeler previously J qualified the chloromethane result from sample IG3-B-2 (79'-80') because of potentially high analytical bias from high recovery in the associated CCV. Further qualification is not warranged by the high LCS and LCSD recovery.
  - Chloromethane was not detected in sample IG3-B-2 (91'-92') and data usability is not adversely affected.
- Chloromethane recoveries were high at 180% and 188%, respectively in the LCS and LCSD associated with the analysis of samples IG3-B-1 (75'-76'), IG3-B-1 (90'-91'), IG3-B-1 (115'-116'), IG3-B-2 (44'-46'), IG3-B-2 (103'-104'), and IG3-B-2 (115'-116') from SDG J115727-1. Data limitations are summarized below.
  - Amec Foster Wheeler previously J qualified the chloromethane result from samples IG3-B-1 (90'-91') and IG3-B-2 (115'-116') because of potentially high analytical bias from high recovery in the associated CCV. Further qualification is not warranted by the high LCS and LCSD recovery.
  - Chloromethane was not detected in sample IG3-B-2 (91'-92') and data usability is not adversely affected.
- Chloromethane recoveries were high at 164% and 167%, respectively, in the LCS and LCSD associated with the analysis of samples IG3-B-4 (94'-95'), IG3-B-4 (115'116'), IG3-B-4 (43'-44'), and IG3-B-4 (79'-80'). Amec Foster Wheeler previously J qualified the chloromethane results from these samples because of potentially high analytical bias from high recovery in the associated CCV. Further qualification is not warranted by the high LCS and LCSD recovery.

7.2.6 Matrix Spike/Matrix Spike Duplicate Accuracy and Precision

TestAmerica did not perform MS/MSD analyses on these samples. Instead, TestAmerica performed duplicate LCS analysis in each batch, and performed MS/MSDs on batch samples that are not related to the samples submitted by Amec Foster Wheeler. It is not possible to evaluate data usability based on the MS/MSDs performed on unrelated samples.

7.2.7 Data Reporting and Analytical Procedures

TestAmerica J qualified results with concentrations between the SDL and the MQL. Amec Foster Wheeler agrees that these results are quantitatively uncertain and has maintained TestAmerica's J qualifiers. (J-DL)

8.0 FIELD PRECISION

Amec Foster Wheeler did not collect field duplicates of any of these samples.

9.0 SUMMARY AND CONCLUSIONS

Amec Foster Wheeler reviewed 1,083 data records for target analytes in the field samples during this data validation. Of these, Amec Foster Wheeler J or UJ qualified 95 records (8.8%) as estimated because of potential high analytical bias from high CCV, LCS, and/or LCSD recovery; low analytical bias from excess headspace in sample vials; and quantitative uncertainty because of results between the SDL and the MQL. Four records (0.37%) were U qualified as not detected because of a detection in an associated trip blank. Amec Foster Wheeler R qualified and rejected 1 result (0.09%) because of extremely low CCV recovery. Over 99% of the data should be considered fully usable with the addition of the qualifiers presented in this report.

Definitions of data qualifiers added during data validation are summarized in Section 5.0 and summaries of specific qualifiers added to each affected sample as a result of the validation findings are presented in Table 2.

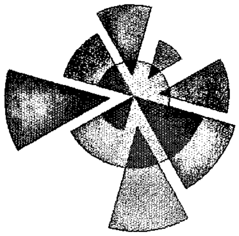
REFERENCES

EPA, 2014b. EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review, EPA/540-R-08-01.

TCEQ, 2010. TCEQ Review and Reporting of COC Concentration Data under TRRP, RG-366/TRRP-13.

LIMITATIONS

This report was prepared exclusively for the Former El Campo Aluminum Facility in El Campo, Texas by Amec Foster Wheeler Environment & Infrastructure, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Amec Foster Wheeler services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Usability Summary is intended to be used by for the Former El Campo Aluminum Facility only, subject to the terms and conditions of its contract with Amec Foster Wheeler. Any other use of, or reliance on, this report by any third party is at that party's sole risk.



TABLES

TABLE 1
Field Samples Submitted to TestAmerica Laboratories, Inc.
Injection Galleries 3 and 4 - Former El Campo Aluminum Facility
El Campo, Texas

Field Sample ID	Collection Date	TestAmerica Sample ID	Notes
IG3-B-1 (43'-45')	600-115585-1	7/30/2015	
IG3-B-2 (44'-46')	600-115727-1	7/31/2015	
IG3-B-2 (79'-80')	600-115727-2	8/1/2015	
IG3-B-2 (91'-92')	600-115727-3	8/1/2015	
IG3-B-2 (103'-104')	600-115727-4	8/1/2015	
IG3-B-2 (115'-116')	600-115727-5	8/1/2015	
IG3-B-1 (75'-76')	600-115727-6	8/2/2015	
IG3-B-1 (90'-91')	600-115727-7	8/2/2015	
IG3-B-1 (115'-116')	600-115727-8	8/2/2015	
TRIP BLANK	600-115727-9	8/2/2015	Trip Blank
IG3-B-3 (46'-47')	600-115792-1	8/4/2015	
IG3-B-3 (74'-75')	600-115792-2	8/4/2015	
IG3-B-3 (95'-96')	600-115792-3	8/4/2015	
IG3-B-3 (104'-105')	600-115792-4	8/4/2015	
TRIP BLANK	600-115792-5	8/4/2015	Trip Blank
IG3-B-4 (43'-44')	600-115936-1	8/5/2015	
IG3-B-4 (79'-80')	600-115936-2	8/5/2015	
IG3-B-4 (94'-95')	600-115936-3	8/6/2015	
IG3-B-4(115'116')	600-115936-4	8/6/2015	
IG4-RW-1	660-119082-1	9/29/2015	
Effluent	660-119082-2	9/29/2015	

TABLE 2
Qualifiers Added During Data Usability Review
Injection Galleries 3 and 4 - Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
IG3-B-1 (43'-45')	Benzene	0.000940	mg/L	J	DL
	Bromomethane	<0.000250	mg/L	R	L
	Chloromethane	0.000266	mg/L	J	H
	Naphthalene	0.000200	mg/L	J	DL
	Toluene	0.000728	mg/L	J	DL
IG3-B-1 (75'-76')	Benzene	0.000235	mg/L	J	DL
	Toluene	0.000206	mg/L	J	DL
IG3-B-1 (90'-91')	1,1-Dichloroethene	0.000687	mg/L	J	DL
	Chloroform	0.000471	mg/L	J	DL
	Chloromethane	0.000238	mg/L	UJ	H, TB
	Vinyl Chloride	0.000258	mg/L	J	DL
IG3-B-1 (115'-116)	1,1-Dichloroethene	0.000396	mg/L	J	DL
	Benzene	0.000516	mg/L	J	DL
	Toluene	0.000315	mg/L	J	DL
	trans-1,2-Dichloroethene	0.000264	mg/L	J	DL
IG3-B-2 (44'-46')	Methylene chloride	0.00181	mg/L	J	DL
IG3-B-2 (79'-80')	Chloromethane	0.000356	mg/L	UJ	H, TB
	cis-1,2-Dichloroethene	0.000975	mg/L	J	DL
	Tetrachloroethene	0.000660	mg/L	J	DL
	Trichloroethene	0.000811	mg/L	U	TB
IG3-B-2 (91'-92')	Benzene	0.000186	mg/L	J	DL
IG3-B-2 (103'-104')	Benzene	0.000190	mg/L	J	DL
IG3-B-2 (115'-116')	1,1,2-Trichloroethane	0.000574	mg/L	J	DL
	Chloroform	0.000454	mg/L	J	DL
	Chloromethane	0.000497	mg/L	UJ	H, TB
	trans-1,2-Dichloroethene	0.000213	mg/L	J	DL
IG3-B-3 (46'-47')	1,1,1,2-Tetrachloroethane	<0.000209	mg/L	UJ	L
	1,1,1-Trichloroethane	<0.000300	mg/L	UJ	L
	1,1,2,2-Tetrachloroethane	<0.000190	mg/L	UJ	L
	1,1,2-Trichloroethane	<0.000173	mg/L	UJ	L
	1,1-Dichloroethane	<0.000168	mg/L	UJ	L
	1,1-Dichloroethene	<0.000300	mg/L	UJ	L
	1,1-Dichloropropene	<0.000185	mg/L	UJ	L
	1,2,3-Trichlorobenzene	<0.000217	mg/L	UJ	L
	1,2,3-Trichloropropane	<0.000191	mg/L	UJ	L
	1,2,4-Trichlorobenzene	<0.000168	mg/L	UJ	L
	1,2-Dibromo-3-chloropropane	<0.000349	mg/L	UJ	L
	1,2-Dibromoethane	<0.000175	mg/L	UJ	L
	1,2-Dichlorobenzene	<0.000170	mg/L	UJ	L
	1,2-Dichloroethane	<0.000172	mg/L	UJ	L
	1,2-Dichloropropane	<0.000173	mg/L	UJ	L
	1,3-Dichlorobenzene	<0.000128	mg/L	UJ	L
	1,3-Dichloropropane	<0.000146	mg/L	UJ	L
	2,2-Dichloropropane	<0.000335	mg/L	UJ	L
	2-Chlorotoluene	<0.000155	mg/L	UJ	L
	4-Chlorotoluene	<0.000242	mg/L	UJ	L
	Benzene	<0.000330	mg/L	UJ	L
	Bromobenzene	<0.000128	mg/L	UJ	L
	Bromochloromethane	<0.000228	mg/L	UJ	L
	Bromodichloromethane	<0.000175	mg/L	UJ	L
	Bromoform	<0.000500	mg/L	UJ	L
	Bromomethane	<0.000392	mg/L	UJ	L

TABLE 2
Qualifiers Added During Data Usability Review
Injection Galleries 3 and 4 - Former El Campo Aluminum Facility
El Campo, Texas

Sample ID	Analyte	Concentration		Qualifiers and Bias/Reason Codes	
IG3-B-3 (46'-47') (continued)	Carbon tetrachloride	<0.000251	mg/L	UJ	L
	Chlorobenzene	<0.000136	mg/L	UJ	L
	Chloroethane	<0.000400	mg/L	UJ	L
	Chloroform	<0.000173	mg/L	UJ	L
	Chloromethane	<0.000390	mg/L	UJ	L
	cis-1,2-Dichloroethene	<0.000121	mg/L	UJ	L
	Dibromochloromethane	<0.000223	mg/L	UJ	L
	Dibromomethane	<0.000165	mg/L	UJ	L
	Dichlorodifluoromethane	<0.000429	mg/L	UJ	L
	Hexachlorobutadiene	<0.000860	mg/L	UJ	L
	Methylene chloride	<0.00200	mg/L	UJ	L
	m-Xylene & p-Xylene	<0.000260	mg/L	UJ	L
	n-Propylbenzene	<0.000106	mg/L	UJ	L
	p-Isopropyltoluene	<0.000150	mg/L	UJ	L
	sec-Butylbenzene	<0.000300	mg/L	UJ	L
	Tetrachloroethene	<0.000189	mg/L	UJ	L
	Toluene	<0.000495	mg/L	UJ	L
	Trichloroethene	<0.000317	mg/L	UJ	L
	Trichlorofluoromethane	<0.000244	mg/L	UJ	L
	Vinyl Chloride	<0.000300	mg/L	UJ	L
	Remaining analytes	<0.000200	mg/L	UJ	L
IG3-B-4 (43'-44')	Chloromethane	0.000505	mg/L	J	H
IG3-B-4 (79'-80')	Benzene	0.000513	mg/L	J	DL
	Bromodichloromethane	0.000339	mg/L	J	DL
	Chloroform	0.000344	mg/L	J	DL
	Chloromethane	0.000560	mg/L	J	H
	Toluene	0.000597	mg/L	J	DL
IG3-B-4 (94'-95')	Benzene	0.000502	mg/L	J	DL
	Chloroform	0.000156	mg/L	J	DL
	Chloromethane	0.000423	mg/L	J	H
	Toluene	0.000396	mg/L	J	DL
	trans-1,2-Dichloroethene	0.000220	mg/L	J	DL
IG3-B-4 (115'116')	Bromodichloromethane	0.000382	mg/L	J	DL
	Chloromethane	0.000367	mg/L	J	H
IG4-RW-1	Chloroform	0.000334	mg/L	J	DL

Notes:

mg/L = milligrams per liter

Qualifier Definitions:

U = The analyte was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

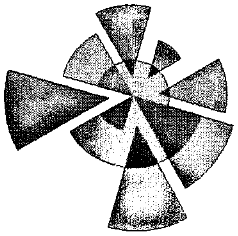
Bias and Reason Code Definitions:

H = Bias in the sample result is likely to be high.

L = Bias in the sample result is likely to be low.

DL = The analyte concentration is between the detection limit and the limit of quantification.

TB = The result was qualified as not detected because of a detection in a trip blank.



APPENDIX A

NELAP CERTIFICATIONS – TestAmerica Houston, TestAmerica Corpus Christi

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

TestAmerica Laboratories, Inc. - Houston

6310 Rothway Drive
Houston, TX 77040-5056

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704223-15-16
Effective Date: 7/7/2015
Expiration Date: 10/31/2015

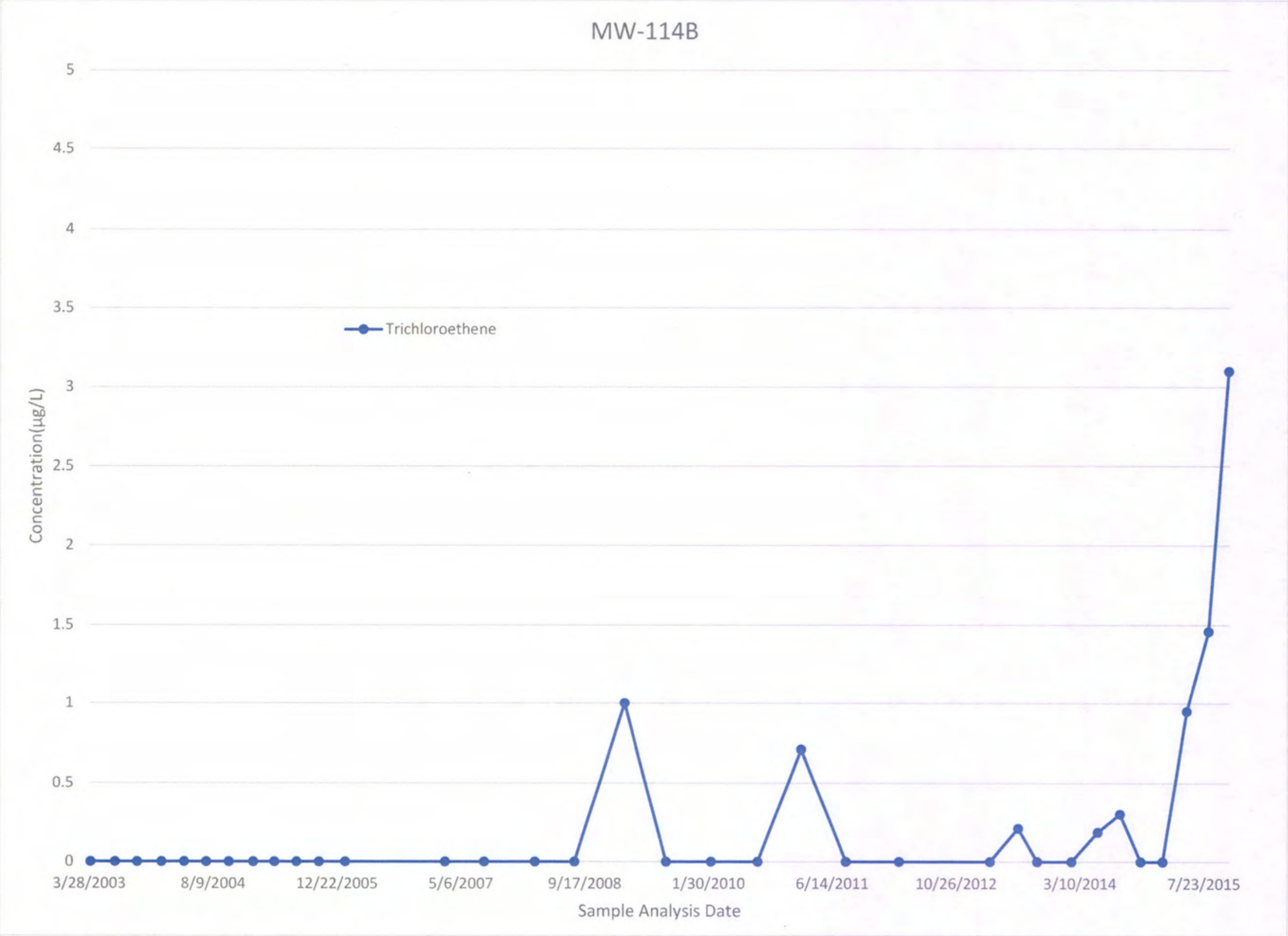
Executive Director Texas Commission on Environmental Quality

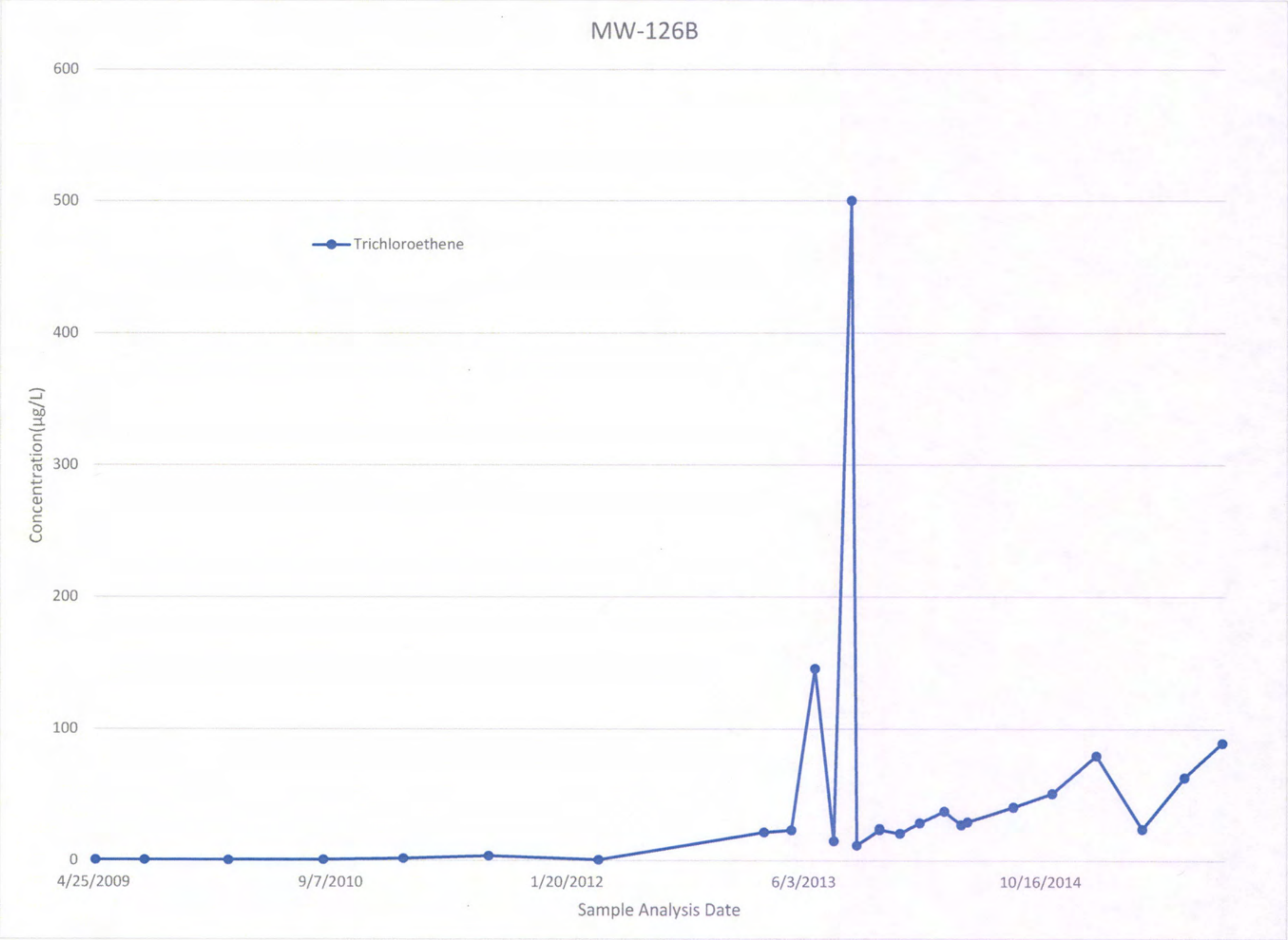
Appendix D

Compilation of Historical Groundwater Analytical Results

Appendix E

Select Groundwater Concentration Trends


MW-114B
Trichloroethene
Concentration(µg/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/28/2003
8/9/2004
12/22/2005
5/6/2007
9/17/2008
1/30/2010
6/14/2011
10/26/2012
3/10/2014
7/23/2015
Sample Analysis Date


MW-126B
Trichloroethene
Concentration(µg/L)
600
500
400
300
200
100
0
4/25/2009
9/7/2010
1/20/2012
6/3/2013
10/16/2014
Sample Analysis Date


MW-141B
Trichloroethene
Concentration(µg/L)
180
160
140
120
100
80
60
40
20
0
5/3/2013
8/11/2013
11/19/2013
2/27/2014
6/7/2014
9/15/2014
12/24/2014
4/3/2015
7/12/2015
10/20/2015
Sample Analysis Date

Appendix F

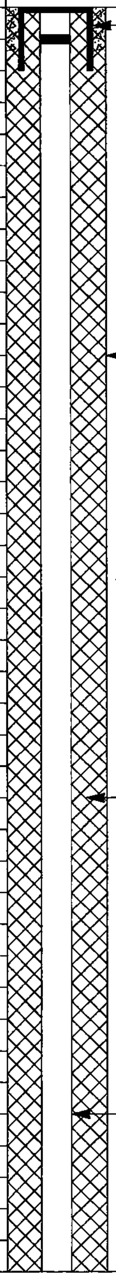
Well Logs

PROJECT: El Campo Aluminum Plant Facility El Campo, TX	**Log of Well No. IG3-IW-1**

BORING LOCATION: N: 13620999.11, E: 2833075.91		GROUND SURFACE ELEVATION AND DATUM: 103.09' MSL	
DRILLING CONTRACTOR: Cascade Drilling, LP		DATE STARTED: 8/15/15	DATE FINISHED: 8/15/15
DRILLING METHOD: Sonic		TOTAL DEPTH (ft.): 118.0	SCREEN INTERVAL (ft.): 68'-118'
DRILLING EQUIPMENT: Full Sonic		DEPTH TO WATER ATD:	CASING: 0'-68'
SAMPLING METHOD: Continuous Core		LOGGED BY: Randy Beyer, P.G.	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Randy Beyer, P.G.	REG. NO. 5468

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: 102.77' MSL
				0.5 1	SANDY CLAY/TOPSOIL (CL): medium brown to black, moist, 90% fines, 10% fine-grained sand, firm, no odor
					CLAY (CH): reddish-brown, moist, 100% fines, high plasticity, stiff, no odor
5				1.1	
				2.9	
10				4.5	
					SILTY CLAY (CL): reddish-brown, damp, 80% fines, 20% silt, soft, medium plasticity, no odor
15					SAND (SP): reddish-tan, moist, 100% medium-grained sand, loose
20					
					- clay clasts with minor gravel, dry, 22-28'
25					
30					- sandy clay layer at 30-30.5', black and reddish stained, minor pebbles, dry
35					- sandy clay layer at 35-35.5', black and reddish stained, minor pebbles, dry
					SANDY CLAY (CL): reddish-brown, moist, 60% fines, 40% sand, hard, non-plastic
40					

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



PID Malfunction at 12.5'-62.0'

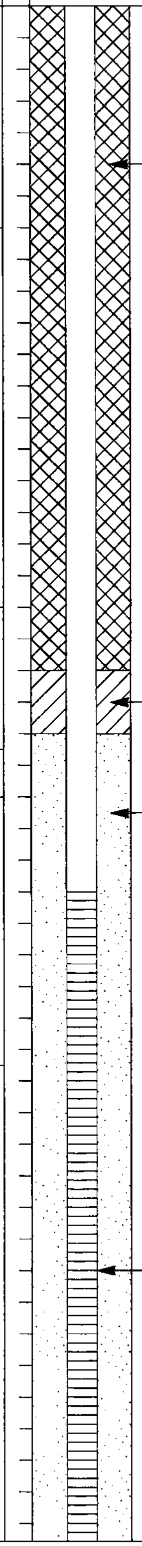
STATE OF TEXAS
Kenneth R. Beyer
KENNETH RANDALL BEYER
GEOLOGY
No. 5468
LICENSED
PROFESSIONAL GEOSCIENTIST
3/29/16

WELL3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Well No. IG3-IW-1 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					SAND (SP): brownish-tan, moist, 100% fine-grained sand, loose, saturated at 42'-47'	
45						Neat Cement Grout
					CLAY (CL): gray to white to tan mottled, damp, 95% fines, 5% silt, very stiff, medium plasticity, dense, calcareous	
50						
55						
60					CLAYEY SILT (ML): light gray to reddish-tan, saturated, 80% silt, 20% fines, firm, low plasticity, no odor	
				0.2		Bentonite Seal
				5.5	CLAY (CL): gray to white to tan mottled, damp, 95% fines, 5% silt, very stiff, medium plasticity, dense	
65						8/12 Grade Sand
				0.9	CLAYEY SILT (ML): light tan, saturated, 90% silt, 10% fines, firm	
				4.6		
70						
				0.8		
				0.3	SAND (SW): light tan, saturated, 100% medium- to coarse-grained sand, loose	
75	IG3-B-1 (75-76')	☒				
				0.8		
80						4" Diameter Sch 80 PVC 0.040 Slot Screen
				0.6		
				0.4		
85						



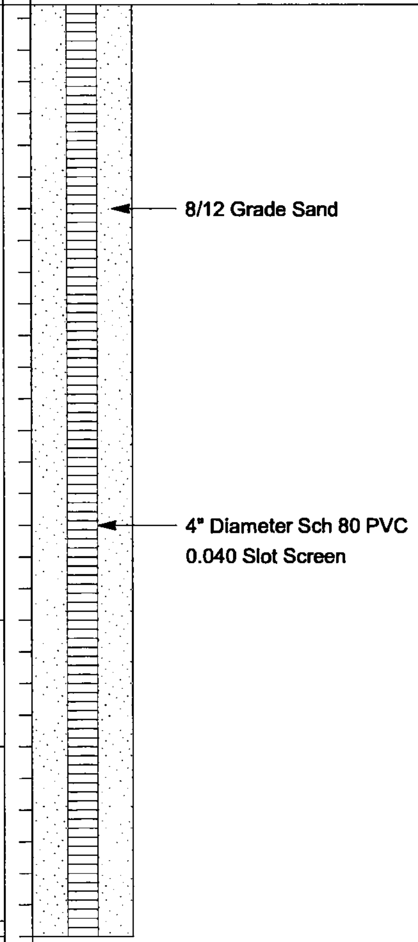
WELL3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Well No. IG3-IW-1 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
				0.6	
90	IG3-B-1 (90-91')	☒			
				10.3	
				1.6	
95					- few clay clasts at 94-96'
				7.6	
				5.3	
100					
				7	
				9.7	
105					
				10.1	
				3.6	SILT (ML): light tannish-gray, saturated, 100% silt, firm
110					
				2.3	
					SILTY SAND (SW): light tannish-gray, saturated, soft, 80% medium-grained sand, 20% silt
				5.6	
115	IG3-B-1 (115-118')	☒			
				7.3	
				5	CLAY (CH): reddish-brown, moist, 100% fines, very stiff, dense, high plasticity
120					Total Depth = 118'
125					
130					
135					

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS



WELL3

Appendix G

Depth-Discrete Soil Boring Log

amec
foster
wheeler

SOIL BORING AND MONITORING WELL LOGS

The following soil boring logs and monitoring well records were prepared under the supervision of Randy Beyer, State of Texas Professional Geoscientist No. 5468, on behalf of Whittaker Corporation.

- Boring No. IG3-B-01
- Boring No. IG3-B-02
- Boring No. IG3-B-03
- Boring No. IG3-B-04

The state of Texas Professional Geoscientist seal that appears below, applies to each of these attached logs.

KENNETH RANDALL BEYER
GEOLOGY
No. 5468

3/30/16

I:\12620 - El Campo\4000 REGULATORY REPORTS\Groundwater Monitoring Reports\2014 Annual\App F - Well Logs\Soil Boring Seal Cover Page_RB.docm

PROJECT: El Campo Aluminum Plant Facility El Campo, TX		**Log of Boring No. IG3-B-01**	
BORING LOCATION: 875' East of MW-113 B and 83' South of Hwy 59		ELEVATION AND DATUM: Not Surveyed	
DRILLING CONTRACTOR: Cascade Drilling, LP		DATE STARTED: 7/28/15	DATE FINISHED: 7/29/15
DRILLING METHOD: Sonic		TOTAL DEPTH (ft.): 126.0	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT: GP-RS300		DEPTH TO WATER | FIRST	COMPL. NA | 24 HRS. NA
SAMPLING METHOD: Continuous Core		LOGGED BY: Randy Beyer, P.G.	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Randy Beyer, P.G.	REG. NO. 5468

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: Not Surveyed		
				SANDY CLAY/TOPSOIL (CL): medium brown to black, moist, 90% fines, 10% fine-grained sand, firm, no odor	0.5	
				CLAY (CH): reddish-brown, moist, 100% fines, high plasticity, stiff, no odor	1	
5					1.1	
					2.9	
10					4.5	
				SILTY CLAY (CL): reddish-brown, damp, 80% fines, 20% silt, soft, medium plasticity, no odor	28	
15				SAND (SP): reddish-tan, moist, 100% medium-grained sand, loose	35	
20						
				- clay clasts with minor gravel, dry, 22-28'		
25						
30				- sandy clay layer at 30-30.5', black and reddish stained, minor pebbles, dry		
35				- sandy clay layer at 35-35.5', black and reddish stained, minor pebbles, dry		
				SANDY CLAY (CL): reddish-brown, moist, 60% fines, 40% sand, hard, non-plastic		
40				SAND (SP): brownish-tan, moist, 100% fine-grained sand,		

RMRK3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Boring No. IG3-B-01 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				loose, saturated at 42'-47'		
45	IG3-B-01 (43-45')	☒				
				CLAY (CL): gray to white to tan mottled, damp, 95% fines, 5% silt, very stiff, medium plasticity, dense, calcareous		
50						
55						
60				CLAYEY SILT (ML): light gray to reddish-tan, saturated, 80% silt, 20% fines, firm, low plasticity, no odor		
					0.2	
				CLAY (CL): gray to white to tan mottled, damp, 95% fines, 5% silt, very stiff, medium plasticity, dense	5.5	
65				CLAYEY SILT (ML): light tan, saturated, 90% silt, 10% fines, firm	0.9	
					4.6	
70					0.8	
				SAND (SW): light tan, saturated, 100% medium- to coarse-grained sand, loose	0.3	
75	IG3-B-01 (75-76')	☒			0.8	
80					0.6	
					0.4	
85						

RMRK3

PROJECT:	El Campo Aluminum Plant Facility El Campo, TX

Log of Boring No. IG3-B-01 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
					0.6	
90	IG3-B-01 (90-91')	☒			10.3	
					1.6	
95				- few clay clasts at 94-96'	7.6	
					5.3	
100					7	
					9.7	
105					10.1	
				SILT (ML): light tannish-gray, saturated, 100% silt, firm	3.6	
110					2.3	
				SILTY SAND (SW): light tannish-gray, saturated, soft, 80% medium-grained sand, 20% silt	5.6	
115	IG3-B-01 (115-116')	☒			7.3	
				CLAY (CH): reddish-brown, moist, 100% fines, very stiff, dense, high plasticity	5	
120					1.3	
					1.4	
125					0.9	
				Total Depth = 126'		
130						
135						

RMRK3

PROJECT: El Campo Aluminum Plant Facility El Campo, TX		**Log of Boring No. IG3-B-02**	
BORING LOCATION: 675' East of MW-113 B and 84' South of Hwy 59		ELEVATION AND DATUM: Not Surveyed	
DRILLING CONTRACTOR: Cascade Drilling, LP		DATE STARTED: 7/30/15	DATE FINISHED: 7/31/15
DRILLING METHOD: Sonic		TOTAL DEPTH (ft.): 122.0	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT: GP-RS300		DEPTH TO WATER / FIRST / COMPL. NA / 24 HRS. NA	
SAMPLING METHOD: Continuous Core		LOGGED BY: Randy Beyer, P.G.	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Randy Beyer, P.G.	REG. NO. 5468

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not Surveyed	PID READING (ppm)	REMARKS
				CLAY (CL): reddish-brown to dark gray mottled, moist, 95% fines, 5% silt, firm, dense		
5						
					1.1	
10					0.7	
				SILT (ML): reddish-brown, moist, 80% silt, 20% fines, soft		
					1.1	
15				SAND (SW): reddish-tan, moist, 100% medium-grained sand, loose, iron oxide stained at 17-18'	8.4	
					2.8	
20					4.4	
25					3.7	
30				- clay at 30-30.5'		
35					7.6	
				- clayey sand at 36-37.5'	35.1	
40						

RMRK3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Boring No. IG3-B-02 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
					37	
	IG3-B-02 (44-46')	☒		- saturated at 43', increased grain size at 45-47', coarse-grained sand, trace gravel		
45					1.6	
				CLAY (CL): white to tan to gray mottled, moist, 90% fines, 10% silt, calcareous	3.7	
50					1.8	
					2.1	
55					0.7	
					2.1	
60				SILT (ML): reddish-tan, saturated, 90% silt, 10% fines, soft	1.2	
				CLAY (CL): light tannish-red, saturated, 90% fines, 10% silt, soft	2.9	
65				CLAYEY SILT (ML): tan, saturated, 80% silt, 20% fines, soft	2.5	
					1.5	
70				SAND (SP): tan, saturated, 100% fine-grained sand, loose, few clay clasts	3.5	
					8	
75						
					1.8	
	IG3-B-02 (79-80')	☒		- increase grain size, medium-grained sand at 78', iron oxide stained at 79-80'		
80					4.4	
					18.5	
				SILT (ML): tan, saturated, 90% silt, 10% fines, soft - clay layer at 83-83.25'		
85				SAND (SW): tan, saturated, 100% fine- to medium-grained sand, loose	5.1	
					6.3	

RMRK3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Boring No. IG3-B-02 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
90	IG3-B-02 (91-92')	☒			8	
					12.8	
				SILT (ML): tan, saturated, 100% silt, soft		
95				SAND (SW): tan, saturated, 100% fine-grained sand, soft	9.1	
					0.2	
100					14.5	
					5	
				SAND (SW): tan, saturated, 100% fine- to coarse-grained sand, soft, trace fine gravel		
105				CLAYEY SAND (SC): grayish-tan, saturated, 80% medium to coarse-grained sand, 20% fines, soft	6.6	
					8.4	
110					5.7	
					5.9	
				- silty at 112-113'		
115	IG3-B-02 (115-116')	☒			8.2	
				- gravel at 115.5-116.8'		
				CLAY (CH): reddish-brown, moist, 100% fines, high plasticity, very stiff, dense	6	
120					4.1	
				Total Depth = 122'	0.5	
125						
130						
135						

RMRK3

PROJECT: El Campo Aluminum Plant Facility El Campo, TX		**Log of Boring No. IG3-B-03**	
BORING LOCATION: 475' East of MW-113 B and 86' South of Hwy 59		ELEVATION AND DATUM: Not Surveyed	
DRILLING CONTRACTOR: Cascade Drilling, LP		DATE STARTED: 8/3/15	DATE FINISHED: 8/3/15
DRILLING METHOD: Sonic		TOTAL DEPTH (ft.): 122.0	MEASURING POINT: Ground Surface
DRILLING EQUIPMENT: GP-RS300		DEPTH TO WATER | FIRST	COMPL. | 24 HRS.
SAMPLING METHOD: Continuous Core		LOGGED BY: Randy Beyer, P.G.	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: Randy Beyer, P.G.	REG. NO. 5468

DEPTH (feet)	SAMPLES Sample No.	Sample	Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not Surveyed	PID READING (ppm)	REMARKS
				SANDY CLAY (CL): light gray, dry, 80% fines, 20% sand, friable, low plasticity		
					0.1	
5					0.5	
					4	
10				SANDY CLAY (CL): reddish-brown, moist, 90% fines, 10% sand, firm, medium plasticity	0.6	
					0.2	
15				SAND (SW): light grayish-tan, dry, 100% fine- to medium-grained sand, loose, trace clay clasts	1.7	
					0.1	
					0.1	
20						
					1.2	
25					1.5	
					3.3	
30					0.5	
35						
40						

RMRK3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Boring No. IG3-B-03 (cont'd)

DEPTH (feet)	SAMPLES			DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
	Sample No.	Sample	Blows/ Foot			
					2.6	
				- saturated 43'-45'		
45	IG3-B-03 (46-47')	☒				
				CLAY (CL): gray to white to tan, moist, 90% fines, 10% sand, friable, low plasticity	1.2	
50					0.6	
					4	
55					2.6	
				SAND (SW): tannish-gray, saturated, 100% fine- to coarse-grained sand, soft		
				CLAY (CL): gray to tan, moist, 90% fines, 10% silt, stiff	4	
				SILT (ML): reddish-tan to gray, 90% silt, 10% fines, soft		
60					1.5	
					2	
				SILTY SAND (SW): reddish-tan, saturated, 80% sand, 20% silt, soft		
65					2.6	
				SAND (SW): light reddish-tan, saturated, 100% fine- to medium-grained sand, loose	2.8	
70					0.7	
					2	
	IG3-B-03 (74-75')	☒				
75					1	
80					0.2	
					2.5	
85					0.2	
					5.1	

RMRK3

PROJECT: El Campo Aluminum Plant Facility
El Campo, TX

Log of Boring No. IG3-B-03 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
90				CLAYEY SAND (SC): light reddish-tan, saturated, 75% sand, 25% fines, soft	8	
					4.9	
95	IG3-B-03 (95-96')	☒		SILTY SAND (SW): light reddish-tan, saturated, 80% fine-grained sand, 20% silt, soft to loose	5.9	
					3.7	
100					11	
					7.6	
105	IG3-B-03 (104-105')	☒			7.9	
				SILTY CLAY (CL): light grayish tan, saturated, 80% fines, 20% silt, stiff	7.6	
				CLAYEY SAND (SW): reddish-tan, saturated, 90% fine- to coarse-grained sand, 10% fines, trace fine gravel	7.3	
110					4	
					4.9	
115				CLAY (CH): reddish-brown, moist, 100% fines, very stiff, dense	2.6	
					0.7	
120				Total Depth = 122'	0.3	
125						
130						
135						

RMRK3

PROJECT: El Campo Aluminum Plant Facility El Campo, TX	**Log of Boring No. IG3-B-04**
BORING LOCATION: 975' East of MW-113 B and 80' South of Hwy 59	ELEVATION AND DATUM: Not Surveyed
DRILLING CONTRACTOR: Cascade Drilling, LP	DATE STARTED: 8/3/15 — DATE FINISHED: 8/3/15
DRILLING METHOD: Sonic	TOTAL DEPTH (ft.): 122.0 — MEASURING POINT: Ground Surface
DRILLING EQUIPMENT: GP-RS300	DEPTH TO WATER — FIRST — COMPL. — 24 HRS.
SAMPLING METHOD: Continuous Core	LOGGED BY: Randy Beyer, P.G.
HAMMER WEIGHT: NA — DROP: NA	RESPONSIBLE PROFESSIONAL: Randy Beyer, P.G. — REG. NO. 5468

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not Surveyed	PID READING (ppm)	REMARKS
0				For approximate lithology, refer to IG3-B-1		
43-44	IG3-B-4 (43-44')	☒				
79-80	IG3-B-4 (79-80')	☒				
94-95	IG3-B-4 (94-95')	☒				
115-116	IG3-B-4 (115-116')	☒				
122				Total Depth = 122'		

Depth scale: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130

RMRK3

150949 26

amec

RESPONSE ACTION PLAN SUPPLEMENT

El Campo Aluminum Facility - VCP No. 538

El Campo, Texas

Received
DEC 06 2011
TCEQ
Remediation Division

Prepared for:

Whittaker Corporation
1955 North Surveyor Avenue
Simi Valley, California 93063-3386

Prepared by:

AMEC Geomatrix, Inc.
3711 S. MoPac Expwy., Bldg. One, Ste. 100
Austin, Texas 78746
(512) 494-0333

December 2011 12-2-11

Project No. 012620000

AMEC Geomatrix

Texas Commission on Environmental Quality

Remediation Division Correspondence Identification Form

SITE & PROGRAM AREA IDENTIFICATION

SITE LOCATION		REMEDIATION DIVISION PROGRAM AND FACILITY IDENTIFICATION	
Site Name:	**El Campo Aluminum Facility**	Is This Site Being Managed Under A State Lead Contract?	☐ Yes ☑ No
Address 1:	**902 Gladys Street**	Program Area:	**VOLUNTARY CLEANUP PROGRAM**
Address 2:		Mail Code:	**MC-221**
City:	**El Campo** State: **Texas**	Is This A New Site To This Program Area?	☐ Yes ☑ No
Zip Code:	**77437** County: **Wharton**	**VCP No.:**	**538**
TCEQ Region:	**Region 12 - Houston**	**--Leave This Field Blank--**	**--Leave This Field Blank--**

DOCUMENT(S) IDENTIFICATION

	PHASE OF REMEDIATION	DOCUMENT NAME
1.	**REMEDIATION**	**RESPONSE ACTION PLAN (RAP)**
2.		
3.		
4.		
5.		

CONTACT INFORMATION

RESPONSIBLE PARTY/APPLICANT/CUSTOMER

Name: **Eric Lardiere**
Company: **Whittaker Corporation**
Phone Number: **805-526-5700 x6650**
Fax Number: **805-584-4182**
Address 1: **1955 N. Surveyor Avenue**
City: **Simi Valley**
State: **CA**
Zip Code: **93063**
Address 2:
Email Address: **eric.lardiere@meggitt.com**

ENVIRONMENTAL CONSULTANT/REPORT PREPARER/AGENT

Name: **Michael Schofield**
Company: **AMEC Geomatrix**
Phone Number: **512-494-0333**
Fax Number: **512-494-0334**
Address 1: **3711 S. MoPac Expressway**
City: **Austin**
State: **TX**
Zip Code: **78746**
Address 2: **BLD 1 STE 100**
Email Address: **mike.schofield@amec.com**

TCEQ INTERNAL USE ONLY

Document No.	TCEQ Database Term	Document No.	TCEQ Database Term
1.	**RAP**	4.	
2.		5.	
3.			

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Response Action Plan

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) **VCP No. 538**
check one: _ Initial submittal for this on-site property X Subsequent submittal for this on-site property
Report date: **December 2, 2011** TCEQ Region No.: **12**

TCEQ Program (check one)

☐ Corrective Action (Mail Code 127)	☐ Superfund PRP Lead (Mail Code 143)
☒ Voluntary Cleanup Program (Mail Code 221)	☐ Municipal Solid Waste Permits (Mail Code 124)
☐ RPR Section (Mail Code 137)	

On-Site Property Information

On-Site Property Name: **El Campo Aluminum Facility**
Street no. **902** Pre dir: _ Street name **Gladys** Street type: **Street** Post dir: _
City: **El Campo** County: **Wharton** County Code: **241** Zip: **77437**
Nearest street intersection or location description: **Gladys Street and Alice Street**

Latitude: Degrees, Minutes, Seconds OR [✓ Decimal Degrees] (circle one) North **29.182208 degrees**
Longitude: Degrees, Minutes, Seconds OR [✓ Decimal Degrees] (circle one) West **-96.282698 degrees**

Off-Site Affected Property Information

Off-Site Affected Property Name: **Hydraulically downgradient properties, El Campo, Texas**
Physical Address:
Street no. _ Pre dir: _ Street name _ Street type: _ Post dir: _
City: **El Campo** County: **Wharton** County Code: **241** Zip: **77437**

☐ Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: **Whittaker Corporation**
Contact Person: **Mr. Eric G. Lardiere** Title: **President and Secretary**
Mailing Address: **1955 North Surveyor Avenue**
City: **Simi Valley** State: CA Zip: **93063-3386** E-mail **eric.lardiere@meggitt.com**
Phone: **805-526-5700 ext. 6650** Fax: **805-584-4182**

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person ____ Name, print: ERIC G. LARDIERE Date: 12/2/11

RAP Executive Summary	ID No.: VCP No. 538
	Report Date: Dec 2, 2011

Use this worksheet to summarize the report. Be sure to complete and submit the Checklist for Report Completeness. **Attach a chronology of activities associated with the affected property.**

Briefly describe the affected property and PCLE zones, the conclusions from the assessment activities, identify any affected or threatened receptors, and describe any other major considerations taken into account when developing this response action plan. If any portion of the response action is necessitated due to an aesthetic or nuisance condition, identify the nature of that condition and identify that portion of the response action proposed to address it. If any media that contains a PCLE zone is not addressed in this RAP, provide justification.

The site is a former aluminum extrusion facility (herein, the Plant) that operated from 1963 until November 2001. In March and April 1997, Bon L Campo conducted due diligence activities prior to purchasing the property from Reynolds Metal Company (herein "Reynolds" is used to refer to both Reynolds Metal Company and their various consultants). Soil, sediment, sludge, and groundwater were assessed in and around the various waste management units and surface impoundments. Areas of stained or otherwise visibly impacted soils were observed, and concentrations of various chemicals of concern (COCs) appeared to be elevated relative to background concentrations. Subsequent investigations were conducted by Reynolds in 1997 and documented chromium, aluminum, barium, lead, PCBs, and other COCs in soils, and trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) in groundwater in excess of the 30 Texas Administrative Code (TAC) 335 Risk Reduction Rule Standard 2 Media Specific Concentrations (MSCs). Subsequently, Reynolds enrolled the property into the Voluntary Cleanup Program in 1997 (VCP No. 538).

Soil excavation work was conducted in 1997 and 1999 to address waste management areas and soils impacts. The Texas Commission on Environmental Quality (the TCEQ, then the Texas Natural Resource Conservation Commission) closed the soils issues, stating in a March 23, 2000 letter that the requirements of the 30 TAC 335 Risk Reduction Standard 2 had been met. That letter also directed Reynolds to proceed with a groundwater assessment. TCE and its daughter products have been the primary target COCs for the resulting assessment, although a few other volatile organic compounds (e.g., 1,1,2-trichloroethane, benzene) have exhibited sporadic and low detections. During the course of the groundwater assessment, the project transitioned to the jurisdiction of 30 TAC 350 Texas Risk Reduction Program (TRRP). On September 21, 2005, TCEQ issued a letter to Reynolds declaring a "substantial change in circumstances" from the conditions known at the time the March 23, 2000 closure letter was issued. The TCEQ letter directed that TCE and degradation products in groundwater were required to be addressed under TRRP.

In March 2001, during the course of groundwater assessment, TCE was detected in an off-site water supply well. Reynolds held a public meeting in concert with the TCEQ on April 30, 2002 at the El Campo High School to inform the local citizens of the groundwater situation and to respond to questions. Reynolds also commenced a field program to identify and sample the local private water wells. As a result of this program, over 300 private water wells were sampled from March to May 2002. Over 200 of these wells were within or proximal to the affected property. Reynolds subsequently equipped 148 affected and threatened wells with carbon filtration treatment systems. They conducted monthly monitoring and maintenance on the systems from May 2002 to September 2005, reporting results to both the TCEQ and the well owners.

In August 2005, the City of El Campo Public Water System (PWS) was extended into the affected property area to provide an alternate source of potable water. Subsequent to the PWS extension, Reynolds plugged and abandoned 125 of the water wells in September and October 2005, and equipped wells that remained plumbed to residences or business with a backflow preventer. There are now no known water wells used for potable water supply that are affected or threatened. Quarterly and semiannual groundwater monitoring and sampling has been conducted over the majority of the project period.

Soil borings were drilled on site (i.e. at the Plant property) in 2002 to investigate whether deeper soils were a continuing TCE source area for the affected groundwater. Based on the results of the soils investigation, a soil vapor extraction (SVE) system was installed in February 2003 near the western side of the former Plant building to remediate TCE-affected source area soils. The system was expanded in July 2005 and is still in operation as of the date of this report. TCE concentrations in both the soil and groundwater source areas have been substantially reduced by the SVE system. The soil PCLE zone and associated SVE Response action have been described in a series of RAERs, the most recent of which was submitted in March 2011. As a result, the Soil Response Action will not be addressed further in this report.

From 2000 to 2005, the majority of the groundwater assessment work was completed. Eighty-six monitoring wells were installed during that time period. Groundwater is present at and below a depth of approximately 32 feet, and does not discharge to the ground surface or to surface waters within the affected property area. Three groundwater bearing units (GWBUs) are affected, and are referred to at this site as Zones A, B, and C. The primary groundwater flow direction in all three zones is to the south-southwest from the Plant property. Based on the distribution of TCE in the groundwater, however, it is possible the many private water wells to the south and southeast of the Plant (most now plugged and abandoned) may have locally influenced groundwater flow, shifting flow to the south-southeast in some portions of the plume. Zones A and B are in direct hydraulic communication in the immediate vicinity of the Plant, and likely in the area to the south and southwest of the Plant. From the available information, Zone C is hydraulically isolated from Zones A and B, except where limited communication occurs on a local scale via inadequate annular seals in a small number of private water wells completed through Zones B and C.

In April 2009, six additional monitoring wells were installed to provide greater spatial control of the B Zone TCE plume in the downgradient area and to further evaluate the C Zone TCE plume. A detection in one of these wells (MW-128B) indicated that the PCLE zone extended south of the previous monitoring well network. In January 2011, three additional wells were installed in an effort to delineate the downgradient extent of the B Zone plume. A minor detection in the southeastern-most well (MW-133B) necessitated the installation of more B Zone wells to complete the delineation. As of the date of this report, six B Zone monitoring wells are being installed to complete the delineation of TCE in the downgradient area.

Although a rigorous evaluation has not been performed, the groundwater is currently presumed to have a Class 1 designation. Groundwater ingestion is the driving exposure pathway, and is the basis for the residential assessment level and the critical groundwater PCL for TCE (0.005 milligrams per liter, or mg/l). Nonaqueous phase liquid (NAPL) has not been observed, and none of the data suggest NAPL is present. The most aerially extensive impact and highest concentrations of TCE are present in Zone B, extending approximately 1.75 miles to the southwest from the Plant. Over the assessment period, TCE concentrations have ranged from less than the detection limit (0.00045 mg/l or lower) in many of the wells to a maximum concentration of 1.32 mg/l in a sample collected from an off-site private water well (Ryan Services well, Zone B, July 23, 2003). The most recent groundwater monitoring event was conducted in August 2011. Based on that data, the highest concentration observed was 0.773 mg/l, present in monitoring well MW-109B. The extent of the TCE-affected groundwater appears to be generally stable, and higher concentration areas are generally shrinking.

In summary, based on assessment data to date, we have concluded:

- TCE was released from the Plant and has affected three GWBUs. There is no evidence that NAPL is present based on field observations and maximum dissolved-phase concentrations. The design and construction of the monitoring wells would not preclude the entry of mobile NAPL into the well had it been present.
- Affected groundwater extends off-site approximately 1.75 miles to the south-southwest of the Plant property.

- Numerous private water wells were affected by the release. A PWS now provides water to users within the affected property area and no known potable supply wells are now affected or threatened by the release. The PWS wells are located over a mile away from the affected groundwater to the northeast (upgradient) and east (cross-gradient). Several water wells completed in the B Zone in the project area are still utilized for non-potable purposes.

- The affected groundwater does not discharge to any surface water. Surface water and related sediments are not threatened by the affected groundwater.

- The three affected GWBUs are part of the Chicot Aquifer. Stratigraphically, Zones A and B are within the Beaumont Formation, and Zone C is within the Lissie Formation. Zone A is unconfined and saturated from approximately 32 to 50 feet depth. It is underlain with a discontinuous clay layer (A/B clay) that separates it in many areas from underlying Zone B. The A/B clay is absent in the Plant vicinity. Zone B is saturated at a depth of approximately 55 to 110 feet depth, and is unconfined and in hydraulic communication with Zone A in the Plant vicinity where the A/B clay is absent, but to the east and west of the Plant, Zone B is likely under confined conditions and may be more isolated from Zone A. Zone B is underlain by a thick continuous clay (B/C clay) that hydraulically segregates Zones B and C. Zone C is under confined conditions and is the saturated interval from approximately 150 to 200 feet depth. Leakage appears to have occured from Zone B to Zone C in the immediate vicinity of three private water wells that lack adequate annular seals.

- TCE appears to have most likely entered the Zone A groundwater near the western perimeter of the Plant, in an area where the A/B clay is absent. The dissolved TCE was then transported to the southwest and downward under advective groundwater movement. Some local advective movement to the east and southeast may also have occurred, possibly under the collective influence of the water wells located in those directions. A map of TCE concentrations for the latest sampling event (August 2011) is included at Figure 1A-1. A map of cis-1,2 DCE concentrations for the August 2011 is also included at Figure 1A-2.

- The extent of COCs in the C Zone appears to be limited to the immediate vicinity of existing or historical wells lacking annual seals. Concentrations of COCs in the C Zone have been declining in recent years to levels near or below PCLs. In fact, during one recent sampling event (February 2010), there were no COCs detected in the C Zone at concentrations above their respective PCLs.

- Full delineation of B Zone in the downgradient area of the TCE plume is in progress, and expected to be complete by the end of 2011.

Current Response Action

Historical COC data indicates TCE degradation is occurring under natural conditions. This is demonstrated by the presence of cis-1,2-DCE, a biodegradation byproduct of TCE, in groundwater samples from numerous wells including MW-6B, MW-7B, MW-21B and MW-16B. In addition, relatively short groundwater plume lengths of TCE daughter products, and the absence of detectable concentrations of vinyl chloride suggest TCE daughter products are also undergoing natural degradation concurrently. Vinyl chloride is biodegradable under both aerobic and anaerobic conditions and therefore, it is not surprising that vinyl chloride is not being detected in groundwater.

General water quality parameter concentrations and field parameters data suggest the aquifer is under predominantly aerobic conditions. Natural biodegradation of TCE and its daughter compounds has been observed under bulk aerobic settings, under conditions where small anaerobic zones co-exist. These anaerobic zones allow for reductive dechlorination (dehalorespiration) of TCE to occur (Enzien et al, 1994). Studies have shown that these types of environments may lead to the development of substantial populations of Methanogenic bacteria (in the anaerobic areas), and Methanotrophs (in the adjacent aerobic areas). The Methanotrophs can degrade TCE and its daughter compounds through the process of aerobic cometabolism, using the methane released by the neighboring Methanogens. A microbiological study conducted within the B-Zone at this site documented the presence of substantial populations of both of these bacterial groups in groundwater at the site. Given this, a practical first step in attempting to enhance the biodegradation process was to attempt to enhance the indigenous microbial population to biodegrade the TCE and daughter products via the cometabolic process in aerobic areas, or via reductive dechlorination in the anaerobic zones.

Water quality parameters data document relatively low concentrations of electron acceptors including iron and manganese to be present in the B-Zone; therefore, a simple carbohydrate injection program was proposed to readily stimulate growth of Methanogens, and increase the size of anaerobic subenvironments, resulting in a corresponding increase in the opportunistic Methanotroph populations. Likewise, the carbohydrate injection was expected to locally stimulate the native microbial population, which would utilize the available dissolved oxygen followed by the nitrate, which would then promote reductive dechlorination near the injection areas. Given the primary contaminant mass at this site is present within the B–Zone, the original RAP outlined the implementation of a carbohydrate injection program to address areas within the B-Zone having the highest TCE levels. The described carbohydrate injection system utilizes a mixture of food-grade molasses as a carbohydrate source, and B-Zone groundwater.

A monitoring well installation and sampling program has been implemented to evaluate the effectiveness of both the carbohydrate injection system within the core area of the B-Zone TCE plume, as well as natural processes in the other portions of the PCLE Zone. These activities comprise the Response Action at the Site. The ultimate goal will be to achieve Remedy Standard A conditions in the A-, B-, and C-Zones within a proposed Reasonable Time Frame of 20 years.

The initially proposed Response Action was approved by the TCEQ in the original Response Action Plan in May 2009. Construction of the first Injection Gallery (#1), located on Murray Road, was completed in August of 2010 and injection began in September 2010. Construction of the second Injection Gallery (#2), located on Lily Street, was completed in February 2011 and injection began in March 2011. Operational data is reported quarterly to the TCEQ Office of Underground Injection Control (UIC). A comprehensive effectiveness evaluation was completed in October 2011 and is being submitted concurrently with this RAP Supplement as the first Groundwater Response Action Effectiveness Report (RAER). In short, the findings reported in the RAER are that the Response Action is having a favorable impact on COC concentrations in the B Zone, and that evidence of enhanced aerobic cometabolism has been seen at distances over 500 feet away from the Injection Galleries. Based on these findings, the chosen Response Action has been appropriate for COC and hydrogeologic conditions, and an expansion of the Response Action is warranted and necessary to treat the entirety of the affected area.

Proposed Response Action Expansion

The proposed Response Action expansion utilizes operational data from the first 18 months of operation of Injection Galleries #1 and #2. The expansion consists of:

1) Modification of Injection Gallery #1 to target a larger portion of the affected property.
2) Installation of three additional Injection Galleries.

Minor modifications have been proposed in the layout of proposed Injection Galleries, as described in depth in Worksheet 2.0.

Downgradient Area Investigation

As previously described above, the B Zone TCE plume is currently undefined in the downgradient direction. Preliminary investigation of this area indicates that the TCE plume is under the hydraulic influence of an agricultural irrigation well in the downgradient direction, located approximately 2 miles south of the facility. Well records indicate that, in addition to deeper groundwater zones, the irrigation well is screened across the highly transmissive basal sands of the B Zone.

Six monitoring wells are currently being installed in an effort to fully delineate the plume and evaluate the influence of the pumping irrigation well. Once installed, the new wells will be monitored during irrigation well pumping and non-pumping conditions. Possible Response Actions based on the findings of this characterization of the downgradient area are discussed in detail in Worksheet 2.0.

What is the selected remedy standard for this affected property? __X__ A ____ B

List all media that contains a PCLE zone and specify the proposed response action for each media. Indicate the type of removal, decontamination, physical control and/or institutional control action that is proposed.

Media	COCs[1]	Removal	Decontamination	Control			
				Physical Control	Modified Groundwater Response Objective[2]		
					PMZ	WCU	TI
Groundwater	**VOCs**		**X**				

Is there a media that contains a PCLE zone that is not addressed in this RAP? __X__ yes ____ no
If yes, provide justification for not addressing the PCLE zone in this RAP.

A shallow soil PCLE Zone exists on the west side on the main Bon L Campo Aluminum Facility building. The soils are impacted by VOCs, and the area is considered to be a primary source area for the COCs observed in groundwater. A separate Response Action is already underway to remove the COCs using a SVE system. SVE System operation has already resulted in substantial reduction of COCs in soils, and shallow groundwater concentrations in that area have also been substantially reduced (AMEC, March 2010). SVE System operation in that area is ongoing, and Response Action Effectiveness Reports are submitted once every three years during operation of that system.

On-site land use: ☐ Residential ☒ Commercial/Industrial
Off-site land use: ☒ Residential ☒ Commercial/Industrial (check all that apply)

Is this a re-submittal or revision of a previous RAP? __X__ Yes ____ No
If yes, explain why the RAP is being revised or resubmitted.

This is a RAP Supplement, being submitted to describe a planned expansion of the Response Action activities at the site. The technology proposed in the initial RAP, carbohydrate injection, has been successful at decontamination of COCs, as detailed in the Response Action Effectiveness Report submitted concurrently with this report. This RAP Supplement proposes an increase in Response Action

---

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).

[2] If a modified groundwater response objective is proposed, check the type(s) of proposed modifications.

projects with the addition of four (4) Injection Galleries. Additionally, this RAP Supplement addresses the installation of a downgradient hydraulic control system, should assessment activities demonstrate such a system is appropriate to further control the TCE plume expansion.

Were all the appropriate notifications made in accordance with §350.55? X Yes ___ No
If no, explain why notifications were not made:

CHRONOLOGY

Category	Event/Report	Date	Objective	Pertinent Information
Response Action	Response Action Effectiveness Report – Groundwater PCLE Zone (GW RAER No. 1)	November 2011	Demonstrate Carbohydrate Injection System Effectiveness	▪ Reported system effectiveness sampling data and injection operation activities.
Groundwater Assessment	Installation of Monitoring Wells	September 2011	Delineation of Downgradient Area of B Zone Groundwater	▪ Installation of six B Zone monitoring wells
	August 2011 Semiannual Groundwater Monitoring Sampling Event (report pending)	August 2011	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	Sampling of Downgradient Residential Supply Wells	June 2011	Groundwater Investigation	▪ Sampling of eleven residential supply wells screened in the B Zone in the downgradient area of the TCE plume.
Soil Assessment	SVE System Evaluation	April 2011	Demonstrate SVE system effectiveness	▪ Installation of eighteen soil borings with installation of permanent soil vapor monitoring points. ▪ Results will be incorporated into next Soil RAER Report.
Response Action	Response Action Effectiveness Report (Soil RAER No. 2) - On-Site Soil PCLE Zone	March 2011	Demonstrate SVE system effectiveness	▪ Continued running SVE system with modifications. ▪ Approved by TCEQ.
	Installation of Injection Gallery #2	February 2011	Groundwater Remediation	▪ Installation of Injection Galley on Lily Street as proposed in RAP.
Groundwater Assessment	February 2011 Semiannual Groundwater Monitoring Sampling Event (report pending)	February 2011	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
Response Action	Begin Quarterly Reporting of Class V Well Operations	February 2011	Underground Injection Control (UIC) Permit Compliance	▪ Reports submitted quarterly to UIC documenting carbohydrate injection activities and analytical program results.
	Installation of Injection Gallery #1	February 2011	Groundwater Remediation	▪ Installation of Injection Galley on CR 306 as proposed in RAP.
Groundwater Assessment	Installation of Monitoring Wells	January 2011	Delineation of Downgradient Area of B Zone Groundwater	▪ Installation of three B Zone monitoring wells
	February 2010 Semiannual Groundwater Monitoring Report	December 2010	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	August 2009 Semiannual Groundwater Monitoring Report	September 2010	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data. ▪ Reported groundwater assessment activities of April 2009.
	August 2010 Semiannual Groundwater Monitoring Sampling Event (report pending)	August 2010	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	Abandonment of Monitoring Wells	March 2010	Groundwater monitoring	▪ Abandonment of five B Zone monitoring wells as outlined in TCEQ-approved RAP (MW-105B, 106A, 106B, 107B, and 122B)
	February – March 2009 Semiannual Groundwater Monitoring Report	December 2009	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	August 2008 Semiannual Groundwater Monitoring Report	July 2009	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	Installation of Monitoring Wells and CPT Borings	April 2009	Further Assessment of B Zone	▪ Installation of four B Zone monitoring wells ▪ Installation of two C Zone monitoring wells ▪ Installation of six B Zone CPT borings with discrete groundwater sampling.
	February – March 2008 Semiannual Groundwater Monitoring Report	November 2008	Groundwater monitoring	▪ Conducted groundwater monitoring and sampling
Response Action	Response Action Plan (RAP) Submittal	May 2008	Groundwater Remediation	▪ Proposed field-scale carbohydrate injection at two injection galleries ▪ Approved by TCEQ in March 2009
	Completion of Remediation Pilot Study	April 2008	Groundwater Remediation Pilot Study	▪ Successful injection of molasses-groundwater mix. Continuing microbiological characterization and response to molasses injection.
	Installed ancillary equipment for groundwater remediation Pilot Study	March 2008	Groundwater Remediation Pilot Study	▪ Installed AST, secondary containment, piping, and security fencing for groundwater remediation Pilot Study.
Groundwater Assessment	Conducted semiannual groundwater monitoring activities	February 2008	Groundwater monitoring	▪ Conducted groundwater monitoring and sampling
Response Action	Installed injection, monitoring, and recovery wells. Placed BioTraps in select wells.	February 2008	Groundwater Remediation Pilot Study	▪ Installed injection, monitoring, and recovery wells for groundwater remediation Pilot Study. Installed BioTraps in select wells for aquifer microbiological characterization.
Groundwater Assessment	Drilled soil borings and collected discrete depth groundwater sampling in vicinity of well MW-6B	November 26-28, 2007	Groundwater investigation	▪ Performed profiling of TCE concentrations in A/B-zone groundwater to support injection, monitoring, and recovery well construction decision for Pilot Study.
Response Action	Class V Injection Well Permit Application – El Campo Aluminum Facility	November 21, 2007	Groundwater Remediation Pilot Study	▪ Provided Work Plan for Installing Class V injection well to implement Pilot Study to assess in situ bioremediation of groundwater. Approved by TCEQ.
Groundwater Assessment	August 2007 Semiannual Groundwater Monitoring Report	November 2007	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	March 2007 Semiannual Groundwater Monitoring Report	August 2007	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.

CHRONOLOGY

Category	Event/Report	Date	Objective	Pertinent Information
Response Action	Response Action Effectiveness Report (Soil RAER No.1) - On-Site Soil PCLE Zone	March 2007	SVE system effectiveness	▪ Continued running SVE system with modifications. ▪ Approved by TCEQ.
APAR Submittal	APAR – El Campo Groundwater Site	December 2006	Revised APAR	▪ Provided full update on groundwater characterization.
Project transition and APAR Preparation	Collected and compiled available file information on project from Reynolds, Reynold's Consultant, Reynolds analytical laboratory and TCEQ	June 2006 – November 2006	Compile and use information to prepare groundwater APAR	▪ No additional field data collected ▪ APAR reflects information obtained from compiled file.
VCP Application Amendment	Amended VCP Application submitted on behalf of Whittaker Corporation	March 31, 2006	Add New VCP Applicant	▪ Whittaker Corporation VCP Applicant A.
Groundwater Assessment	October 2005 Quarterly Groundwater Monitoring Report	December 15, 2006	Groundwater monitoring	▪ Data included in this APAR..
	July 2005 Quarterly Groundwater Monitoring Report	December 15, 2006	Groundwater monitoring	▪ Data included in this APAR.
	April 2005 Quarterly Groundwater Monitoring Report	March 3, 2006	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	January 2005 Quarterly Groundwater Monitoring Report	March 2, 2006	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
	2004 Supplemental Groundwater Characterization Report (URS, 2006b)	February 28, 2006	Continuous stratigraphic characterization and discrete groundwater sampling to investigate potential groundwater flowpaths. Field investigation activities completed April 2004 – January 2005	▪ Has not been submitted to TCEQ. ▪ Results of 2004 investigation to supplement the 2003 *Groundwater Characterization Report* (URS, 2003d). Implementation of field work proposed in *Supplemental Site Investigation Workplan*, May 5, 2004.
Groundwater Monitoring	Groundwater Monitoring Program Modification	November 21, 2005	Modify the numbers of wells sampled and to transition from quarterly to semiannual monitoring	▪ Removed upgradient wells MW-3, -105B, -106A/B, and -107B and private water wells from the program. ▪ Plan approved by TCEQ. ▪ January 2006 monitoring event was initial event under this plan.
Groundwater Assessment	Installed monitoring wells	October 2005	Define extent of affected C-zone groundwater and investigate nature of well leakage	▪ Installed 2 C-zone monitoring wells: MW-17C and MW-22C.
Soil Assessment	Drilled soil borings	October 2005	Soil TCE delineation	▪ Drilled 12 soil borings. ▪ Collected samples from four intervals above saturated zone.
Response Action	Plugged and abandoned private water wells	September – October 2005	Minimize potential for groundwater exposure	▪ Wells were plugged and abandoned for willing owners.
Groundwater Monitoring	October 2004 Quarterly Groundwater Monitoring Report	September 7, 2005	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
Response Action	Extended City of El Campo Public Water System (PWS) to affected property area	August – September 2005	Provide alternate water source	▪ Water lines were installed to connect residences and businesses to the PWS. ▪ If the resident kept his well, a backflow preventer was installed in the water line.
Soil Assessment	Soil Delineation Work Plan	August 2005	Work plan	▪ Identified 12 soil boring locations in and around the former aluminum plant to delineate the nature and extent of affected soil. ▪ Approved by TCEQ.
Groundwater Assessment	Installed monitoring wells	April – June 2005	Groundwater investigation	▪ Installed 5 A-zone monitoring wells: MW-25A, -26A, -109A to -111A ▪ Installed 7 B-zone monitoring wells: MW-24B to -26B, -112B2, -122B, -123B. ▪ Installed 2 C-zone monitoring wells: MW-5C, -11C ▪ VFWMWs-2 and -3 plugged and abandoned.
	July 2004 Quarterly Groundwater Monitoring Report	April 8, 2005	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
Response Action	Response Action Effectiveness Report (RAER) - On-Site Soil PCLE Zone	March 31, 2005	SVE system effectiveness	▪ Continued running SVE system with modifications. ▪ Approved by TCEQ.
Groundwater Assessment	Groundwater Delineation Work Plan	March 2005	Work plan	▪ Identified 14 monitoring well locations to delineate the nature and extent of affected groundwater. ▪ Approved by TCEQ.
Groundwater and Stratigraphy Assessment	Installed monitor wells and conducted Cone Penetrometer Testing (CPT) and Membrane Interface Probe (MIP) investigations	April 2004 – January 2005	Collect discrete interval groundwater samples along potential preferential flow paths and conduct continuous stratigraphic characterization	▪ Installed 5 B-zone monitoring wells: MW-117B to -121B ▪ Conducted 30 Cone Penetrometer Testing and 9 Membrane Interface Probe characterizations for purposes of soil classification. ▪ Additional investigation to supplement 2003 *Groundwater Characterization Report* (URS, 2003d).
Soil Assessment	Drilled soil borings	August 2004	Confirmation soil sampling	▪ Drilled 6 soil borings, CB-1 to -6. ▪ Collected confirmation samples for RAER.
Groundwater Assessment	Supplemental Site Investigation Workplan	May 5, 2004	Groundwater monitoring	▪ The workplan did not amend the existing quarterly monitoring program, except that newly installed monitoring wells would be added to the program.

CHRONOLOGY

Category	Event/Report	Date	Objective	Pertinent Information
	Groundwater Characterization Report	November 2003	Groundwater conditions summary and area groundwater delineation	▪ Provided geochemistry data and analysis of affected groundwater. ▪ Provided detailed explanation of groundwater flow. ▪ Discussed possible evidence for additional TCE sources.
Response Action	SVE system began operation	July 2003	Soil remediation	▪ Completed in accordance with RAP.
Groundwater Assessment	Groundwater Monitoring Report	June 2003	Groundwater monitoring	▪ Reported groundwater monitoring and sampling data.
Response Action	Installed SVE wells and system	May – June 2003	Soil remediation	▪ Completed in accordance with RAP. ▪ Installed SVE Deep Well for remediation.
Soil Assessment	Drilled soil borings	April 2003	Soil investigation	▪ Drilled and sampled 4 soil borings, EB-108 to -111.
Groundwater Assessment	Installed monitoring wells	March 2003	Groundwater investigation	▪ Installed 9 A-zone monitoring wells: MW-22, 100A to -102A, -106A, -108A, 116A, VFWMW-2, VFWMW-3. ▪ Installed 8 B-zone monitoring wells: 109B to -116B.
	Conducted aquifer pump test	March 26 – 29, 2003	Groundwater characterization	▪ Performed a 68-hour pump test on Pump Test Well at southern perimeter of site. ▪ Performed in the B zone to develop specific numerical parameters for aquifer transmissivity and storativity.
Response Action	Response Action Plan (RAP) – Aluminum Extrusion Building Soil PCLE Zone	February 2003	Soil remediation	▪ Installed the SVE system to remove VOCs from subsurface soils in an area adjacent to and underneath the west portion of the former aluminum plant building. ▪ Approved by TCEQ.
Groundwater Assessment	Supplemental Sampling and Analysis for the Groundwater Monitoring Plan	January 8, 2003	Addendum to the Groundwater Monitoring Plan	▪ Proposed the sampling of additional monitoring wells. ▪ Proposed an expanded analytical parameter list. ▪ Approved by TCEQ.
	Installed monitoring wells	December 2002	Groundwater investigation	▪ Installed 10 B-zone monitoring wells: MW-17B, -21B, 100B to -108B. ▪ Installed 2 C-zone monitoring wells: MW-20, -21. ▪ Installed 1 C-zone monitoring well: MW-7C.
Soil Assessment	Drilled soil borings	October 2002	Soil investigation	▪ Drilled and sampled 8 soil borings, EB-100 to -107.
Groundwater Assessment	Interim Groundwater Investigation Report	September 19, 2002	Groundwater investigation	▪ Reported analytical data.
Soil Assessment	Aluminum Extrusion Building Soil Report	August 2002	Soil Report	▪ Reported soil sampling results.
Groundwater Assessment	Interim Groundwater Monitoring Report	August 22, 2002	Groundwater monitoring	▪ Reported groundwater monitoring data.
	Groundwater Monitoring Plan	June 24, 2002	Groundwater monitoring	▪ Established two objectives: 1. To monitoring boundaries of TCE-impacted groundwater for movement and/or changes. 2. To collect water quality and/or water level data to assess boundaries of impacted groundwater and predict future migration (if any) of impacted groundwater. ▪ Proposed the installation of additional monitoring wells to fulfill objectives. ▪ Approved by TCEQ.
Soil Assessment	Aluminum Extrusion Building Soil Sampling Plan	May 16, 2002	Soil investigation	▪ Provided the sampling plan for the soil investigation adjacent to and underneath the Aluminum Extrusion Building.
Groundwater Assessment	Installed monitoring wells	May 2002	Affected groundwater delineation	▪ Installed 7 B-zone monitoring wells: MW-4B, -5B, -11B, -13B, -14B, -16B, -19B. ▪ Installed 1 A-zone monitoring well: MW-19A.
Response Action	Installed carbon filtration systems & initiated monthly system inspections and reporting	May 2002	Protect human health	▪ Installed filter systems on private water wells and in and adjacent to the affected property. ▪ Monthly filtration system inspections continued and reporting continued through September 2005.
TNRCC Site Visit	Toured facility with TCEQ representative	May 1, 2002	Familiarize TCEQ personnel with site	▪ Reynolds and TCEQ representatives toured the facility to discuss the source soil identification.
Notification	Established public meeting and local office	April 30, 2002	Facilitate communication	▪ Communicated with city and county officials and the public. ▪ Responded to property owners regarding human health concerns.
Groundwater Assessment	Installed monitoring wells	April 2002	Groundwater investigation	▪ Installed 1 A-zone monitoring well on the VFW property south of Interstate Highway 59: VFWMW-1. ▪ Installed 2 B-zone monitoring wells on site: MW-6B, -10B.

CHRONOLOGY

Category	Event/Report	Date	Objective	Pertinent Information
Groundwater Assessment	Sampled private water wells	March – May 2002	Groundwater investigation	▪ Sampling at Ryan Services indicated TCE and its degradation products in wells in a deeper groundwater bearing unit. ▪ Additional sampling was done at adjacent businesses and private residences. ▪ Conducted door-to-door surveys for private water wells. ▪ Sampeld over 300 private water wells for volatile organic compounds ▪ Notified well owners of probable or actual exposure.
	Installed monitoring wells	March 2002	Groundwater investigation	▪ Installed 2 off-site A-zone monitoring wells: MW-17 and MW-18. ▪ Affected Zone A groundwater documented off site, in proximity to private water wells.
Plant Operations	Facility Operations Terminated	November 2001	Close El Campo Aluminum Plant	▪ Facility operations were terminated and the plant equipment was removed. ▪ Only the office building and the floor slab and shell of plant remain.
Groundwater Assessment	Groundwater Site Assessment Report	August 2001	APAR	▪ Informed TCEQ of compliance with §350.55 ▪ Informed TCEQ of abandonment of MW-15.
No Further Action on Soils	TCEQ concurrence letter for completion of soils remediation	March 23, 2000	No Further Action	▪ Met 30 TAC 335 RRS-2 ▪ Directed to proceed with groundwater investigation
Groundwater Assessment	Addendum to Site Investigation Report	January 2000	Site investigation	▪ All soil chromium levels < RRS-2 ▪ Groundwater assessment to transition to TRRP.
	Groundwater Site Investigation Workplan	May 1999	Groundwater investigation	▪ Plan for monitoring well installation to confirm groundwater flow direction, and properties of groundwater-bearing unit.
	Soil Removal Action Workplan	May 1999	Soil remediation	▪ Plan for excavation of BTU-2 and 7 for chromium.
	Completed water well inventory	February 1999	Determine local water well locations	▪ Reviewed available records at the Texas Water Development Board (TWDB) and the TNRCC for public and private water wells located within a one-mile radius of the facility.
	Site Investigation Report	January 1999	Site investigation	▪ Documented soils < Risk Reduction Standard (RRS)- 2 for chromium in some BTUs ▪ > Risk Reduction Standard 2 for lead and TCE.
	Monitored groundwater	1997 – 2001	Groundwater monitoring	▪ Groundwater samples analyzed for VOCs. ▪ Determined that the groundwater flow direction was actually to the southwest. ▪ TCE plume identified on property.
	Installed monitoring wells	1997 – 2000	Groundwater investigation	▪ Installed and monitored 15 monitoring wells: MW-2 to -16 around and beyond the perimeter of the site. ▪ Off-site monitoring well MW15 was plugged and abandoned at the request of the land owner.
	Site Investigation Workplan	December 1997	Soil and groundwater investigation	▪ Workplan for initial soil and groundwater assessment. ▪ Modified to reflect October 1997 TCEQ comments.
Soil Remediation	Visibly Contaminated Soil Excavation Report	July 1997	Soil remediation	▪ Soil removed at site.
Begin Site Assessment	Voluntary Cleanup Program (VCP) Application	May 27, 1997	Address impacts identified in the due diligence investigations	▪ Reynolds Metals Company – Applicant A. ▪ Bon L Campo Limited Partnership – Applicant B. ▪ Approved by the TCEQ on June 12, 1997. ▪ VCP Number 538 assigned to the site.
	Environmental Assessment	May 12, 1997	Due diligence	▪ Submitted by ERM for Bon L Campo. ▪ Identified environmental impacts associated with historical operations at the facility. ▪ Installed one A-zone monitoring well, MW1. ▪ Installed five temporary geoprobe wells.
Historical Site Operations	Property purchased by Bon L Campo Limited Partnership	1997	Property transfer	▪ Bon L Campo operated the company as the El Campo Aluminum Company.
	Anodizing/coloring operations were conducted	Unknown – 1995	Manufacturing	▪ Historical information.
	Dross cooler addition constructed	1988	Manufacturing	▪ Historical information.
	Dross bench operations conducted	Unknown – 1983	Manufacturing	▪ Historical information.
	Casthouse added to main building	1975	Manufacturing	▪ Historical information.
	Property purchased by Reynolds Metals Company	1972	Property transfer	▪ El Campo Aluminum Company, a subsidiary of Reynolds Metals Company, owned and operated the plant.
	Property purchased by Whittaker Corporation	1968	Property transfer	▪ Whittaker owned and operated the plant.
	Degreaser operations	Late 1960's – unknown	Manufacturing	▪ Historical information.

CHRONOLOGY

Category	Event/Report	Date	Objective	Pertinent Information
Historical Site Operations	Paint line in operation	mid-1960s – 1968	Manufacturing	▪ Used for painting non-skid aluminum landing mats.
	Fabrication area added to main building	1966	Manufacturing	▪ Historical information.
	Facility constructed and operations began	1963	Initiate plant operations	▪ Owned by May Aluminum. ▪ Built the main manufacturing building, office building, and a window plant on the property.

Checklist for Report Completeness	**ID No.: VCP No. 538**
	Report Date: Dec 2, 2011

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.

					Report Contents
			Required	**Cover Page**	☒
			Required	**Executive Summary**	☒
			Required	**Checklist for Report Completeness**	☒
			Required	**Worksheet 1.0** Response Action Objectives	☒
No ☒	Have new data been collected that was not previously submitted?	☐ Yes		**Attachment 1A*** Maps and Cross Sections	☐
				Attachment 1B* Graphs of Concentration versus Time	☐
			Required	**Worksheet 2.0** Response Action Design	☒
			Required	**Attachment 2A*** Response Action Diagrams and Component/Equipment Descriptions	☒
			Required	**Attachment 2B*** Proposed Well Design	☒
No ☒	Is an ecological services analysis or compensatory restoration plan part of the proposed response action?	☐ Yes		**Attachment 2C*** ESA and Compensatory Restoration Plan	☐
No ☒	Is a plume management zone proposed as part of the response action?	☐ Yes		**Worksheet 2.1** Plume Management Zone	☐
				Attachment 2D* Plume Management Zone Map	☐
				Attachment 2E* Attenuation Action Levels Determination	☐
No ☒	Is a waste control unit proposed as part of the response action?	☐ Yes		**Worksheet 2.2** Waste Control Unit	☐
				Attachment 2F* Map of Waste Control Unit	☐
No ☒	Is a technical impracticability area proposed as part of the response action?	☐ Yes		**Worksheet 2.3** Technical Impracticability	☐
				Attachment 2G* Map of Technical Impracticability Area	☐

Checklist for Report Completeness

ID No.: VCP No. 538

Report Date: Dec 2, 2011

				Report Contents
No ☒	Is the response action a remedy standard B?	☐ Yes	**Worksheet 2.4** Institutional Controls	☐
		Required	**Worksheet 3.0** Performance Measures and Potential Problems	☒
		Required	**Worksheet 3.1** Monitoring and Sampling	☒
		Required	**Attachment 3A*** Map of Monitoring and Sampling Points	☒
		Required	**Worksheet 3.2** Operation and Maintenance	☒
		Required	**Worksheet 4.0** Confirmation Sampling Plan	☒
		Required	**Attachment 4A*** Map of Confirmation Sampling Points	☒
No ☒	Is the response action a Remedy Standard B?	☐ Yes	**Worksheet 5.0** Post Response Action Care	☐
			Attachment 5A* Map of PRAC Monitoring and Sampling Points	☐
			Attachment 5B* PRAC Costs	☐
No ☒	Does the person, who is a small business, desire to modify the financial assurance requirement?	☐ Yes	**Attachment 5C*** Small Business Affidavit	☐
		Required	**Worksheet 6.0** Implementation Schedule	☒
		Required	**Appendix 1*** References	☒
No ☒	Was any data collected that was not previously reported?	☐ Yes	**Appendix 2*** Data Tables and Boring Logs	☐
No ☒	Were any studies or tests conducted?	☐ Yes	**Appendix 3*** Studies and Tests Documentation	☐
No ☒	Is the response action a Remedy Standard B?	☐ Yes	**Appendix 4*** Proposed Institutional Controls	☒
No ☐	Are any institutional controls proposed/required on property not owned by the person?	☒ Yes	**Appendix 5*** Landowner Concurrence	☒
No ☒	Are any of the sample collection or handling procedures different from those reporting in the APAR or other previously submitted report?	☐ Yes	**Appendix 6*** Sampling Procedures	☐
No ☒	Are statistics or geostatistics proposed to be used as part of the response action?	☐ Yes	**Appendix 7*** Statistical Methodology	☐
No ☒	Was approval received from the TCEQ regarding the use of different rules to address a media?	☐ Yes	**Appendix 8*** Split Media Approval	☐

Form contents marked with an asterisk (*) are not included in the blank form.

Response Action Objectives Associated Information: Attachment 1A, 1B	**RAP Worksheet 1.0** Page 1 of 17	
	ID No.: VCP No. 538	**Report Date: Dec 2, 2011**

Use this worksheet to describe the objectives for the response action in each media.

Response Action Objectives

List the environmental media to which this applies **A-Zone, B-Zone, and C-Zone Groundwater**
Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

This is a supplement to the original Response Action Plan. The general approach is the same; this Supplement proposes an expansion of the existing Response Action, with no significant change in approach or technology.

The response objective for the Affected Property is attainment of Remedy Standard A for groundwater in the shallow water-bearing zones referred to in the APAR (Geomatrix, December 2006) as the A-, B-, and C-Zones. The Response Action will attain Remedy Standard A through long-term decontamination of A-Zone, B-Zone, and C-Zone groundwater using both enhanced and naturally-occurring bioremediation methods.

Each of the water-bearing zones is composed predominantly of highly transmissive, unconsolidated fluviodeltaic sediments, with a very low groundwater gradient, resulting in a low overall groundwater flux rate. The water bearing zones are under primarily aerobic conditions, and support a substantial native microbial population capable of sustaining biodegradation of contaminants.

Microbiological and geochemical data indicates that anaerobic microenvironments are present within the water-bearing zones. These anaerobic microenvironments support biologically-mediated transformation of the released contaminant, Trichloroethene (TCE), into daughter products cis-1,2 Dichloroethene (cis-1,2-DCE), trans-1,2 Dichloroethene (trans-1,2 DCE), and 1,1-Dichloroethene (1,1-DCE) via reductive dehalorespiration. The presence of abundant Methanotrophs may account for the small areas impacted by these daughter products, and the absence of detectable concentrations of vinyl chloride. Methanotrophs can readily destroy all of these COCs via cometabolism in aerobic settings, even in close proximity to anaerobic microenvironments,

Groundwater TCE and daughter product isopleths and concentration changes over time suggest that such natural degradation processes are underway. The extent of the PCLE Zone has declined over time, and the areal extent of the central portion of the Affected Property, where TCE concentrations exceed 100 micrograms per liter (µg/l) has also decreased substantially over time (see Figures 1A-1, 1A-2, and 1A-3). The observed decline in TCE concentrations over time in key wells within the Affected Property is also summarized in attached Charts 1B-1 through 1B-8.

The existing site characterization data also confirm that microbial stimulation via injection of a carbohydrate (in this case, molasses) is a viable means to facilitate a more rapid biodegradation of TCE. This approach is proposed to address areas where the mass of TCE and its associated daughter products, cis-1,2 DCE (Figure 1A-4) and 1,1-DCE, are relatively high, thus expediting attainment of Remedy A conditions. Background groundwater geochemical data exhibit relatively low concentrations of the common electron acceptors; this is a favorable condition, since otherwise these would compete with microbial populations when using carbohydrate injection as a means to stimulate microbial growth.

Presently, the human ingestion exposure pathway to groundwater at the Affected Property is controlled by agreements between water well owners and Whittaker Corporation, which preclude use of the water wells constructed in the Affected Property and screened within the affected A-, B-, and C-Zones. While agreements have not been reached with all landowners within the affected area, every property has been supplied with a potable water source. A map of the properties with institutional controls is included as Appendix 5, and an in-depth discussion of the institutional controls in place is included in the Groundwater Response Action Effectiveness Report (RAER) submitted concurrently with this report. Whittaker will make all reasonable efforts to maintain such agreements, as well as seek new agreements with property owners lacking agreements, for the duration of the Response Action, until the Remedy Standard A objective is successfully attained.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

COCs will ultimately be transformed, in situ, into the harmless daughter products carbon dioxide, water, chloride, and ethene. Existing geochemical data shows that degradation of TCE, and its immediate daughter products, cis-1,2 DCE, trans-1,2 DCE, and 1,1 DCE, has not resulted in formation of measurable concentrations of vinyl chloride in groundwater. The absence of vinyl chloride in the aquifer is likely due to the general aerobic condition of the aquifer, outside the anaerobic microenvironments responsible for reduction of TCE. Vinyl chloride is not generally persistent under such aerobic conditions.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

Given the observed decline in areal extent of the TCE plume since 2003, when a soil vapor extraction (SVE) system was activated to address the original primary suspected source area, we are presently proposing a reasonable timeframe of 20 years to attain Remedy Standard A conditions. Over the proposed 20-year period, which began upon the initial RAP approval in 2009, natural biodegradation mechanisms will address the majority of the contaminant plume, with enhanced bioremediation by microbial stimulation conducted to address the core area of the contaminant plume, where TCE concentrations are highest (see **Figure 1A-3**).

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate how that physical control or combination of measures will reliably contain COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

Not applicable for this Response Action. Whittaker will continue to operate the source area SVE system to remove COCs from the vadose zone in the suspected primary source area until that system is no longer considered effective, and will continue to provide Response Action Effectiveness Reports documenting effectiveness of that Response Action.

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevent COC concentrations above the critical soil PCLs from migrating beyond the existing boundary of the soil PCLE zone.

Not applicable for this Response Action. The soil remedy objective is addressed under a separate Response Action, which has been successful in reducing contaminant mass in soils, as well as directly addressing continued COC releases from soil to groundwater.

Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies **A-Zone, B-Zone, and C-Zone groundwater bearing units.**

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification **X** 1 ___ 2 ___ 3

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? ___ Yes **X** No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? ___ Yes ___ No

If yes, complete the appropriate portions of this report.
If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

Plume stability and decline in areal extent has been shown through existing historical data. The proposed Response Action will monitor these natural attenuation processes, and with carbohydrate injection to provide a carbon source, will expedite these attenuation processes in the core areas of the plume.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) is exceeded.

Not applicable. COC concentrations are below groundwater-to-air PCLs.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

Not applicable. Groundwater in the Affected Property does not discharge to the surface.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

The water well use agreements between Whittaker and the other property owners within the Affected Property will be maintained to prevent human and ecological receptor exposure.

ATTACHMENT 1A

Maps and Cross Sections

Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: Groundwater

List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

Based on the success of the Response Action to date, as documented in the RAER submitted concurrently with this report, the purpose of this RAP Supplement is to describe the planned expansion of injection activities.

The proposed expansion includes the expansion of Injection Gallery #1, and installation of three additional injection galleries, designated Injection Galleries #3, #4, and #5. A map showing the layout of the overall Response Action expansion is included as **Figure 1A-3**.

Hydrogeologic data collected at the Site during the operation of Injection Galleries #1 and #2 has been incorporated into the design of the proposed Response Action expansion. Modifications of the design from the original RAP submittal consist of:

1) Reduction of the number of recovery wells from three wells per gallery to one well per gallery. Operational data from Injection Galleries #1 and #2 indicate that the average injection well can accept molasses-containing water at a rate of approximately 1.5 gallons per minute. The pumping rate from one recovery well is approximately 10 gallons per minute. One recovery well, therefore, is sufficient to provide water for an entire Injection Gallery.

2) Placement of the recovery well downgradient from the Injection Wells. In order to influence the local hydraulic gradient and to promote the lateral spreading of injected carbohydrate, the recovery well in each proposed gallery is positioned between 500 and 1000 feet downgradient of the line of injection wells. As with previously constructed galleries, sub-grade, double-containment piping will transport recovery well water to the injection trailer for mixing prior to injection.

3) Spacing between Injection Wells, Monitoring Wells, and Recovery Wells has increased. Operational data from Injection Galleries #1 and #2 indicates that the transmissivity of B Zone sand is higher than initial estimates. In Injection Galley #2, impacts of injection were detected in monitoring well MW-21B, located 500 feet downgradient, in as little as 4 months after injection. As a result, proposed galleries have been designed with greater spacing between wells.

As shown in **Figure 1A-3,** new galleries have been positioned to target the area of B Zone groundwater with concentrations of TCE greater than 100 micrograms per liter (µg/l).

The modification of Injection Gallery #1 is proposed to treat a greater area of the TCE plume. Proposed changes to Injection Gallery #1 are shown in **Figure 2A-1**. Injection wells are currently aligned across the direction of hydraulic gradient, with the well array currently approximately 300 feet in length. The modification would expand this array to a length of approximately 600 feet, with the expansion expanding the array roughly from MW-125B to MW-109B. In addition, operational data from Injection Gallery #1 suggests that the initial placement of injection and recovery wells was too close, based on the detection of molasses in the recovery water. To correct this, the existing three injection wells in Gallery

#1 will be decommissioned, and the existing recovery wells will be converted to injection wells. In addition, a new recovery well will be installed 1,000 feet downgradient of the gallery (as explained in item 2 above).

Proposed Injection Gallery #3 will be located in the central portion of the TCE plume, adjacent to MW-113B, and immediately south of Highway 59. The proposed gallery layout is shown in **Figure 2A-2**. Gallery #3 is located approximately 850 feet to the north of Gallery #1 in the area of the highest historically observed TCE concentrations. Gallery #3 will consist of five injection wells spaced 100 feet apart aligned across the groundwater flow direction. A monitoring well will be located 250 feet downgradient of the injection well alignment, and a recovery well will be located 500 feet downgradient.

Proposed Injection Gallery #4 will be located approximately 1,000 feet downgradient of Gallery #1, and is the widest of the proposed injection galleries. The design of Injection Gallery #4 is shown in **Figure 2A-3**. Gallery #4 will consist of a line of ten injection wells spaced 100 feet apart, and aligned across the groundwater flow direction. Monitoring wells will be located at distances of 300 and 600 feet downgradient from the injection wells, and a recovery well will be installed at a distance of 1,000 feet downgradient of the injection wells.

Proposed Injection Gallery #5 will be located approximately 1,000 feet downgradient of Gallery #4, in the vicinity of MW-128B. Design of Injection Gallery #5 is shown in **Figure 2A-4**. Gallery #5 will consist of a line of 5 injection wells spaced 100 feet apart, aligned across the groundwater flow direction. One monitoring well will be located approximately 125 feet downgradient from the injection wells, and a recovery well will be located approximately 500 feet downgradient of the injection wells.

Downgradient Area Investigation

As previously described above, the B Zone TCE plume is currently undefined in the downgradient direction. Preliminary investigation of this area indicates that the TCE plume is under the hydraulic influence of an agricultural irrigation well located downgradient of the main portion of the plume, approximately 2 miles south of the Plant. Well records confirm that, in addition to deeper groundwater zones, the irrigation well is screened across the highly transmissive basal sands of the B Zone.

Six monitoring wells are currently being installed in an effort to fully delineate this southern tip of the plume and evaluate the influence of the pumping irrigation well. Once installed, the new wells will be monitored during pumping of the irrigation well and in the absence of pumping. Once a characterization of the hydraulic regime in the downgradient area is complete, one of the following response actions will be used to address this downgradient area:

1) **No action.** In the event that the irrigation well is concluded to have no significant influence on plume extent or movement, a perimeter of monitoring wells will be maintained around the affected area. Under this scenario, there would be no effort to modify, remove, or replace the irrigation well.

2) **Abandonment and Replacement of the Irrigation Well.** In the event the irrigation well is concluded to have a significant influence on plume extent or movement, the well owner will be contacted to negotiate the abandonment and replacement of the irrigation well. Assuming landowner concurrence, a replacement irrigation well would be constructed such that no pumping occurs from the B Zone. The replacement irrigation well may also be relocated to another location farther from the plume. Monitoring wells in the downgradient area will be used to characterize the subsequent behavior of the PCLE zone in that area. Based on the results of that characterization, one of the following additional response actions will take place:

a) If the PCLE Zone is concluded to be expanding, an active remediation will be implemented at the plume toe to control this expansion. This active remediation may consist of carbohydrate injection, hydraulic control, or another method. The proposed method and related information would be addressed in an additional RAP Supplement.

b) If the PCLE Zone is found to be stable or shrinking, the monitoring well network will be maintained and monitored, and no active remediation will be implemented.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

Each of the Injection Galleries will consist of a row of five wells positioned generally perpendicular to the inferred direction of B-Zone groundwater flow (constrained as needed by roadway layout and property access issues). Both galleries will utilize a 100-feet spacing between the wells. The arrangement will couple five injection wells with one recovery well as shown in **Figures 2A-1, 2A-2, 2A-3,** and **2A-4. Figure 2A-5** shows a cross-section conceptualization of a portion of the injection system.

Each of the wells will be constructed of flush-mounted, 4-inch diameter Schedule 40 Polyvinyl Chloride (PVC) well risers, with 20 feet of 0.040-inch slotted stainless steel well screen. The well screen intervals for each of the Injection Galleries will be set near the base of the B-Zone, which has been identified as the interval of highest groundwater transmissivity and COC concentrations.

Each of the injection wells and recovery wells will be placed in locked, flush-mounted well vaults. All fluids transfer will be conducted via double-walled PVC piping set below grade. The well vaults will also serve as fluids transfer piping inspection points to verify piping integrity. The recovery wells will be equipped with dedicated downhole electric submersible pumps. Electrical power will be provided at the surface by tying into the public utility, or by use of solar panels.

Recovered groundwater will pass through a secure enclosure, where molasses storage and injection will take place. Molasses injection will be performed using a metering pump, and calibrated to deliver a TOC concentration of up to 10 grams per liter. The projected groundwater recovery rate is 5 gallons per minute (gpm) per recovery well, with a corresponding injection rate of 5 gpm per injection well.

The arrangement and operation of the Injection Galleries is intended to optimize carbohydrate injection and smearing across the treatment zone, to maximize the size of the treatment zone. An array of monitoring wells will be installed at each of the Injection Galleries to evaluate the carbohydrate injection system effects. The wells will be constructed of flush-mount 2-inch diameter PVC riser, with a 0.020-inch slotted screened interval set consistent with the injection well screened intervals, and will monitor the area immediately downgradient of the treatment zone.

We presently anticipate continuing the current pattern of operating each of the galleries cyclically, where continued injection and recovery is conducted for approximately two weeks, followed by a six-week period of no injection. The system will be designed for flexibility in operating mode, however, accounting for potential alterations of injection/recovery operations that may be needed within the well arrays.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

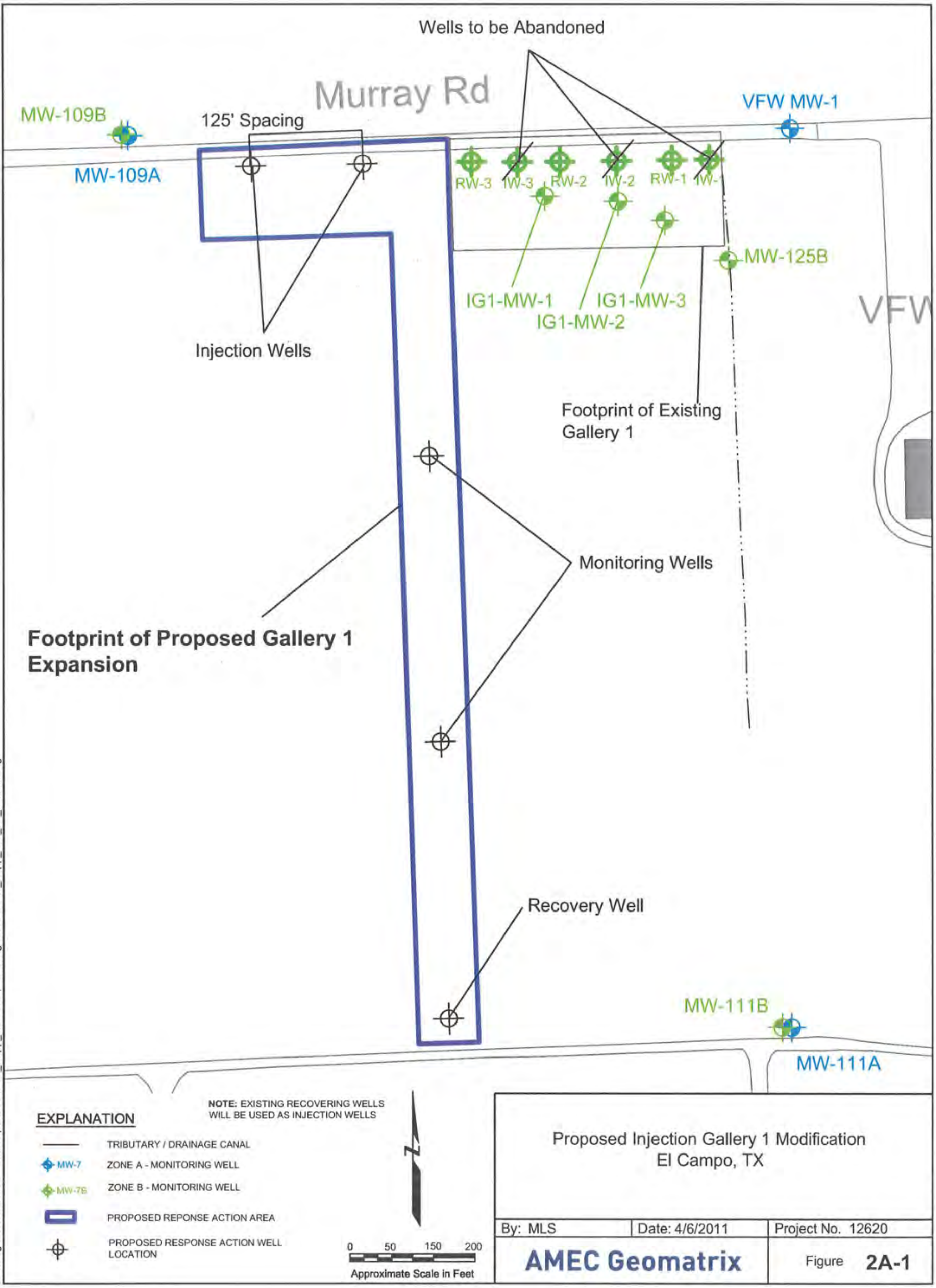
Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
TCEQ Industrial and Hazardous Waste Permits Section	Class V Injection Well Permit	To be applied for upon RAP Supplement approval. Permit #5X2600478 in place for existing galleries.	March 2012

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

The TCEQ-approved Response Action has been underway since August 2010. The effectiveness of the Response Action has been addressed in the Response Action Effectiveness Report submitted concurrently with this report.

ATTACHMENT 2A

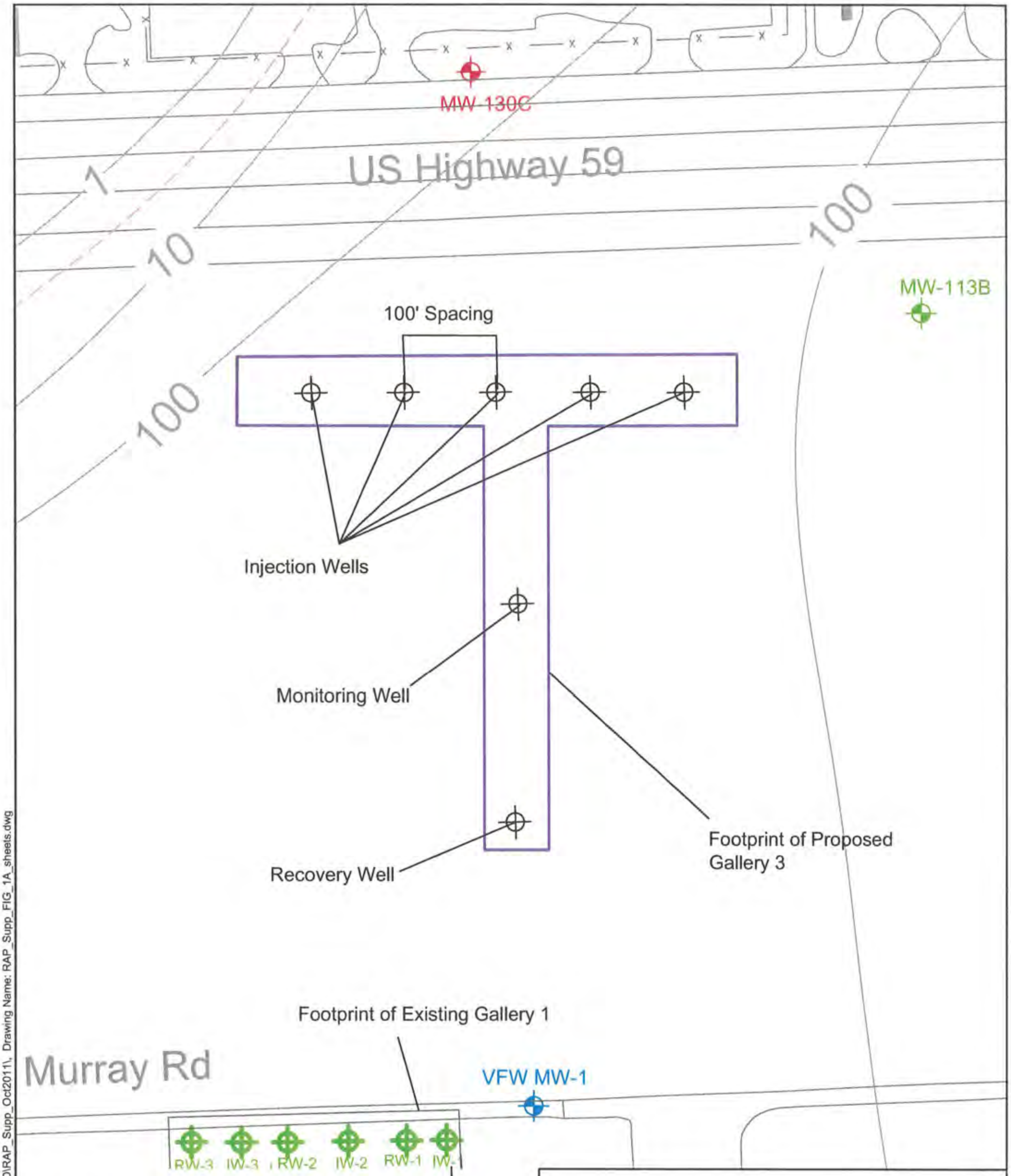
Response Action Diagrams and Component/Equipment Descriptions



Proposed Injection Gallery 1 Modification
El Campo, TX

By: MLS	Date: 4/6/2011	Project No. 12620
AMEC Geomatrix		Figure **2A-1**

Plot Date: 10/10/11 - 5:10pm, Plotted by: mike.schofield
Drawing Path: I:\12620 - El Campo\CAD\RAP_Supp_Oct2011\, Drawing Name: RAP_Supp_FIG_1A_sheets.dwg



EXPLANATION

— TRIBUTARY / DRAINAGE CANAL
MW-7 ZONE A - MONITORING WELL
MW-7B ZONE B - MONITORING WELL
10 AUGUST 2011 TCE ISOCONCENTRATION LINE (UG/L)
AUGUST 2011 TCE PCL LINE
▭ PROPOSED REPONSE ACTION AREA
⌖ PROPOSED RESPONSE ACTION WELL LOCATION

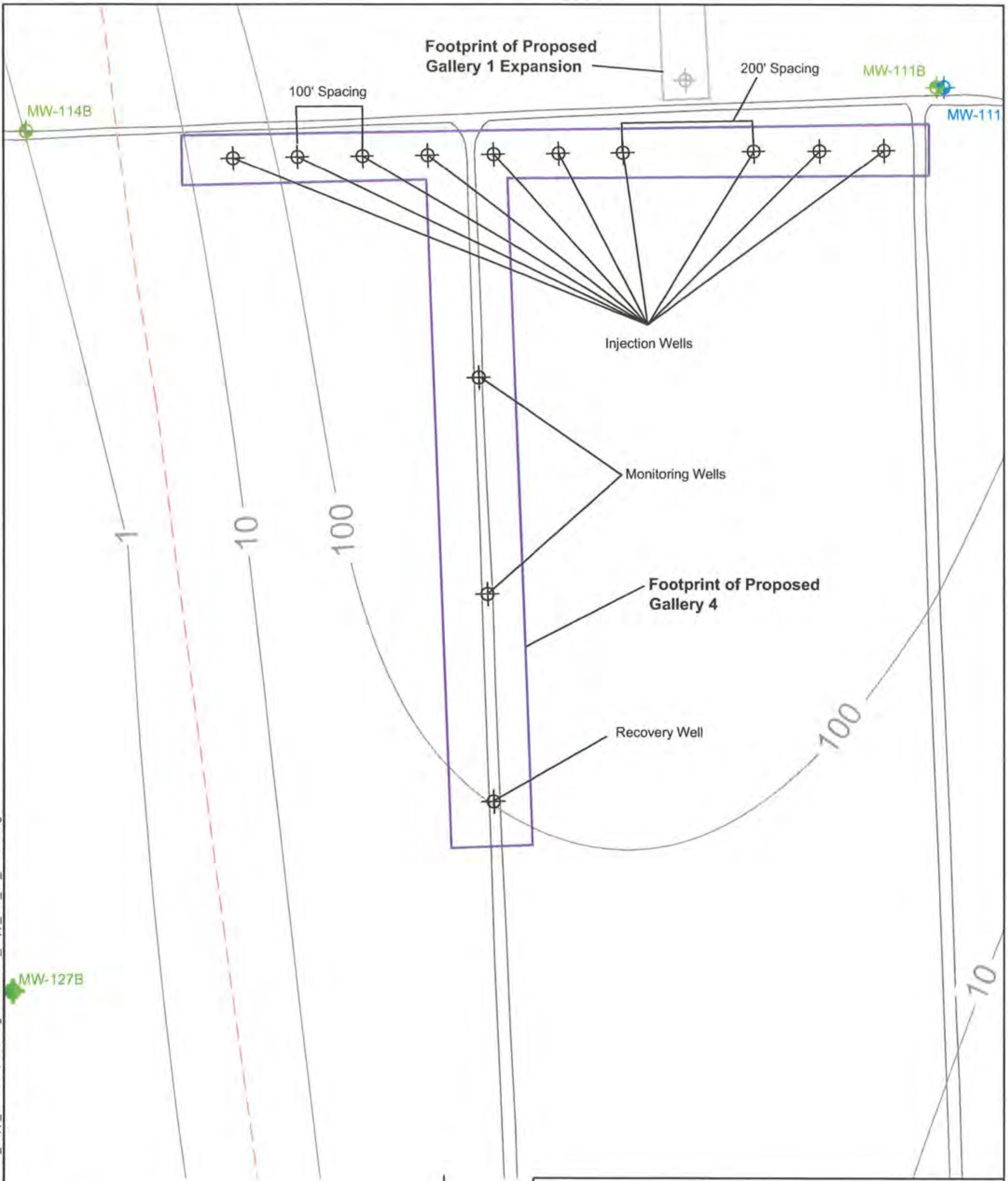
0 100 200 300
Approximate Scale in Feet

N

Proposed Injection Gallery 3
El Campo, TX

By: MLS	Date: 4/6/2011	Project No. 12620
AMEC Geomatrix		Figure **2A-2**

Plot Date: 10/10/11 - 4:46pm, Plotted by: mike.schofield
Drawing Path: I:\12620 - El Campo\CAD\RAP_Supp_Oct2011\, Drawing Name: RAP_Supp_FIG_1A_sheets.dwg



EXPLANATION

—	TRIBUTARY / DRAINAGE CANAL
◆ MW-7	ZONE A - MONITORING WELL
◆ MW-7B	ZONE B - MONITORING WELL
—	AUGUST 2011 TCE ISOCONCENTRATION LINE (UG/L)
— —	AUGUST 2011 TCE PCL LINE
▭	PROPOSED REPONSE ACTION AREA
⊕	PROPOSED RESPONSE ACTION WELL LOCATION

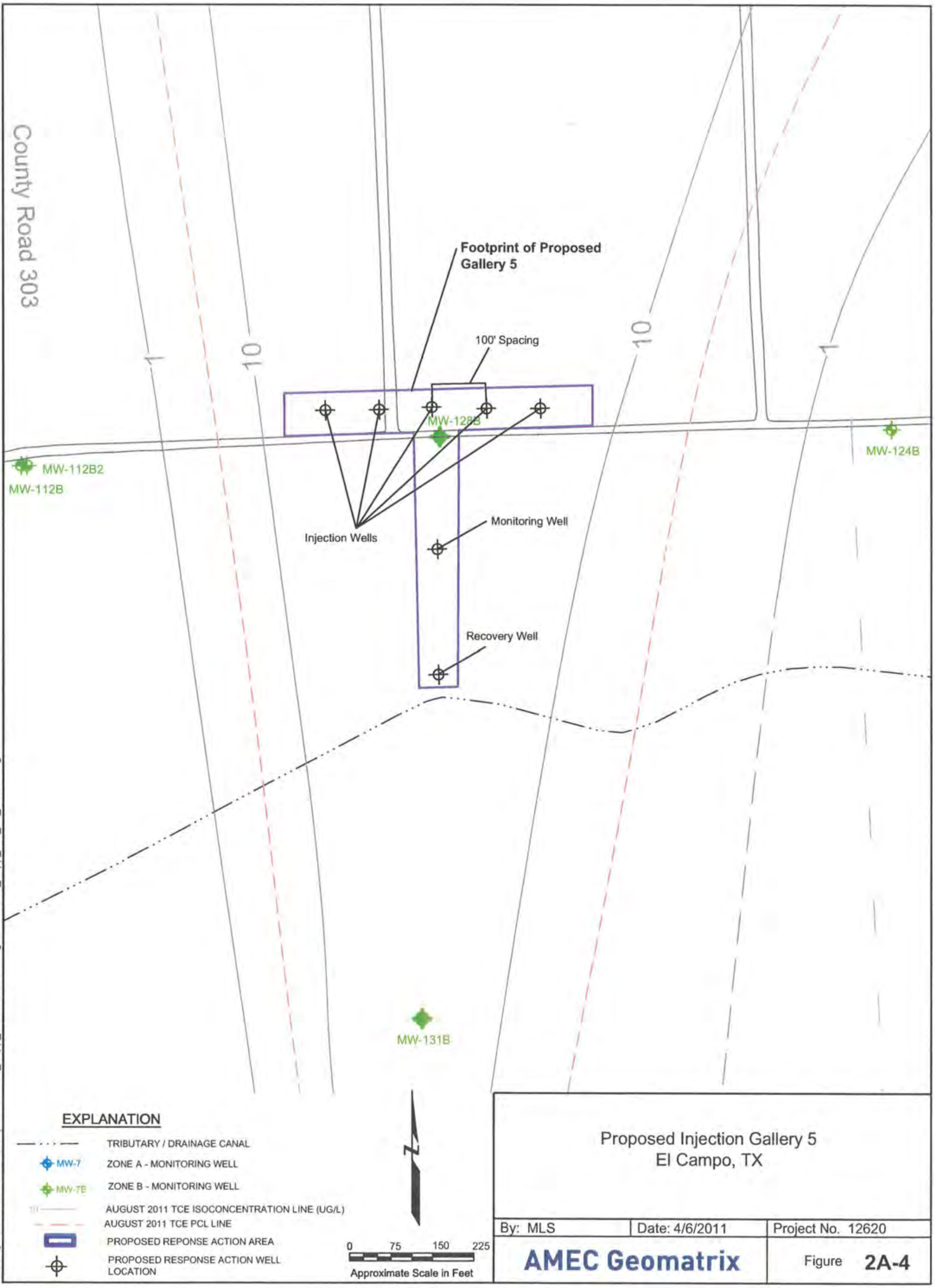
0 100 200 300

Approximate Scale in Feet

Proposed Injection Gallery 4
El Campo, TX

By: MLS	Date: 4/6/2011	Project No. 12620
AMEC Geomatrix		Figure 2A-3

Plot Date: 10/10/11 - 4:43pm, Plotted by: mike.schofield
Drawing Path: I:\12620 - El Campo\CAD\RAP_Supp_Oct2011\, Drawing Name: RAP_Supp_FIG_1A_sheets.dwg



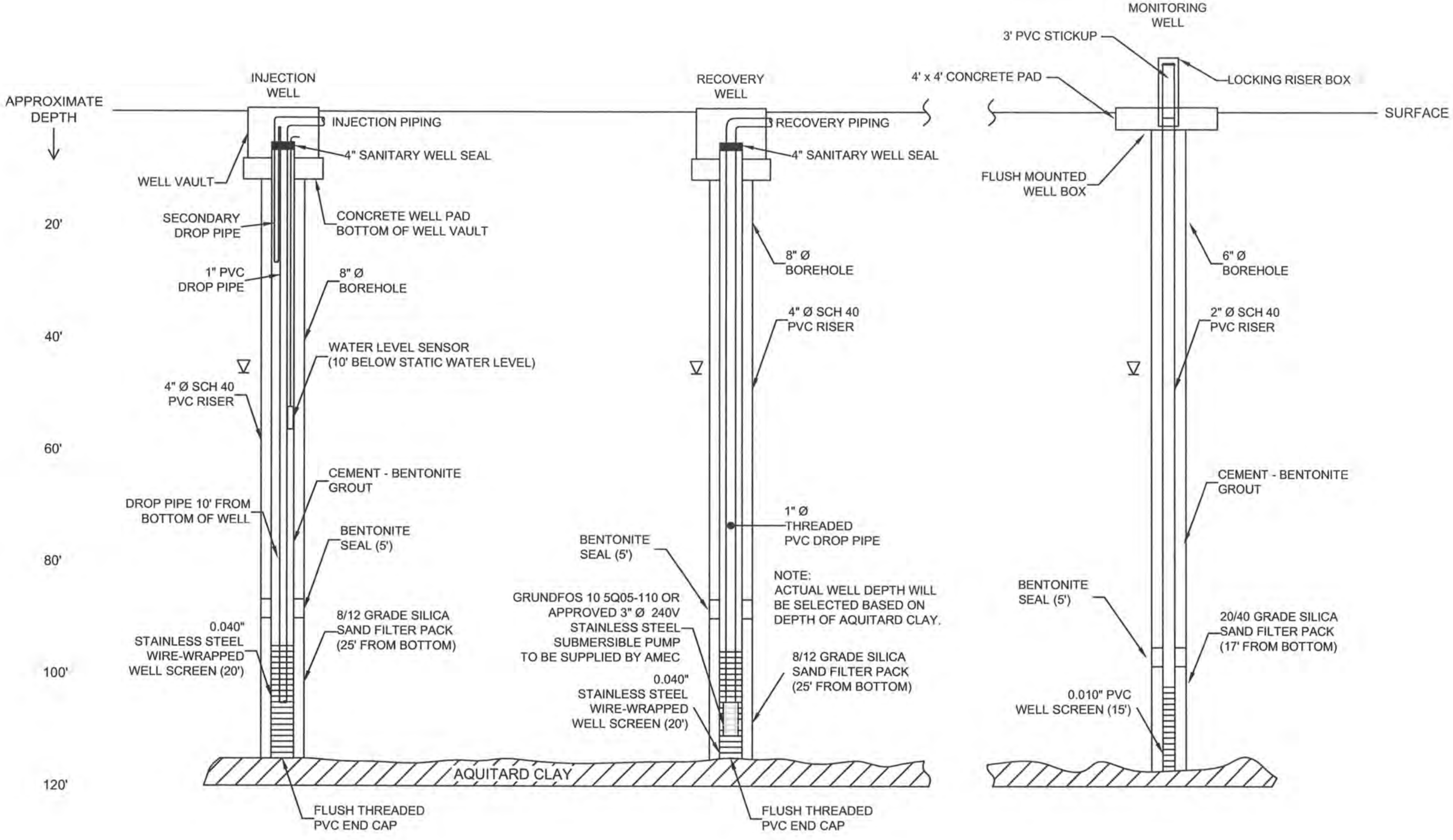
Proposed Injection Gallery 5
El Campo, TX

By: MLS	Date: 4/6/2011	Project No. 12620
	AMEC Geomatrix	Figure 2A-4

Plot Date: 10/10/11 - 5:28pm, Plotted by: mike.schofield
Drawing Path: I:\12620 - El Campo\CAD\RAP_Supp_Oct2011\, Drawing Name: RAP_Supp_FIG_1A_sheets.dwg

ATTACHMENT 2B

Proposed Well Design

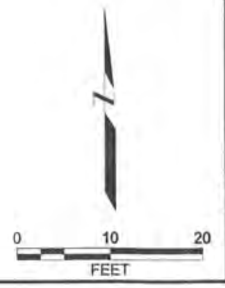


EXPLANATION

∇ STATIC POTENTIOMETRIC SURFACE

STATE OF TEXAS
BRIAN SCOTT AIKEN
96313
LICENSED
PROFESSIONAL ENGINEER

12-1-11



INJECTION, RECOVERY, AND MONITORING WELL DESIGN
Carbohydrate Injection Gallery
El Campo Aluminum Facility
El Campo, TX

By: MLS	Date: 10/27/11	Project No. 012620.000.0
AMEC Geomatrix		Figure 2B-1

Plot Date: 10/27/11 - 2:23pm, Plotted by: mike.schofield
Drawing Path: I:\12620 - El Campo\CAD\RAP_Supp_Oct2011\, Drawing Name: ATT 2B - Injection Extraction Wells.dwg

Institutional Control Associated Information: Appendices 4, 5	**RAP Worksheet 2.4** Page 8 of 17	
	ID No.: VCP No. 538	**Report Date: Dec 2, 2011**

Complete this worksheet if an institutional control will be used as part of the response action. Include a draft of the proposed institutional controls in Appendix 4. Provide a list of landowners from whom landowner concurrence will be requested, as necessary, in Appendix 5.

Specify the property for which this applies. **Former Bon L Campo Aluminum Facility – 902 Gladys Street, El Campo, TX**

Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control[1]				Property Ownership		Anticipated Filing Date[2]
	Deed Notice	Restrictive Covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))		**X**				**X**	**In Place**
Document use of physical or institutional control under Remedy Standard B §350.31(g))				**El Campo City Ordinance 2004-15**		**X**	**In Place**
Document notice of on-going long term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))							
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							

[1] Check the appropriate box(es) to indicate the type of institutional control required for the proposed response action.

[2] Specify date or amount of time after RAP approval.

Institutional Control Associated Information: Appendices 4, 5	**RAP Worksheet 2.4** **Page 9 of 17**	
	ID No.: VCP No. 538	**Report Date: Dec 2, 2011**

Specify the property for which this applies. **Offsite Properties located within PCLE Zone but outside City of El Campo corporate limits. Properties are identified in figure provided in Appendix 5.**

Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control[1]				Property Ownership		Anticipated Filing Date[2]
	Deed Notice	Restrictive Covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))		X				X	**Varies***
Document use of physical or institutional control under Remedy Standard B §350.31(g))				X**		X	**Varies***
Document notice of on-going long term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(l))							
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							

***A detailed summary of the status of off-site institutional controls is presented as Appendix 3 of the November 2011 Groundwater RAER.**
****Groundwater use in the A, B, and C Zone is restricted by El Campo City Ordinance 2004-15.**

---

[1] Check the appropriate box(es) to indicate the type of institutional control required for the proposed response action.
[2] Specify date or amount of time after RAP approval.

Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that will be used to determine if reasonable progress is being made by the response action in a timely manner. Use these measures to document effectiveness of the response action in the RAER.

The Response Action Performance will be measured using six factors:

1. Long term changes in COC concentrations, as measured based on the following proposed groundwater monitoring program. A general decline in COC concentrations over time in the core plume areas downgradient of the treatment zones would be indicative of system effectiveness. There should also be a corresponding decline in the areal extent of the PCLE Zone.

   The target COCs for evaluation of the Response Action are:
   - TCE
   - cis-1,2 DCE
   - trans-1,2 DCE
   - 1,1-DCE
   - Vinyl Chloride

2. TOC concentrations in the treatment zones. TOC concentrations in the treatment zone areas are expected to remain within the target range for the duration of the carbohydrate injection program. TOC levels will be regularly assessed as part of the proposed groundwater monitoring program.

3. Microbial populations in the treatment zones. A microbial population evaluation will be continued during carbohydrate injection, and as needed during the Monitored Natural Attenuation period, to evaluate the microbial potentials for both the anaerobic dehalorespiration process and the aerobic cometabolism process.

   The assessment criteria will include the following:
   - Eubacteria population (total bacterial population response).
   - Methanogen population (Methanogenic bacterial population response).
   - Dehaloccocoides population (assessment of microbial population capable of initiating extensive reductive dehalorespiration).
   - Concentrations of soluble methane monooxygenase (*sMMO*), an enzyme which facilitate the aerobic cometabolism of chlorinated solvents.

   An increase in each of these microbial constituents would be indicative of system effectiveness.

4. Alternate electron acceptor levels in the treatment zones. These data will be collected and reviewed to assess geochemical effects from the carbohydrate injection and microbial response. The utilization of electron acceptors will provide information to verify the potential for both reductive dehalorespiration or aerobic cometabolic processes.
   The target parameters are:
   - Nitrate
   - Nitrite
   - Sulfate
   - Total and dissolved iron
   - Total and dissolved manganese
   - Chloride
   - Alkalinity

The primary inorganic indicator of an environment that would facilitate successful bioattenutation is the lack of competing electron acceptors, such as nitrate, iron, manganese and sulfate. Constituents such as nitrite, chloride, alkalinity, and pH will be monitored to evaluate the general water quality within the treatment zones.

5. Assessment of field parameters. These data will also be collected to assess geochemical effects from the carbohydrate injection and microbial response.
   The target parameters are:

   - Dissolved oxygen
   - Oxidation-reduction potential
   - pH
   - Conductivity

   The information will assist in determining the dominant regime (aerobic vs. anaerobic conditions), and support decisions regarding the need for system modification or use of bioaugmentation to stimulate greater microbial activity.

6. Injection well performance. Flow rates will be regularly monitored at all injection wells. Declines in injection capacity will indicate the occurrence of biofouling or similar screen and filter pack obstruction, and will be addressed through well treatment and/or development.

Potential Problems

Complete the table for the response action. When the response action consists of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: Carbohydrate Injection

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
Biofouling	Impedes ability to deliver carbohydrate amendment to groundwater.		X	Periodically develop and/or treat well, including possible disinfection using chlorine or similar agent.
Non-optimal treatment zone establishment.	May slow the progress of remedy.		X	Review carbohydrate mix composition, carbohydrate injection well spacing, and delivery rate.
Decline of Methanotroph population	May compromise rate of TCE cometabolism.		X	Review carbohydrate mix composition, carbohydrate injection well spacing, and delivery rate.

Failure to stimulate Methanogen population	May compromise methane production for use by Methanotrophs, which would compromise rate of TCE cometabolism.		X	Review carbohydrate mix composition, carbohydrate injection well spacing, and delivery rate.
Failure to stimulate Methanotroph population	May compromises rate of TCE cometabolism.		X	Review carbohydrate mix composition, carbohydrate injection well spacing, and delivery rate.
Failure to observe decline in TCE concentrations	Indicates remedy is not likely fully effective.		X	Review Response Action design. Evaluate alternative methods for biostimulation or bioaugmentation. Consider in situ well stripping or other methods.

ATTACHMENT 3A

Map of Monitoring and Sampling Points

Monitoring and Sampling	**RAP Worksheet 3.1**	**Page 13 of 17**
Associated Information: Attachment 3A	**ID No.: VCP No. 538**	**Report Date: Dec 2, 2011**

List the monitoring and sampling of COC concentrations or other parameters that will be conducted during the response action. Illustrate the monitoring or sampling locations in Attachment 3A. If statistics or geostatistics will be used, provide details in Appendix 7. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Groundwater	TCE c-1,2-DCE t-1,2-DCE 1,1-DCE Vinyl chloride	Total Fe Dissolved Fe Ferrous Fe Total Mn Dissolved Mn Nirate Nitrite Sulfate TOC Chloride Dissolved Oxygen ORP pH	See APAR	MW-6B MW-7B MW-10B MW-21B MW-111B MW-113B MW-125B IG1-MW-1 IG1-MW-2 IG1-MW-3 IG1-MW-4 IG1-MW-5 IG2-MW-1 IG2-MW-2 IG3-MW-1 IG3-RW-1 IG4-MW-1 IG4-MW-2 IG5-MW-1 IG5-RW-1		SW Method 8260b	Quarterly during active carbohydrate injection program (five years), plus 1 additional year.
	VOCs		See APAR	All monitoring wells (see Attachment 3A)		SW Method 8260b	Annual for next 3 years
	VOCs		See APAR	All monitoring wells (see Attachment 3A)		SW Method 8260b	Bi-annually for the duration of the Response Action.

---

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.

[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.

[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.

[4] Specify the depth or height of the sampling or monitoring points.

[5] Specify the frequency at which this monitoring or sampling will occur.

Monitoring and Sampling Associated Information: Attachment 3A	**RAP Worksheet 3.1** Page 14 of 17	
	ID No.: VCP No. 538	**Report Date: Dec 2, 2011**

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Microbiological Assessment		Eubacteria Methanogens Dehaloccocoides *sMMO*	Biotrap Retrieval	MW-6B MW-7B MW-10B MW-21B MW-111B MW-113B MW-125B IG1-MW-1 IG1-MW-2 IG1-MW-3 IG1-MW-4 IG1-MW-5 IG2-MW-1 IG2-MW-2 IG3-MW-1 IG3-RW-1 IG4-MW-1 IG4-MW-2 IG5-MW-1 IG5-RW-1		See Microbial Insights Report in Appendix 3	Semi-annually during active carbohydrate injection program (five years), plus 1 additional year.

Explain the reasons for the above-listed monitoring and sampling plan.

The recommended monitoring and sampling program provides a reasonably sufficient data set to evaluate both carbohydrate injection results and to evaluate monitored natural attenuation processes.

Groundwater monitoring wells will be permanently abandoned when they are not either within the PCLE Zone or used to monitor the PCLE Zone perimeter, and if COC concentrations at the well are below PCLs for 2 consecutive annual events.

A summary table listing all of the monitoring wells to be utilized as part of this Response Action is included in Attachment 3A.

---

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Use this worksheet to describe the operation and maintenance (O&M) activities for each response action. In situations where the response action consists of more than one major component, for clarity one worksheet can be completed for each major component.

Response Action Name/Designation: **Carbohydrate Injection System Operation and Maintenance**

List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

Oversight activities associated with remedial actions discussed in this RAP will include inspections to confirm proper operation of the remedial system, avoid accidental releases of impacted media to the environment through visual inspections and mitigating actions (maintenance, shut-down of system to fix piping, etc.), and confirm proper security is in place to reduce the potential for the public to come into contact with impacted media or operating machinery.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

Key operating parameters include flow rate measurement with various flowmeters, and verification of proper TOC levels in the injection fluid.

List the routine tasks required to operate the response action.

Adjustments of pumping rates to maintain proper inflow rates (pumping rates from the recovery wells) and outflow rates (discharge rates into the injection wells, and injection rates into the aquifer) in the system.
Refilling the molasses storage tanks.
Servicing and calibrating the metering pump.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

The following bulleted list outlines general routine tasks required for system operation:

1. Weekly inspections of wellhead, tanks, piping, pumps, and other accessible equipment.
2. Weekly checks of water levels in recovery and injection wells.
3. As needed well redevelopment and/or treatment of recovery and injection wells.
4. Monthly TOC analysis of injected water.

Confirmation Sampling Plan Associated Information: Attachment 4A	**RAP Worksheet 4.0** Page 16 of 17	
	ID No.: VCP No. 538	**Report Date: Dec 2, 2011**

List the COCs and other parameters that will be sampled to confirm completion of the response action. Illustrate the monitoring or sampling locations in Attachment 4A. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided. If needed, describe the sample collection and handling methods, if not previously provided, in Appendix 6.

Media	COC[1]	Other parameter (specify)	Sampling Method	Sampling points[2]	Depth/height (ft.)	Analytical Method	Sampling Frequency
Surface Soil							
Subsurface Soil							
Groundwater	TCE c-1,2-DCE t-1,2-DCE 1,1-DCE Vinyl chloride		Low flow purge and sample	All remaining monitoring wells.		SW 8260b.	One time.
Surface water							
Sediment							
Air							
Other media (specify)							

Explain the reasons for the above-listed sampling plan. Discuss statistical or geostatistical methodology(ies) which will be applied, if any, in the data collection process. Discuss any assumptions made in the statistical/geostatistical assessment, and how they will be met.

As the goal of the Response Action is achievement of Remedy Standard A, a full demonstration that Remedy Standard A conditions have been met for each of the COCs is required. Since the Response Action will not be terminated until a minimal 2-year period of full Remedy Standard A compliance is achieved, a single final confirmation sampling event should be adequate for final confirmation.

---

[1] Specify either a specific COC or type of COC (such as VOCs, metals).

[2] Specify the sampling point to the degree it is known, (for example, MW-1, or near former boring #2).

ATTACHMENT 4A

Map of Confirmation Sampling Points

Please refer to Figure 3A-1 in Attachment 3A

Implementation Schedule	**RAP Worksheet 6.0**	**Page 17 of 17**
	ID No.: VCP No. 538	**Report Date: Dec 2, 2011**

Document the proposed schedule for implementing the response action. Include all major response action activities through the life of the project, including all removal, decontamination, and control actions, component installations, O&M, monitoring, and post-response action care activities.

Implementation of Response Action (specify component or action)	**Start**	**Finish**	**Duration**
Implement recommended groundwater monitoring program.	March 2012	March 2029	17 years
Construct Injection Gallery #1 Expansion, #3, #4, & #5	February 2012	May 2012	4 months
Implement carbohydrate injection at all galleries.	March 2012	March 2017	5 years
Irrigation Well Abandonment (If necessary)	July 2012	July 2012	1 Week
Downgradient Plume Area Focused Monitoring	February 2012	February 2012	1 year
Final confirmation sampling.	February 2029	February 2029	1 month
Well abandonment.	March 2029	April 2029	2 months

List the proposed schedule for report submittals. Add additional lines if more reports than listed will be needed to complete the response action.

Reports	**Submittal date**
Response Action Effectiveness Report (RAER)	
RAER submittal number 1	Submitted November 2011
RAER submittal number 2	December 2012
RAER submittal number 3	December 2015
RAER submittal number 4	December 2018
RAER submittal number 5	December 2021
RAER submittal number 6	December 2024
RAER submittal number 7	December 2027
Response Action Completion Report (RACR)	May 2029

APPENDIX 1

References

REFERENCE LIST
RESPONSE ACTION PLAN SUPPLEMENT
El Campo Aluminum Facility

AMEC Geomatrix, May 2008: Response Action Plan, El Campo Aluminum Facility, El Campo, Texas

AMEC Geomatrix, March 2011: Soil Response Action Effectiveness Report, El Campo Aluminum Facility, El Campo, Texas

AMEC Geomatrix, November 2011: Groundwater Response Action Effectiveness Report, El Campo Aluminum Facility, El Campo, Texas

Enzien, M., Picardal, F., Hazen, T., Arnold, R., and Fliermans, C., 1994: *Reductive Dechlorination of Trichloroethylene and Tetrachloroethylene under Aerobic Conditions in a Sediment Column.* Appl. & Environmental Microbiol. 60 (6), pp 2200-2204.

Geomatrix, December 2006: Affected Property Assessment Report, El Campo Groundwater Site, El Campo, Texas (3 volumes).

Geomatrix, March 2007: Soil Response Action Effectiveness Report, El Campo Aluminum Facility, El Campo, Texas (2 volumes).

U.S. Environmental Protection Agency, 1998: Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. EPA/600/R-98/128, 248 p.

Wiedemeier, T., Rifai, H., Newell, C., and Wilson, J., 1999: *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface*, John Wiley and Sons, 636p.

APPENDIX 4

Proposed Institutional Controls

TEXAS RISK REDUCTION PROGRAM RESTRICTIVE COVENANT

THE STATE OF TEXAS §
§
COUNTY OF WHARTON §

THIS **RESTRICTIVE COVENANT** is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality ("TCEQ") Texas Risk Reduction Program ("TRRP") Rule found at 30 Texas Administrative Code ("TAC"), Chapter 350, and affects the real property ("Property") described as follows:

> [*Insert legal description or a reference to an attached Exhibit A with the phrase,* "attached hereto and incorporated herein by reference." *This legal description needs to include the entire recorded tract of land held by the owner executing this restrictive covenant. The description should consist of the property description used in the last recorded vesting deed covering the Property or, if the Property has since been subdivided, the legal description for the subdivision with reference to the recorded plat map thereof (where the vesting deed covered multiple lots, tracts, or parcels of land, only the lot(s), tract(s), or parcel(s) containing the identified chemicals of concern would need to be included.) This is not a legal description of the Affected Property as set forth below. If the Affected Property (as set forth below) that is being made subject to the restrictive covenant impacts the land of more than one owner, a separate restrictive covenant needs to be filed for each tract.*]

Portions of the [soils and/or groundwater] of the Property contain certain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP. The portion considered to be Affected Property is described as follows:

> [*Insert legal description and reference to an attached Exhibit B, with the phrase,* "attached hereto and incorporated herein by reference." *Exhibit B must include a metes and bounds description of the Affected Property and a plat map clearly demarcating the portions of the Property that contain the Affected Property. The map must contain a North arrow, a correlating map scale, and a legend identifying any used symbols or abbreviations. The metes and bounds description and plat map must be accompanied by a certification from a registered professional land surveyor so registered by the Texas Board of Professional Surveying attesting to the accuracy of the descriptions. Also list each chemical of concern by environmental medium that exceeds the critical Protective Concentration Level.*]

This Restrictive Covenant is required for the following reasons:

> [*Include appropriate paragraph(s) from TCEQ Guidance RG-366/TRRP-16, Appendix B, Insert A Paragraphs from Restrictive Covenant Form*]

☐ The Affected Property currently meets TRRP standards for commercial/industrial land use. Based on the reports, the chemicals of concern pose no significant present or future risk to humans or the environment based on commercial/industrial land use. No further remediation of the Affected Property is required by the TCEQ as long as the Affected Property is not used for residential purposes as the property may not be protective for residential use. If any person desires in the future to change the use of the Affected Property from solely commercial/industrial land use to residential purposes, the TCEQ must be notified at least 60 days in advance of such use and additional response actions may be necessary before the property may be used for residential purposes. Persons contemplating a change in land use for the Affected Property are encouraged to review the definitions for commercial/industrial and residential land use contained in TRRP as the definition of residential land use is broad.

and/or

☐ Remediation of the Affected Property is in progress to achieve protective conditions for the use of the Affected Property for [*residential* or *commercial/industrial*] use. This notice is required to inform others of the ongoing long-term response action.

As of the date of this Restrictive Covenant, the record owner of fee title to the Property is [*Insert FirstName LastName*] ("<u>Owner</u>") with an address of [*Insert Address*]. In consideration of the Response Actions by Whittaker Corporation ("Responder"), approval of the Response Action Plan, Response Action Supplement, and Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Owner has agreed to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. [*Include appropriate paragraphs from TCEQ Guidance RG-366/TRRP-16, Appendix B, Insert B Paragraphs for Restrictive Covenant Form*]

Use of and exposure to the groundwater underlying the Affected Property for any purpose is prohibited until such time when all the chemicals of concern no longer exceed their respective protective concentration levels ("PCLs"). The maintenance and monitoring described in Exhibit "C" is required. Removal or modification of this restrictive covenant is prohibited without prior approval of TCEQ. *Note: If the Affected Property is not within the existing water service area of the City of El Campo, the Owner(s) shall not be required to restrict the use of or exposure to groundwater under the Affected Property until an alternative water supply becomes available to the Affected Property.*

2. The Affected Property shall not be used for any purposes other than commercial/industrial uses, as defined in 30 Texas Administrative Code, Chapter 350, Section 350.4(a)(13). *Note: The Owner(s) shall not be required to restrict the use of the Affected Property to commercial/industrial uses unless the present land use of the Affected Property is solely for a commercial/industrial use and this paragraph shall not be required if the Affected Property is currently in use, in whole or in part for residential purposes.*

3. These restrictions shall be a covenant running with the land and be binding on and enforceable as to any and all subsequent owners of the Property.

For additional information, contact:

TCEQ Central Records 12100 Park 35 Circle, Building E Austin, Texas 78753	Mail: TCEQ – MC 199 P.O. Box 13087 Austin, Texas 78711-3087
TCEQ Program and Identifier No.:	Voluntary Cleanup Program ("VCP") No. 538

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

[*Remainder of page intentionally left blank*]

Executed this ________ day of __________________, ________.

[*Insert Owner(s)*]

By: ________________________________

Name: ______________________________

Title: ______________________________

Executed this ________ day of __________________, ________.

WHITTAKER CORPORATION

By: ________________________________

Name: ______________________________

Title: ______________________________

Accepted as Third Party Beneficiary this ________ day of __________________, ________.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

By: ________________________________

Name: ______________________________

Title: ______________________________

(ACKNOWLEDGMENTS)

THE STATE OF TEXAS §
§
COUNTY OF WHARTON §

BEFORE ME, on this the _____ day of _________________, ________, personally appeared [*Insert FirstName LastName*], Owner, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of __________________, ________,

Notary Public in and for the State of Texas,
County of ______________________

My Commission Expires: ________________

THE STATE OF TEXAS §
§
COUNTY OF TRAVIS §

BEFORE ME, on this the _____ day of _________________, ________, personally appeared [*Insert FirstName LastName*], [*Insert Title*], of the TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _____ day of __________________, ________,

Notary Public in and for the State of Texas,
County of ______________________

My Commission Expires: ________________

[*UNIQUE CALIFORNIA ACKNOWLEDGEMENT FORM TO BE SUPPLIED*]

AFTER RECORDING, RETURN TO:
Fulbright & Jaworski L.L.P.
1301 McKinney, Suite 5100
Houston, Texas 77010-3095
Attention: Edward C. Lewis, Esq.

EXHIBIT "A"

DESCRIPTION OF THE SUBJECT PROPERTY

Property Address:

[*Insert # Street*]
El Campo, Wharton County, Texas 77437

Legal Description:

[*Insert Legal Description*]

[*AND/OR*] See Attached Map/Diagram

EXHIBIT "B"

DESCRIPTION OF THE AFFECTED PROPERTY

Property Address:

[*Insert # Street*]
El Campo, Wharton County, Texas 77437

Legal Description:

[*Insert Legal Description*]

[*AND*] See Attached Map/Diagram

EXHIBIT "C"

DESCRIPTION OF MAINTENANCE/MONITORING, AND/OR OTHER RESPONSE ACTIONS

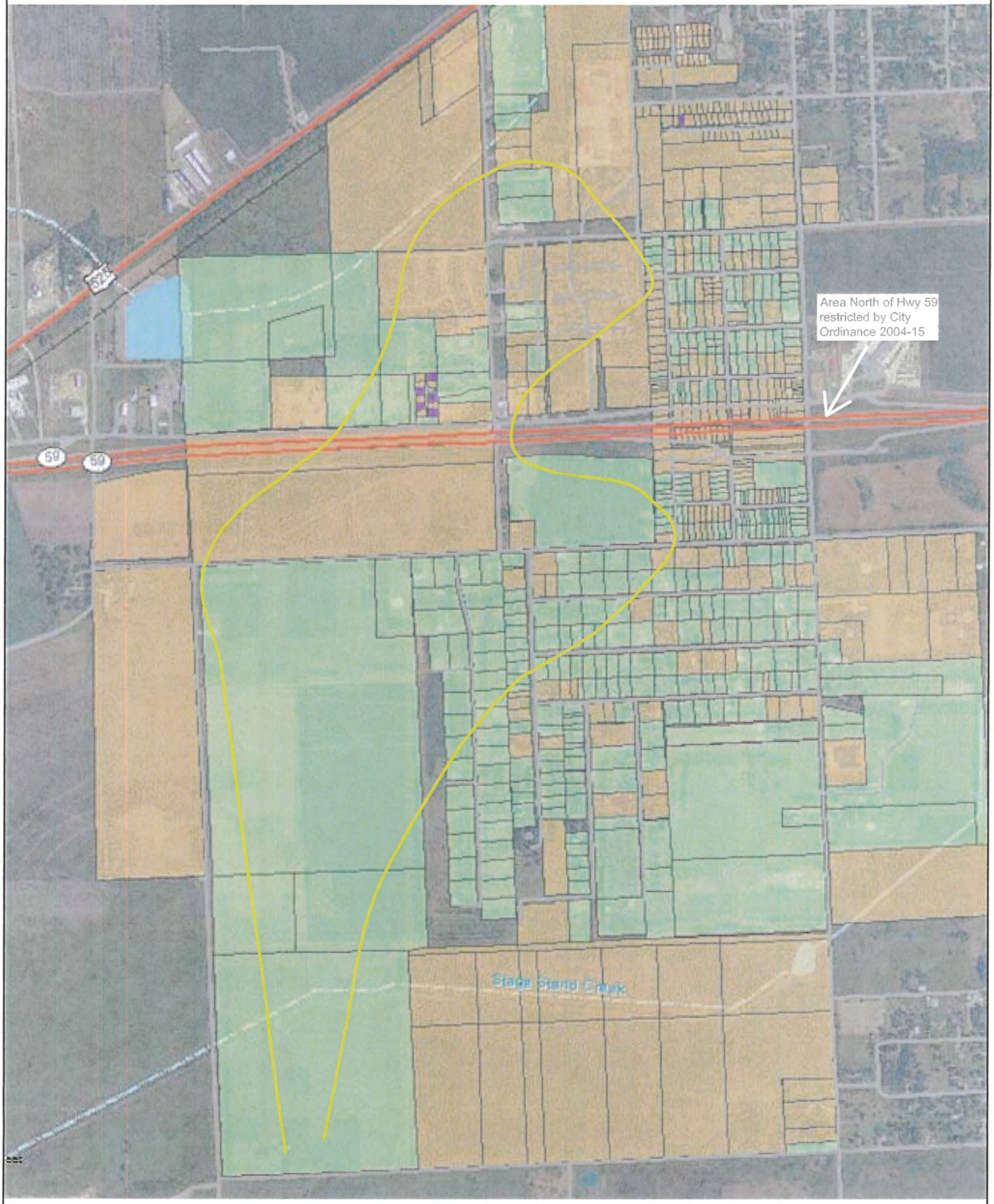
[*Insert Description*]

[*AND/OR*] See Attached Map/Diagram

APPENDIX 5

Landowner Concurrence

Plot Date: 09/07/11 - 3:55pm, Plotted by: mike.schofield
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 29-TCE ConcMaps 8-11_IST_CONT.dwg



EXPLANATION

— CURRENT PCLE ZONE

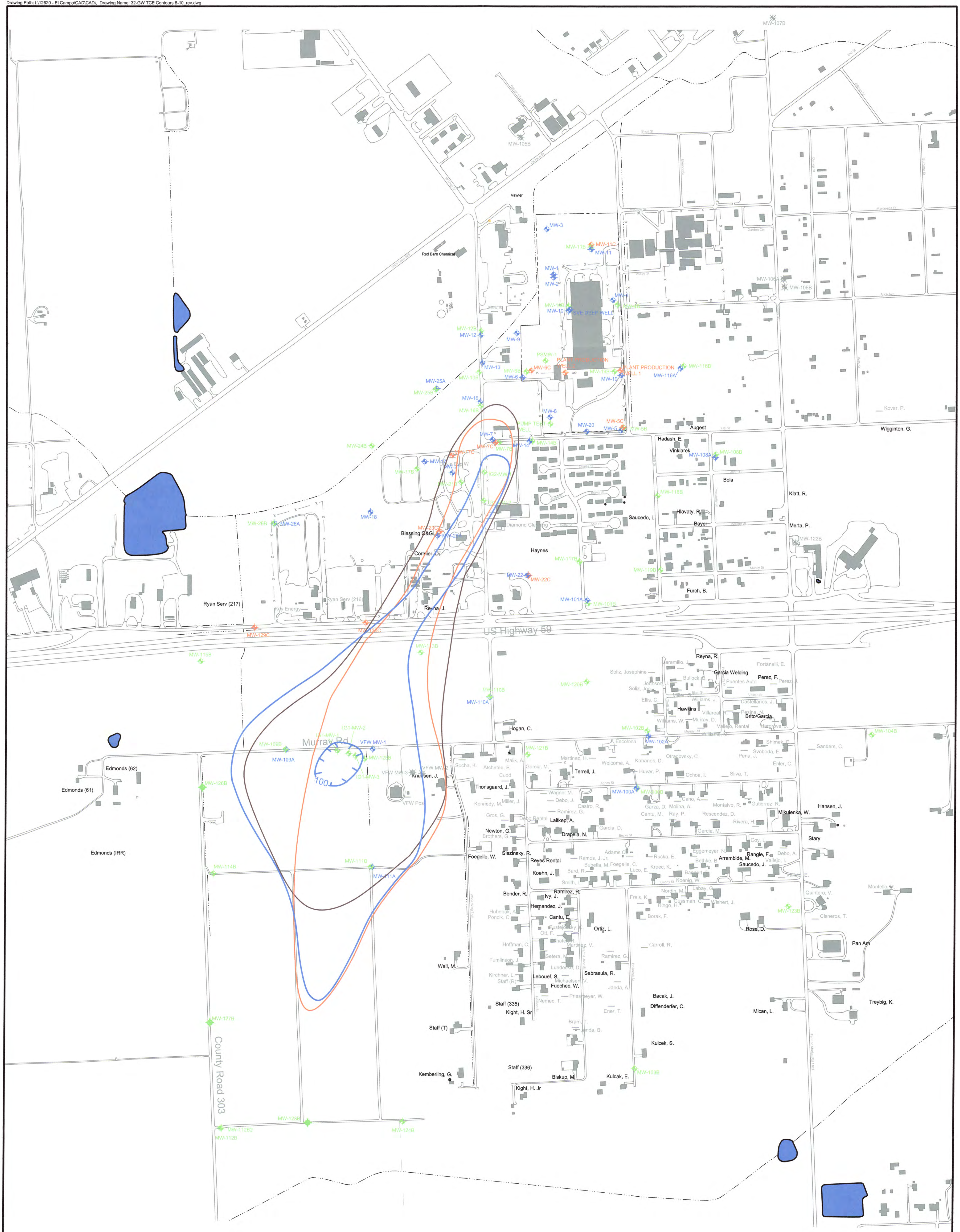
🟩 PROPERTY WITH DEED RESTRICTION

🟧 PROPERTY WITHOUT DEED RESTRICTION

STATUS OF INSTITUTIONAL CONTROLS
WITHIN PCLE ZONE
El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 09/07/11	Project No. 12620.000
AMEC Geomatrix		**Appendix 5**

Plot Date: 12/18/12 - 3:36pm, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 32-GW TCE Contours 8-10_rev.dwg



N

0 400
APPROXIMATE SCALE (FEET)

EXPLANATION

—	APPROXIMATE PLUME CORE 2009 - TRICHLOROETHENE 100 MICROGRAMS PER LITER ISOCONCENTRATION LINE FOR AUGUST 2009 - ZONE B
—	APPROXIMATE PLUME CORE 2010 - TRICHLOROETHENE 100 MICROGRAMS PER LITER ISOCONCENTRATION LINE FOR AUGUST 2010 - ZONE B
—	APPROXIMATE PLUME CORE 2011 - TRICHLOROETHENE 100 MICROGRAMS PER LITER ISOCONCENTRATION LINE FOR AUGUST 2011 - ZONE B

EXPLANATION

⬭	SURFACE WATER FEATURE
— · · · —	TRIBUTARY / DRAINAGE CANAL
✱	MONITORING WELL PLUGGED AND ABANDONED
⊕ MW-7	ZONE A - MONITORING WELL
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005

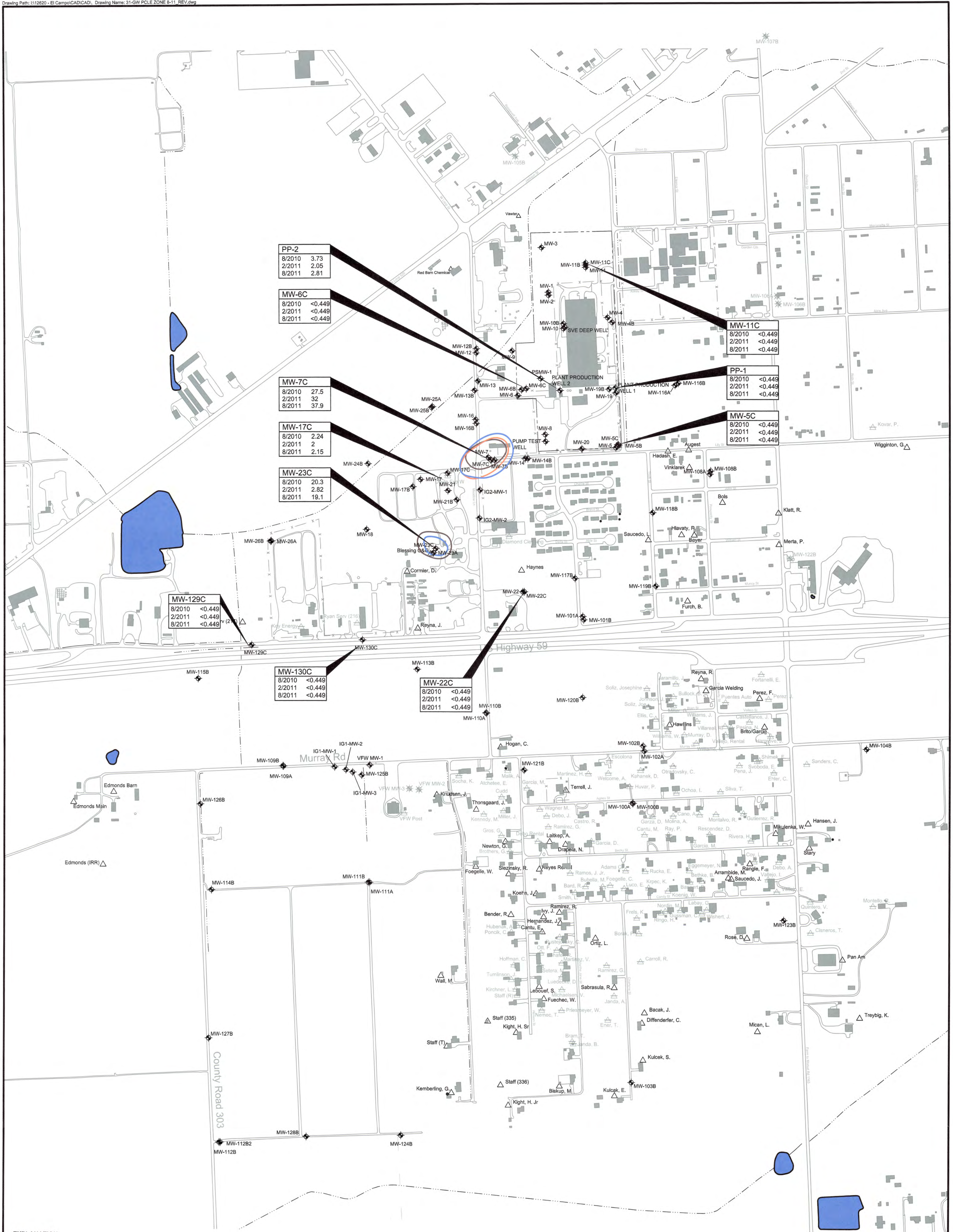
William D. Clarke
Geology
12-18-12

B ZONE GROUNDWATER TRICHLOROETHENE ABOVE 100 MICROGRAMS PER LITER FOR AUGUST 2011 AND PREVIOUS 2 YEARS

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/18/12	Project No. 12620.000
amec		Figure 5B-5

Plot Date: 12/17/12 - 12:37pm, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 31-GW PCLE ZONE 8-11_REV.dwg



PP-2	
8/2010	3.73
2/2011	2.05
8/2011	2.81

MW-6C	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

MW-7C	
8/2010	27.5
2/2011	32
8/2011	37.9

MW-17C	
8/2010	2.24
2/2011	2
8/2011	2.15

MW-23C	
8/2010	20.3
2/2011	2.82
8/2011	19.1

MW-11C	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

PP-1	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

MW-5C	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

MW-129C	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

MW-130C	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

MW-22C	
8/2010	<0.449
2/2011	<0.449
8/2011	<0.449

EXPLANATION

⬮	SURFACE WATER FEATURE
✱	MONITORING WELL (PLUGGED AND ABANDONED)
—···—	TRIBUTARY / DRAINAGE CANAL
⌖ MW-7	MONITORING WELL (ZONE A, B OR C)
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
—	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR AUGUST 2010
—	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR FEBRUARY 2011
—	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR AUGUST 2011
<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

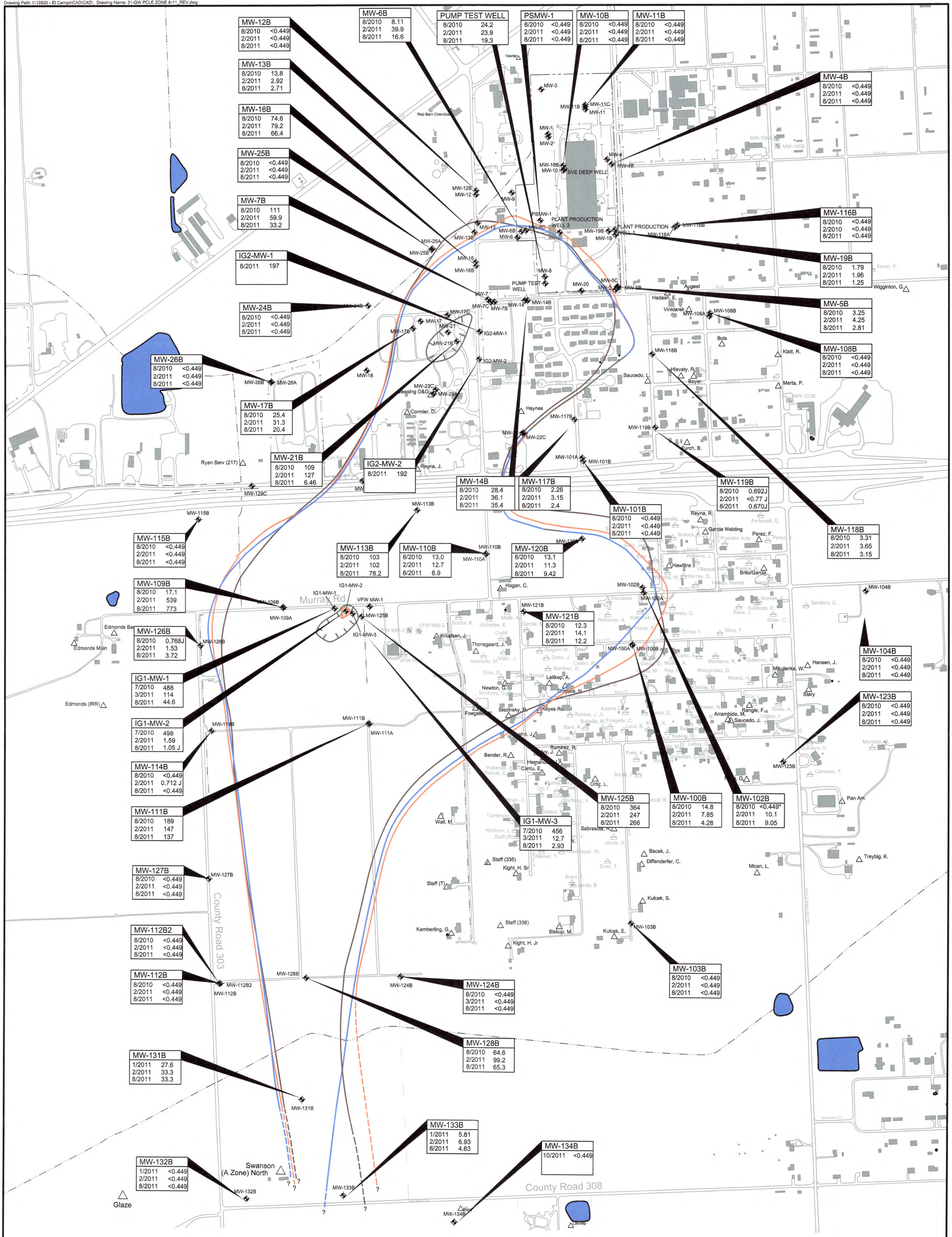
William D. Clarke
Geology
3859
12-18-12

C ZONE GROUNDWATER TRICHLOROETHENE
PCLE ZONE - AUGUST 2011
FOR FOR PREVIOUS 2 MONITORING EVENTS

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/17/12	Project No. 12620.000
amec		Figure 5B-4C

Plot Date: 12/18/12 - 9:41am, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 31-GW PCLE ZONE 8-11_REV.dwg



EXPLANATION

🟦	SURFACE WATER FEATURE	—	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR AUGUST 2010
✱	MONITORING WELL PLUGGED AND ABANDONED 2010	—	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR FEBRUARY 2011
—·· —	TRIBUTARY / DRAINAGE CANAL	—	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR AUGUST 2011
⊕ MW-7	MONITORING WELL (ZONE A, B OR C)	<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
△	WATER WELL	J	CONCENTRATION IS ESTIMATED
△	WATER WELL PLUGGED AND OR ABANDONED 2003 OR 2005	*	ANOMALOUS DATA POINT NOT USED FOR CONTOURING
			ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

William D. Clarke
Geology
3859
12-18-12

B ZONE GROUNDWATER TRICHLOROETHENE
PCLE ZONE - AUGUST 2011
AND FOR PREVIOUS 2 MONITORING EVENTS

El Campo Aluminum Facility
El Campo, Texas

By: MLS
Date: 12/18/12
Project No. 12620.000
amec
Figure 5B-4B

Plot Date: 12/17/12 - 12:32pm, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 31-GW PCLE ZONE 8-11_REV.dwg

EXPLANATION

	SURFACE WATER FEATURE
	MONITORING WELL (PLUGGED AND ABANDONED)
	TRIBUTARY / DRAINAGE CANAL
MW-7	MONITORING WELL (ZONE A, B OR C)
△	WATER WELL
	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR AUGUST 2010
	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR FEBRUARY 2011
	APPROXIMATE 5 MICROGRAMS PER LITER (ug/l) ISOCONCENTRATION LINE FOR AUGUST 2011
<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
J	CONCENTRATION IS ESTIMATED
--	NOT SAMPLED - WELL DAMAGED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

N

0 400
APPROXIMATE SCALE (FEET)

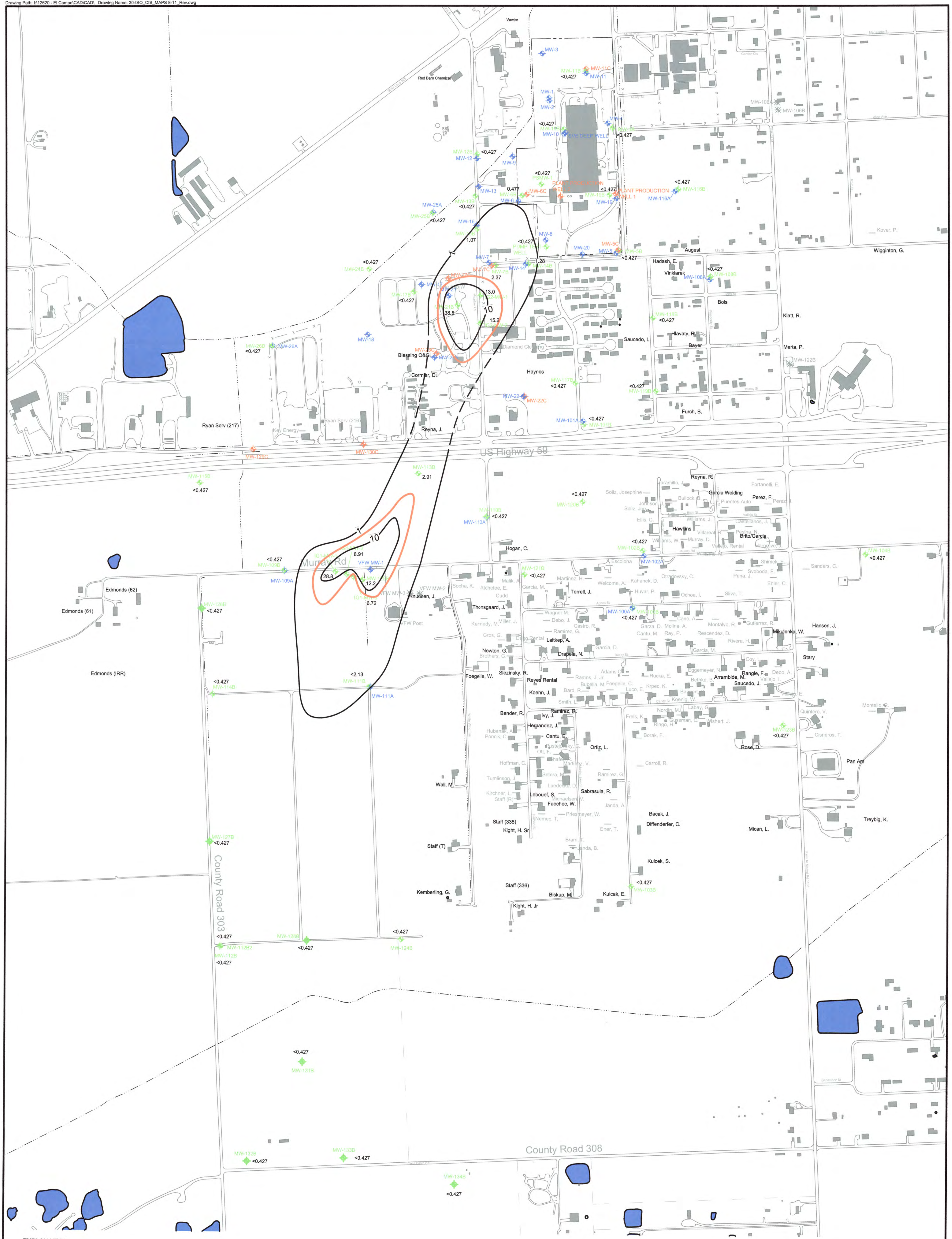
William D. Clarke
Geology
3859
12-18-12

A ZONE GROUNDWATER TRICHLOROETHENE
PCLE ZONE - AUGUST 2011
AND FOR PREVIOUS 2 MONITORING EVENTS

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/17/12	Project No. 12620.000
amec		Figure 5B-4A

Plot Date: 12/13/12 - 10:58am, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 30-ISO_CIS_MAPS 8-11_Rev.dwg



EXPLANATION

▨	SURFACE WATER FEATURE
—···—	TRIBUTARY / DRAINAGE CANAL
MW-7	ZONE A - MONITORING WELL
MW-7B 11.9	ZONE B - MONITORING WELL WITH AUGUST 2011 1,1 DCE CONCENTRATION (ug/l)
MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.427	1,1-DICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—1—	1,1 DICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE DASHED WHERE INFERRED)
—	PCLE ZONE BOUNDARY (7 ug/l)
J	CONCENTRATION IS ESTIMATED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

N

0 400
APPROXIMATE SCALE (FEET)

William D. Clarke
Geology
3859
12-18-12

B ZONE 1,1- DICHLOROETHENE ISOCONCENTRATION MAP AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/13/12	Project No. 12620.000
amec		Figure 5B-3B

EXPLANATION

▇	SURFACE WATER FEATURE
✳	MONITORING WELL PLUGGED AND ABANDONED
—···—	TRIBUTARY / DRAINAGE CANAL
⊕ MW-7	ZONE A - MONITORING WELL
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C 7.42	ZONE C - MONITORING WELL WITH AUGUST 2011 cis-1,2 DCE CONCENTRATION (ug/l)
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.367	cis-1,2-DICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—1—	cis-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
J	CONCENTRATION IS ESTIMATED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

N

0 400
APPROXIMATE SCALE (FEET)

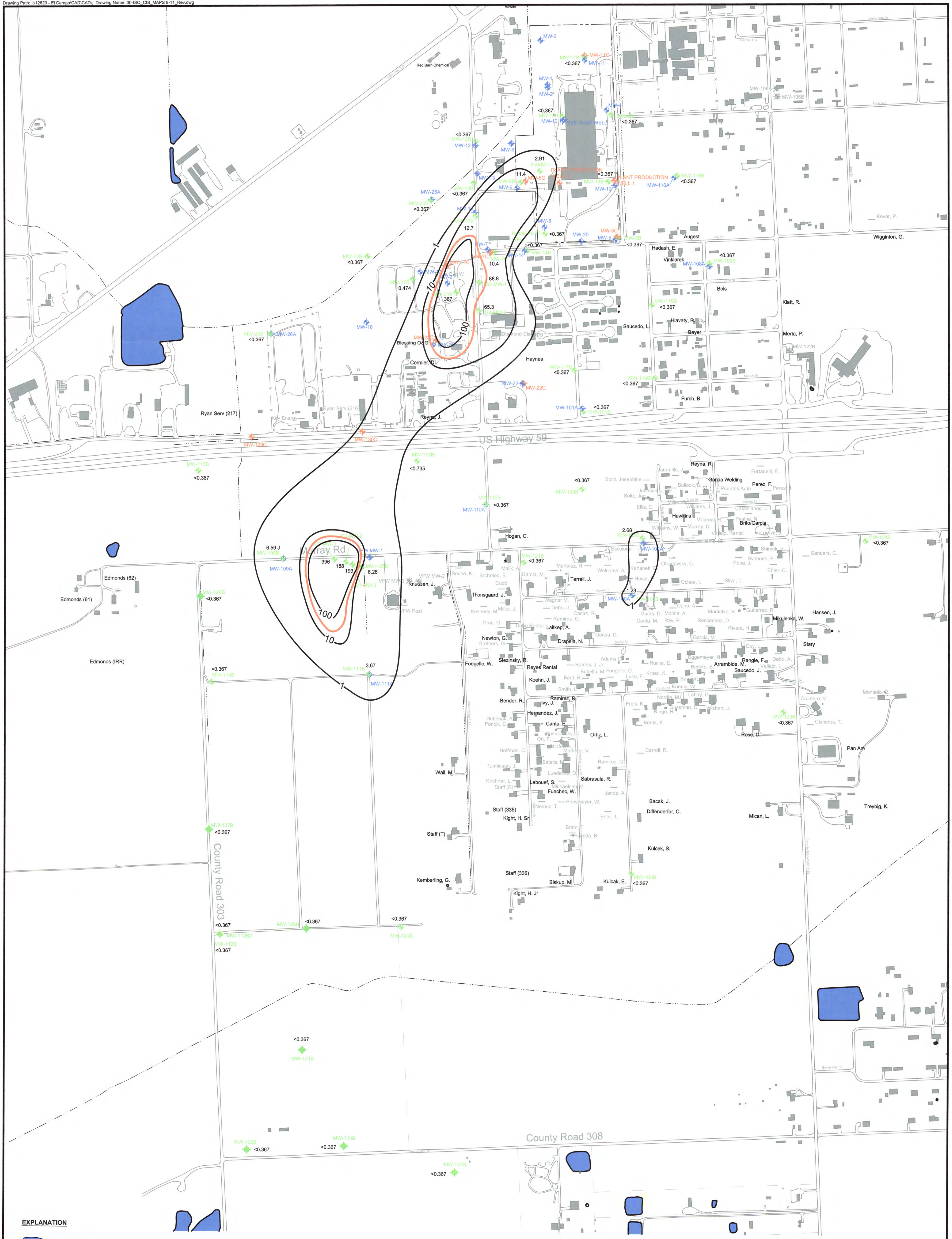
William D. Clarke
Geology
3859
11-20-12

C ZONE cis-1,2-DICHLOROETHENE
ISOCONCENTRATION MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 07/25/12	Project No. 12620.000
amec		Figure 5B-2C

Plot Date: 12/13/12 - 10:56am, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 30-ISO_CIS_MAPS 8-11_Rev.dwg



EXPLANATION

▨	SURFACE WATER FEATURE
✳	MONITORING WELL (PLUGGED AND ABANDONED)
—··· —	TRIBUTARY / DRAINAGE CANAL
⌖ MW-7	ZONE A - MONITORING WELL
⌖ MW-7B 50.8	ZONE B - MONITORING WELL WITH AUGUST 2011 cis-1,2 DCE CONCENTRATION (ug/l)
⌖ MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.37	cis-1,2-DICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—1—	cis-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
—	PCLE ZONE BOUNDARY (70 ug/l)
J	CONCENTRATION IS ESTIMATED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

William D. Clarke
Geology
3859
12-18-12

B ZONE cis-1,2-DICHLOROETHENE
ISOCONCENTRATION MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/13/12	Project No. 12620.000
amec		Figure 5B-2B

Plot Date: 07/25/12 - 10:53am, Plotted by: brian.laprarie
Drawing Path: I:\Project\El Campo\CAD\, Drawing Name: 30-ISO_CIS_MAPS 8-11.dwg

EXPLANATION

▬	SURFACE WATER FEATURE
✳	MONITORING WELL (PLUGGED AND ABANDONED)
—··—	TRIBUTARY / DRAINAGE CANAL
⊕ MW-7 1.03	ZONE A - MONITORING WELL WITH AUGUST 2011 cis-1,2 DCE CONCENTRATION (ug/l)
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.367	cis-1,2-DICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—1—	cis-1,2-DICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)
NS	WELL DAMAGED – NOT SAMPLED

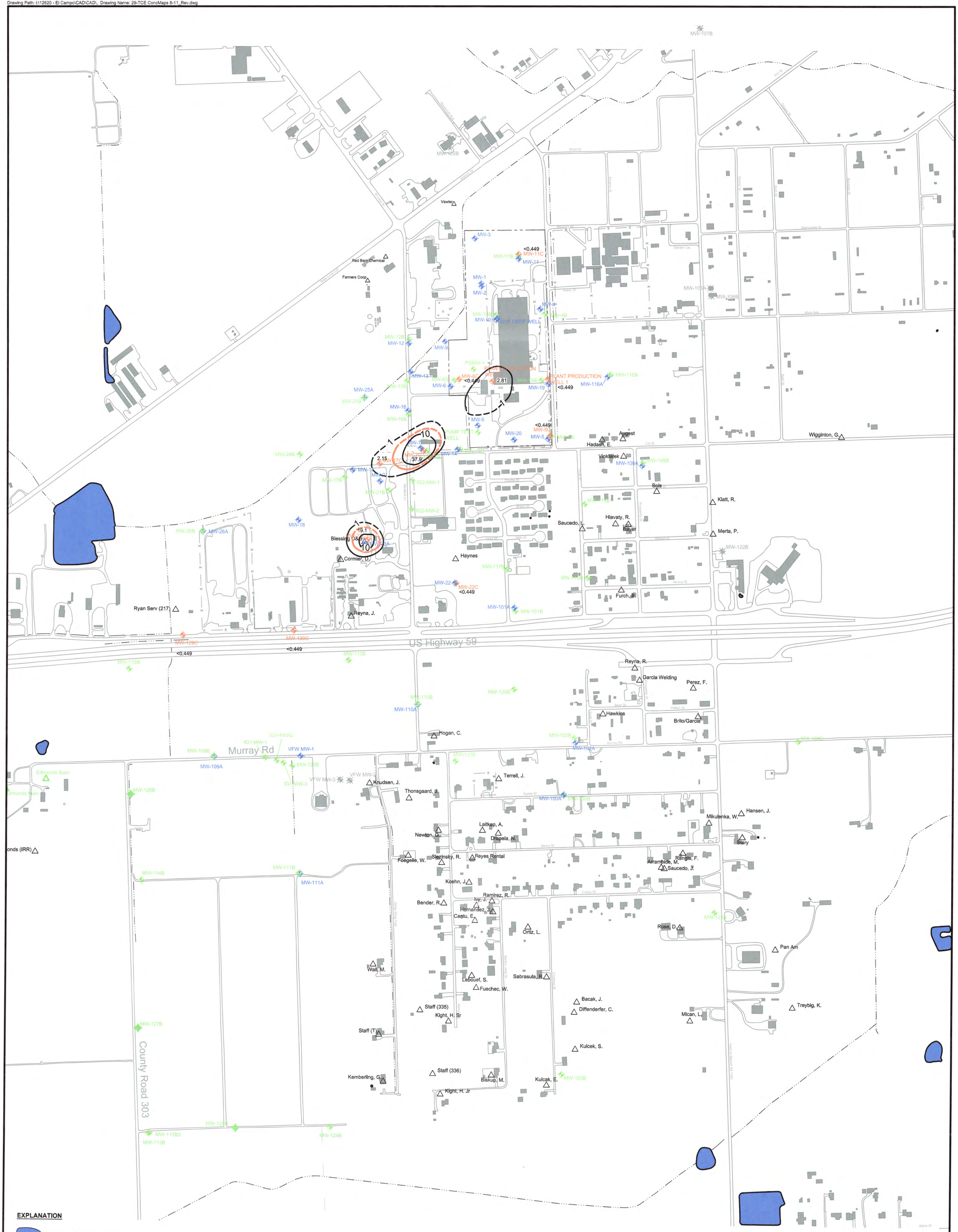
William D. Clarke
Geology
3859
11-20-12

A ZONE cis-1,2-DICHLOROETHENE
ISOCONCENTRATION MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 07/25/12	Project No. 12620.000
amec		Figure 5B-2A

Plot Date: 12/17/12 - 12:58pm, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 29-TCE ConcMaps 8-11_Rev.dwg



EXPLANATION

▬	SURFACE WATER FEATURE
—···—	TRIBUTARY / DRAINAGE CANAL
⊕ MW-7	ZONE A - MONITORING WELL
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C 2.63	ZONE C - MONITORING WELL WITH AUGUST 2011 TCE CONCENTRATION (ug/l)
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—1—	TRICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
▬	PCLE ZONE BOUNDARY (5 ug/l) (LINE IS DASHED WHERE INFERRED)
	ALL RESULTS ARE REPORTED IN MIRCOGRAMS PER LITER (ug/l)

N

0 400
APPROXIMATE
SCALE (FEET)

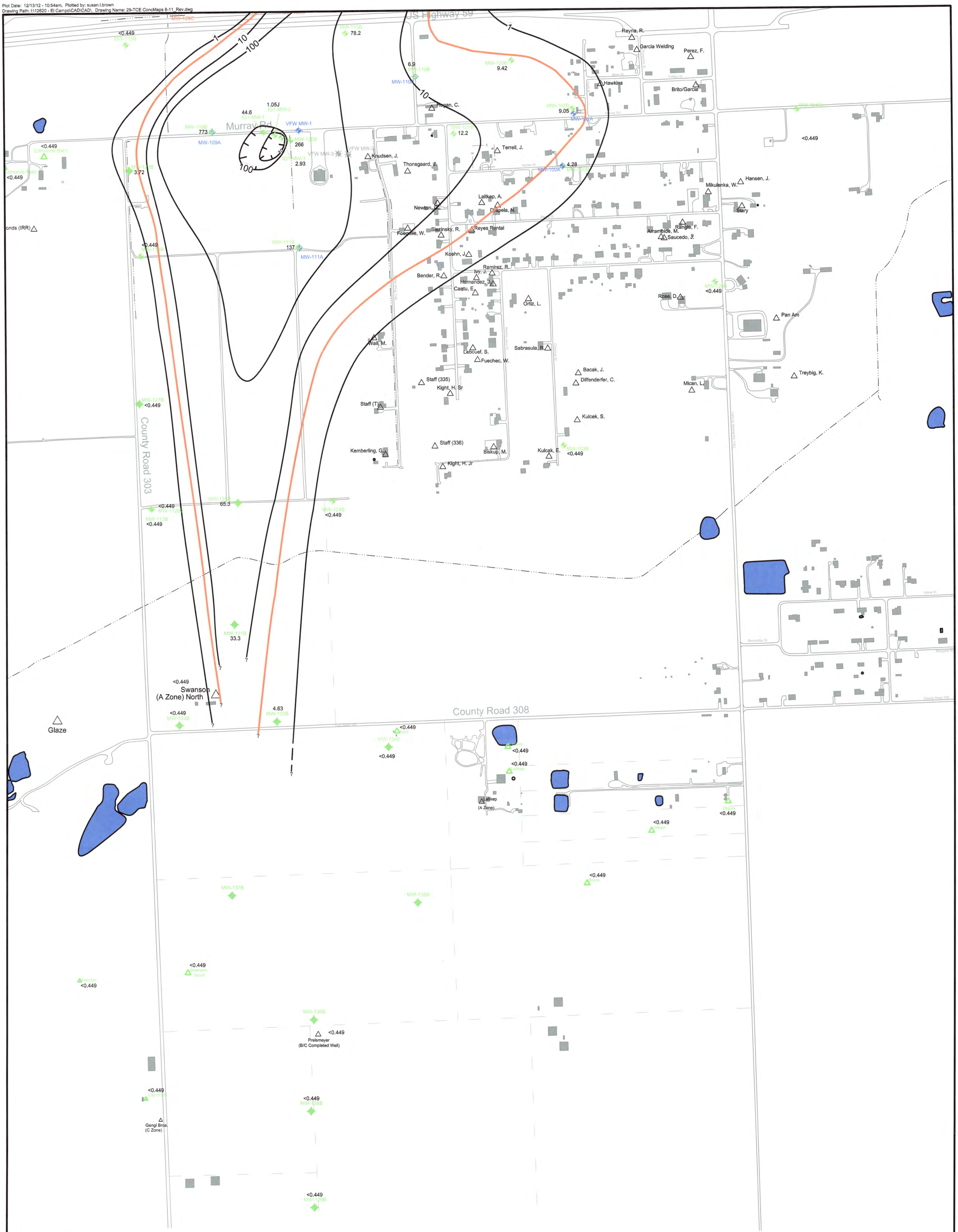
William D. Clarke
Geology
3859
12-18-12

C ZONE TRICHLOROETHENE ISOCONCENTRATION MAP AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/17/12	Project No. 12620.000
amec		Figure 5B-1C

Plot Date: 12/13/12 - 10:54am, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 29-TCE ConcMaps 8-11_Rev.dwg



EXPLANATION

🟦	SURFACE WATER FEATURE
—···—	TRIBUTARY / DRAINAGE CANAL
MW-7	ZONE A - MONITORING WELL
MW-7B 184	ZONE B - MONITORING WELL WITH AUGUST 2011 TCE CONCENTRATION (ug/l)
MW-7C	ZONE C - MONITORING WELL
△	WATER WELL - Residential B Zone Water Well in Downgradient Area Identified in April 2011 Water Well Search. Sample Result for TCE shown.
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—10—	TRICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
—	PCLE ZONE BOUNDARY (5 ug/l)
J	CONCENTRATION IS ESTIMATED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

N

0 400
APPROXIMATE
SCALE (FEET)

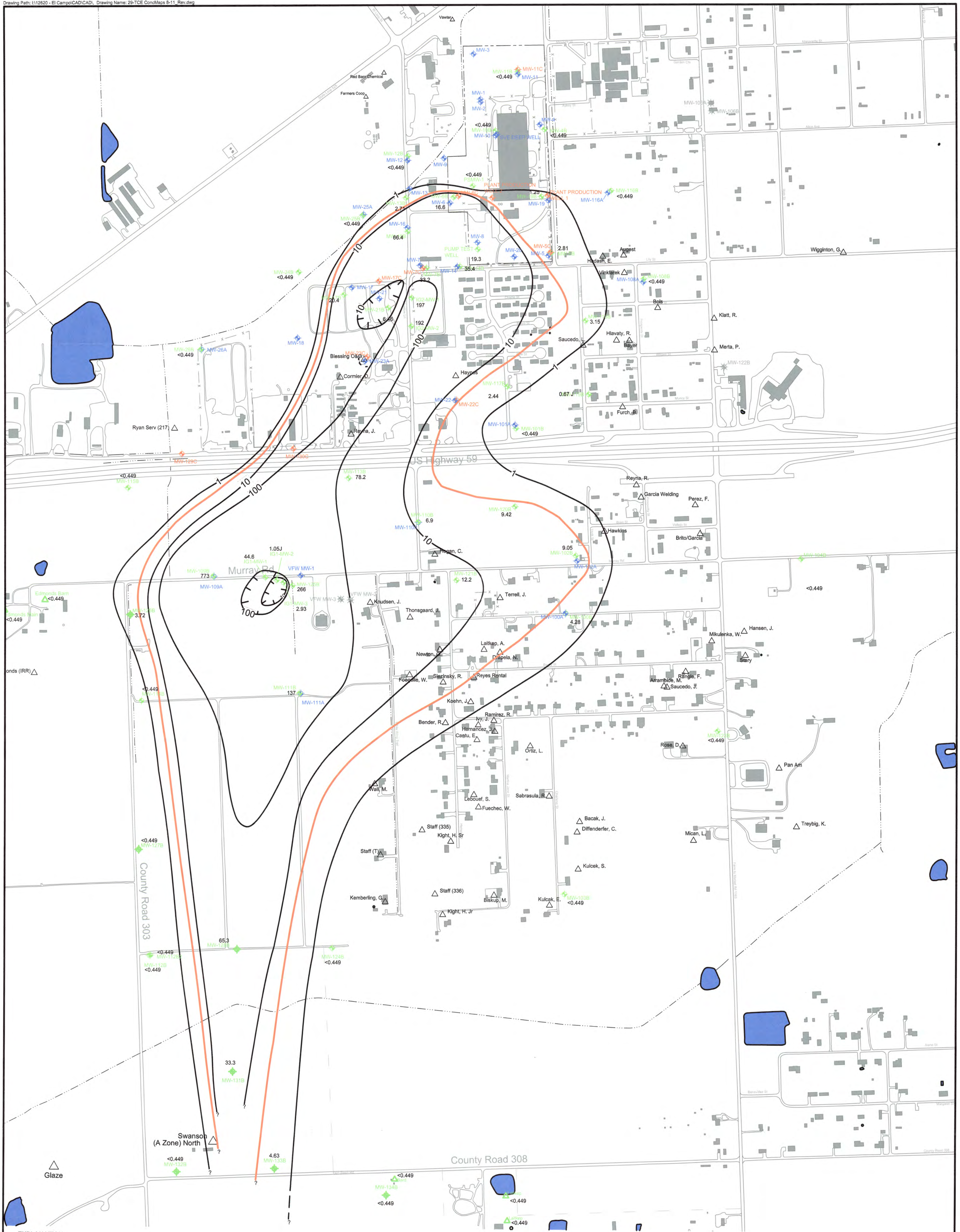
William D. Clarke
Geology
3859
12-18-12

B ZONE TRICHLOROETHENE ISOCONCENTRATION MAP
SOUTHERN AREA - AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/13/12	Project No. 12620.000
amec		Figure 5B-1B-2

Plot Date: 12/13/12 - 10:43am, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 29-TCE ConcMaps 8-11_Rev.dwg



EXPLANATION

🟦	SURFACE WATER FEATURE
—···—	TRIBUTARY / DRAINAGE CANAL
MW-7	ZONE A - MONITORING WELL
MW-7B 184	ZONE B - MONITORING WELL WITH AUGUST 2011 TCE CONCENTRATION (ug/l)
MW-7C	ZONE C - MONITORING WELL
△	WATER WELL - Residential B Zone Water Well in Downgradient Area Identified in April 2011 Water Well Search. Sample Result for TCE shown.
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—10—	TRICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
—	PCLE ZONE BOUNDARY (5 ug/l)
J	CONCENTRATION IS ESTIMATED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

0 400
APPROXIMATE
SCALE (FEET)

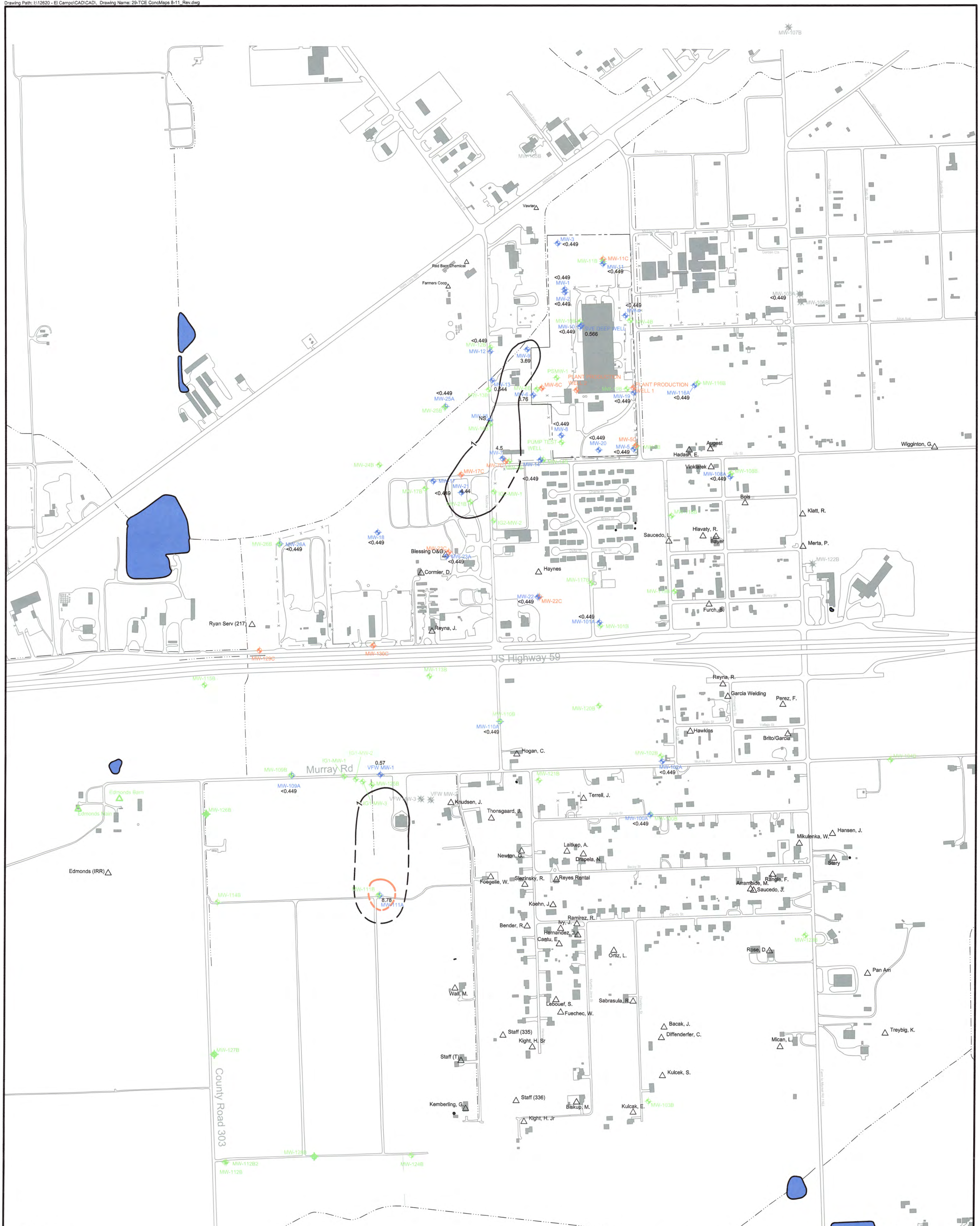
William D. Clarke
Geology
3859
12-18-12

B ZONE TRICHLOROETHENE ISOCONCENTRATION MAP
NORTHERN AREA - AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/13/12	Project No. 12620.000
amec		Figure 5B-1B-1

Plot Date: 12/12/12 - 11:09am, Plotted by: susan.l.brown
Drawing Path: I:\12620 - El Campo\CAD\CAD\, Drawing Name: 29-TCE ConcMaps 8-11_Rev.dwg



EXPLANATION

🟦	SURFACE WATER FEATURE
✱	MONITORING WELL PLUGGED AND ABANDONED
—···—	TRIBUTARY / DRAINAGE CANAL
MW-7 11.6	ZONE A - MONITORING WELL WITH AUGUST 2011 TCE CONCENTRATION (ug/l)
MW-7B	ZONE B - MONITORING WELL
MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
<0.449	TRICHLOROETHENE NOT DETECTED ABOVE THE SAMPLE QUANTITATION LIMIT (SQL)
—1—	TRICHLOROETHENE ISOCONCENTRATION CONTOUR (LINE IS DASHED WHERE INFERRED)
🟥	PCLE ZONE BOUNDARY (5 ug/l) (LINE IS DASHED WHERE INFERRED)
J	CONCENTRATION IS ESTIMATED
NS	NOt SAMPLED - WELL DAMAGED
	ALL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (ug/l)

N

0 400
APPROXIMATE
SCALE (FEET)

William D. Clarke
Geology
3859
12-18-12

A ZONE TRICHLOROETHENE
ISOCONCENTRATION MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 12/12/12	Project No. 12620.000
amec		Figure 5B-1A

Plot Date: 07/25/12 - 1:10pm, Plotted by: brian.laprarie
Drawing Path: I:\Project\El Campo\CAD\, Drawing Name: 28-Potentiometric_MAPS 8-11.dwg

-N-

0 400
APPROXIMATE SCALE (FEET)

EXPLANATION

▨	SURFACE WATER FEATURE
✳	MONITORING WELL (PLUGGED AND ABANDONED)
───	TRIBUTARY / DRAINAGE CANAL
⊕ MW-7	ZONE A - MONITORING WELL
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
49.21	MEASURED WATER LEVEL (FT. AMSL)
∼	POTENTIOMETRIC SURFACE CONTOUR IN FT. AMSL (LINE IS DASHED WHERE INFERRED)

STATE OF TEXAS
William D. Clarke
Geology
3859
LICENSED
PROFESSIONAL GEOSCIENTIST
11-20-12

C ZONE POTENTIOMETRIC SURFACE MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 07/25/12	Project No. 12620.000
amec		Figure 5A-C

Plot Date: 07/25/12 - 1:07pm, Plotted by: brian.laprarie
Drawing Path: I:\Project\El Campo\CAD\, Drawing Name: 28-Potentiometric_MAPS 8-11.dwg

EXPLANATION

●	SURFACE WATER FEATURE
✳	MONITORING WELL (PLUGGED AND ABANDONED)
─	TRIBUTARY / DRAINAGE CANAL
⊕ MW-7	ZONE A - MONITORING WELL
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
64.28	MEASURED WATER LEVEL (FT. AMSL)
⌒	POTENTIOMETRIC SURFACE CONTOUR IN FT. AMSL (LINE IS DASHED WHERE INFERRED)
N/A	DATA NOT AVAILABLE

N

0 400
APPROXIMATE SCALE (FEET)

STATE OF TEXAS
William D. Clarke
Geology
3859
12-18-12

B ZONE POTENTIOMETRIC SURFACE MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 07/25/12	Project No. 12620.000
amec		Figure 5A-B

Plot Date: 07/25/12 - 1:01pm, Plotted by: brian.laprarie
Drawing Path: I:\Project\El Campo\CAD\, Drawing Name: 28-Potentiometric_MAPS 8-11.dwg

EXPLANATION

▨	SURFACE WATER FEATURE
✳	MONITORING WELL (PLUGGED AND ABANDONED)
—	TRIBUTARY / DRAINAGE CANAL
⊕ MW-7	ZONE A - MONITORING WELL
⊕ MW-7B	ZONE B - MONITORING WELL
⊕ MW-7C	ZONE C - MONITORING WELL
△	WATER WELL
△	WATER WELL PLUGGED AND/OR ABANDONED 2003 OR 2005
64.36	MEASURED WATER LEVEL (FT. AMSL)
⁓	POTENTIOMETRIC SURFACE CONTOUR IN FT. AMSL (LINE IS DASHED WHERE INFERRED)

William D. Clarke
Geology
3859
11-20-12

A ZONE POTENTIOMETRIC SURFACE MAP
AUGUST 2011

El Campo Aluminum Facility
El Campo, Texas

By: MLS	Date: 07/25/12	Project No. 12620.000
amec		Figure 5A-A

AFFECTED PROPERTY ASSESSMENT REPORT
Small Arms Firing Range
Roy P. Benavidez National Guard Armory
801 Armory Road (CR406)
El Campo, Texas

prepared for:

ADJUTANT GENERAL'S DEPARTMENT
Attn: Mr. David Boucher
2200 West 35th Street, Building 1, AGTX-EV
Austin, Texas 78703

August 2005

prepared by:

Mandy Mercer
Mandy Mercer, P.G., Project Geologist

Roxie L. Voran
Roxie L. Voran, P.G., Senior Associate

CORRIGAN CONSULTING, INC.
an environmental consulting firm
12000 Aerospace Avenue, Suite 450
Houston, Texas 77034
(281) 922-4766

Report Certification Page

STATE OF TEXAS
8/17/05
Mandy R. Mercer
Geology
6650
LICENSED
PROFESSIONAL GEOSCIENTIST

Mandy Mercer

(Seal and Date Here)

Mandy R. Mercer, Project Geologist, P.G., License No. 6650

Ms. Mercer was responsible for soil sample collection, and preparation of the Affected Property Assessment Report.

STATE OF TEXAS
8/17/05
Roxie L. Voran
Geology
1788
LICENSED
PROFESSIONAL GEOSCIENTIST

Roxie L. Voran

(Seal and Date Here)

Roxie L. Voran, Senior Associate, P.G., License No. 1788

Mr. Voran was responsible for quality control on the project and for reviewing the Affected Property Assessment Report.

Note: Individual specifications, estimates, calculations, and figures (maps and cross-sections) depicting geologic interpretation have been stamped by the professional geologist who prepared the document or directly managed its preparation. Soil boring logs are not individually stamped and should not be used separate from this report.

APAR Table of Contents	Check if included
Cover Page	✓
Professional Signatures and Seals	✓
Executive Summary	✓
Conclusions and Recommendations	✓
Chronology*	✓
Specialized Submittals Checklist	
Section 1 Property Information	
Discussion of site operations, release sources, and geology/hydrogeology	✓
Table 1A - Sources of Release	✓
Table 1B - Potential Off-Site Sources	✓
Figure 1A - On-Site Property Map*	✓
Figure 1B - Affected Property Map*	✓
Figure 1C - Regional Geologic Map*	✓
Figure 1D - Regional Geologic Cross Section(s)*	✓
Section 2 Exposure Pathways and Groundwater Resource Classification	
Discussion of potential receptors, groundwater classification, and exposure pathways	✓
Table 2A - Water Well Summary	✓
Table 2B - Affected Water Well Summary	✓
Table 2C - Complete or Reasonably Anticipated to be Complete Exposure Pathways	✓
Figure 2A - Potential Receptors Map*	✓
Figure 2B - Field Survey Photographs*	
Figure 2C - Water Well Map*	✓
Attachment 2A - Tier 1 Ecological Exclusion Criteria Checklist	✓
Attachment 2B - Tier 1 Ecological Exclusion Criteria Supporting Documentation*	✓
Section 3 Assessment Strategy	
Discussion of assessment strategies	✓
Table 3A - Underground Utilities	✓
Section 4 Soil Assessment	
Discussion of nature and extent of COCs in soil	✓
Table 4A - Surface Soil Residential Assessment Levels with no Ecological Component	✓
Table 4B - Surface Soil Residential Assessment Levels with Ecological Component	✓
Table 4C - Subsurface Soil Residential Assessment Levels	✓
Table 4D - Soil Data Summary*	✓
Table 4E - Soil Geochemical/Geotechnical Data summary*	
Figure 4A - Surface Soil COC Concentration Maps*	✓
Figure 4B - Subsurface Soil COC Concentration Maps*	
Figure 4C - Cross Sections*	
Section 5 Groundwater Assessment	
Discussion of nature and extent of COCs in groundwater	
Table 5A - Groundwater Residential Assessment Levels	
Table 5B - Groundwater Data Summary*	
Table 5C - Groundwater Geochemical Data Summary*	
Table 5D - Groundwater Measurements*	
Figure 5A - Groundwater Gradient Map*	
Figure 5B - Groundwater COC Concentration Maps*	
Figure 5C - Groundwater Geochemistry Maps*	
Figure 5D - Cross Section Groundwater-to-Surface Water Pathway*	
Section 6 Surface Water Assessment and Critical PCL Development	
Discussion of nature and extent of COCs in surface water	✓
Table 6A - Surface Water Critical PCLs	✓
Table 6B - Surface Water Data Summary*	✓
Figure 6A - Surface Water PCLE Zone Map*	✓
Figure 6B - Photographs	

APAR Table of Contents	Check if included
Section 7 Sediment Assessment and Critical PCL Development	
Discussion of nature and extent of COCs in sediment	✓
Table 7A - Sediment Critical PCLs	✓
Table 7B - Sediment Data Summary*	✓
Figure 7A - Sediment PCLE Zone Map*	✓
Section 8 Air Assessment and Critical PCL Development	
Discussion of the nature and extent of COCs in outdoor and indoor air	
Table 8A - Outdoor Air Data Summary*	
Figure 8A - Outdoor Air COC Concentration Maps*	
Section 9 Ecological Risk Assessment	
Discussion of ecological risk assessment, expedited stream evaluation, and/or reasoned justification Copies of SLERA or SSERA	
Section 10 COC Screening	
Discussion of COC screening process and results	✓
Table 10A - COC Screening Summary Table	✓
Section 11 Soil Critical PCL Development	
Discussion of soil critical PCL evaluation	✓
Table 11A - Surface Soil Critical PCLs (On-Site/Off-Site)	✓
Table 11B - Subsurface Soil Critical PCLs (On-Site/Off-Site)	✓
Figure 11A - Surface Soil PCLE Zone Maps*	✓
Figure 11B - Subsurface Soil PCLE Zone Maps*	
Figure 11C - Cross Sections of the PCLE Zone*	
Section 12 Groundwater Critical PCL Development	
Discussion of groundwater critical PCL evaluation	
Table 12A - Groundwater Critical PCLs - Full Plume POE*	✓
Table 12B - Groundwater-to-Surface Water PCLs	✓
Table 12C - Groundwater-to-Sediment PCLs	✓
Table 12D - Groundwater Critical PCL Evaluation - Surface Water/Sediment Discharge POE	✓
Figure 12A - Groundwater PCLE Zone Map*	
Section 13 Notifications	
Discussion of notification conducted	
Table 13A - Notification Summary	✓
Figure 13A - Notification Map*	
Appendices	
Appendix 1 Notifications	
Appendix 2 Boring Logs and Monitor Well Completion Details*	
Appendix 3 Monitor Well Development and Purging Data*	
Appendix 4 Registration and Institutional Controls*	
Appendix 5 Water Well Records*	✓
Appendix 6 Monitor Well Records*	
Appendix 7 Aquifer Testing Data*	
Appendix 8 Statistics Data Tables and Calculations*	
Appendix 9 Development of Non-Default RBELs and PCLs*	✓
Appendix 10 Laboratory Data Packages and Data Usability Summary*	✓
Appendix 11 Miscellaneous Assessment*	
Appendix 12 Waste Characterization and Disposition Documentation*	
Appendix 13 Photographic Documentation	✓
Appendix 14 Standard Operating Procedures	✓
Appendix 15 OSHA Health and Safety Plan (Sec350.74(b)(1))*	
Appendix 16 Reference List*	✓

Cover Page

Program ID No. (primary): *RN104503057* Report date: *August 2005*
TCEQ Region No.: *12* MSD Certificate No.:
Additional Program ID Numbers.: SWR/Facility ID No.: PST Facility ID No.: *2809 (Inactive)*
DCRP ID No.: VCP ID No.: LPST ID No.:
MSW Tracking No.: HW Permit/CP No.: Enforcement ID No.:
Other ID Nos.: *CN600396121 (Customer Number)*

Reason for submittal (check all that apply):
☒ Initial submittal
☐ Revision
Notice of Deficiency Letter
Permit/Compliance Plan
☒ Voluntary response
Enforcement/Agreed order
Directive/NOV letter
Other:

On-Site Property Information

On-Site Property (Facility) Name: *Roy P. Benavidez National Guard Armory / El Campo OMS 12*
Street no. *801* Pre dir: Street name: *Armory (CR406)* Street type: *Rd.* Post dir:
City: *El Campo* County: *Wharton* County Code *241* Zip *77437*
Nearest street intersection and location description: *East of Highway 71 on the south side of Highway 59*

Latitude: Decimal Degrees (indicate one) North *29 10.263'*
Longitude: Decimal Degrees (indicate one) West *96 15.176'*

Contact Person for On-Site Property Information and Acknowledgment

Company Name or Person: *Adjutant General's Department*
tact Name: *David Boucher* Title: *Environmental Specialist*
Mailing Address: *2200 West 35th Street, Building 1, AGTX-EV*
City: *Austin* State: *TX* Zip: *78703* Phone: *(512) 782-5753*
Email: *dave.boucher@tx.ngb.army.mil* Fax: *(512) 465-5141*
Person is: __ property owner __ property manager __ potential purchaser __ tenant __ operator
other *Owner representative*

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of administrative, civil, or criminal penalties.

Signature of Person Name (print): Date:

Consultant Contact Person

Consultant Company Name: *Corrigan Consulting, Inc.*
Contact Person: *Roxie Voran, P.G., CAPM* Title: *Senior Associate*
Mailing Address: *12000 Aerospace Avenue, Suite 450*
City: *Houston* State: *TX* Zip: *77034*
Phone: *(281) 922-4766* Fax: *(281) 922-4767* E-mail address *roxiev@corrigan-consulting.com*

Professional Signatures and Seals

Professional Geoscientist

Roxie L. Voran	*1788*	*4/30/2006*
Professional Geoscientist	Geoscientist License number	Expiration date
Roxie L. Voran	8/17/05	
Signature	Date	
(281) 922-4766	*(281) 922-4767*	*roxiev@corrigan-consulting.com*
Telephone number	FAX number	E-mail

Professional Engineer

Professional Engineer	P.E. License number	Expiration date
Signature	Date	
Telephone number	FAX number	E-mail

Registered Corrective Action Specialists (RCASs) and Corrective Action Project Managers (CAPMs)

For LPST sites only.

Registered Corrective Action Specialist	RCAS Registration number	Expiration date
Signature	Date	
Corrective Action Project Manager	CAPM Registration number	Expiration date
Signature	Date	
Telephone number	FAX number	E-mail

Seals, as applicable:

8/17/05
Roxie L. Voran
Geology
1788

Executive Summary

Environmental Media	Actual or Probable Exposures On-Site?		Actual or Probable Exposures Off-Site?		Have notifications for actual or probable exposures been completed? (§350.55(e))		
	Yes	No	Yes	No	Yes	No	N/A
Soil		X		X			X
Groundwater		X		X			X
Sediment		X		X			X
Surface Water		X		X			X

Is there, or has there been, an affected or potentially affected water well? ___Yes _X_ No

If yes, what is the well used for? ______

Actual land use: On-site: ___Res _X_ C/I Off-site affected property: ___Res ___C/I _X_ N/A

Land use for critical PCL determination: On-site: ___Res _X_ C/I Off-site affected property: ___Res ___C/I _X_ N/A

Did the affected property pass the Tier 1 ecological exclusion criteria checklist? _X_ Yes ___No

Affected groundwater-bearing unit(s) (in order from depth below ground surface), or uppermost groundwater-bearing unit if none affected

Unit No.	Name	Depth below ground surface (ft)	Resource Classification (1, 2, or 3)
1	***Chicot Aquifer***	***60***	***1 (Assumed)***
2			
3			

Assessment

Environmental Media		Assessment Levels Exceeded? On-Site?			Assessment Levels Exceeded? Off-Site?			Affected property defined to RAL?			Is COC extent stable or expanding?	General classes of COCs (VOCs SVOCs, metals, etc.)
		Yes	No	Not sampled	Yes	No	Not sampled	Yes	No	N/A		
Soil	Surface	X					X		X		***Stable***	***Metals***
	Subsurface			X			X			X		
Groundwater				X			X			X		
Sediment							X			X		
Surface Water							X			X		

NAPL Occurrence Matrix

	NAPL Occurrence		Description
NAPL in vadose zone	X	No NAPL in vadose zone	There is no direct or indirect evidence of NAPL in the vadose zone
		NAPL in/on soil	NAPL detected in or on unsaturated, unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
		NAPL in fractured clay	NAPL detected in fractures of unsaturated fine-grained soils
		NAPL in fractured or porous rock	NAPL detected in unsaturated lithologic material
		NAPL in karst	NAPL detected in karst environment
NAPL at capillary fringe	X	No NAPL at capillary fringe	There is no direct or indirect evidence of NAPL at the capillary fringe
		NAPL at capillary fringe	NAPL detected at vadose-saturated zone transition, capillary fringe (in contact with water table)
NAPL in saturated zone	X	No NAPL in saturated zone	There is no direct or indirect evidence of NAPL in the saturated zone
		NAPL in soil	NAPL detected in saturated unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
		NAPL in fractured clay	NAPL detected in fractures of saturated fine-grained soil or other double-porosity sediments
		NAPL in saturated fractured or porous rock	NAPL detected in saturated lithologic material
		NAPL in saturated karst	NAPL detected in karst environment within the saturated zone
NAPL in surface water or sediment	X	No NAPL in surface water or sediment	There is no direct or indirect evidence of NAPL in surface water or sediments
		NAPL in surface water	NAPL detected in surface water at exceedance concentration levels or visual observation
		NAPL in sediments	NAPL detected in sediments at exceedance concentration levels or visual observation via migration pathway or a direct release

Remedy Decision

Environmental Media		Critical PCL exceeded on-site?			Critical PCL exceeded off-site?			PCLE zones defined?			General class (VOCs, SVOCs, metals, etc.) of COCs requiring remedy
		Yes	No	N/A	Yes	No	N/A	Yes	No	N/A	
Soil	Surface	X					X		X		***Metals***
	Subsurface			X			X			X	
Groundwater				X			X			X	
Sediment				X			X				
Surface Water				X			X				

NAPL Triggers

NAPL Response Action Triggers		Description of Triggers
X	No NAPL response action triggers	No NAPL triggers have been observed in any assessment zones (vadose, capillary fringe and saturated), nor in surface water or sediments
	NAPL vapor accumulation is explosive	NAPL vapors accumulate in buildings, utility and other conduits, other existing structures, or within anticipated construction areas at levels that are potentially explosive (≥ 25% LEL)
	NAPL zone expanding	NAPL zone is observed to be expanding using time-series data
	Mobile NAPL in vadose zone	NAPL zone is observably mobile, or is theoretically mobile based on COC concentrations and residual saturation
	NAPL creating an aesthetic impact or causing nuisance condition	NAPL is responsible for objectionable characteristics (e.g., taste, odor, color, etc.) resulting in making a natural resource or soil unfit for intended use
	NAPL in contact with Class 1 groundwater	NAPL has come in actual contact with saturated zone or capillary fringe of a Class 1 GWBU
	NAPL in contact with Class 2 or 3 groundwater	NAPL has come in actual contact with saturated zone or capillary fringe of a Class 2 or Class 3 GWBU
	NAPL in contact with surface water	Liquid containing COC concentrations that exceed the aqueous solubility in contact with surface water via various migration pathways or direct release to surface water
	NAPL in or on sediments	Liquid containing COC concentrations that exceed the aqueous solubility impact surface water sediments via migration pathway or a direct release

Conclusions and Recommendations

Assessment Results

The Roy P. Benavidez National Guard Armory is located in El Campo, Texas south of Highway 59. Located at the site is a small arms firing range (SAFR) consisting of an earthen backstop and two firing platforms. The firing range is no longer in use. Sampling activities were conducted during September 2003, November 2003, and June 2004 to determine whether activities at the firing range had resulted in an impact to surface soils at the firing platforms or backstop. Samples were analyzed for VOCs by Method 8260, SVOCs by Method 8270, and Metals by Method 6020. No VOC concentrations were reported greater than the laboratory method quantitation limit (MQL) or Tier 1 Protective Concentration Level (PCL). One SVOC, bis (2-ethylhexyl) phthalate, was detected in a sample from one location at a concentration greater than the laboratory MQL of 0.167 mg/kg but less than the Tier 1 PCL of 160 mg/kg. Several metals were detected at concentrations greater than assessment levels. They include:

- **Antimony** – detected in seven samples greater than the Texas Specific Background Concentration of 1 milligram per kilogram (mg/kg)
- **Cadmium** – detected in several samples greater than the laboratory MQL of 0.050 mg/kg
- **Calcium** – detected in several samples greater than the laboratory MQL of 25 mg/kg
- **Cobalt** – detected in two samples greater than the Texas Specific Background Concentration of 7 mg/kg
- **Copper** – detected in eight samples greater than the Texas Specific Background Concentration of 15 mg/kg
- **Lead** – detected in several samples greater than the Texas Specific Background Concentration of 15 mg/kg and detected in 16 samples greater than the Critical PCL of 70.23 mg/kg
- **Magnesium** – detected in several samples greater than the laboratory MQL of 10 mg/kg
- **Manganese** – detected in three samples greater than the Texas Specific Background Concentration of 300 mg/kg
- **Nickel** – detected in two samples greater than the Texas Specific Background Concentration of 10 mg/kg
- **Potassium** – detected in several samples greater than the laboratory MQL of 10 mg/kg
- **Selenium** – was not detected above laboratory detection limits, however the Sample Quantitation Limit (SQL) used by the laboratory to define the detection limit was greater than the laboratory MQL of 0.25 mg/kg for several samples
- **Silver** - was not detected above laboratory detection limits, however the Sample Quantitation Limit (SQL) used by the laboratory to define the detection limit was greater than the laboratory MQL of 0.24 mg/kg for several samples
- **Sodium** – detected in several samples greater than the laboratory MQL of 25 mg/kg
- **Zinc** – detected in five samples greater than the Texas Specific Background Concentration of 30 mg/kg

According to the TCEQ memorandum dated October 21, 2003, and entitled "Determining Which Releases are Subject to TRRP," action levels can be established for COCs. An action level is defined as the lowest applicable Tier 1 PCL or the MQL or background, if either of those concentrations is higher than the Tier 1 PCL. For COCs with maximum concentrations less than the action levels, the release is not considered to be subject to TRRP, provided the site passes the Tier 1 Ecological Exclusion Criteria Checklist. Based on the TCEQ memorandum, only lead, antimony, and silver are subject to TRRP at this site.

A small pond has developed in a low-lying area where soil was removed to construct the backstop. Based on the information in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters of the State, and the pond is not consistently or routinely utilized as valuable habitat for natural communities. Therefore, the pond is excluded and the nearest surface water body considered to be surface wasters of the State is Tres Palacios Creek, located approximately one-quarter mile east of the property. However, one surface water sample and one sediment sample were collected from the pond. The samples were analyzed for antimony, lead, and silver by Method 6020. Results for the sediment sample indicated a lead concentration of 69.8 mg/kg, which is greater than the Texas Specific Background Concentration for lead of 15 mg/kg, but less than the Critical lead PCL calculated for the site of 70.23 mg/kg. Results for the surface water sample indicated a lead concentration of 0.013 mg/L which is less than the Tier 1 Commercial/Industruial (C/I) PCL of 0.015 mg/L.

Based on the analytical data, delineation of lead-impacted soil has not been completed in all locations sufficient to demonstrate groundwater protectiveness. This can be achieved by the collection and analysis of additional soil samples or by assessing groundwater at this site. Alternatively, we understand that the Adjutant General's Department plans to conduct a Response Action at the site to remove impacted soil for off-site disposal. Upon completion of the Response Action, verification soil sampling should be conducted and may verify the extent of impacted soil.

Surrounding properties in the vicinity of the affected properties include an American Legion facility and baseball fields adjacent to the facility to the west, and several single-family residences to the north. The property to the south and east is undeveloped and used for agricultural purposes. Due to the location of the affected properties within the boundaries of the larger Armory facility, and due to the less mobile nature of the contaminants, it is not likely that contamination noted in shallow soils during this investigation will impact adjacent properties.

According to the water well search conducted in June 2005, there are 17 water wells located within a half-mile radius of the facility. The wells are installed to depths ranging from 67 feet bgs to 230 feet bgs and the shallowest screened interval is from 63 to 67 feet bgs. Due to the depth of the screened intervals, and the distance of the wells from the affected properties, it is not likely that contamination noted in shallow soils during this investigation will impact those wells.

NAPL Discussion

No evidence of NAPL was detected during any of the field activities.

Response Actions and Recommendations

As noted above, the Adjutant General's Department plans to undertake a Response Action for the removal and off-site disposal of impacted soil. Verification soil sampling should be conducted upon the completion of the Response Action.

Following Pages: **Figure A - Affected Property and PCLE Zone Map**

Chronology of Events

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
PROFESSIONAL LICENSED GEOSCIENTIST

Legend

- ● Sample location
- ● Sample location with COC exceedance (lead)
- ▨ PCLE Zone (lead) (Critical PCL = 70.23 mg/kg)
- ◯ Affected property boundary

Affected Property and PCLE Zone Map

Date: 06/05

Figure A

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Chronology of Events

August 2003	Adjutant General's Department (AGD) retained Corrigan Consulting, Inc. (CCI) to perform environmental sampling and analysis of soils at a former small arms firing range at the El Campo National Guard Armory. Purpose of the project was to determine what, if any, contaminants exist in soils in exceedance of the Texas Tier 1 Residential Soil PCLs, and to submit the findings in the format of an Affected Property Assessment Report (APAR).
September 2003	Soil sampling activities were conducted at the firing range backstop and the former firing platform location as indicated by facility personnel. A total of thirty shallow soil samples (0-6 inches) were collected, twenty-five spaced along the firing range backstop, and five at the former firing platform. Samples were submitted to a qualified environmental laboratory for analysis of Total Petroleum Hydrocarbons by Tx1005, TAL Metals by EPA 6020, Volatile Organic Compounds (VOCs) by EPA 8260, Semi-volatile Organic Compounds (SVOCs) by EPA 8270, Explosives by EPA 8330 (2 samples), pH by EPA 150.1 (5 samples), and SPLP Metals by EPA 6010B (as required). Based on the analytical results, concentrations of lead, silver and antimony from a number of soil borings were greater than the applicable Tier 1
October 2003	Met with Mr. David Boucher of the Adjutant General's Department to review initial sample results. Mr. Boucher supplied a copy of a previous report that was completed for the facility. Maps included with that report indicated a second former firing platform separate from the firing platform location indicated by facility personnel. A Sampling plan to assess shallow vertical and horizontal contaminants was discussed.
November 2003	Soil sampling activities were conducted. A total of thirteen shallow soil samples (0-6 inches) were collected to assess horizontal limits of lead, silver, and antimony at the former firing platform (three), and the firing range backstop (ten). In addition, three shallow soil samples (0-6 inches) were collected at the location of the second former firing platform and analyzed for TAL 23 Metals. A total of six deeper soil samples (1.5-2 feet) were collected at the former firing platform (one), and the firing range backstop (five), to assess the vertical extent of lead, silver, and antimony.
June 2004	Additional soil sampling activities were conducted. Soil samples were collected to assess horizontal limits (0-0.5 ft bgs) and vertical limits (1.5-2, 3-3.5 ft bgs) of lead in shallow soils surrounding the firing platforms and the firing range backstop. Additionally, a surface water sample and a sediment sample were collected from the pond behind the firing backstop and analyzed for lead, antimony and silver.

Section 1 Property Information

Section 1.1 Physical Location

Property Location and Land Use

The Roy P. Benavidez National Guard Armory is located at 801 Armory Road in El Campo, Wharton County, Texas and is operated by the Texas Army National Guard. The property is approximately 8.7 acres in size, only 1 acre of which has been developed, and is used primarily for vehicle/equipment storage and administrative activities. Historically, a portion of the property was used as a small arms firing range consisting of two firing platforms and a backstop/bermed area, however the firing range is no longer in use. At the time of the field activities, cattle were grazing on the undeveloped portion of the property. The surrounding area is predominantly undeveloped and is used for agricultural purposes.

Topography

The topography of the El Campo area is generally flat with a gentle slope from north to south across the region. The Tres Palacios River is located approximately 0.5-mile east of the site.

Onsite, a large earthen berm was constructed in the southeastern corner of the property to serve as a backstop for firing range activities. The berm is flanked on the northwest and southeast by low-lying areas created when soil was removed to build the berm. Over time, water from rainfall and surface runoff has accumulated in the low-lying area southeast of the berm and created a pond. This pond was observed during all three site visits (September 2003, November 2003, and June 2004) and is presumably perennial. Surface drainage in the area of the berm is northwestward and southeastward from the center ridge. According to laboratory analytical data, the highest COC concentrations were reported on the northwest side of the berm where shooting activities were focused.

According to the FEMA map generated through http://www.esri.com/hazards/, it is unknown whether the site lies within the 100-year floodplain.

Weather

The El Campo area receives approximately 41.5 inches of rainfall per year. No recent extreme weather events have been documented for the area.

Section 1.2 Affected Property and Sources of Release

History and Operations

The Roy P. Benavidez National Guard Armory property is approximately 8.7 acres in size and has been occupied by the Texas National Guard since approximately 1959. Prior to this time the site was undeveloped. The facility currently includes approximately 1 acre of developed area used for vehicle/equipment storage and administrative activities, and cattle were grazing on the undeveloped portion of the property at the time of field activities. Future facility use is presumed to be the same as the current use. Historically, a portion of the property was used as a small arms firing range consisting of two firing platforms and a backstop/bermed area, however the firing range is no longer in use. The NAICS code for the facility is 928110 which encompasses military reserve armories and bases. Primary COCs identified during this investigation included several metals identified at concentrations greater than the Texas Specific Background Concentrations.

Project Overview

Corrigan Consulting, Inc. was contracted by the Adjutant General's Department in 2003 to conduct a soil investigation at the El Campo Armory Facility. The soil investigation was related to the use of a small arms firing range at the site, and at the time it was unknown when the range was constructed and how often it had been used. The purpose of the investigation was to determine if COC concentrations in excess of PCLs existed at any of the locations associated with the firing range, and whether the site was reportable as an "affected property" as defined under the Texas Risk Reduction Program (TRRP). As a result of this investigation, three distinct affected properties were identified at this facility as being impacted by firing range activities: two firing platforms and the berm/backstop area. Primary COCs identified during this investigation included several metals identified at concentrations above Texas Specific Background Concentrations at both firing platforms and at the backstop area, and lead identified above the critical PCL of 70.23 mg/kg at the backstop area. It is believed that the metals impacts are a direct result of bullets being fired at the backstop area resulting in spent munitions accumulating in the shallow soil.

Section 1.3 Geology/Hydrogeology

Based on the Geologic Atlas of Texas Seguin Sheet, the facility lies within the outcrop area of the Beaumont Formation, which consists of mostly clay, silt, sand, and gravel, and includes mainly stream channel, point bar, natural levee, and backswamp deposits. Concretions and massive accumulations of calcium carbonate (caliche), iron oxide, and iron-manganese oxides are evident in the zone of weathering. Soil conditions observed in surface soil at the site included a clayey silt with a pH ranging from 6.75 at the northernmost firing platform to 9.22 at the backstop area in the southern portion of the facility.

The Chicot Aquifer is the major aquifer for the area, consisting mainly of discontinuous layers of sand and clay of about equal thickness. Water bearing units within the aquifer include the Willis Sand, Lissie Formation, Beaumont Clay, and Quaternary Alluvium. The Chicot Aquifer overlies the Evangeline Aquifer and includes all deposits from the land surface to the top of the Evangeline. The base of the Chicot Aquifer ranges in altitude from the land surface at the outcrop to more than 1,100 feet below ground surface in southern Wharton County. Based on data collected from local water wells, the hydraulic conductivity of the Chicot Aquifer in the area of the site is 88 feet per day, and the average rate of movement throughout Wharton County is 75 feet per year.

Land surface elevation at the facility is approximately 90 feet above sea level. Shallow groundwater is reportedly found at 15 to 20 feet below ground surface (bgs), based on reports from previous investigations conducted near the facility.

Subsurface geology was not evaluated at the site.

Table 1A. Sources of Release

Affected property name/number[1]	Name of potential source[2] (supplied by the person)	Type of potential source (select from Column 1 on Inputs list)	NOR unit or SWMU number, if applicable	Substances of potential concern (select from Column 2 on Inputs list)	Size of source (capacity, area, or volume)	Status of source (select from Column 3 on Inputs list)		Was a release from this source confirmed? (if yes, indicate the discovery method from Column 4 on Inputs list, and date release was discovered)			
						Status[3]:	If closed or other, list date closed or explain:	No	Yes	Discovery method	Date
Firing Platform 1	Munitions	Munitions	N/A	Metals	<0.5 acre	Abandoned	~1977		X	Soil Investigation	09/03
Firing Platform 2	Munitions	Munitions	N/A	Metals	<0.5 acre	Abandoned	~1977		X	Soil Investigation	09/03
Backstop/Berm	Munitions	Munitions	N/A	Metals	1-acre	Abandoned	~1977		X	Soil Investigation	09/03

---

[1] The name or number is an identification of the affected property assigned by the person. Continue using the name or number identification throughout this report and all other correspondence on the affected property.

[2] The potential source is the source of the release. The person determines the name given to the potential source. Examples: northwest tank farm, Main Street landfill, etc.

[3] Specify whether the source status is active, inactive, abandoned, closed, or specify another status as appropriate.

Table 1B - Potential Off-Site Sources

No potential off-site sources are known to exist.

Table 1B. Potential Off-Site Sources

Affected property name/number	Off-site facility/ site name	Physical address	Regulatory ID number	Type of operation/ business	Years of operation (if known)	COCs
N/A						
N/A						

Following Pages: **Figure 1A - On-Site Property Map**

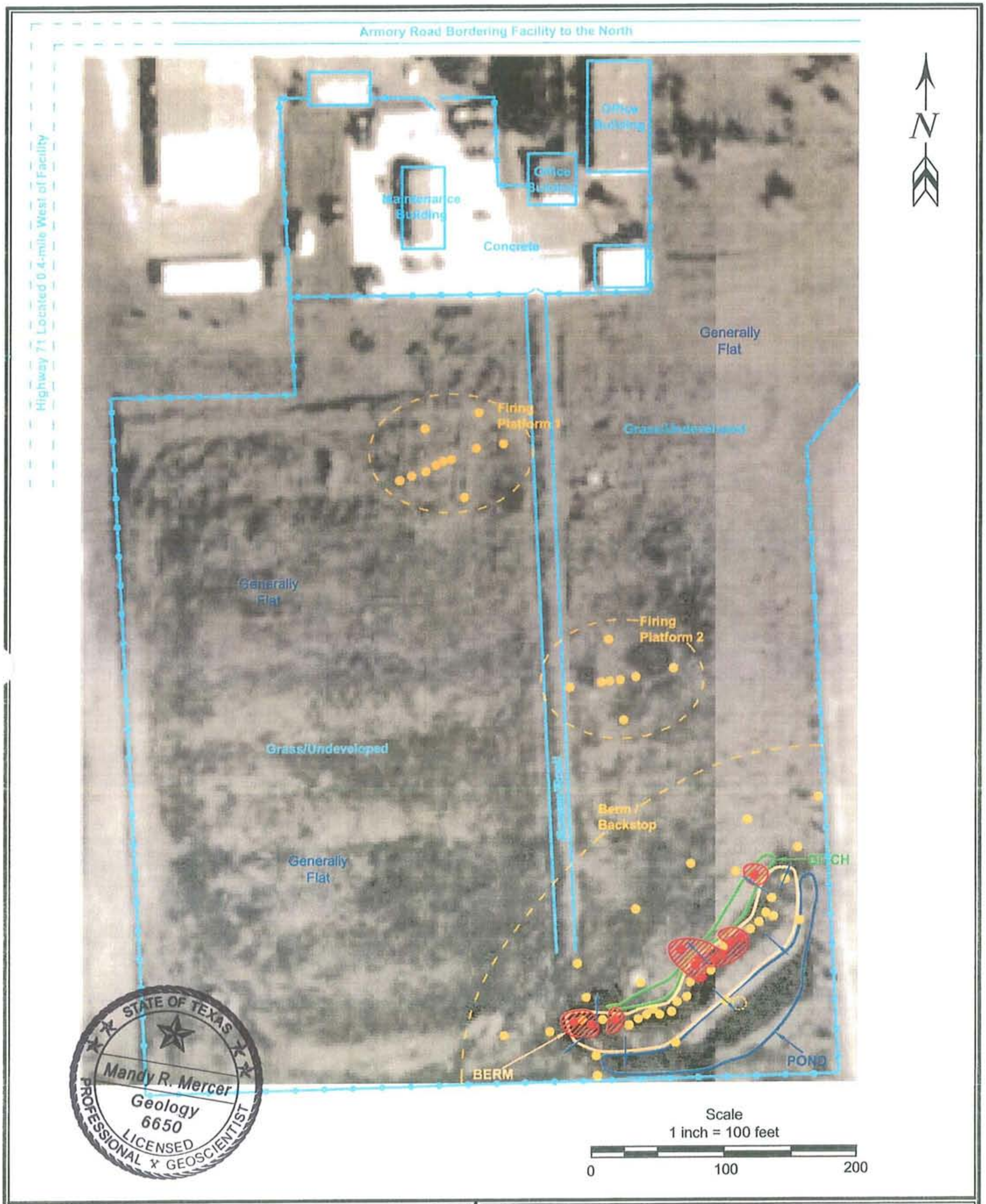
Figure 1B - Affected Property Map

Cross section lines were not included as the subsurface soil was not assessed during this investigation.

Figure 1C - Regional Geologic Map

Figure 1D - Regional Geologic Cross Sections

Legend		
Area of Investigation	On-Site Property Map	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Approximate Direction of Surface Drainage	Date: 06/05	
	Figure 1A	***CORRIGAN CONSULTING, INC.***

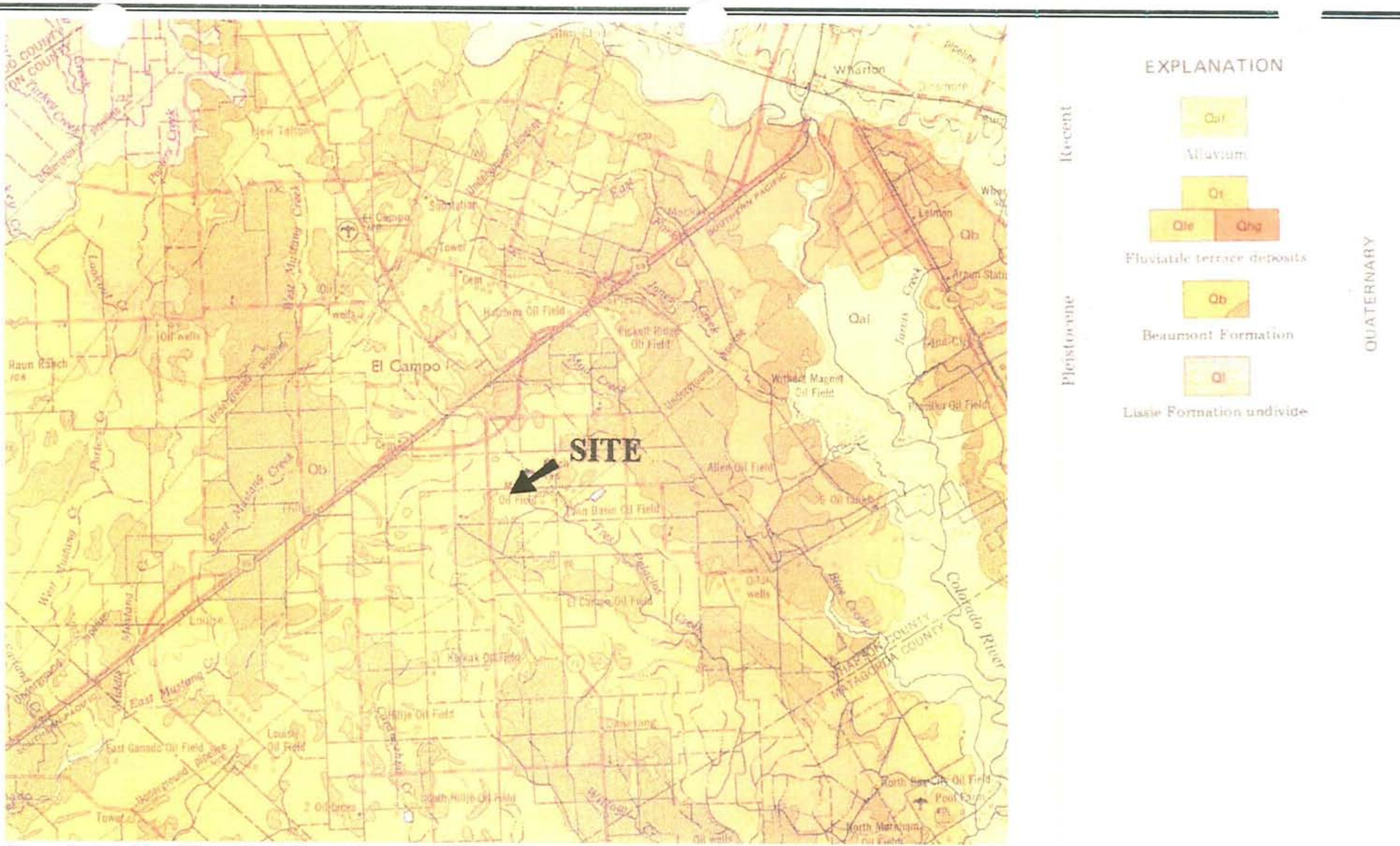


Mandy R. Mercer
Geology
6650

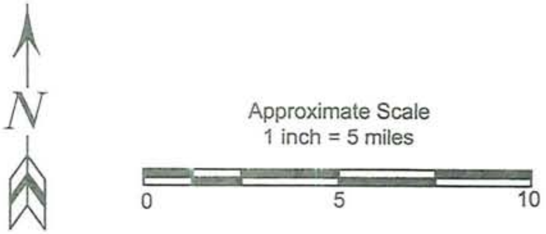
Legend

- ● Sample location
- ● Sample location with COC exceedance (lead)
- ▨ PCLE Zone (lead) (Critical PCL = 70.23 mg/kg)
- ◌ Affected property boundary
- ╲ Approximate Direction of Surface Drainage

Affected Property Map	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 06/05	
Figure 1B	**CORRIGAN CONSULTING, INC.**



Source: Geologic Atlas of Texas, Seguin Sheet,1974, rev. 1979



Approximate Scale
1 inch = 5 miles

Regional Geologic Map	AGD El Campo National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 06/05	
Figure: 1C	***CORRIGAN CONSULTING, INC.***

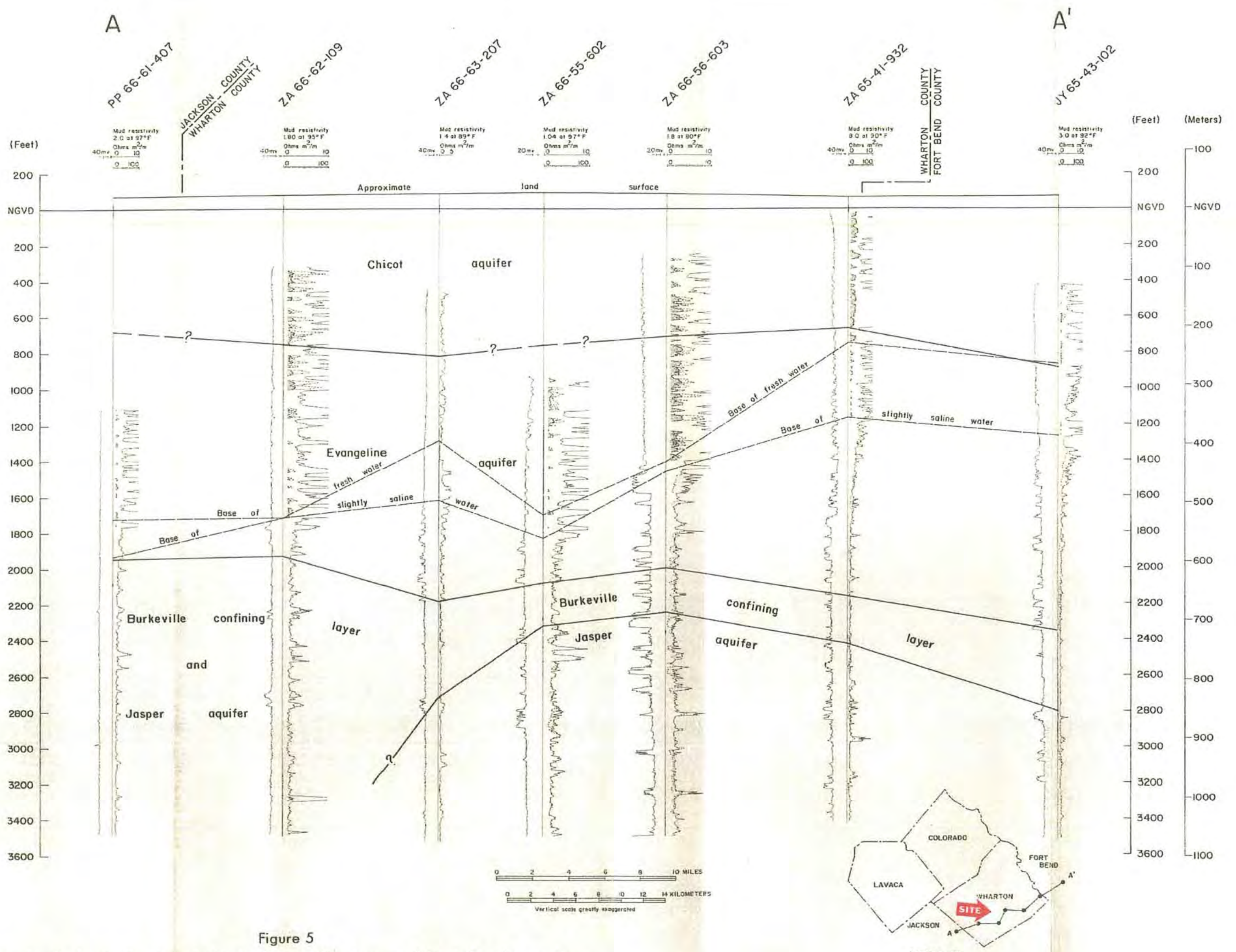


Figure 5

Geohydrologic Section A-A', Jackson, Wharton, and Fort Bend Counties

NOTE: The term "NGVD" or "NATIONAL GEODETIC VERTICAL DATUM" has been adopted by the National Geodetic Survey to replace the term "MEAN SEA LEVEL"

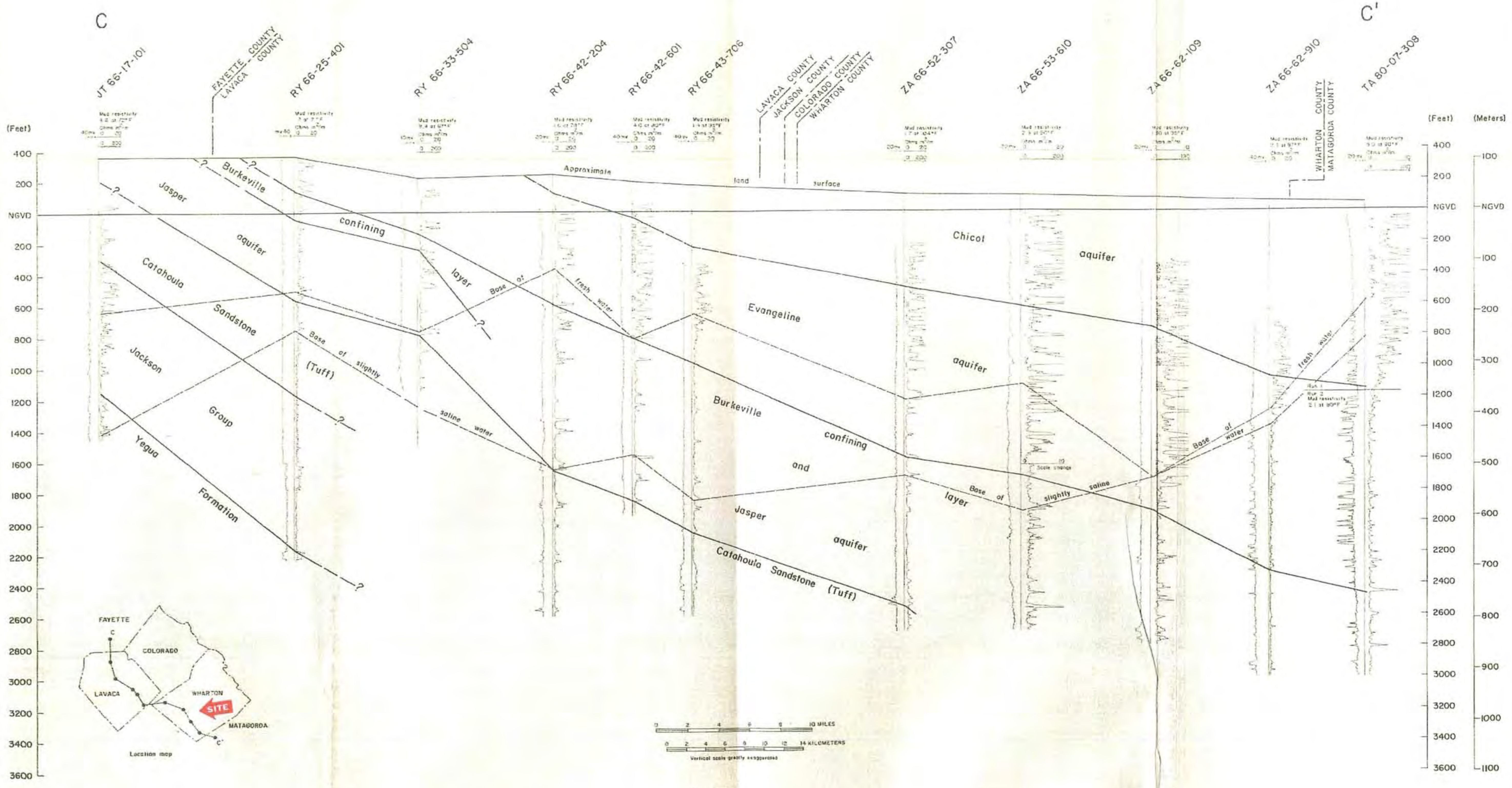


Figure 7

Geohydrologic Section C-C', Fayette, Lavaca, Wharton, and Matagorda Counties

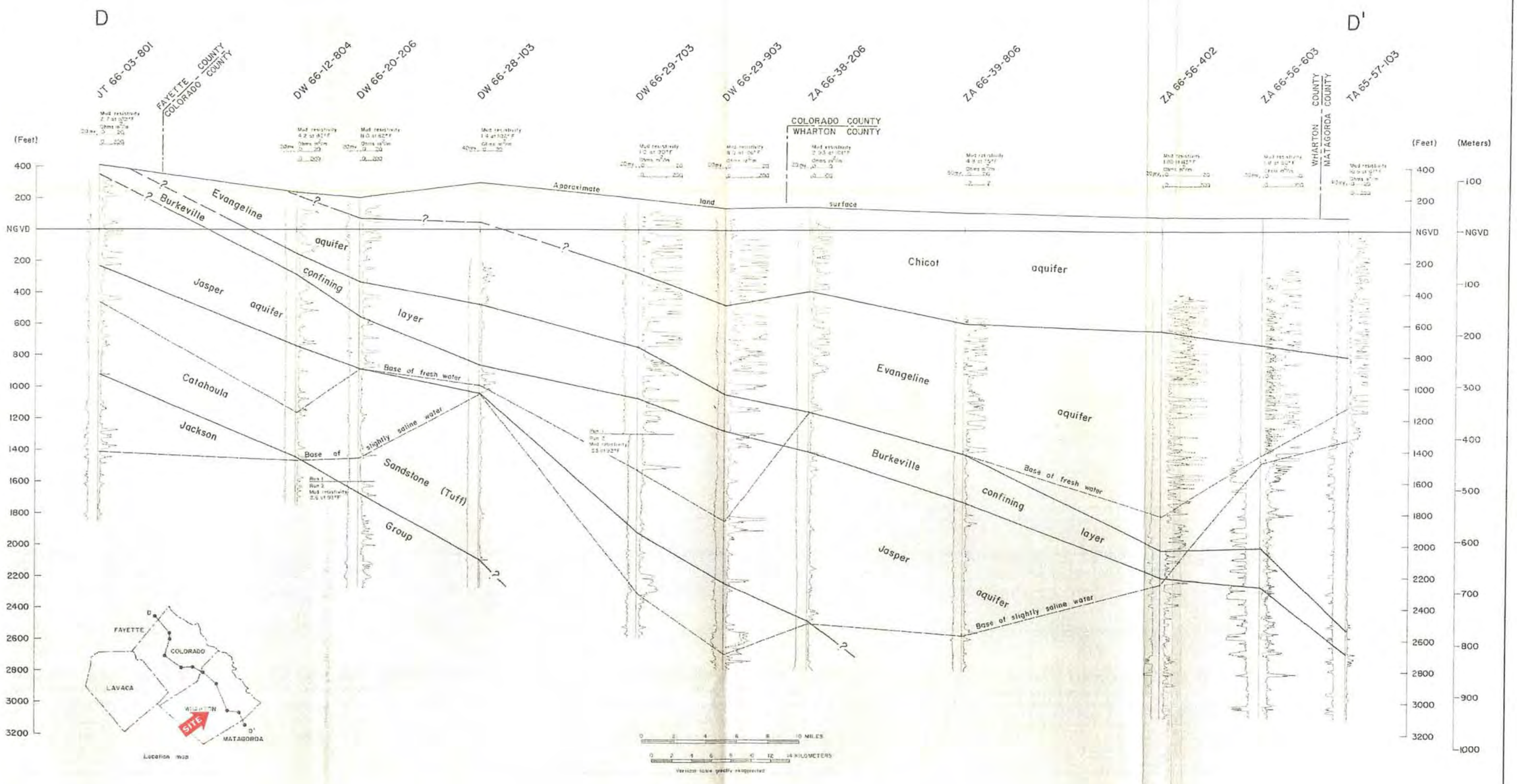


Figure 8

Geohydrologic Section D-D', Fayette, Colorado, Wharton, and Matagorda Counties

NOTE: The term "NGVD" or "NATIONAL GEODETIC VERTICAL DATUM" has been adopted by the National Geodetic Survey to replace the term "MEAN SEA LEVEL"

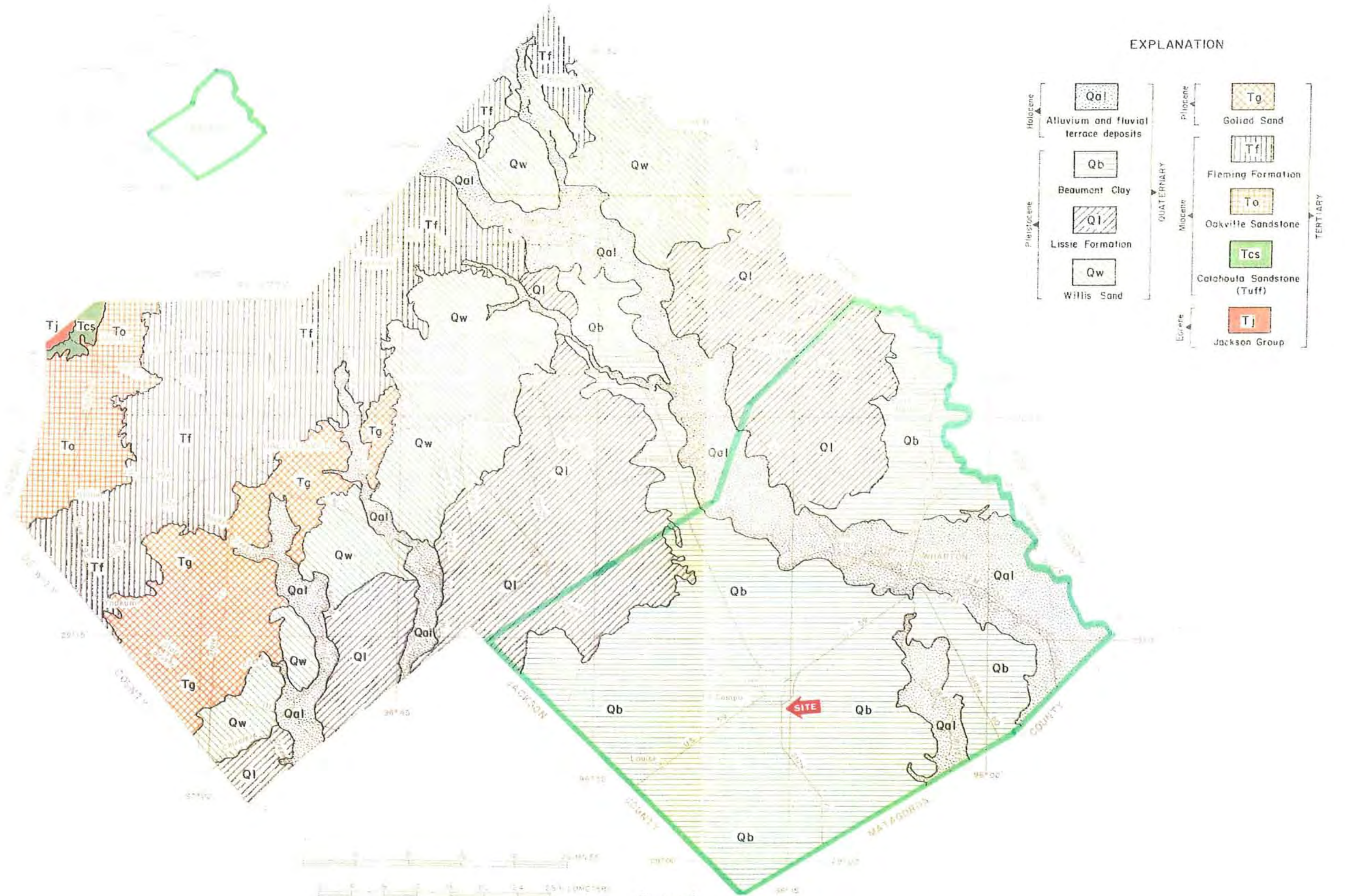


Figure 4

Geology of Colorado, Lavaca, and Wharton Counties

Base from U.S. Geological Survey topographic quadrangles

Geology from the University of Texas, Bureau of Economic Geology, Atlas of Texas, 1968, 1974, 1975

Section 2 Exposure Pathways and Groundwater Resource Classification

Section 2.1 Source(s) of Potable Water for On-Site Property and Affected Off-Site Properties

Potable water needs for the facility are fulfilled by the City of El Campo which maintains public water supply wells within city limits. The wells are installed in the Chicot and Evangeline Aquifers to depths ranging from 1,032 feet bgs to 1,400 feet bgs. The nearest public water supply well is over one mile north of the facility. The well, identified as City of El Campo #5 (6654621), was screened at five different intervals beginning at 710 feet bgs to the total depth of 1,032 feet bgs. Due to the distance of the well from the facilty, and the depth of screened intervals, there is no potential for the well to be impacted as a result of activities at the firing range at the El Campo Armory facility.

It is unknown whether the City of El Campo maintains a local ordinance or deed restriction preventing the installation of additional water wells within city limits.

Section 2.2 Field Receptor Survey

As observed in aerial photographs and during on-site work and travel to and from the site, there is an American Legion facility located west of the Armory which is comprised of several buildings and baseball fields. South and east of the site is predominantly undeveloped land which is likely used for agricultural purposes. North of the site across Armory Road are several single-family residences.

Section 2.3 Records Survey

A water well records search was conducted by Atlas Environmental Research on June 20, 2005. Records were obtained from the Texas Water Development Board and the Texas Commission on Environmental Quality. The Water Well Search Report is included in Appendix 5.

Section 2.4 Receptor Survey Results

The water well search conducted by Atlas Environmental Research and dated June 20, 2005 identified four located water wells, 35 plotted water wells, and 11 partially numbered water wells. The direction of groundwater flow is unknown. The wells were installed for various uses including domestic, industrial, and public supply. The deepest well within a half-mile of the facility was installed to a depth of 230 feet below ground surface (bgs) and is screened from 220 to 230 feet bgs. This well is identified on the map included with the report as 4(2) and is used for industrial purposes. The shallowest well within a half-mile of the facility was installed to a depth of 67 feet bgs and is screened from 63 to 67 feet bgs. The well is identified on the map included with the report as 6H and is used for domestic purposes.

General land use in the area is primarily agricultural. The topography is generally flat and Tres Palacious Creek is located approximately one-quarter mile east of the site and flows in a southeasterly direction.

Section 2.5 Groundwater Resource Classification

Groundwater in the area of the El Campo Armory Facility is assumed to be Class 1.

Section 2.6 Exposure Pathways

The previous and current threat of exposure for humans at the affected property includes dermal contact with affected soils. The affected areas are wholly contained within the fenced facility boundary and behind a locked gate, and the area is no longer used by facility personnel, therefore the potential for exposure is relatively low. No actual exposures are known to have occurred.

The undeveloped portion of the Armory facility is inhabited by cattle and other wildlife around and within the pond to the south of the backstop. The animals feed on plants located and rooted in the impacted surface soil, therefore there is a threat of exposure.

Class 1 groundwater is assumed for this facility, therefore the Class 3 groundwater pathways are considered incomplete. Additionally, because subsurface soil was not evaluated during this investigation, the subsurface soil pathways are considered incomplete.

Table 2A - Water Well Summary

*The direction of groundwater flow is unknown, therefore all wells identified within a half-mile radius of the facility are included in the table below with no reference to gradient.

*Because several of the wells identified on the map are nested wells, information from the shallowest well in each group was used for the table.

Well no. / designation	Well owner's name of record	Distance from affected property (ft.)	Screened interval/open interval (ft)	Cemented interval (ft)	Completion type	Total depth	Date drilled	Producing formation	Current water use[1]	Current status[2]	Data source[3]
606	American Legion	2,019	Unknown	Unknown	Steel	112	7/?/74	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
607	Paul Dornak	1,553	Unknown	Unknown	Steel	114	7/10/74	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
608	Edmund Mach	1,087	80 – 265	Unknown	Steel	265	7/?/74	Chicot/Evangeline	Irrigation	Unknown	TWDB/TCEQ
611	Paul Dornak	1,786	Unknown	Unknown	Steel	102	7/10/74	Chicot/Evangeline	Unused - Destroyed	Unused	TWDB/TCEQ
6H (nested)	G.W. Hicks	1,242	63 – 67	Unknown	PVC	67	8/3/65	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6NN (nested)	Knights of Columbus	1,398	80 – 87	Unknown	PVC	87	9/26/73	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6QQ (nested)	Jess May Dornak	2,407	78 – 84	Unknown	PVC	84	7/28/75	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6RR (nested)	Hubert Graham	2,562	84 – 90	Unknown	PVC	90	12/9/74	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6SS (nested)	Charenee Yackeh	2,174	84 – 90	Unknown	PVC	90	9/26/77	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
9AAA	Charles Borak	2,485	92 – 102	Unknwon	PVC	102	6/8/83	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
4H (nested)	Langdon	854	60 – 80	Unknown	PVC	80	4/19/83	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6(1)	Kenny Cerny	2,252	90 – 100	3 - 10	PVC	100	2/16/04	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6(2)	Steve Korenek	2,718	109 – 119	3 - 10	PVC	119	2/18/04	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6(3)	El Campo Little League	1,398	95 – 115	Unknown	PVC	115	7/19/90	Chicot/Evangeline	Irrigation	Unknown	TWDB/TCEQ
9(1)	J.A. Mount	2,562	90 – 100	0 - 15	PVC	100	5/13/87	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
4(1)	Wilbur Rod	2,096	90 – 100	0 - 70	PVC	100	9/7/89	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
4(2)	Mallard & Mallard	2,562	220 - 230	0 - 10	PVC	230	6/12/87	Chicot/Evangeline	Industrial	Unknown	TWDB/TCEQ

---

[1] Current water use: Dom - domestic; PS - public supply/municipal; Ind - industrial; Comm - commercial; Irr - irrigation; Liv - livestock

[2] Current status: Act - active; Ab - abandoned/not in use; SB - standby/backup; P&A - plugged and abandoned

[3] Indicate the specific primary source of well information.

Table 2B - Affected Water Well Summary

Well number/ designation	Current owner and phone number	Property address and/or legal description[1]	Tenants and/or easement holders[2]	Samples collected		Do COC concentrations exceed Tier 1 $^{GW}GW_{Ing}$ PCLs?	
				Yes	No	Yes	No
None known							

---

[1] Provide the address of the property containing the threatened or affected well. If the property does not have an address or if property plot maps are provided, include the legal description of the property (i.e., lot and block numbers, appraisal district reference numbers, etc.)

[2] If samples were collected on property not owned by the person and results exceed Tier 1 PCLs, provide the names of tenants and/or easement holders.

Table 2C - Complete or Reasonably Anticipated to be Complete Exposure Pathways
Use this table to indicate the complete or reasonably anticipated to be complete exposure pathways by checking the applicable pathways based on the media affected by COCs and the potential for migration of COCs. The shaded boxes are those pathways considered complete per the TRRP rule. If a shaded box is not checked, explain in Section 2.6 why the pathway is not complete.

Table 2C. Complete or Reasonably Anticipated to be Complete Exposure Pathways

Exposure pathway	Surface soil[1]	Subsurface soil[2]	Groundwater	Surface water/ sediment
$^{Tot}Soil_{Comb}$[3]	X	NA	NA	NA
$^{Air}Soil_{Inh\text{-}V}$	NA			
$^{GW}Soil_{Ing}$ or $^{GW}Soil_{Class3}$	X			
$^{GW}GW_{Ing}$ or $^{GW}GW_{Class3}$	NA	NA		
$^{Air}GW_{Inh\text{-}V}$				
^{SW}GW				
^{Sed}GW				
^{SW}SW or ^{Sed}Sed			NA	X
Other (specify)[4]				

Following Pages: **Figure 2A - Potential Receptors Map**

Figure 2B - Field Survey Photographs
A field receptor survey was not conducted beyond the boundaries of the El Campo Armory facility, therefore photographs are not available.

Figure 2C - Water Well Map

Attachment 2A - Tier 1 Ecological Exclusion Criteria Checklist

Attachment 2B - Tier 1 Ecological Exclusion Criteria Supporting Documentation

---

[1] Residential: soils from 0-15 feet deep, or to bedrock or groundwater-bearing unit if shallower.
Commercial/industrial: soils from 0-5 feet deep, or to bedrock or groundwater-bearing unit if shallower.

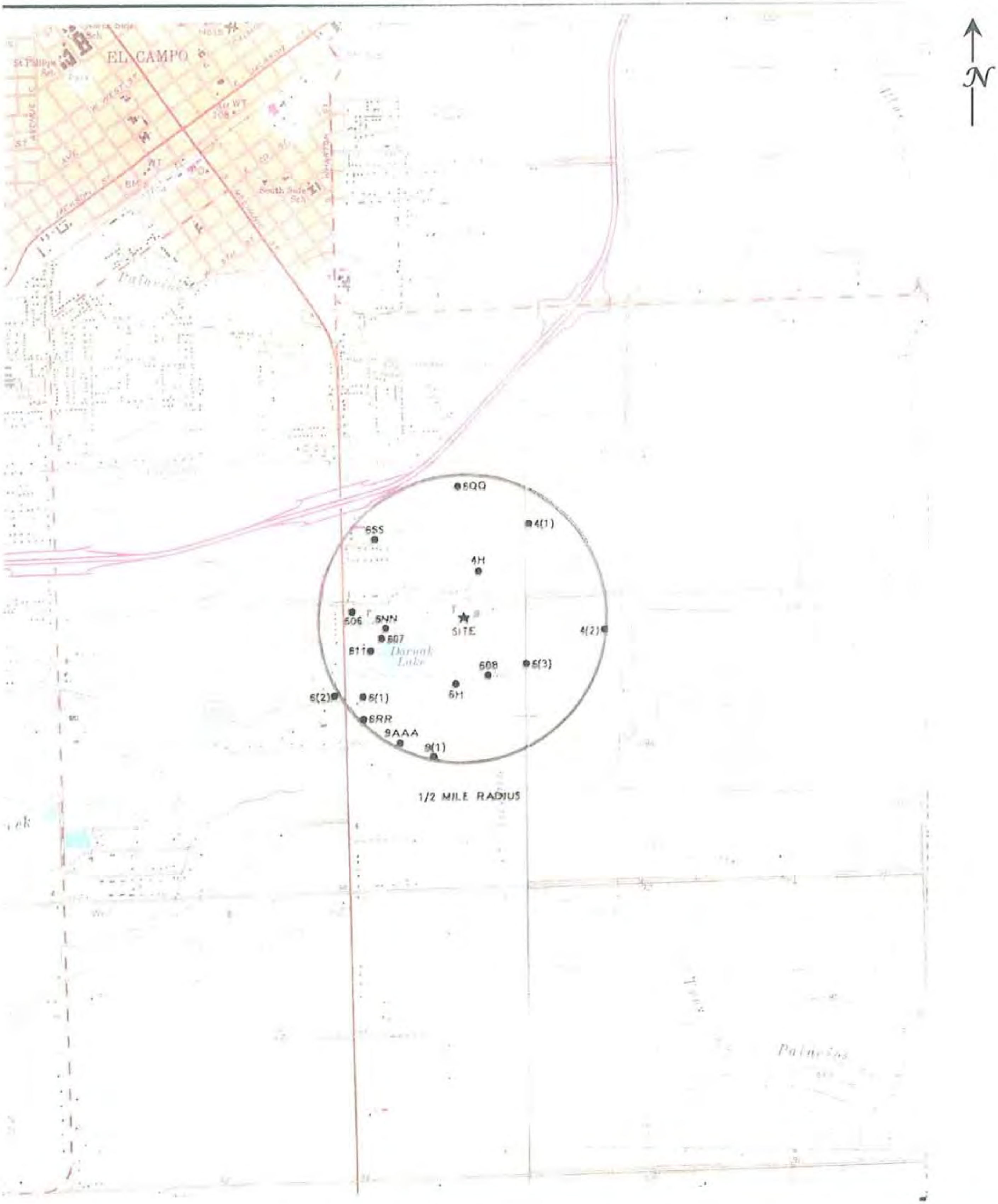
[2] The vadose zone beneath the surface soil extending to the groundwater-bearing unit, and including unsaturated zones between stratified groundwater-bearing units.

[3] Residential: $^{Air}Soil_{Inh\text{-}VP} + {}^{Soil}Soil_{Ing} + {}^{Soil}Soil_{Derm} + {}^{Veg}Soil_{Ing}$
Commercial/industrial: $^{Air}Soil_{Inh\text{-}VP} + {}^{Soil}Soil_{Ing} + {}^{Soil}Soil_{Derm}$

[4] If other exposure pathways are identified here, include those pathways in the derivation of assessment levels and evaluation of critical PCLs.

Source: TerraServer USA (http://terraserver-usa.com)

Potential Receptors Map	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Road (CR 406) El Campo, Texas
Date: 06/05	
Figure 2A	*CORRIGAN CONSULTING, INC.*



Source: Atlas E.R. Water Well Search, June 20, 2005
El Campo, Texas Quadrangle, 1965 (Revised 1981)
Pierce, Texas Quadrangle, 1952 (Revised 1980)
Contour Interval = 5 feet

0 2484 4968
Scale in Feet

Water Well Map	AGD El Campo National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 04/05	
Figure 2C	***CORRIGAN CONSULTING, INC.***

Attachment 2A Tier 1 Exclusion Criteria Checklist

PART I. Affected Property Identification and Background Information

1) Provide a description of the specific area of the response action and the nature of the release. Include estimated acreage of the affected property and the facility property, and a description of the type of facility and/or operation associated with the affected property. Also describe the location of the affected property with respect to the facility property boundaries and public roadways.

The Roy P. Benavidez National Guard Armory is located at 801 Armory Road in El Campo, Wharton County, Texas and is operated by the Texas Army National Guard. The property is approximately 8.7 acres in size, only 1 acre of which has been developed, and is used primarily for vehicle/equipment storage and administrative activities. Currently the undeveloped portion of the property is inhabited by cattle and other local wildlife. The surrounding area is predominantly undeveloped and is used for agricultural purposes. The facility is bordered by Armory Road (CR 406) and several single-family residences to the north, American Legion property to the west, and undeveloped property to the south and east. The facility is located approximately 0.4-mile east of the intersection of Highway 71 and Armory Road.

Historically, a portion of the property was used as a small arms firing range consisting of two firing platforms and a backstop/bermed area, however the firing range is no longer in use. The purpose of the investigation was to determine if COC concentrations in excess of PCLs existed at any of the locations associated with the firing range, and whether the site was an "affected property" as defined under TRRP. As a result of this investigation, three distinct affected properties were identified at this facility as being impacted by firing range activities: two firing platforms and the berm/backstop area. The combined area of the affected properties is approximately 1 acre. Primary COCs identified during this investigation included several metals identified above Texas Specific Background Concentrations at both firing platforms and at the backstop area, including lead identified above the critical PCL of 70.23 mg/kg at the backstop area. It is believed that the metals impacts are a direct result of bullets being fired at the backstop area resulting in spent munitions accumulating in the shallow soil.

Attach available USGS topographic maps and/or aerial or other affected property photographs to this form to depict the affected property and surrounding area. Indicate attachments:

X Topo map   X Aerial photo   ____ Other (specify) ____________

1) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

Known/Suspected COC Location		Based on sampling data?	
X	Soil <5 ft below ground surface	X Yes	____ No
____	Soil >5 ft below ground surface	____ Yes	____ No
____	Groundwater	____ Yes	____ No
X	Surface Water/Sediments	X Yes	____ No

Explain (previously submitted information may be referenced):

Sampling activities were conducted during September 2003, November 2003, and June 2004 to determine whether activities at the firing range had resulted in an impact to surface soils at the firing platforms or backstop. Samples were analyzed for VOCs by Method 8260, SVOCs by Method 8270, and Metals by Method 6020. No VOC concentrations were reported greater than the laboratory method quantitation limit (MQL) or Tier 1 Protective Concentration Level (PCL) for the respective contaminants of concern (COCs). One SVOC, bis (2-ethylhexyl) phthalate, was detected at one location at a concentration greater than the laboratory MQL of 0.167 mg/kg but less than the Tier 1 PCL of 160 mg/kg. Of the 23 metals analyzed, 14 were detected in surface soil samples at concentrations greater than MQLs and/or Texas Specific Median Background Concentrations. They include:

- **Antimony** – detected in seven samples greater than the Texas Specific Background

Concentration of 1 milligram per kilogram (mg/kg)

- **Cadmium** – detected in several samples greater than the laboratory MQL of 0.050 mg/kg
- **Calcium** – detected in several samples greater than the laboratory MQL of 25 mg/kg
- **Cobalt** – detected in two samples greater than the Texas Specific Background Concentration of 7 mg/kg
- **Copper** – detected in eight samples greater than the Texas Specific Background Concentration of 15 mg/kg
- **Lead** – detected in several samples greater than the Texas Specific Background Concentration of 15 mg/kg and detected in 16 samples greater than the Critical PCL of 70.23 mg/kg
- **Magnesium** – detected in several samples greater than the laboratory MQL of 10 mg/kg
- **Manganese** – detected in three samples greater than the Texas Specific Background Concentration of 300 mg/kg
- **Nickel** – detected in two samples greater than the Texas Specific Background Concentration of 10 mg/kg
- **Potassium** – detected in several samples greater than the laboratory MQL of 10 mg/kg
- **Selenium** – was not detected above laboratory detection limits, however the Sample Quantitation Limit (SQL) used by the laboratory to define the detection limit was greater than the laboratory MQL of 0.25 mg/kg for several samples
- **Silver** – was not detected above laboratory detection limits, however the Sample Quantitation Limit (SQL) used by the laboratory to define the detection limit was greater than the laboratory MQL of 0.24 mg/kg for several samples
- **Sodium** – detected in several samples greater than the laboratory MQL of 25 mg/kg
- **Zinc** – detected in five samples greater than the Texas Specific Background Concentration of 30 mg/kg

According to a TCEQ memorandum dated October 21, 2003, entitled "Determining Which Releases are Subject to TRRP," action levels can be established for COCs. An action level is defined as the lowest applicable Tier 1 PCL or the MQL or background, if either of those concentrations is higher than the Tier 1 PCL. For COCs with maximum concentrations less than the action levels, the release is not considered to be subject to TRRP, provided the site passes the Tier 1 Ecological Exclusion Criteria Checklist. Based on the TCEQ memorandum, only lead, antimony, and silver are subject to TRRP at this site.

One surface water sample and one sediment sample were collected from the pond located behind the backstop. The samples were analyzed for antimony, lead, and silver by Method 6020. Analytical results indicated a lead concentration of 69.8 mg/kg detected in the sediment sample and 0.013 mg/L detected in the surface water sample.

1) Provide the information below for the nearest surface water body which has become or has the potential to become impacted from migrating COCs via surface water runoff, air deposition, groundwater seepage, etc. Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities that are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and
b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

The nearest surface water body is SEE BELOW feet/miles from the affected property and is named:

On site, a large earthen berm was constructed in the southeastern corner of the property to accommodate firing range activities. The berm is flanked on the northwest and southeast by low-lying areas created when soil was removed to build the berm. Over time, water from rainfall and surface runoff has accumulated in the low-lying area southeast of the berm and created a pond. This pond was observed during all three site visits (September 2003, November 2003, and June 2004) and is presumably perennial. Based on the information provided above in 1)a and 1)b the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded and the nearest water body considered surface waters of the State is Tres Palacious Creek located approximately one-quarter mile east of the nearest affected property.

The water body is best described as a:

- X freshwater stream:
  - X perennial (has water all year)
  - ____ intermittent (dries up completely for at least 1 week a year)
  - ____ intermittent with perennial pools
- ____ freshwater swamp/marsh/wetland
- ____ saltwater or brackish marsh/swamp/wetland
- ____ reservoir, lake, or pond; approximate surface acres ________
- ____ drainage ditch
- ____ tidal stream ____ bay ____ estuary
- ____ other; specify

Is the water body listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 – 307.10?

X Yes Segment # 1502 Use Classification: Contact recreation; Aquatic life
____ No

If the water body is not a State classified segment, identify the first downstream classified segment.

Name: Not applicable
Segment #: Not applicable
Use Classification: Not applicable

As necessary, provide further description of surface waters in the vicinity of the affected property:

PART II. Exclusion Criteria and Supportive Information

Subpart A. Surface Water/Sediment Exposure

1) Regarding the affected property where a response action is being pursued under the TRRP, have COCs migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc.? Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

   1) Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

____ Yes   __X__ No

Explain:

Surface water and/or sediment samples were not collected from Tres Palacious Creek, however it is not likely that it will be impacted as a result of surface soil contamination at the site.

If the answer is yes to Subpart A above, the affected property does not meet the exclusion criteria. However, complete the remainder of Part II to determine if there is a complete and/or significant soil exposure pathway, then complete PART III – Qualitative Summary and Certification. If the answer is No, go to Subpart B.

Subpart B. Affected Property Setting

In answering "Yes" to the following question, it is understood that the affected property is not attractive to wildlife or livestock, including threatened or endangered species (i.e., the affected property does not serve as valuable habitat, foraging area, or refuge for ecological communities). (May require consultation with wildlife management agencies.)

1) Is the affected property wholly contained within contiguous land characterized by: pavement, buildings, landscaped area, functioning cap, roadways, equipment storage area, manufacturing or process area, other surface cover or structure, or otherwise disturbed ground?

____ Yes   __X__ No

Explain:

The affected property is wholly contained within the fenced boundary of the Armory facility, however the undeveloped portion of the property is inhabited by cattle and other local wildlife.

If the answer to Subpart B above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subparts C and D and complete PART III – Qualitative Summary and Certification. If the answer to Subpart B above is No, go to Subpart C.

Subpart C. Soil Exposure

1) Are COCs which are in the soil of the affected property solely below the first 5 feet beneath ground surface **or** does the affected property have a physical barrier present to prevent exposure of receptors to COCs in surface soil?

____ Yes _X_ No

Explain:

Metals impacts have been documented in surface soils.

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III – Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area

In answering "Yes" to the question below, it is understood that all of the following conditions apply:

- The affected property is not known to serve as habitat, foraging area, or refuge to threatened/endangered or otherwise protected species. (Will likely require consultation with wildlife management agencies.)
- Similar but unimpacted habitat exists within a half-mile radius.
- The affected property is not known to be located within one-quarter mile of sensitive environmental areas (e.g., rookeries, wildlife management areas, preserves). (Will likely require consultation with wildlife management agencies.)
- There is no reason to suspect that the COCs associated with the affected property will migrate such that the affected property will become larger than one acre.

1) Using human health protective concentration levels as a basis to determine the extent of the COCs, does the affected property consist of one acre or less <u>and</u> does it meet all of the conditions above?

_X_ Yes ____ No

Explain how conditions are met/not met:

The total area of the three identified affected properties is 1 acre or less.

If the answer to Subpart D above is Yes, then no further ecological evaluation is needed at this affected property, assuming the answer to Subpart A was No. Complete PART III - Qualitative Summary and Certification. If the answer to Subpart D above is No, proceed to Tier 2 or 3 or comparable ERA.

PART III. Qualitative Summary and Certification (complete in all cases.)

Attach a brief statement (not to exceed 1 page) summarizing the information you have provided in this form. This summary should include sufficient information to verify that the affected property meets or does not meet the exclusion criteria. The person should make the initial decision regarding the need for further ecological evaluation (i.e., Tier 2 or 3) based upon the results of this checklist. After review, TCEQ will make a final determination on the need for further assessment. **Note that the person has the continuing obligation to re-enter the ERA process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria.**

Completed by Mandy R. Mercer, P.G. (Typed/Printed Name)
Project Geologist (Title)
June 14, 2005 (Date)

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

David Boucher (Typed/Printed Name of Person)
Environmental Specialist (Title of Person)
(Signature of Person)
(Date Signed)

ATTACHMENT 2B

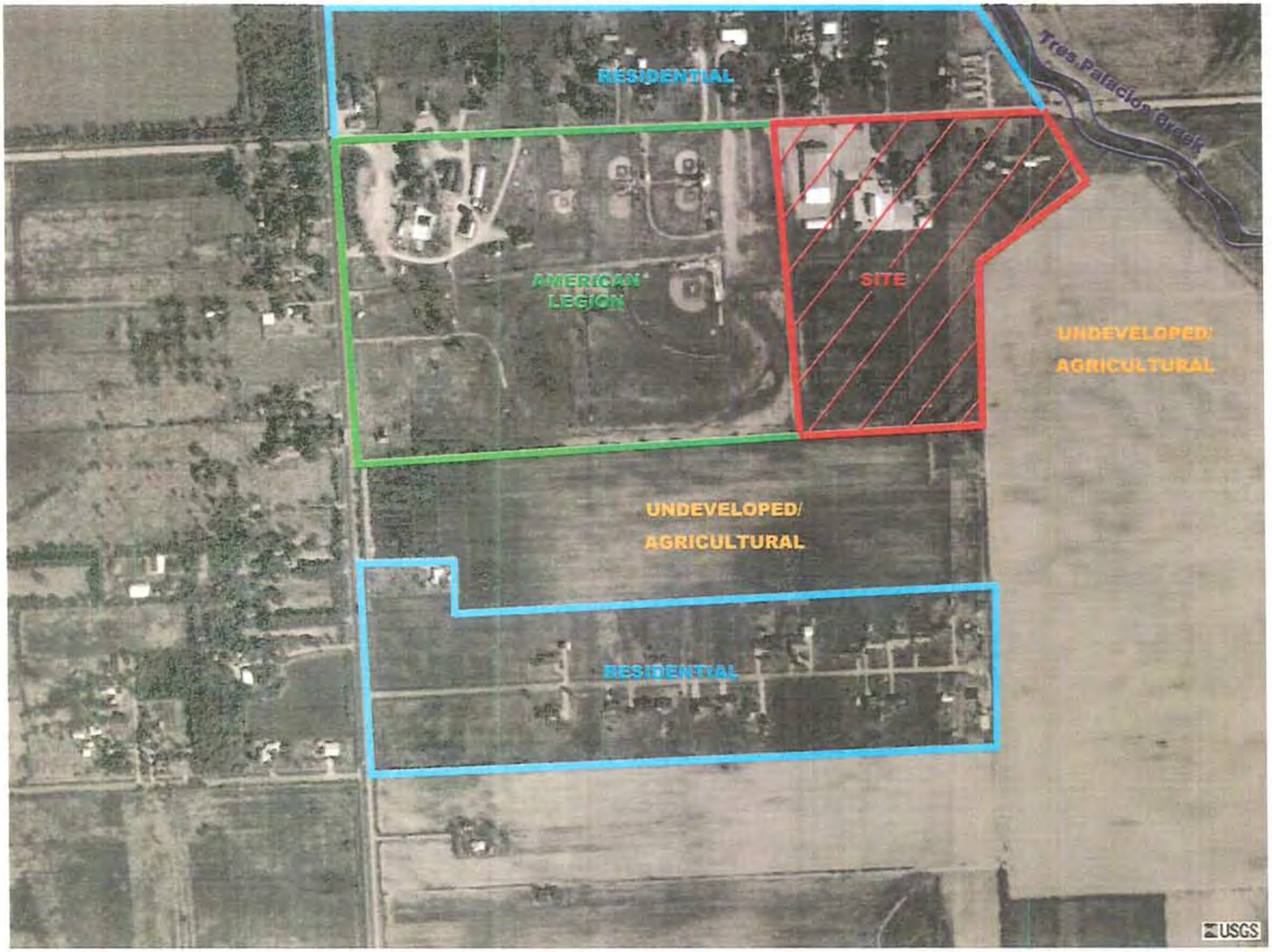
Name of Facility: Roy P. Benavidez National Guard Armory
Affected Property Location: 801 Armory Road (CR406), El Campo, Texas
Mailing Address: C/O Mr. David Boucher, 2200 West 35th Street, Building 1, AGTX-EV, Austin, Texas
Facility ID: RN104503057

The Roy P. Benavidez National Guard Armory is located at 801 Armory Road in El Campo, Wharton County, Texas and is operated by the Texas Army National Guard. The property is approximately 8.7 acres in size, only 1 acre of which has been developed, and is used primarily for vehicle/equipment storage and administrative activities. Currently the nondeveloped portion of the property is inhabited by cattle and other local wildlife. The surrounding area is predominantly undeveloped and is used for agricultural purposes. The facility is bordered by Armory Road (CR 406) and several single-family residences to the north, American Legion property to the west, and undeveloped property to the south and east. The facility is located approximately 0.4-mile east of the intersection of Highway 71 and Armory Road.

Historically, a portion of the property was used as a small arms firing range consisting of two firing platforms and a backstop/bermed area, however the firing range is no longer in use. The purpose of the investigation was to determine if COC concentrations in excess of PCLs existed at any of the locations associated with the firing range, and whether the site was reportable as an "affected property" as defined under TRRP. As a result of this investigation, three distinct affected properties were identified at this facility as being impacted by firing range activities: two firing platforms and the berm/backstop area. The combined area of the affected properties is approximately 1.1 acres, and the areas are located in the nondeveloped portion of the property and are wholly contained within the fenced boundary of the Armory facility. Primary COCs identified during this investigation included several metals identified above Texas Specific Background Concentrations at both firing platforms and at the backstop area, and lead identified above the critical PCL of 70.23 mg/kg at the backstop area. It is believed that the metals impacts are a direct result of bullets being fired at the backstop area resulting in spent munitions accumulating in the shallow soil. Environmental media known or suspected to contain COC concentrations includes surface soil less than 5 feet bgs.

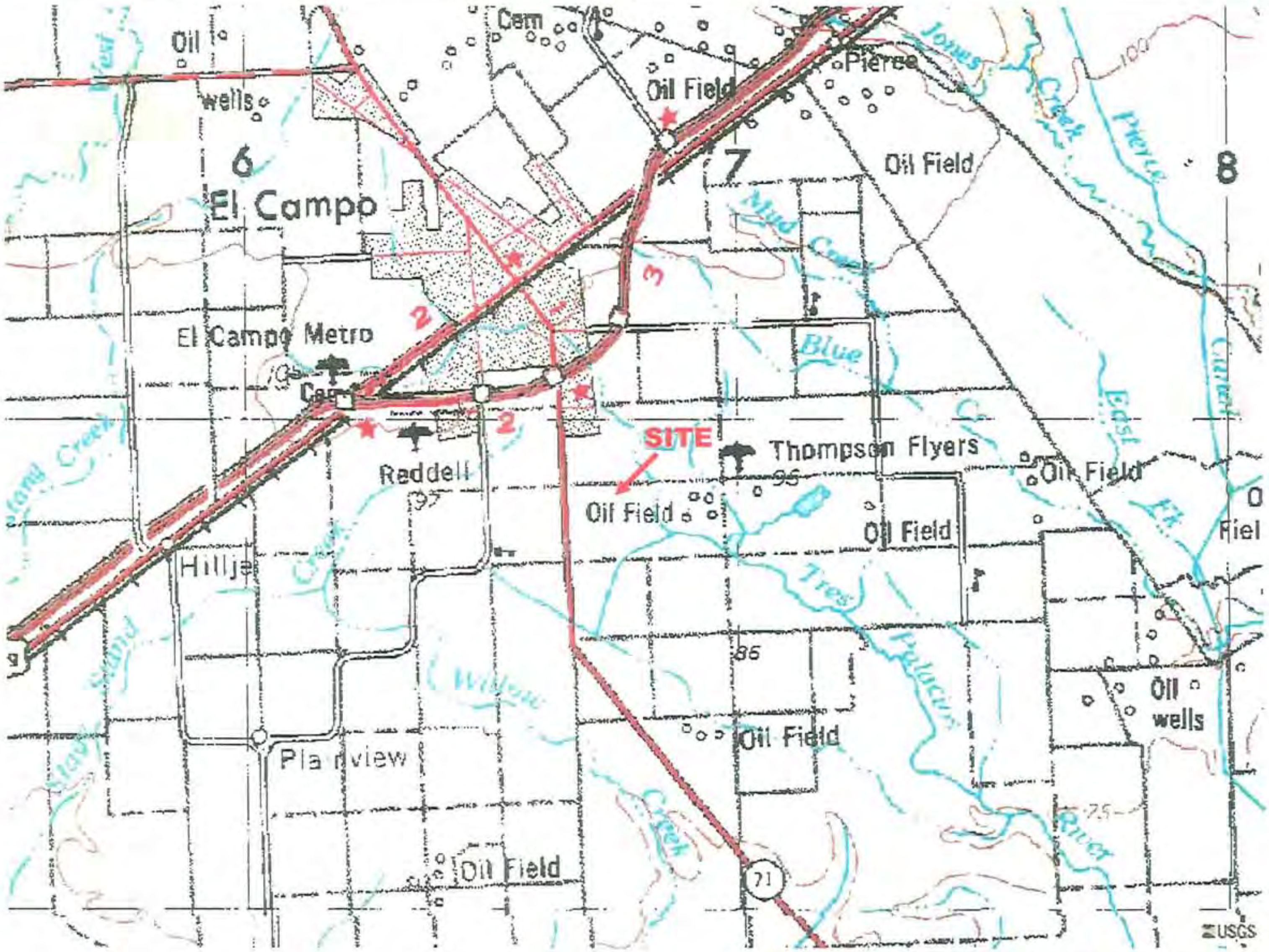
The nearest surface water body is a pond that has developed in a low-lying area behind the backstop on the southeastern side where soil was removed to construct the berm. Over time, water from rainfalls and surface runoff accumulated in the low-lying area. This pond was observed during all three site visits (September 2003, November 2003, and June 2004) and is presumably perennial. The pond is approximately 0.2-acre in size. The water body is not listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 – 307.10. It is an individual feature with no segments or fingers. The nearest naturally occurring surface water feature is Tres Palacious Creek located approximately one-quarter mile east of the nearest affected property. The pond is inhabited by local wildlife such as frogs, turtles, snakes, birds, and insects.

One surface water sample and one sediment sample were collected from the pond located behind the backstop. The samples were analyzed for antimony, lead, and silver by Method 6020. Results for the sediment sample indicated a lead concentration of 69.8 mg/kg and results for the surface water sample indicated a lead concentration of 0.013 mg/L.



Source: TerraServer USA (http://terraserver-usa.com)

Tier 1 Exclusion Criteria Checklist	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Road (CR 406) El Campo, Texas
Date: 06/05	
Attachment 2B	*CORRIGAN CONSULTING, INC.*



Source: El Campo, Tex Topographic Quadrangle, 1965, Revised 1981

Contour Interval = 25 feet

0 2.0 4.0

Scale in Miles

N

Tier 1 Exclusion Criteria Checklist	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Road (CR 406) El Campo, Texas
Date: 06/05	
Attachment 2B	*CORRIGAN CONSULTING, INC.*

Section 3 Assessment Strategy

Section 3.1 General Assessment Issues

Environmental Media Assessed

The primary activity known to have occurred at the firing range consists of military personnel firing small arms from either firing platform toward and into the bermed backstop area, thus resulting in spent munitions accumulating in the shallow soils beneath the firing platforms and at the backstop. Thus, sampling activities were conducted during September 2003, November 2003, and June 2004 to determine whether activities at the firing range had resulted in an impact to surface soils at the firing platforms or backstop. Surface water and sediment samples were also collected from a small pond located behind the backstop on the southeast side. Based on the known site activities, the primary media of concern included only surface soils and surface water/sediment, therefore subsurface soils and groundwater were not evaluated.

Target COCs

All samples collected in September 2003 were analyzed for TAL Metals by Method 6020, and samples from selected locations were also analyzed for VOCs by Method 8260 and SVOCs by Method 8270. Samples collected during subsequent site visits were analyzed for selected metals by Method 6020 based on previous analytical data. Some samples were also analyzed for pH and for selected metals using the SPLP method. The target COCs were selected based on the known site activities, with an emphasis placed on metals considering the high metals content in equipment and materials related to firearms.

Background

A site-specific background study was not conducted.

Section 3.2 Assessment Strategy

General Assessment Approach

Surface soil sample locations were selected based on the known locations associated with the firing range. The locations of the two former firing platforms were identified through aerial photographs and facility personnel. In September 2003, five samples were collected from the area of the northern platform and 25 samples were collected from the backstop area. Locations for the platform samples were selected based on knowledge of the location and orientation of the actual platform. The sample locations were spaced approximately five feet apart in a linear pattern. Of the backstop samples, 23 were collected from the upper portion of the berm and spaced equally from the southwest end of the berm to the northeast end of the berm. Two samples were collected from the low-lying area directly in front of the berm: one near the northeast end and one near the center of the berm.

In November 2003, three samples were collected from the area of the southern platform, four samples were collected from the area of the northern platform, and 15 samples were collected from the backstop area. Locations for the southern platform samples were selected based on knowledge of the location and orientation of the actual platform. The sample locations were spaced approximately five feet apart in a linear pattern. Locations for the northern platform samples were based on analytical results from the samples collected in September. They included one vertical delineation sample and three horizontal delineation samples. Locations for the backstop samples were based on analytical results from the samples collected in September. They included 10 horizontal delineation samples and five vertical delineation samples. The delineation samples were collected from either the upper portion of the berm or the low-lying area directly in front of the berm.

In June 2004, three samples were collected from the area of the northern platform, five samples were collected from the area of the southern platform, and 17 samples were collected from the backstop area. Locations for the platform samples were selected based on analytical results from the samples previously collected. They included one vertical delineation sample at each the northern and southern platform, two horizontal delineation samples at the northern platform, and four horizontal delineation samples at the southern platform. Locations for the backstop samples were based on analytical results from the samples previously collected. They included six vertical delineation samples and 11 horizontal delineation samples. Six of the horizontal delineation samples were collected from the undisturbed area approximately 50 feet in front of the berm. One surface water sample and one sediment sample were also collected from the pond located behind the backstop.

Field screening for organic vapors using a photoionization detector (PID) was conducted on each of the samples collected in September 2003 and documented in a field notebook, however because metals were identified as the primary COCs, and only very low concentrations of SVOCs were reported, the field screening results were predictably low and were not useful in this investigation.

All samples were collected at the proposed locations and field activities were not hampered by layout, infrastructure, or logistical issues.

Sampling Approach

The purpose of this investigation was to determine if COC concentrations in excess of PCLs existed at any of the locations associated with the firing range, and whether the site was an "affected property" as defined under TRRP. Sample locations were originally selected based on the documented locations of shooting activities, and subsequently selected based on analytical data. Horizontal delineation samples were collected approximately 20 feet away from the original sample location and at the same depth as the original sample. Vertical delineation samples were collected at the original sample location approximately one to two feet deeper than the original sample in order to evaluate surface soils. Samples at the surface were collected by hand with a small trowel, and samples from 1.5 to 3.5 feet bgs were collected with a small hand auger.

All field work was conducted in accordance with the standard operating procedures developed by Corrigan Consulting, Inc., and current TRRP regulatory guidance, and laboratory analytical methods were conducted in accordance with EPA-approved and TCEQ-approved methods.

Surface Water and Sediment Assessment

One surface water sample and one sediment sample were collected from the pond located behind the backstop. The samples were analyzed for antimony, lead, and silver by Method 6020. Results for the sediment sample indicated a lead concentration of 69.8 mg/kg, which is greater than the Chronic Eco Risk Screening Level Benchmark for lead of 35 mg/kg, and less than the Acute Eco Risk Screening Level Benchmark for lead of 91 mg/kg. Results for the surface water sample indicated a lead concentration of 0.013 milligrams per liter (mg/L) which is greater than the Chronic Eco Risk Screening Level Benchmark of 0.0023 mg/L. The samples were collected along the bank of the pond near the central portion of the berm on the southeast side.

The pond has been observed to contain water during each site visit. It is not hydrologically connected to groundwater, but receives water through rainfall and surface runoff during a rain event. Based on observations, the pond is not in contact with surface waters of the State or other surface waters that are ultimately in contact with surface waters of the State.

Miscellaneous

Not applicable.

Utilities

Not applicable – there are no utilities located in the vicinity of the affected properties.

Assessment Methods

Samples at the surface were collected by hand with a small trowel, and samples from 1.5 to 3.5 feet bgs were collected with a small hand auger. A calibrated PID was used to measure headspace vapors, however because metals were identified as the primary COCs, and only very low concentrations of SVOCs were reported, the field screening results were predictably low and were not useful in this investigation. Samples were placed into clean, laboratory-provided 4- or 8-ounce glass jars and packed to minimize headspace. The sample containers were labeled, sealed in a plastic bag, and placed into an ice-filled cooler to preserve the sample at approximately 4 degrees Celsius. Samples were submitted to the laboratory with a Chain-of-Custody Record. Sampling equipment was decontaminated with a solution of Alconox and distilled water and rinsed with distilled water following the collection of each sample.

For the sediment sample, a posthole digger was used to collect sediment from approximately one foot from the bank. The sample was placed into a clean, laboratory-provided 4-ounce glass jar and packed to minimize headspace. The container was labeled, sealed in a plastic bag, and placed into an ice-filled cooler to preserve the sample at approximately 4 degrees Celsius. The sample was submitted to the laboratory with a Chain-of-Custody Record.

For the surface water sample, a disposable bailer was used to collect pond water from approximately four feet from the bank. The sample was placed into a clean, laboratory-provided and preserved 500 milliliter plastic container. The container was labeled, sealed in a plastic bag, and placed into an ice-filled cooler to preserve the sample at approximately 4 degrees Celsius. The sample was submitted to the laboratory with a Chain-of-Custody record.

Data Quality

The selected analytical methods of 8260 for VOCs, 8270 for SVOCs, and 6020 for metals, were used because they are the accepted analytical methods used for the subject COCs.

The reporting limits (MQLs and SQLs) for this project represent the minimum concentration of analyte reportable within the guidelines of legally defensible data. SQLs are subject to elevation due to sample preparation, sample matrix, sample volume, moisture content, instrument, or chemical interferences that may influence the final results reported. Further, Assessment Levels for several COCs may be less than achievable laboratory MQLs.

Table 3A - Underground Utilities

Identify the underground utilities within or immediately adjacent to the affected property that are threatened or affected or those that may be, or are known, preferential migration pathways. List the utility type (e.g., sanitary sewer, water line, etc), the construction material (e.g., clay, concrete, etc) and backfill material (native soil, gravel, etc), the approximate depth at which the utility line is buried, and the name of the company responsible for the utility line. Indicate if the utility line is a potential pathway for COC migration and if the utility line itself is impacted.

Table 3A. Underground Utilities

Utility type	Construction material	Backfill material	Approx. depth (ft)	Utility company name	Potential migration pathway?		Affected?	
					Yes	No	Yes	No
Not applicable – there are no utilities located in the vicinity of the affected properties								

Section 4 Soil Assessment

Section 4.1 Derivation of Assessment Levels

For vertical assessment of soils during this investigation, the laboratory MQL was identified as the target assessment level or, when a State Specific Background Concentration was available for a COC, the background level was used. For horizontal assessment of soil, the Tier 1 Commercial/Industrial PCL for a 0.5-acre source area was used. For lead in particular, a site-specific Tier 2 PCL was calculated using site-specific pH and soil information.

The previous and current threat of exposure for humans at the affected property includes dermal contact with affected soils. The affected areas are wholly contained within the fenced facility boundary and behind a locked gate, and the area is no longer used by facility personnel, therefore the potential for exposure is relatively low. No actual exposures are known to have occurred.

The undeveloped portion of the Armory facility where the affected properties are located is inhabited by cattle and other wildlife around and within the pond to the south of the backstop. The cattle and wildlife feed on grass and plants located and rooted in the impacted surface soil, therefore there is a possibility of exposure.

Class 1 groundwater is assumed for this facility, therefore the Class 3 groundwater pathways are considered incomplete. Additionally, because subsurface soil was not evaluated during this investigation, the subsurface soil pathways are considered incomplete.

Surrounding properties in the vicinity of the affected properties include an American Legion facility and baseball fields adjacent to the facility to the west, and several single-family residences to the north. The property to the south and east is undeveloped and used for agricultural purposes. Due to the location of the affected properties within the boundaries of the larger Armory facility, and due to the less mobile nature of the contaminants, it is not likely that contamination noted in shallow soils during this investigation will impact adjacent properties.

According to the water well records seach conducted in June 2005, there are 17 water wells located within a half-mile radius of the facility. The wells are installed to depths ranging from 67 feet bgs to 230 feet bgs and the shallowest screened interval is from 63 to 67 feet bgs. Due to the depth of the screened intervals, and the distance of the wells from the affected properties, it is not likely that contamination noted in shallow soils during this investigation will impact those wells.

Section 4.2 Nature and Extent of COCs and NAPL in Soil

Sampling activities were conducted during September 2003, November 2003, and June 2004 to determine whether activities at the firing range had resulted in an impact to surface soils at the firing platforms or backstop. Samples were analyzed for VOCs by Method 8260, SVOCs by Method 8270, and TAL Metals by Method 6020. No VOC concentrations were reported greater than the laboratory MQL or Tier 1 PCL for the respective COCs. One SVOC, bis (2-ethylhexyl) phthalate, was detected at one location at an estimated concentration greater than the laboratory MQL of 0.167 mg/kg but less than the Tier 1 PCL of 160 mg/kg. Several metals were detected at concentrations greater than assessment levels. They include:

- **Antimony** – detected in seven samples greater than the Texas Specific Background Concentration of 1 mg/kg
- **Cadmium** – detected in several samples greater than the laboratory MQL of 0.050 mg/kg

- **Calcium** – detected in several samples greater than the laboratory MQL of 25 mg/kg
- **Cobalt** – detected in two samples greater than the Texas Specific Background Concentration of 7 mg/kg
- **Copper** – detected in eight samples greater than the Texas Specific Background Concentration of 15 mg/kg
- **Lead** – detected in several samples greater than the Texas Specific Background Concentration of 15 mg/kg and detected in 16 samples greater than the Critical PCL of 70.23 mg/kg
- **Magnesium** – detected in several samples greater than the laboratory MQL of 10 mg/kg
- **Manganese** – detected in three samples greater than the Texas Specific Background Concentration of 300 mg/kg
- **Nickel** – detected in two samples greater than the Texas Specific Background Concentration of 10 mg/kg
- **Potassium** – detected in several samples greater than the laboratory MQL of 10 mg/kg
- **Selenium** – was not detected above laboratory detection limits, however the Sample Quantitation Limit (SQL) used by the laboratory to define the detection limit was greater than the laboratory MQL of 0.25 mg/kg for several samples
- **Silver** - was not detected above laboratory detection limits, however the Sample Quantitation Limit (SQL) used by the laboratory to define the detection limit was greater than the laboratory MQL of 0.24 mg/kg for several samples
- **Sodium** – detected in several samples greater than the laboratory MQL of 25 mg/kg
- **Zinc** – detected in five samples greater than the Texas Specific Background Concentration of 30 mg/kg

According to the TCEQ memorandum dated October 21, 2003, and entitled "Determining Which Releases are Subject to TRRP," action levels can be established for COCs. An action level is defined as the lowest applicable Tier 1 PCL or the MQL or background, if either of those concentrations is higher than the Tier 1 PCL. For COCs with maximum concentrations less than the action levels, the release is not considered to be subject to TRRP, provided the site passes the Tier 1 Ecological Exclusion Criteria Checklist. Based on the TCEQ memorandum, only lead, antimony, and silver are subject to TRRP at this site.

The on-site pond, located southeast of the earthen backstop, is isolated and not in contact with surface waters of the State or other surface waters that are ultimately in contact with surface waters of the State. However, one surface water sample and one sediment sample were collected from the pond. The samples were analyzed for antimony, lead, and silver by Method 6020. Results for the sediment sample indicated a lead concentration of 69.8 mg/kg, which is greater than the Chronic Eco Risk Screening Level Benchmark for lead of 35 mg/kg, and less than the Acute Eco Risk Screening Level Benchmark for lead of 91 mg/kg. Results for the surface water sample indicated a lead concentration of 0.013 milligrams per liter (mg/L) which is greater than the Chronic Eco Risk Screening Level Benchmark of 0.0023 mg/L. The samples were collected along the bank of the pond near the central portion of the berm on the southeast side.

Sample locations were selected based on the known locations of shooting activities. The locations of the two former firing platforms were identified through aerial photographs and facility personnel. Horizontal and vertical delineation sample locations were selected based on analtycial data from the previous sampling event. In total, 10 locations were sampled in the area of the northern firing platform in order to identify the horizontal extent of contamination, and vertical delineation samples were collected at two locations. Seven locations were sampled in the area of the southern firing platform in order to identify the horizontal extent of contamination, and a vertical delineation sample was collected at one location. Forty-six locations were sampled in the area of the backstop in order to identify the horiztonal extent of contamination, and vertical delineation samples were collected at 12 locations. See Figure 1B for sampling locations and Table 4D for analytical results.

As illustrated in Figure 1B, the highest concentrations of COCs in soil occur in the area of the backstop both in the upper portion of the berm and in the low-lying area in front of the berm. It is believed that the metals impacts are a direct result of bullets being fired at the backstop area resulting in metals from spent munitions accumulating in the shallow soil. Because the firing range is no longer in use and because the area is completely fenced, the exposure potential for humans is relatively low, however the exposure potential for cattle and other wildlife feeding on the grass and plants rooted in the impacted soil is present.

Based on the analytical data, delineation of lead-impacted soil has not been completed in all locations sufficient to demonstrate groundwater protectiveness. This can be achieved by the collection and analysis of additional soil samples or by assessing groundwater at the site. Alternatively, we understand that the Adjutant General's Department plans to conduct a Response Action at the site for the removal of impacted soil. Upon completion of the Response Action, verification soil sampling should be conducted and may verify the extent of impacted soil.

NAPL was not observed in surface soils during this investigation.

Table 4A. Surface Soil Residential Assessment Levels with no Ecological Component

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
TAL METALS BY 6020										
Aluminum	1	6.2E+5	5.2E+5	1	0.5	30,000	B-16	0 – 0.5	09/16/03	9,930
Antimony	1	1.3E+2	5.4	1	0.25	1	B-25	0 – 0.5	09/16/03	14.5
Arsenic	1	2.0E+2	5.0	1	0.25	5.9	P2-1	0 – 0.5	11/11/03	5.32
Barium	1	3.9E+4	4.4E+2	1	0.5	300	B-13	0 – 0.5	09/16/03	119
Beryllium	1	2.5E+2	1.8	1	0.05	1.5	B-12	0 – 0.5	09/16/03	0.649
Cadmium	1	8.5E+2	1.5	1	0.05	NE	P2-3	0 – 0.5	11/11/03	0.586
Calcium	1	NE	NE	NE	25	NE	B-25D(dup)	0 – 0.5	09/16/03	143,000 D
Chromium	1	9.5E+4	2.4E+3	1	0.5	30	B-12 & B-16	0 – 0.5	09/16/03	10.2 B
Cobalt	1	4.1E+4	4.0E+3	1	0.5	7	B-4	0 – 0.5	09/16/03	15.9
Copper	1	3.8E+4	1.0E+3	1	0.5	15	B-25D(dup)	0 – 0.5	09/16/03	133
Iron	1	NE	NE	NE	10	15,000	B-12	0 – 0.5	09/16/03	9,780
Lead	1	1.6E+3	3.0	1	0.1	15	B-25	0 – 0.5	09/16/03	8,840 D
Magnesium	1	NE	NE	NE	10	NE	B-12	0 – 0.5	09/16/03	2,400
Manganese	1	3.6E+4	1.0E+4	1	0.5	300	B-4	0 – 0.5	09/16/03	834
Mercury	1	6.2	0.0078	1	0.02	0.04	P2-1	0 – 0.5	11/11/03	0.0857
Nickel	1	8.5E+3	4.7E+2	1	0.5	10	B-4	0 – 0.5	09/16/03	14.7
Potassium	1	NE	NE	NE	10	NE	B-12	0 – 0.5	09/16/03	1,820
Selenium	1	4.8E+3	2.3	1	0.25	0.3	B-25D(dup)	0 – 0.5	09/16/03	0.519 J
Silver	1	1.9E+3	1.4	1	0.24	NE	P-5	0 – 0.5	09/16/03	0.714
Sodium	1	NE	NE	NE	25	NE	B-9	0 – 0.5	09/16/05	906
Thallium	1	78	1.7	1	0.5	9.3	---	---	---	U
Vanadium	1	2.4E+3	1.0E+4	1	0.5	50	B-12	0 – 0.5	09/16/03	20.8
Zinc	1	2.5E+5	7.0E+3	1	0.5	30	P2-1	0 – 0.5	11/11/03	299

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
VOCS BY 8260										
Benzene	1	67	0.026	1	0.005	---	---	---	---	U
Bromobenzene	1	220	17	1	0.005	---	---	---	---	U
Bromochloromethane	1	1.0E+3	9.1	1	0.005	---	---	---	---	U
Bromodichloromethane	1	460	0.15	1	0.005	---	---	---	---	U
Bromoform	1	1.0E+3	1.4	1	0.005	---	---	---	---	U
MTBE	1	2.0E+3	1.9	1	0.005	---	---	---	---	U
Tert-Butylbenzene	1	5.7E+3	3.0E+2	1	0.005	---	---	---	---	U
Sec-Butylbenzene	1	6.7E+3	2.5E+2	1	0.005	---	---	---	---	U
n-Butylbenzene	1	6.9E+3	3.6E+2	1	0.005	---	---	---	---	U
Carbon Tetrachloride	1	34	0.062	1	0.005	---	---	---	---	U
Chlorobenzene	1	1.2E+3	1.1	1	0.005	---	---	---	---	U
Chloroethane	1	1.4E+5	92	1	0.010	---	---	---	---	U
Chloroform	1	26	3.0	1	0.005	---	---	---	---	U
Chloromethane	1	290	0.91	1	0.010	---	---	---	---	U
2-Chlorotoluene	1	4.2E+3	27	1	0.005	---	---	---	---	U
4-Chlorotoluene	1	6.7	32	1	0.005	---	---	---	---	U
p-Cymene	1	8.8E+3	690	1	0.005	---	---	---	---	U
1,2-Dibromo-3-Chloropropane	1	11	1.7E-3	1	0.005	---	---	---	---	U
Dibromochloromethane	1	340	0.11	1	0.005	---	---	---	---	U
1,2-Dichlorobenzene	1	1.1E+3	18	1	0.005	---	---	---	---	U
1,3-Dichlorobenzene	1	170	20	1	0.005	---	---	---	---	U
1,4-Dichlorobenzene	1	1.2E+3	2.1	1	0.005	---	---	---	---	U
Dichlorodifluoromethane	1	7.0E+4	720	1	0.005	---	---	---	---	U
1,2-Dichloroethane	1	22	0.014	1	0.005	---	---	---	---	U
1,1-Dichloroethane	1	7.9E+3	28	1	0.005	---	---	---	---	U
Trans-1,2-dichloroethene	1	9.3E+3	0.49	1	0.005	---	---	---	---	U
Cis-1,2-Dichloroethene	1	6.4E+3	0.25	1	0.005	---	---	---	---	U
1,1-Dichloroethene	1	4.0E+3	0.05	1	0.005	---	---	---	---	U
2,2-Dichloropropane	1	86	0.27	1	0.005	---	---	---	---	U
1,3-Dichloropropane	1	99	0.14	1	0.005	---	---	---	---	U
1;2-Dichloropropane	1	86	0.023	1	0.005	---	---	---	---	U
Trans-1,3-dichloropropene	1	99	0.08	1	0.005	---	---	---	---	U
1,1-Dichloropropene	1	99	0.3	1	0.005	---	---	---	---	U
Cis-1,3-Dichloropropene	1	53	0.015	1	0.005	---	---	---	---	U
Ethylbenzene	1	1.8E+4	7.6	1	0.005	---	---	---	---	U
Hexachlorobutadiene	1	41	4.1	1	0.005	---	---	---	---	U
Isopropylbenzene	1	1.1E+4	1.0E+3	1	0.005	---	---	---	---	U
Methylene Chloride	1	960	0.013	1	0.020	---	---	---	---	U
Naphthalene	1	360	93	1	0.010	---	---	---	---	U
n-Propylbenzene	1	7.3E+3	1.3E+2	1	0.005	---	---	---	---	U
Styrene	1	2.9E+4	3.3	1	0.005	---	---	---	---	U
1,1,1,2-Tetrachloroethane	1	130	3.2	1	0.005	---	---	---	---	U
1,1,2,2-Tetrachloroethane	1	14	0.052	1	0.005	---	---	---	---	U
Tetrachloroethylene	1	360	0.05	1	0.005	---	---	---	---	U
Toluene	1	8.2E+3	8.2	1	0.005	---	---	---	---	U
1,2,4-Trichlorobenzene	1	5.2E+3	4.8	1	0.005	---	---	---	---	U
1,2,3-Trichlorobenzene	1	1.6E+3	79	1	0.005	---	---	---	---	U

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
VOCS BY 8260 (continued)										
1,1,2-Trichloroethane	1	35	0.02	1	0.005	---	---	---	---	U
1,1,1-Trichloroethane	1	1.9E+4	1.6	1	0.005	---	---	---	---	U
Trichloroethene	1	310	0.034	1	0.005	---	---	---	---	U
Trichlorofluoromethane	1	5.0E+4	380	1	0.005	---	---	---	---	U
1,2,3-Trichloropropane	1	4.1	5.1E-3	1	0.005	---	---	---	---	U
1,2,4-Trimethylbenzene	1	190	140	1	0.005	---	---	---	---	U
1,3,5-Trimethylbenzene	1	160	160	1	0.005	---	---	---	---	U
Vinyl Chloride	1	15	0.022	1	0.002	---	---	---	---	U
o-Xylene	1	6.6E+4	71	1	0.005	---	---	---	---	U
m,p-Xylenes	1	9.3E+3	110	1	0.010	---	---	---	---	U
SVOCS BY 8270										
Acenaphthene	1	3.7E+4	710	1	0.167	---	---	---	---	U
Acenaphthylene	1	3.7E+4	1.2E+3	1	0.167	---	---	---	---	U
Aniline	1	180	0.82	1	0.667	---	---	---	---	U
Anthracene	1	1.9E+5	2.1E+4	1	0.167	---	---	---	---	U
Benzo(a)anthracene	1	24	40	1	0.167	---	---	---	---	U
Benzo(a)pyrene	1	2.4	7.6	1	0.167	---	---	---	---	U
Benzo(b)fluoranthene	1	24	130	1	0.167	---	---	---	---	U
Benzo(g,h,i)perylene	1	1.9E+4	1.4E+5	1	0.167	---	---	---	---	U
Benzo(k)fluoranthene	1	240	1.4E+3	1	0.167	---	---	---	---	U
Benzoic Acid	1	960	570	1	1.0	---	---	---	---	U
Benzyl Butyl Phthalate	1	2.8E+4	8.1E+3	1	0.167	---	---	---	---	U
Bis(2-chloroethyoxy)methane	1	9.1	0.026	1	0.333	---	---	---	---	U
Bis(2-chloroethyl)ether	1	4.9	4.7E-3	1	0.333	---	---	---	---	U
Bis(2-chloroisopropyl)ether	1	150	0.43	1	0.333	---	---	---	---	U
Bis(2-ethylhexyl)phthalate	1	560	160	1	0.167	---	B-25D(dup)	0 – 0.5	09/16/03	0.172 J
4-Bromophenyl-phenylether	1	1.2	0.79	1	0.333	---	---	---	---	U
di-n-Butyl Phthalate	1	2.6E+4	9.9E+3	1	0.167	---	P-4	0 – 0.5	09/16/03	0.041 J
4-chloro-3-methylphenol	1	3.2E+3	14	1	0.333	---	---	---	---	U
4-Chloroaniline	1	1.2E+3	1.3	1	0.667	---	---	---	---	U
2-Chloronaphthalene	1	5.0E+4	2.0E+3	1	0.333	---	---	---	---	U
2-Chlorophenol	1	3.2E+3	4.9	1	0.333	---	---	---	---	U
4-Chlorophenyl Phenyl Ether	1	0.98	0.072	1	0.333	---	---	---	---	U
Chrysene	1	2.4E+3	3.5E+3	1	0.167	---	---	---	---	U
Dibenz(a,h)Anthracene	1	2.4	21	1	0.167	---	---	---	---	U
Dibenzofuran	1	2.7E+3	100	1	0.333	---	---	---	---	U
1,2-Dichlorobenzene	1	1.1E+3	18	1	0.333	---	---	---	---	U
1,3-Dichlorobenzene	1	170	20	1	0.333	---	---	---	---	U
1,4-Dichlorobenzene	1	1.2E+3	2.1	1	0.333	---	---	---	---	U
3,3-Dichlorobenzidine	1	42	0.14	1	0.333	---	---	---	---	U
2,4-Dichlorophenol	1	1.8E+3	1.1	1	0.333	---	---	---	---	U
Diethyl Phthalate	1	4.0E+3	470	1	0.167	---	P-4	0 – 0.5	09/16/03	0.091 J
Dimethyl Phthalate	1	1.8E+3	190	1	0.167	---	---	---	---	U
2,4-Dimethylphenol	1	4.7E+3	9.7	1	0.333	---	---	---	---	U
4,6-dinitro-2-methyl phenol	1	63	0.28	1	0.333	---	---	---	---	U
2,4-Dinitrophenol	1	1.4E+3	0.28	1	0.333	---	---	---	---	U
2,4-Dinitrotoluene	1	28	0.012	1	0.333	---	---	---	---	U

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
SVOCS BY 8270 (continued)										
2,6-Dinitrotoluene	1	28	0.011	1	0.333	---	---	---	---	U
Fluoranthene	1	2.5E+4	5.7E+3	1	0.167	---	---	---	---	U
Fluorene	1	2.5E+4	890	1	0.167	---	---	---	---	U
Hexachlorobenzene	1	8.7	1.1	1	0.333	---	---	---	---	U
Hexachlorobutadiene	1	41	4.1	1	0.333	---	---	---	---	U
Hexachlorocyclopentadiene	1	20	19	1	0.333	---	---	---	---	U
Hexachloroethane	1	680	5.5	1	0.333	---	---	---	---	U
Indeno(1,2,3-c,d)Pyrene	1	24	390	1	0.167	---	---	---	---	U
Isophorone	1	3.7E+3	6.7	1	0.333	---	---	---	---	U
2-Methylnaphthalene	1	2.5E+3	51	1	0.167	---	---	---	---	U
2-methylphenol	1	3.5E+3	21	1	0.333	---	---	---	---	U
3&4-Methylphenol	1	1.8E+3	1.9	1	0.333	---	---	---	---	U
Naphthalene	1	360	93	1	0.167	---	---	---	---	U
4-Nitroaniline	1	500	0.13	1	0.667	---	---	---	---	U
3-Nitroaniline	1	180	0.076	1	0.333	---	---	---	---	U
2-Nitroaniline	1	50	0.066	1	0.333	---	---	---	---	U
Nitrobenzene	1	240	0.26	1	0.333	---	---	---	---	U
2-Nitrophenol	1	620	0.4	1	0.333	---	---	---	---	U
4-Nitrophenol	1	190	0.3	1	0.333	---	---	---	---	U
N-Nitrosodi-n-Propylamine	1	1.4	7.9E-4	1	0.333	---	---	---	---	U
N-Nitrosodiphenylamine	1	1.9E+3	6.3	1	0.333	---	---	---	---	U
di-n-Octyl Phthalate	1	1.4E+4	1.0E+6	1	0.167	---	---	---	---	U
Pentachlorophenol	1	110	0.018	1	0.333	---	---	---	---	U
Phenanthrene	1	1.9E+4	1.2E+3	1	0.167	---	---	---	---	U
Phenol	1	4.6E+3	57	1	0.333	---	---	---	---	U
Pyrene	1	1.9E+4	3.3E+3	1	0.167	---	---	---	---	U
Pyridine	1	250	0.21	1	0.333	---	---	---	---	U
1,2,4-Trichlorobenzene	1	5.2E+3	4.8	1	0.333	---	---	---	---	U
2,4,6-Trichlorophenol	1	1.1E+3	1.3	1	0.333	---	---	---	---	U
2,4,5-Trichlorophenol	1	2.1E+4	100	1	0.333	---	---	---	---	U

*Due to the nature of the facility and the proposed future use of the facility, commercial/industrial assessment levels were used in lieu of residential assessment levels.

Table 4B. Surface Soil Residential Assessment Levels with Ecological Component

COC	**Human health PCL**[1]	**Ecological PCL (0 to 0.5 ft)**		**Ecological PCL (0.5 to 5 ft)**		**Maximum concentration in areas of ecological concern**			
	(mg/kg)	**(mg/kg)**	**Basis**[2]	**(mg/kg)**	**Basis**[15]	**Sample ID**	**Sample depth**	**Sample date**	**Conc (mg/kg)**
Not applicable									

---

[1] From Table 4A.

[2] Specify the basis of the ecological PCL (benchmark, MQL, background, Tier 2 PCL, or Tier 3 PCL).

Table 4C. Subsurface Soil Residential Assessment Levels

COC	Source area size (acres)	$^{Air}Soil_{Inh-V}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL	Back-ground	Maximum concentration			
			(mg/kg)	Tier	(mg/kg)	(mg/kg)	Sample ID	Sample depth	Sample date	Conc (mg/kg)
Subsurface soils were not evaluated during this investigation										

Following pages:

Table 4D - Soil Data Summary

Table 4E - Soil Geochemical/Geotechnical Data Summary
Geochemical and geotechnical data was not collected during this investigation.

Figure 4A - Surface Soil COC Concentration Maps

Figure 4B - Subsurface Soil COC Concentration Maps
Not applicable - Subsurface soil was not evaluated during this investigation.

Figure 4C - Cross Sections
Not applicable - Subsurface soil was not evaluated during this investigation. Surface soils were primarily clayey silt or silty clay.

ATTACHMENT 4D-1
Soil Data Summary Table for VOCs by Method SW-846 8260 B

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date	All VOCs (mg/kg)
B-1	0 - 0.5	09/16/03	N/A
B-2	0 - 0.5	09/16/03	N/A
B-3	0 - 0.5	09/16/03	N/A
B-4	0 - 0.5	09/16/03	N/A
B-5	0 - 0.5	09/16/03	N/A
B-6	0 - 0.5	09/16/03	N/A
B-7	0 - 0.5	09/16/03	N/A
B-8	0 - 0.5	09/16/03	N/A
B-9	0 - 0.5	09/16/03	N/A
B-10	0 - 0.5	09/16/03	N/A
B-11	0 - 0.5	09/16/03	N/A
B-12	0 - 0.5	09/16/03	N/A
B-13	0 - 0.5	09/16/03	N/A
B-14	0 - 0.5	09/16/03	N/A
B-15	0 - 0.5	09/16/03	N/A
B-16	0 - 0.5	09/16/03	N/A
B-17	0 - 0.5	09/16/03	N/A
B-18	0 - 0.5	09/16/03	N/A
B-19	0 - 0.5	09/16/03	N/A
B-20	0 - 0.5	09/16/03	N/A
B-21	0 - 0.5	09/16/03	N/A
B-22	0 - 0.5	09/16/03	N/A
B-23	0 - 0.5	09/16/03	N/A
B-24	0 - 0.5	09/16/03	N/A
B-25	0 - 0.5	09/16/03	U
B-25D	0 - 0.5	09/16/03	U
P-1	0 - 0.5	09/16/03	N/A
P-1D	0 - 0.5	09/16/03	N/A
P-2	0 - 0.5	09/16/03	N/A
P-3	0 - 0.5	09/16/03	N/A
P-4	0 - 0.5	09/16/03	U
P-5	0 - 0.5	09/16/03	N/A
Data Quality Control Samples (mg/L)			
RS091603	NA	09/16/03	U

Notes:
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
N/A - not analyzed
NA - not applicable
VOC analysis by Method SW-846 8260B

ATTACHMENT 4D-2
Soil Data Summary Table for SVOCs by Method SW-846 8270C

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date	CAS	bis (2-ethylhexyl) phthalate 117-81-7 (mg/kg)	di-n-Butyl Phthalate 84-74-2 (mg/kg)	Diethyl Phthalate 84-66-2 (mg/kg)	All Other SVOCs (mg/kg)
			MQL	0.167	0.167	0.167	--
B-1	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-2	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-3	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-4	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-5	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-6	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-7	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-8	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-9	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-10	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-11	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-12	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-13	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-14	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-15	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-16	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-17	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-18	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-19	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-20	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-21	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-22	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-23	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-24	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-25	0 - 0.5	09/16/03		0.060 J	U (<0.038)	U (<0.038)	U
B-25D	0 - 0.5	09/16/03		0.172 J	U (<0.039)	U (<0.039)	U
P-1	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-1D	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-2	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-3	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-4	0 - 0.5	09/16/03		U (<0.039)	0.041 J	0.091 J	U
P-5	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
Data Quality Control Samples (mg/L)							
RS091603	NA	09/16/03		U (<0.001)	U (<0.003)	U (<0.001)	U
Tier 1 C/I 0.5-acre PCLs (mg/kg)				160	9,900	470	--

Notes:
ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/kg - milligrams per kilogram or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
J - the target analyte was positively identified below the MQL and above the SQL, or is an estimated value
N/A - not analyzed
NA - not applicable
SVOC analysis by Method EPA 8270C
PCLs - Commercial/Industrial protective concentration levels
Concentrations in **BOLD BOX** indicate exceedance of laboratory MQL

ATTACHMENT 4D-3
Soil Data Summary Table for Metals by Method EPA 6020

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
			CAS	7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7439-97-6	7440-02-0	2133-26-8	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
			MQL	0.5	0.25	0.25	0.5	0.05	0.050	25	0.5	0.5	0.5	10	0.1	10	0.5	0.02	0.5	10	0.25	0.24	25	0.5	0.5	0.5
Backstop/Berm Samples (mg/kg)																										
B-1	0 - 0.5	09/16/03		5,340	0.599	1.03	79.8	0.527	0.371	6,970	9.63	2.76	12.5	4,370	**90.6**	1,050	177	0.0360 J	6.73	723	U (<0.479)	U (<0.479)	474	U (<0.383)	10.6	135
B-1A	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1B	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1C	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1D	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-2	0 - 0.5	09/16/03		6,010	1.79	0.981	63.7	0.621	U (<0.087)	4,890	6.06	3.3	49.9	4,470	**393**	898	111	0.0248 J	4.71	733	U (<0.497)	U (<0.497)	390	U (<0.397)	11.9	29.5
B-3	0 - 0.5	09/16/03		2,530	0.468 J	1.57	58.4	0.375	U (<0.082)	2,210	3.64	3.1	5.13	2,750	31.7	493	190	0.0234 J	3.45	326	U (<0.468)	U (<0.468)	365	U (<0.375)	11	8.42
B-4	0 - 0.5	09/16/03		3,990	2.68	2.09	90.8	0.496	0.177	5,790	4.36	15.9	29	4,750	**749**	961	834	U (<0.0236)	14.7	757	U (<0.472)	U (<0.472)	354	U (<0.378)	18	19.8
B-5	0 - 0.5	09/16/03		3,970	U (<0.383)	0.957	135	0.491	0.096 J	10,800	4.55	1.77	6.19	3,390	21.2	943	94.5	U (<0.0239)	3.96	556	U (<0.479)	U (<0.479)	365	U (<0.383)	10.4	9.94
B-6	0 - 0.5	09/16/03		3,880	U (<0.374)	1.13	56.5	0.479	U (<0.082)	3,280	4.39	2.65	7.63	3,520	62.4	922	127	U (<0.0234)	4.31	607	U (<0.467)	U (<0.467)	385	U (<0.374)	10.5	12.2
B-7	0 - 0.5	09/16/03		3,170	U (<0.378)	1.23	35.1	0.437	U (<0.083)	2,660	3.8	2.08	4.89	2,750	8.54	670	131	U (<0.0236)	3.21	356	U (<0.473)	U (<0.473)	366	U (<0.378)	10.6	7.33
B-7A	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.438)	N/A	N/A	N/A	N/A
B-7B	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.451)	N/A	N/A	N/A	N/A
B-7C	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.466)	N/A	N/A	N/A	N/A
B-8	0 - 0.5	09/16/03		4,550	U (<0.387)	1.07	53.8	0.593	U (<0.085)	3,420	4.54	1.86	6.54	3,740	10.9	1,090	84.8	U (<0.0242)	4.56	501	U (<0.484)	0.666	447	U (<0.387)	12.3	8.91
B-9	0 - 0.5	09/16/03		4,790	U (<0.371)	1.84	66.7	0.521	0.093 J	31,100 D	6.09	3.54	6.29	5,470	10.6	1,910	186	U (<0.0232)	8.32	883	U (<0.463)	0.602	906	U (<0.371)	14.7	11.6
B-10	0 - 0.5	09/16/03		4,870	U (<0.391)	0.781	147	0.525	0.098 J	23,600	4.43	3.15	5.48	3,720	18.3	1,270	82.2	U (<0.0244)	4.79	472	U (<0.488)	U (<0.488)	880	U (<0.391)	9.06	9.55
B-11	0 - 0.5	09/16/03		5,450	U (<0.376)	0.974	66.9	0.446	U (<0.082)	12,900 B	5.97	2.88	5.29	5,310	15.3	1,540	145	U (<0.0235)	6.63	949	U (<0.469)	U (<0.469)	695	U (<0.376)	5.03	20.1
B-12	0 - 0.5	09/16/03		9,090	U (<0.392)	2.67	105	0.649	0.110 J	15,600	10.2 B	6.23	9.1	9,780	15.9	2,400	313	U (<0.0245)	13	1,820	U (<0.490)	U (<0.490)	846	U (<0.392)	20.8	18.6
B-13	0 - 0.5	09/16/03		9,080	U (<0.395)	1.53	119	0.567	0.099 J	16,800	9.35 B	4.03	11.3	8,040	**76.2**	2,080	227	U (<0.0247)	9.38	1,680	U (<0.493)	U (<0.493)	502	U (<0.395)	13.6	18.8
B-14	0 - 0.5	09/16/03		5,160	U (<0.385)	1.3	105	0.493	0.108 J	36,200 D	5.59 B	4	6.46	4,920	20.4	1,670	233	U (<0.0241)	7.98	911	U (<0.481)	U (<0.481)	372	U (<0.385)	10.4	12.5
B-15	0 - 0.5	09/16/03		4,470	U (<0.379)	1.98	97.6	0.615	U (<0.083)	7,700	7.14	2.77	8.69	5,230	**75.4**	1,160	114	0.0237 J	5.41	621	U (<0.473)	U (<0.473)	386	U (<0.379)	17.1	10.2
[illegible]	0 - 0.5	09/16/03		9,930	U (<0.393)	1.89	90.5	0.553	0.086 J	15,900	10.2 B	4.06	12.9	8,390	**103**	2,120	214	U (<0.0246)	8.77	1,790	U (<0.492)	U (<0.492)	427	U (<0.393)	17	25
B-16A	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-17	0 - 0.5	09/16/03		8,610	0.686	2	105	0.462	0.107 J	16,400	9.31 B	5.67	21.2	7,540	**128**	1,630	377	U (<0.0237)	9.89	1,450	U (<0.473)	U (<0.473)	432	U (<0.379)	17.3	14.6
B-18	0 - 0.5	09/16/03		4,920	0.746	1.67	85	0.45	U (<0.083)	13,400	5.64 B	3.47	12	5,110	**80.5**	1,090	193	U (<0.0237)	6.18	875	U (<0.476)	U (<0.474)	405	U (<0.379)	12.3	12.3
B-19	0 - 0.5	09/16/03		4,480	U (<0.388)	1.77	51.6	0.472	U (<0.085)	4,370	5.29	2.86	10.5	4,420	51.5	850	147	0.0242 J	5.18	737	U (<0.484)	U (<0.484)	381	U (<0.388)	12	13
B-20	0 - 0.5	09/16/03		6,160	U (<0.396)	1.99	68.6	0.532	U (<0.087)	3,920	6.25 B	3.38	10.6	5,510	35.1	1,010	162	0.0247 J	5.96	981	U (<0.495)	U (<0.495)	385	U (<0.396)	13.6	15.3
B-21	0 - 0.5	09/16/03		3,580	U (<0.379)	1.47	47.8	0.39	U (<0.083)	2,950	4.21 B	1.89	22	3,490	65.2	651	90.8	U (<0.0237)	3.71	619	U (<0.473)	U (<0.473)	397	U (<0.379)	10.4	12.9
B-21A	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-22	0 - 0.5	09/16/03		4,740	U (<0.385)	1.04	78.4	0.494	U (<0.084)	3,420	4.70 B	3.1	6.61	3,800	7.94	1,030	163	U (<0.0241)	6.17	614	U (<0.482)	U (<0.482)	347	U (<0.385)	9.48	9.74
B-23	0 - 0.5	09/16/03		5,270	U (<0.381)	1.57	95.7	0.548	U (<0.083)	3,710	5.62 B	2.88	7.45	4,920	12.40	988	209	0.0238 J	6.24	885	U (<0.477)	U (<0.477)	410	U (<0.381)	12	11.6
B-24	0 - 0.5	09/16/03		3,800	2.67	1.38	53.6	0.45	0.155	2,280	5.99 B	2.03	103	4,230	**79.4**	620	80.8	0.0281 J	4.96	1,020	U (<0.563)	U (<0.563)	398	U (<0.450)	13.4	61.4
B-24-1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24A	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24A1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24B	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24B1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24C	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25	0 - 0.5	09/16/03		3,640	14.5	2.32	90.1	0.423	U (<0.080)	70,600 D	4.73	3.17	73.3	5,730	**8,840 D**	1,250	242	U (<0.0229)	5.68	574	U (<0.457)	U (<0.457)	477	U (<0.366)	16.9	22.8
B-25D(dup)	0 - 0.5	09/16/03		3,350	3.09	1.58	80.4	0.33	0.236	143,000 D	3.96	2.62	133	4,290	**1,010**	1,340	197	U (<0.0236)	5.13	658	0.519 J	U (<0.472)	437	U (<0.377)	11.2	18.8
B-25A	0 - 0.5	11/11/03		N/A	1.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**275**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25A2	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25B	1.5 - 2	11/11/03		N/A	4.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**670**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25BD(dup)	1.5 - 2	11/11/03		N/A	1.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**222**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25C	0 - 0.5	11/11/03		N/A	U (<0.374)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25C1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25D	3 - 3.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25D DUP	3 - 3.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-26	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-27	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
[illegible]	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
[illegible]	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-30	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-31	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-32	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ATTACHMENT 4D-3
Soil Data Summary Table for Metals by Method EPA 6020

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
			CAS	7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7439-97-6	7440-02-0	2133-26-8	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
			MQL	0.5	0.25	0.25	0.5	0.05	0.050	25	0.5	0.5	0.5	10	0.1	10	0.5	0.02	0.5	10	0.25	0.24	25	0.5	0.5	0.5
B-33	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-34	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-35	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Platform 1 Samples (Northern) (mg/kg)																										
P-1	0 - 0.5	09/16/03		1,670	0.408 J	3.5	21.1	0.204	U (<0.079)	767	3.97	3.58	3.75	3,410	12.3	215	294	0.0227 J	2.74	239	U (<0.453)	U (<0.453)	410	U (<0.362)	13.1	6.49
P-1D	0 - 0.5	09/16/03		2,000	U (<0.367)	2.36	18.1	0.229	0.092 J	1,060	3.8	1.97	4.17	2,670	12.1	278	127	0.0229 J	2.22	300	U (<0.458)	0.458 J	364	U (<0.367)	9.75	9.56
P-2	0 - 0.5	09/16/03		2,640	U (<0.363)	1.59	21.1	0.307	U (<0.080)	1,420	4.34	1.59	4.82	2,730	12	450	96.3	0.0227 J	2.51	298	U (<0.454)	U (<0.454)	486	U (<0.363)	9.45	8.76
P-3	0 - 0.5	09/16/03		4,780	U (<0.374)	1.43	30.6	0.444	0.082 J	1,550	5.84	2.06	5.71	4,210	10.2	705	113	0.0351 J	4.04	622	U (<0.468)	U (<0.468)	409	U (<0.374)	10.6	11.9
P-4	0 - 0.5	09/16/03		2,600	U (<0.371)	2.49	20.7	0.301	0.081 J	997	4.37	2.28	4.36	3,370	12.3	412	153	0.0348 J	2.64	380	U (<0.464)	0.591	371	U (<0.371)	11.2	7.9
P-5	0 - 0.5	09/16/03		2,180	0.374 J	2.87	25.2	0.261	0.079 J	1,050	6.14	3.13	4.38	3,900	22.3	407	195	0.0340 J	2.83	449	U (<0.453)	0.714	338	U (<0.363)	13.2	8.09
P-5B	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.6	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.456)	N/A	N/A	N/A	N/A
P-6	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.7	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.439)	N/A	N/A	N/A	N/A
P-7	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19.5	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.460)	N/A	N/A	N/A	N/A
P-7B	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P-8	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12.5	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.441)	N/A	N/A	N/A	N/A
P-8	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P-9	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Platform 2 Samples (Southern) (mg/kg)																										
P2-1	0 - 0.5	11/11/03		2,720	0.921	5.32	23	0.278	0.332	1,700	6.36 B	2.51	11.9	6,080	**131**	411	165	0.0857	4.1	767	U (<0.535)	U (<0.428)	65.3	U (<0.343)	15.2	299
P2-1B	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-2	0 - 0.5	11/11/03		1,840	0.995	4.20	24.6	0.222	0.286	599	6.49 B	2.72	16.2	4,090	**79.1**	237	192	0.0212 J	3.84	1,040	U (<0.529)	U (<0.423)	52.9	U (<0.339)	14	131
P2-3	0 - 0.5	11/11/03		3,150	0.434 J	2.96	46.7	0.358	0.586	853	5.86 B	7.08	9.62	4,520	52.6	408	340	0.0217 J	3.54	1,030	U (<0.543)	U (<0.434)	77.1	U (<0.347)	15.2	160
P2-4	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-5	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-6	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-7	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Data Quality Control Samples (mg/L)																										
RS091603	NA	09/16/03		0.024 J	0.037	U (<0.004)	0.012	U (<0.003)	U (<0.003)	U (<1.13)	U (<0.005)	U (<0.009)	U (<0.009)	U (<0.900)	U (<0.008)	U (<0.675)	U (<0.007)	U (<0.0009)	U (<0.006)	U (<0.765)	U (<0.018)	U (<0.011)	U (<1.13)	U (<0.004)	U (<0.009)	U (<0.023)
RS111103	NA	11/11/03		U (<0.009)	0.01	U (<0.002)	U (<0.004)	U (<0.001)	U (<0.001)	U (<0.500)	U (<0.002)	U (<0.004)	U (<0.004)	U (<0.400)	U (<0.003)	U (<0.300)	U (<0.003)	U (<0.0004)	U (<0.003)	U (<0.340)	U (<0.008)	U (<0.005)	U (<0.500)	U (<0.002)	U (<0.004)	U (<0.010)
Texas-Specific Background Concentration				**30,000**	**1**	**5.9**	**300**	**1.5**	**NE**	**NE**	**30**	**7**	**15**	**15,000**	**15**	**NE**	**300**	**0.04**	**10**	**NE**	**0.3**	**NE**	**NE**	**9.3**	**50**	**30**
Tier 1 C/I 0.5-acre PCLs (mg/kg)				**520,000**	**5.4**	**5**	**440**	**1.8**	**1.5**	**NE***	**2,400**	**4,000**	**1,000**	**NE***	**3**	**NE***	**10,000**	**0.0078**	**470**	**NE***	**2.3**	**1.4**	**NE***	**1.7**	**2,400**	**7,000**
Tier 2 C/I 0.5-acre PCLs (mg/kg)				---	**81.17**	**5.82**	---	---	---	---	---	---	---	---	**70.23**	---	---	**1.6**	---	---	---	---	---	---	---	---

Notes:
ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/kg - milligrams per kilogram or parts per million
mg/L - milligrams per liter or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
J - the target analyte was positively identified below the MQL and above the SQL, or is an estimated value
B - a target analyte or common laboratory contaminant was identified in the method blank
D - the sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference
N/A - not analyzed
NE - not established
Metals analysis by Method EPA 6020
PCLs - Commercial/Industruial protective concentration levels
Highlighted concentrations indicate exceedance of Texas-Specific Background Concentration
Concentrations in **BOLD** indicate exceedance of Critical PCL
Concentrations in **BOLD BOX** indicate exceedance of laboratory MQL for metals where a background concentration has not been established.
*These compounds are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply.
See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tnrcc.state.tx.us/permitting/trrp.htm.

ATTACHMENT 4D-4

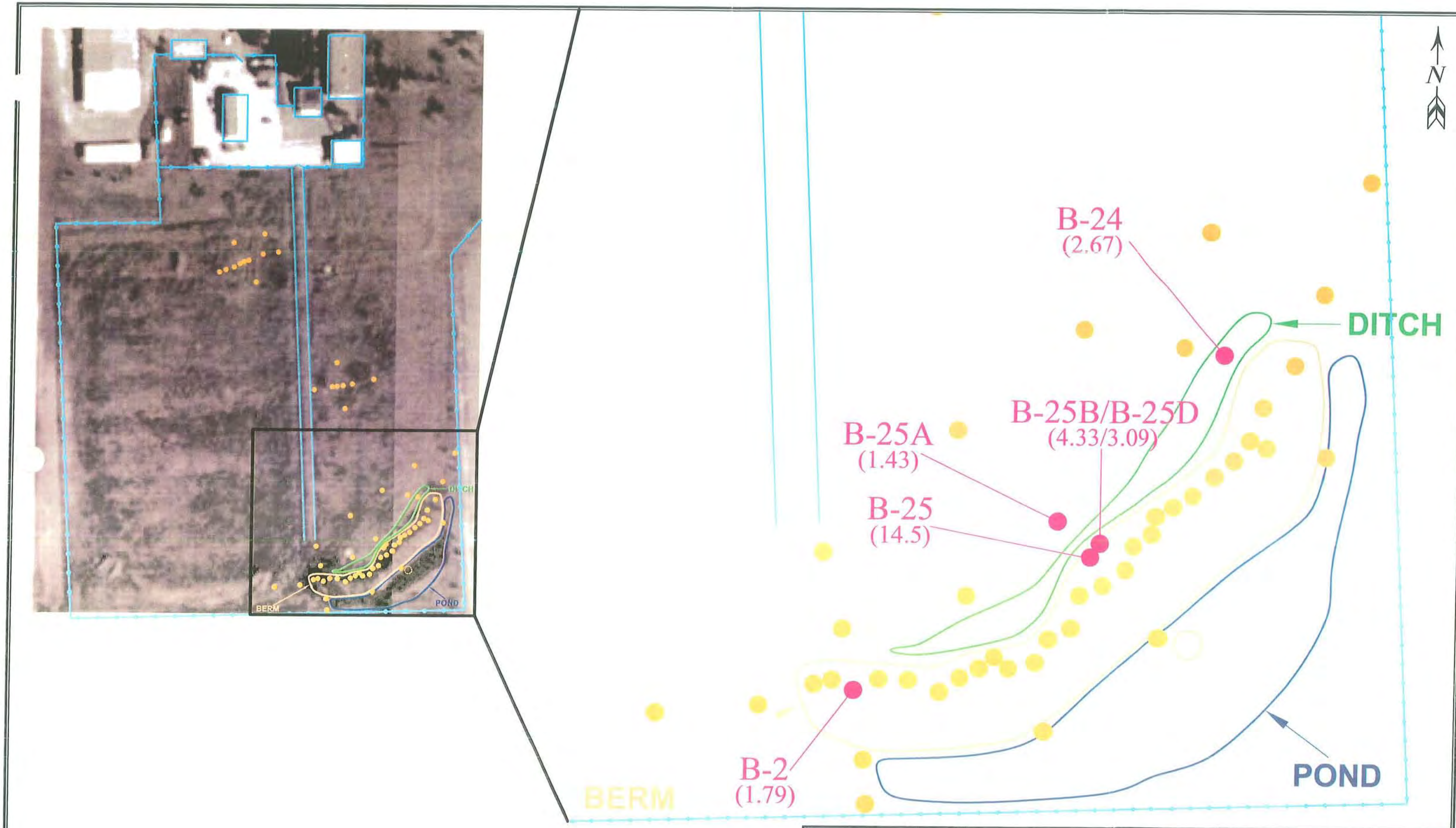
Soil Data Summary Table for SPLP Metals by Method EPA 6020 and Soil pH by Method SW-846 9045C

Adjutant General's Department
Roy P. Benzvidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date	CAS	Antimony 7440-36-0 (mg/L)	Lead 7439-92-1 (mg/L)	Silver 7440-22-4 (mg/L)	Soil pH SU
			MQL	0.003	0.002	0.01	---
B-5	0 - 0.5	09/16/03		N/A	N/A	N/A	8.21
B-8	0 - 0.5	09/16/03		N/A	N/A	U (<0.012)	N/A
B-11	0 - 0.5	09/16/03		N/A	N/A	N/A	9.22
B-18	0 - 0.5	09/16/03		N/A	N/A	N/A	8.31
B-23	0 - 0.5	09/16/03		N/A	N/A	N/A	7.83
B-25	0 - 0.5	09/16/03		**0.056**	**28.4**	N/A	N/A
P-4	0 - 0.5	09/16/03		N/A	N/A	N/A	6.75
P-5	0 - 0.5	09/16/03		N/A	N/A	U (<0.012)	N/A
Tier 1 C/I 0.5-acre PCLs (mg/kg)				**0.006**	**0.015**	**0.120**	---

Notes:

ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/L - milligrams per liter or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
N/A - not analyzed
SPLP metals analysis by Method EPA 6020
Soil pH by Method SW-846-9045C
PCLs - Commercial/Industruial protective concentration levels
Concentrations in **BOLD** indicate exceedance of Tier 1 PCLs



Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location
● Sample location with COC exceedance (antimony)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Antimony) = 1 mg/kg

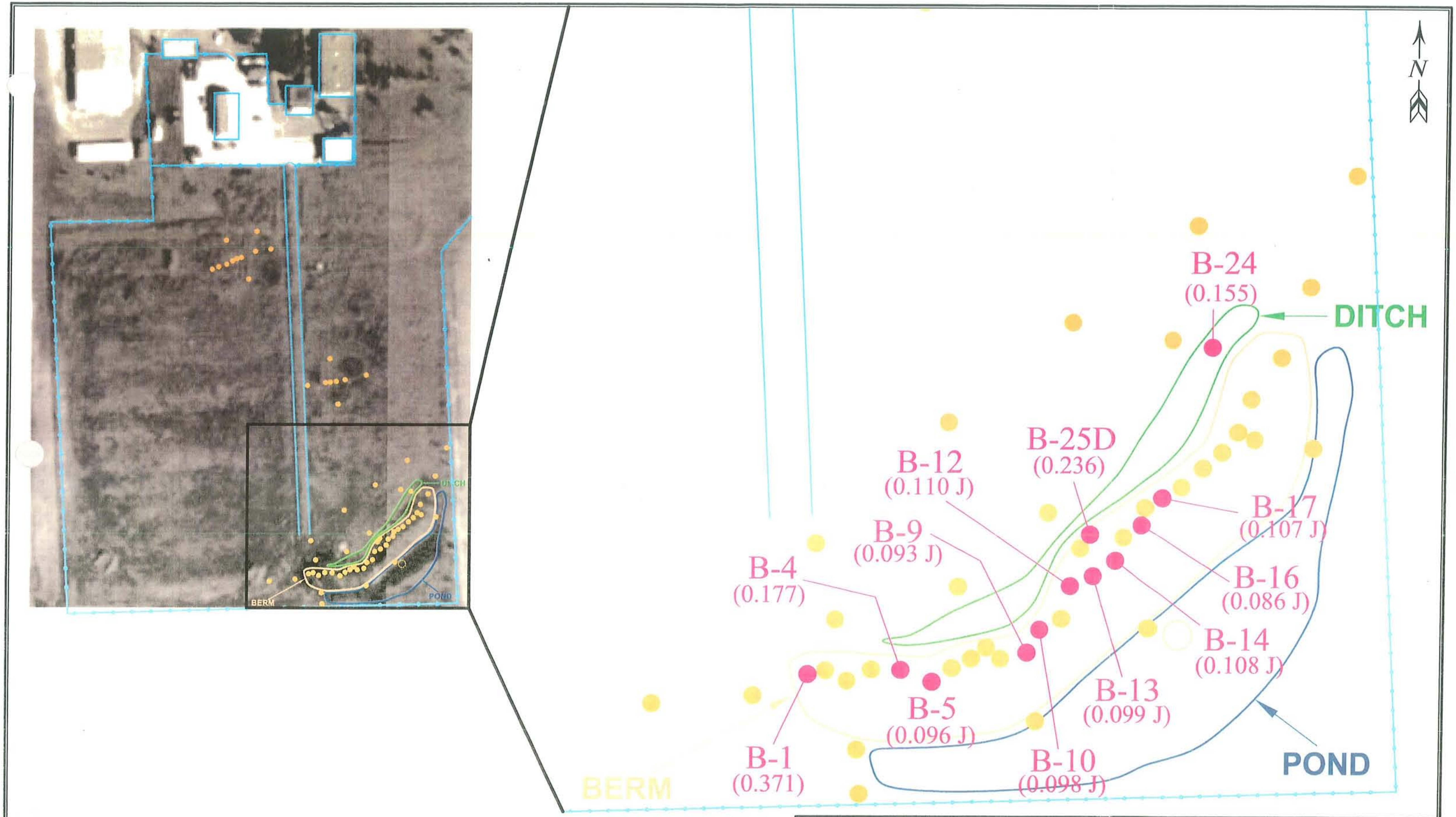
Surface Soil COC
Map - Antimony

Date: 06/05

Figure 4A-1

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

🟡	Sample location
🔴	Sample location with COC exceedance (cadmium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Cadmium) = 0.05 mg/kg

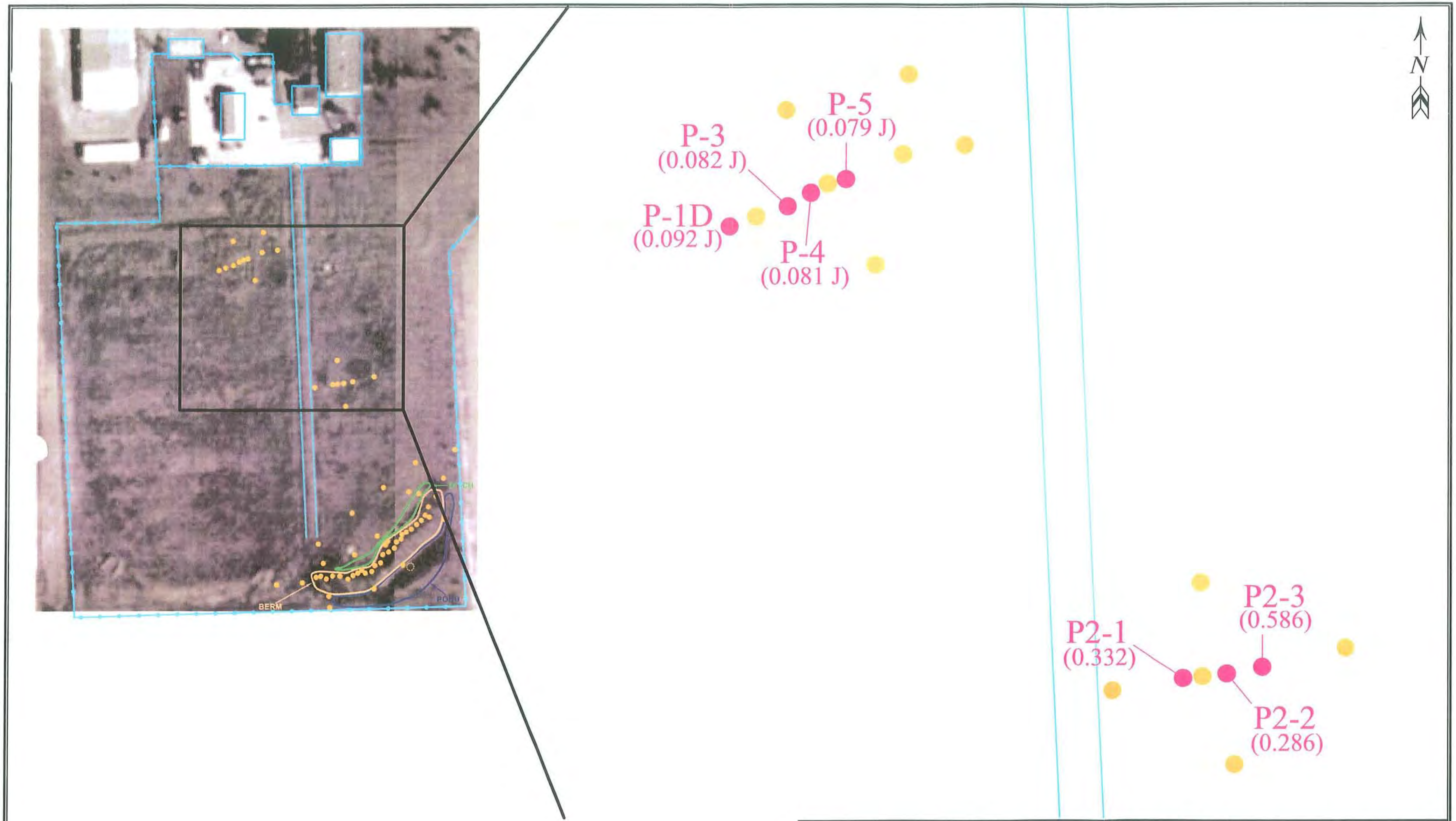
Surface Soil COC
Map - Cadmium
Backstop

Date: 06/05

Figure 4A-2(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location

● Sample location with COC exceedance (cadmium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Laboratory MQL (Cadmium) = 0.05 mg/kg

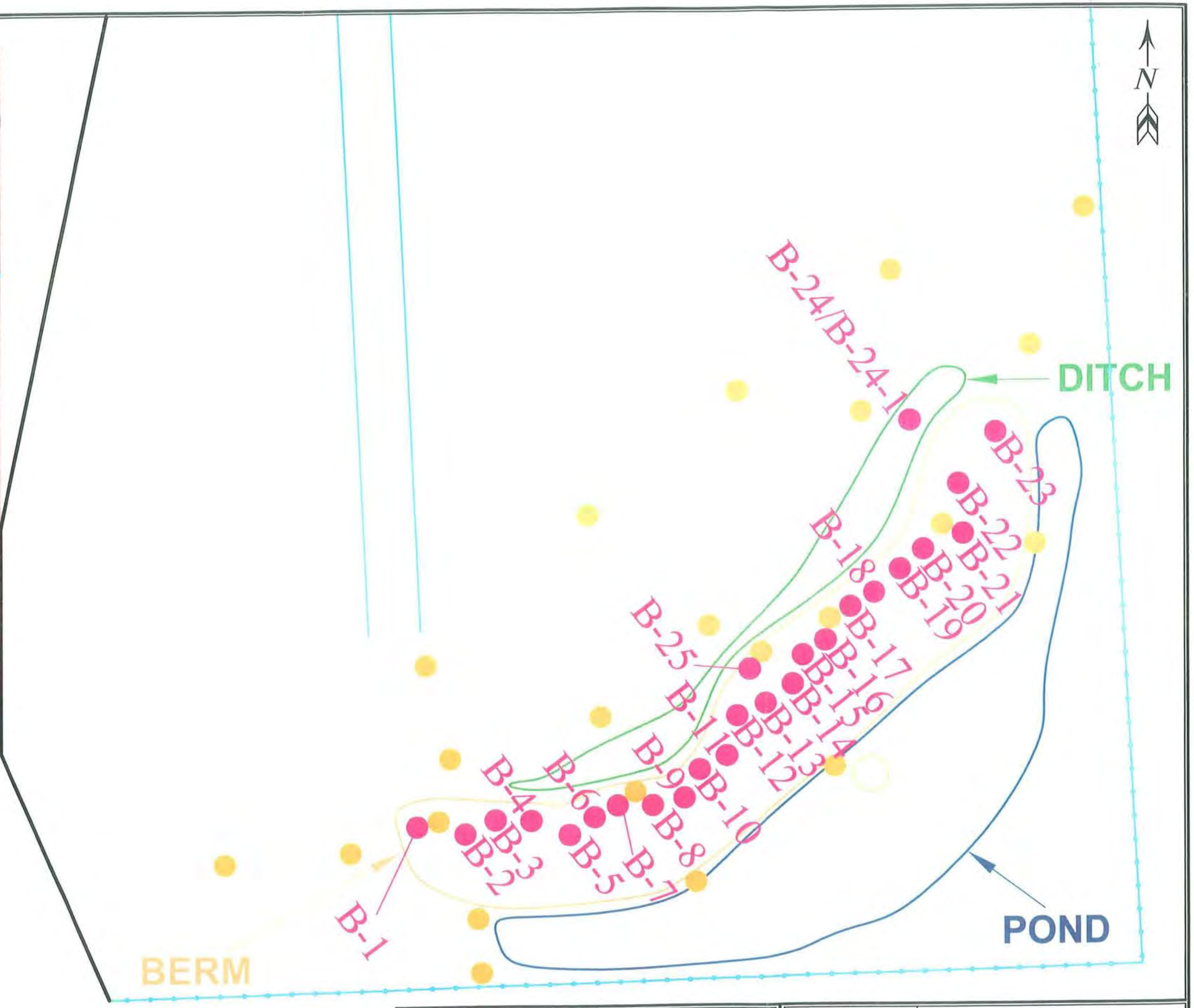
Surface Soil COC
Map - Cadmium
Platforms

Date: 06/05

Figure 4A-2(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
B-1	6,970
B-2	4,890
B-3	2,210
B-4	5,790
B-5	10,800
B-6	3,280
B-7	2,660
B-8	3,420
B-9	31,100 D
B-10	23,600
B-11	12,900 B
B-12	15,600

Sample ID	Concentration
B-13	16,800
B-14	36,200 D
B-15	7,700
B-16	15,900
B-17	16,400
B-18	13,400
B-19	4,370
B-20	3,920
B-21	2,950
B-22	3,420
B-23	3,710
B-24	2,280
B-25	70,600 D

Scale
1 inch = 30 feet
0 30 60

Legend

●	Sample location
●	Sample location with COC exceedance (calcium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Calcium) = 25 mg/kg

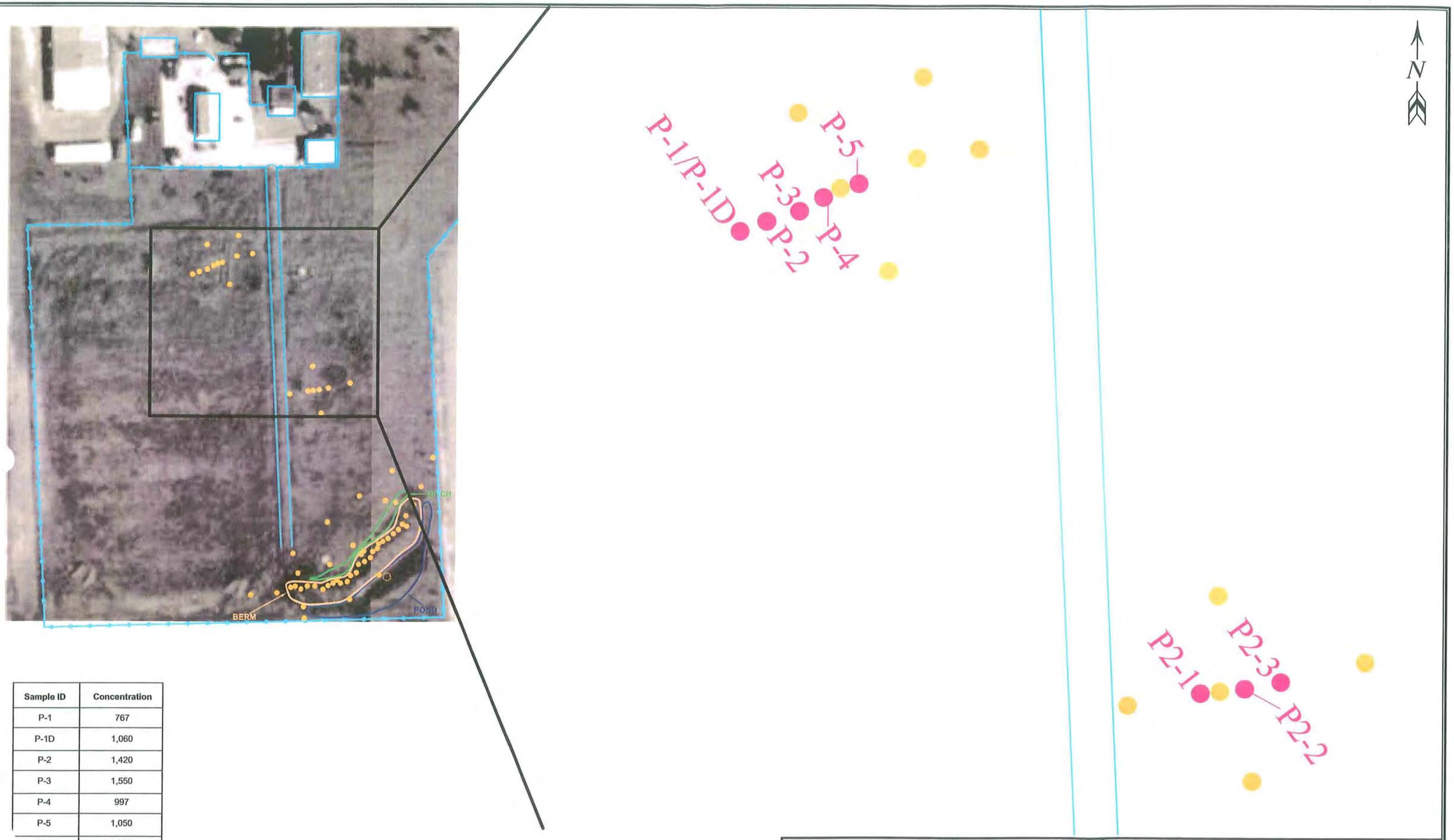
Surface Soil COC
Map - Calcium
Backstop

Date: 06/05

Figure 4A-3(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
P-1	767
P-1D	1,060
P-2	1,420
P-3	1,550
P-4	997
P-5	1,050
P2-1	1,700
P2-2	599
P2-3	853

Legend

● Sample location

● Sample location with COC exceedance (calcium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Laboratory MQL (Calcium) = 25 mg/kg

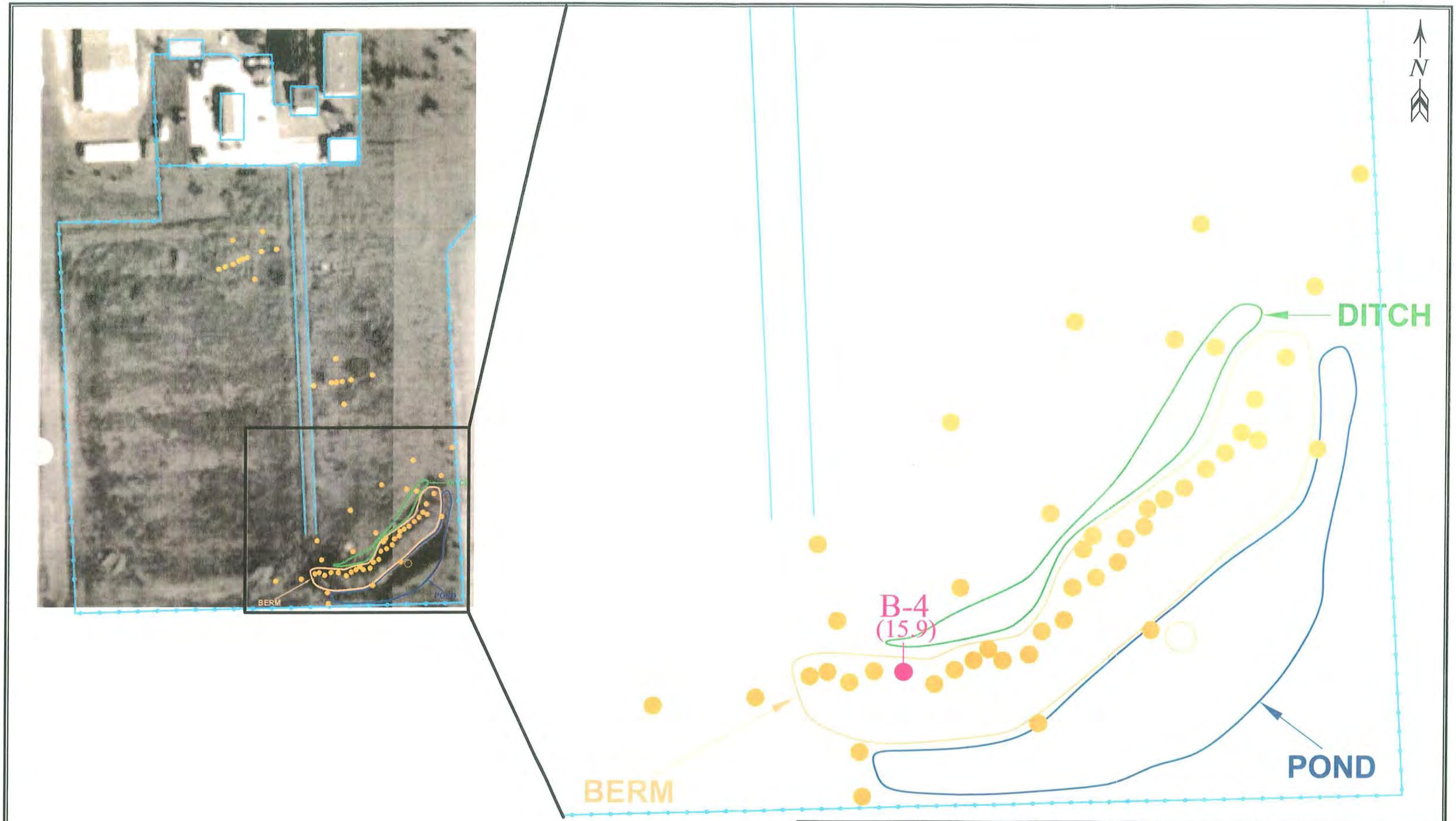
Surface Soil COC
Map - Calcium
Platforms

Date: 06/05

Figure 4A-3(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (cobalt)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Cobalt) = 7 mg/kg

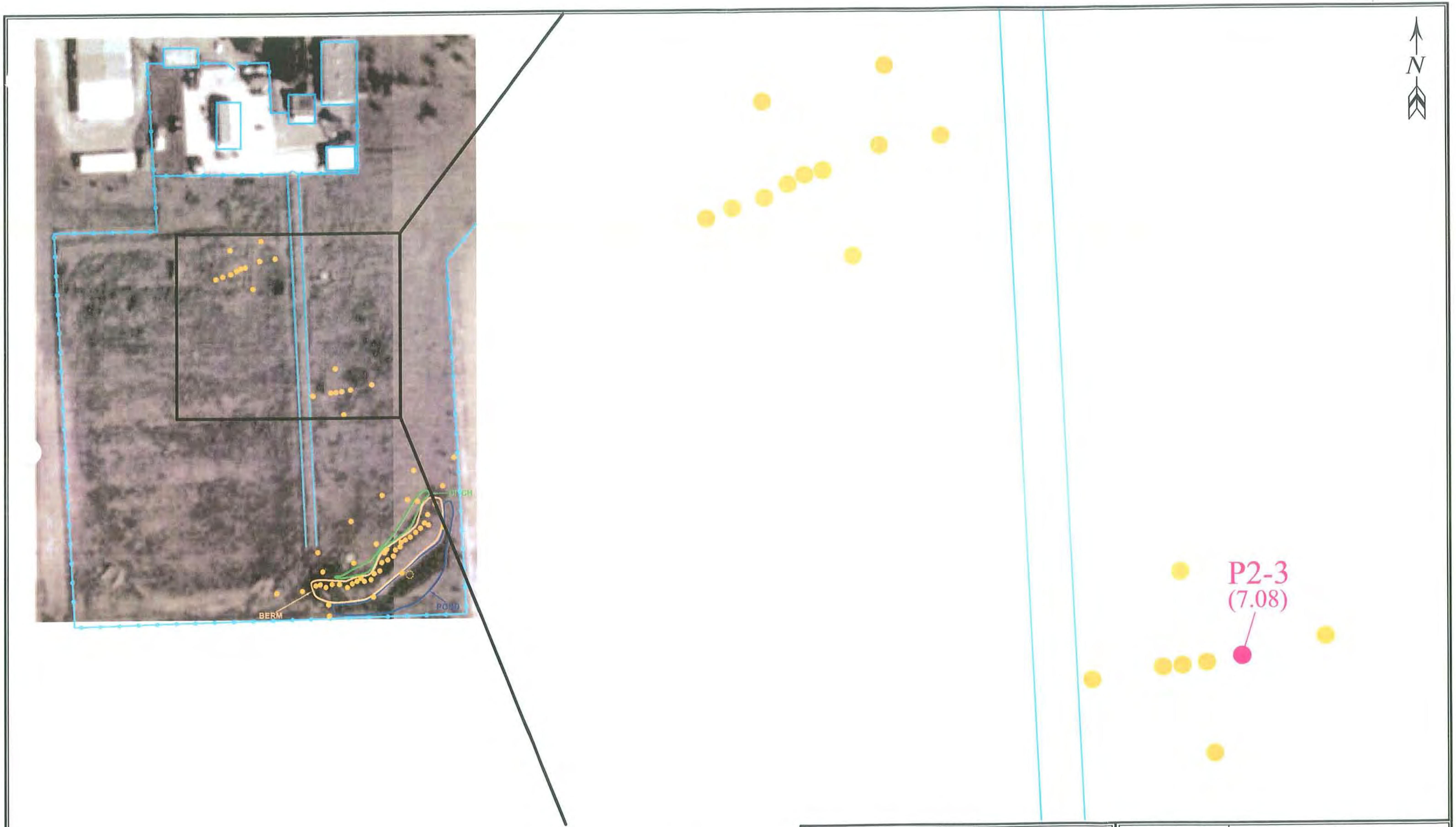
Surface Soil COC
Map - Cobalt
Backstop

Date: 06/05

Figure 4A-4(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

- 🟡 Sample location
- ● Sample location with COC exceedance (cobalt)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Cobalt) = 7 mg/kg

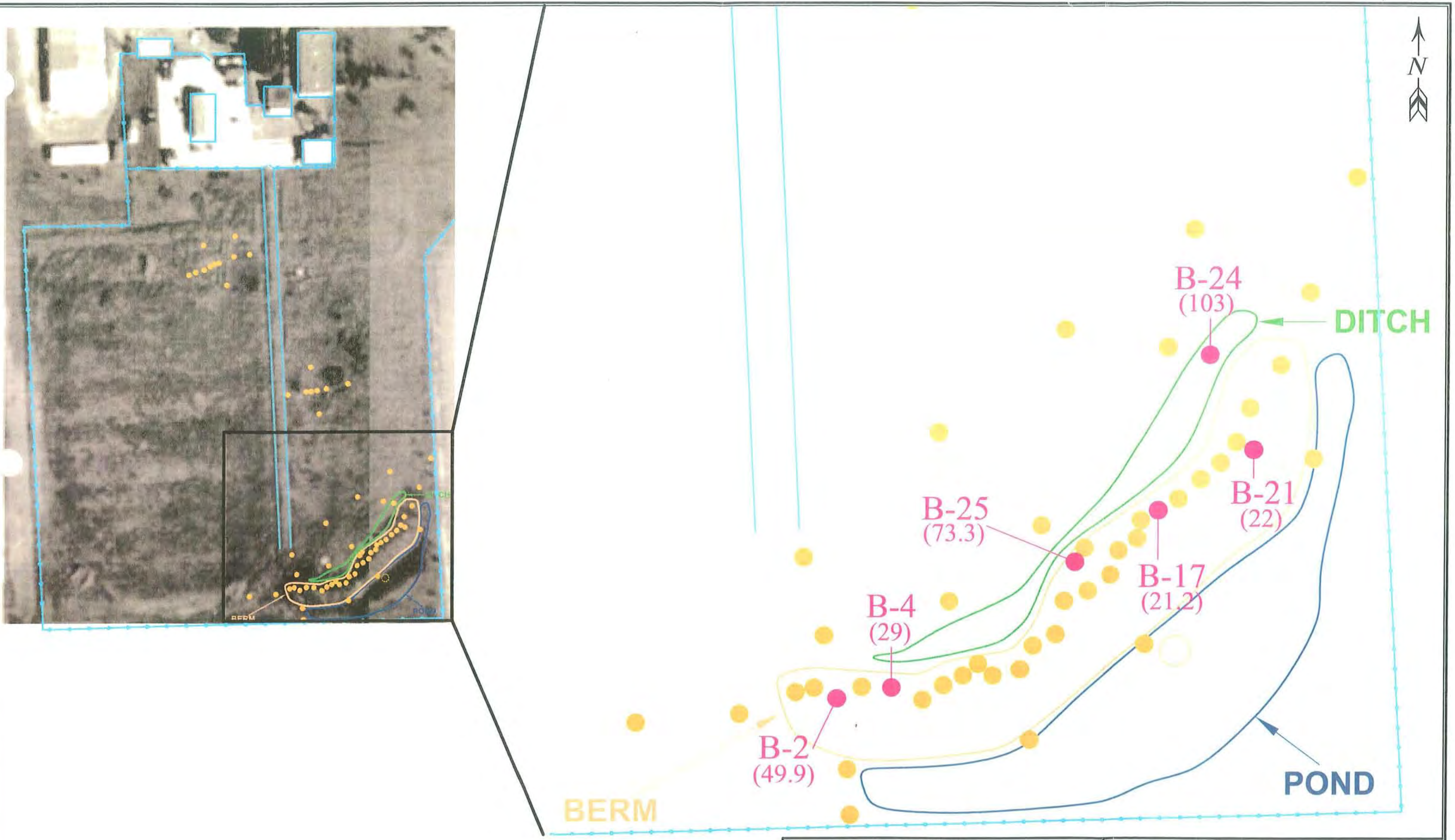
Surface Soil COC
Map - Cobalt
Platforms

Date: 06/05

Figure 4A-4(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location

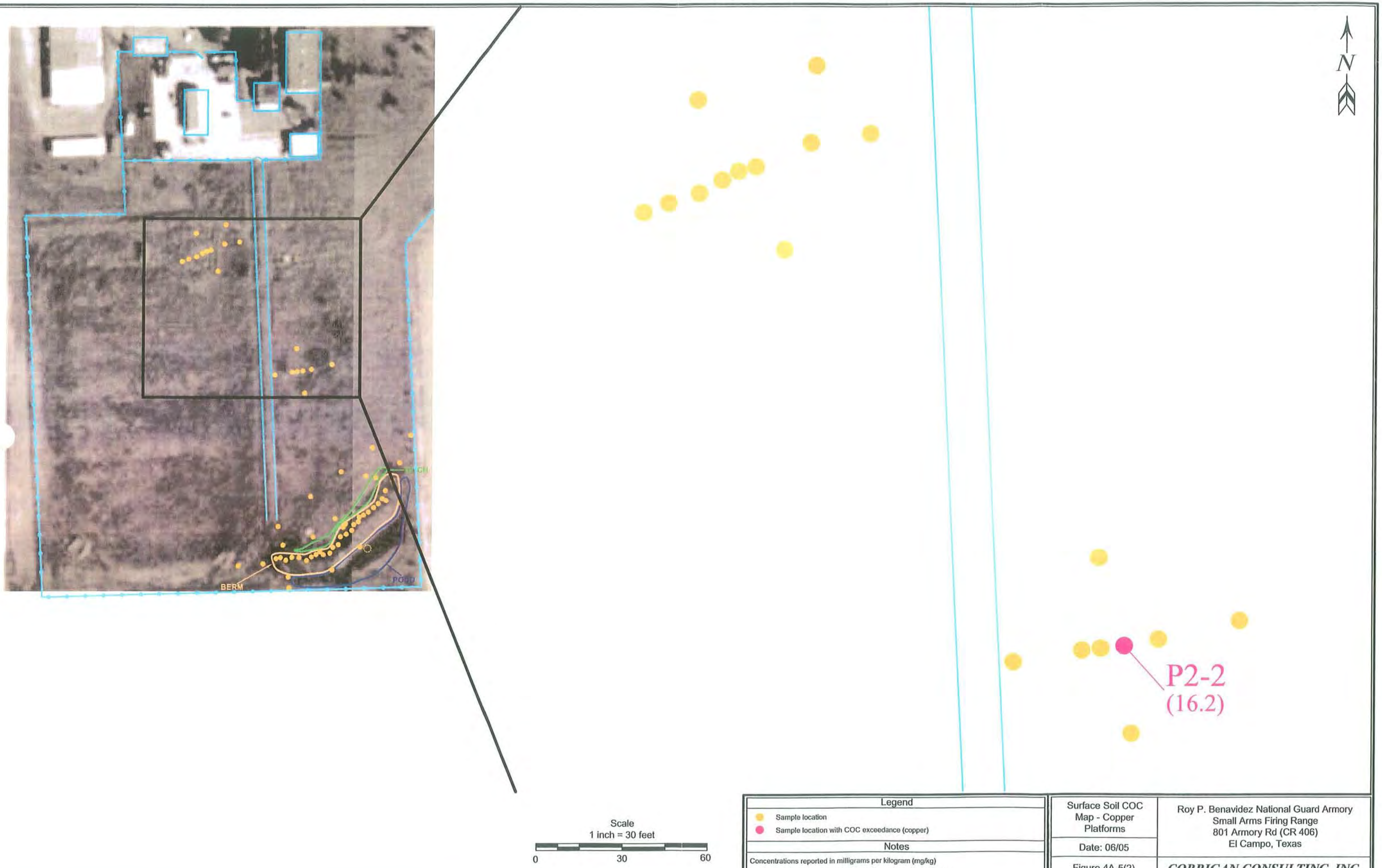
● Sample location with COC exceedance (copper)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Texas Specific Background Concentration (Copper) = 15 mg/kg

Surface Soil COC Map - Copper Backstop	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 06/05	
Figure 4A-5(1)	*CORRIGAN CONSULTING, INC.*



Legend
● Sample location
● Sample location with COC exceedance (copper)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Texas Specific Background Concentration (Copper) = 15 mg/kg

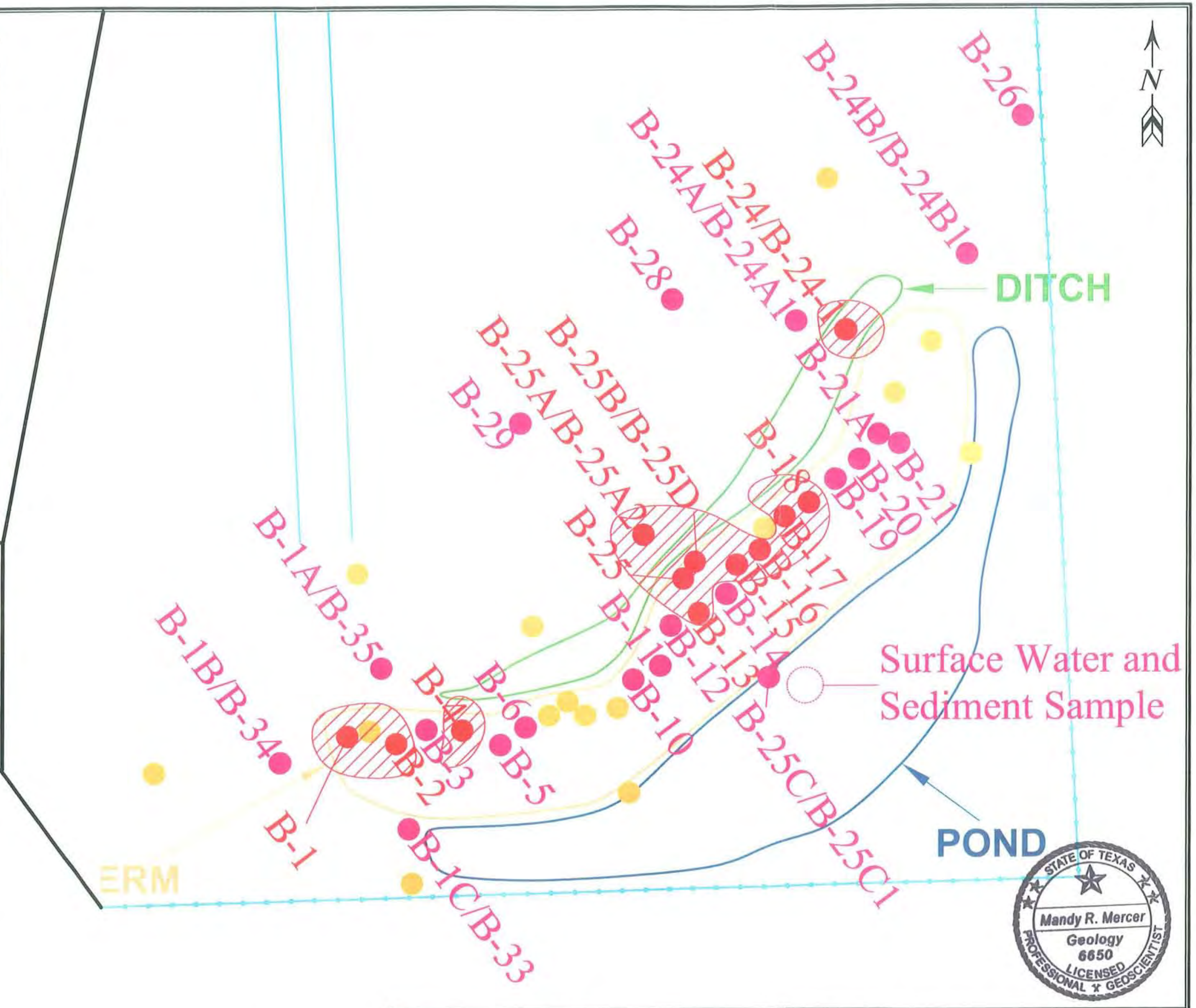
Surface Soil COC
Map - Copper
Platforms

Date: 06/05

Figure 4A-5(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration	Sample ID	Concentration	Sample ID	Concentration
B-1	**90.6**	B-13	**76.2**	B-24A	67
B-1A	30.5	B-14	20.4	B-24B	29.1
B-1B	28	B-15	**75.4**	B-24B1	20.1
B-1C	60.8	B-16	**103**	B-25	**8,840 D**
B-2	**393**	B-17	**128**	B-25A	**275**
B-3	31.7	B-18	**80.5**	B-25A2	20.9
B-4	**749**	B-19	51.5	B-25B	**670**
B-5	21.2	B-20	35.1	B-25C	17
B-6	62.4	B-21	65.2	B-25C1	15.5
B-10	18.3	B-21A	29.7	B-26	22.4
B-11	15.3	B-24	**79.4**	B-28	16.9
B-12	15.9	B-24-1	54.8	B-29	45.4

Scale
1 inch = 30 feet
0 30 60

Mandy R. Mercer
Geology
6650

Legend

●	Sample location
●	Sample location with COC exceedance (lead)
●	PCLE Zone (lead)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Lead) = 15 mg/kg
Critical PCL (Lead) = 70.23 mg/kg

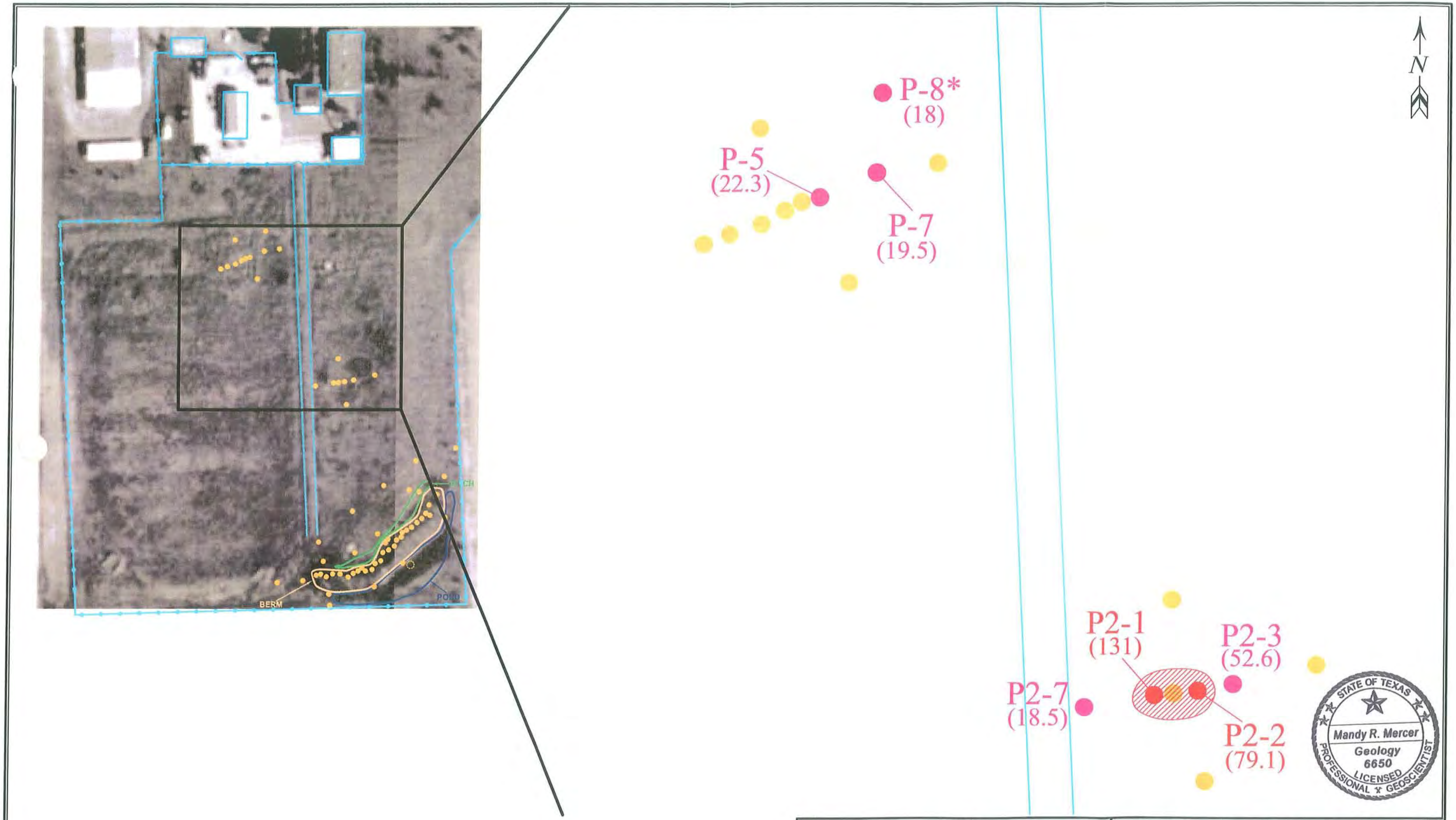
Surface Soil COC
Map - Lead
Backstop

Date: 06/05

Figure 4A-6(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED
PROFESSIONAL GEOSCIENTIST

Scale
1 inch = 30 feet
0 30 60

Legend
- ● Sample location
- ● Sample location with COC exceedance (lead)
- ● PCLE Zone (lead)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Lead) = 15 mg/kg
Critical PCL (Lead) = 70.23 mg/kg

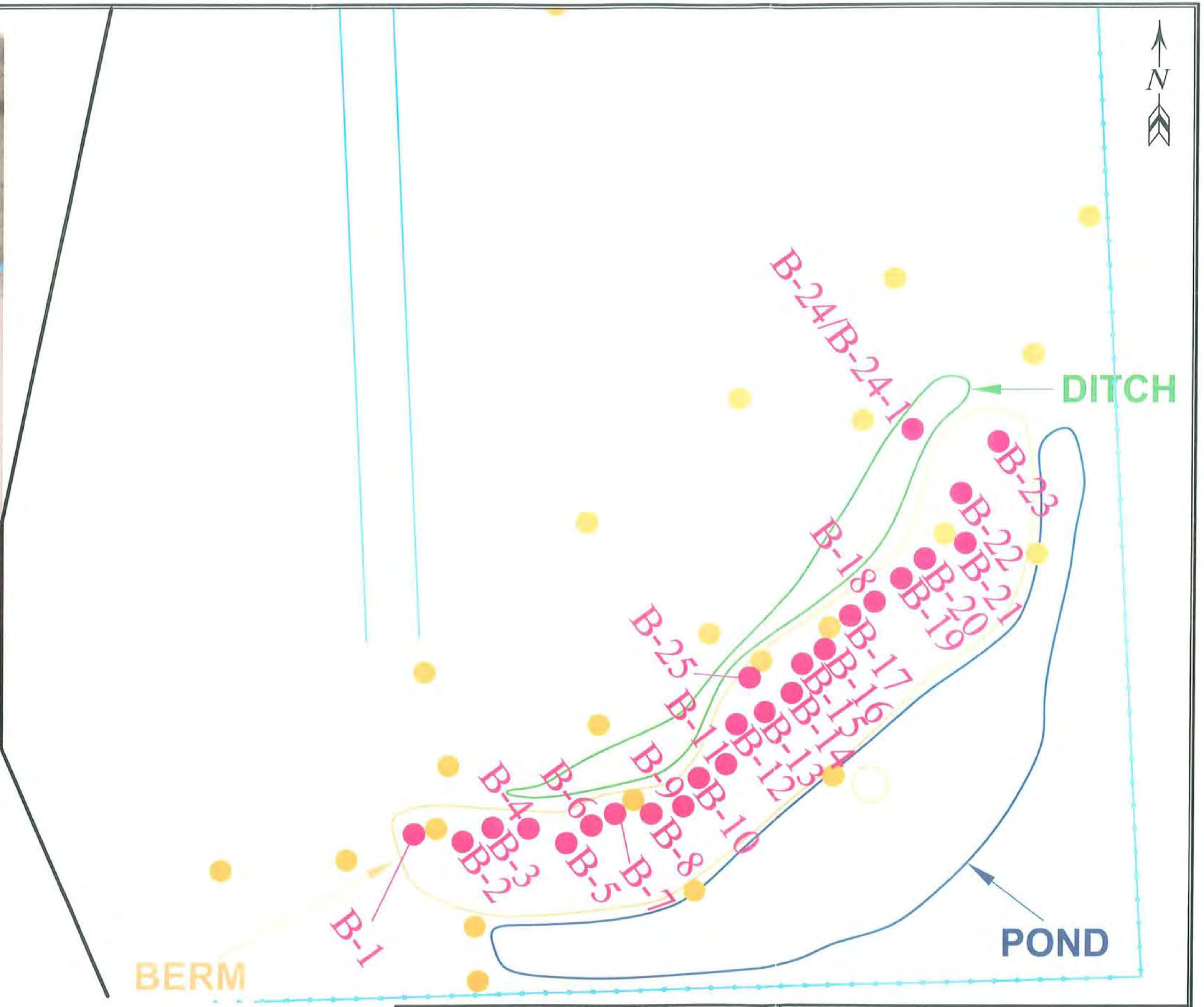
Surface Soil COC
Map - Lead
Platforms

Date: 06/05

Figure 4A-6(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
B-1	1,050
B-2	898
B-3	493
B-4	961
B-5	943
B-6	922
B-7	670
B-8	1,090
B-9	1,910
B-10	1,270
B-11	1,540
B-12	2,400

Sample ID	Concentration
B-13	2,080
B-14	1,670
B-15	1,160
B-16	2,120
B-17	1,630
B-18	1,090
B-19	850
B-20	1,010
B-21	651
B-22	1,030
B-23	988
B-24	620
B-25	1,250

Scale
1 inch = 30 feet
0 30 60

Legend

- ● Sample location
- ● Sample location with COC exceedance (magnesium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Magnesium) = 10 mg/kg

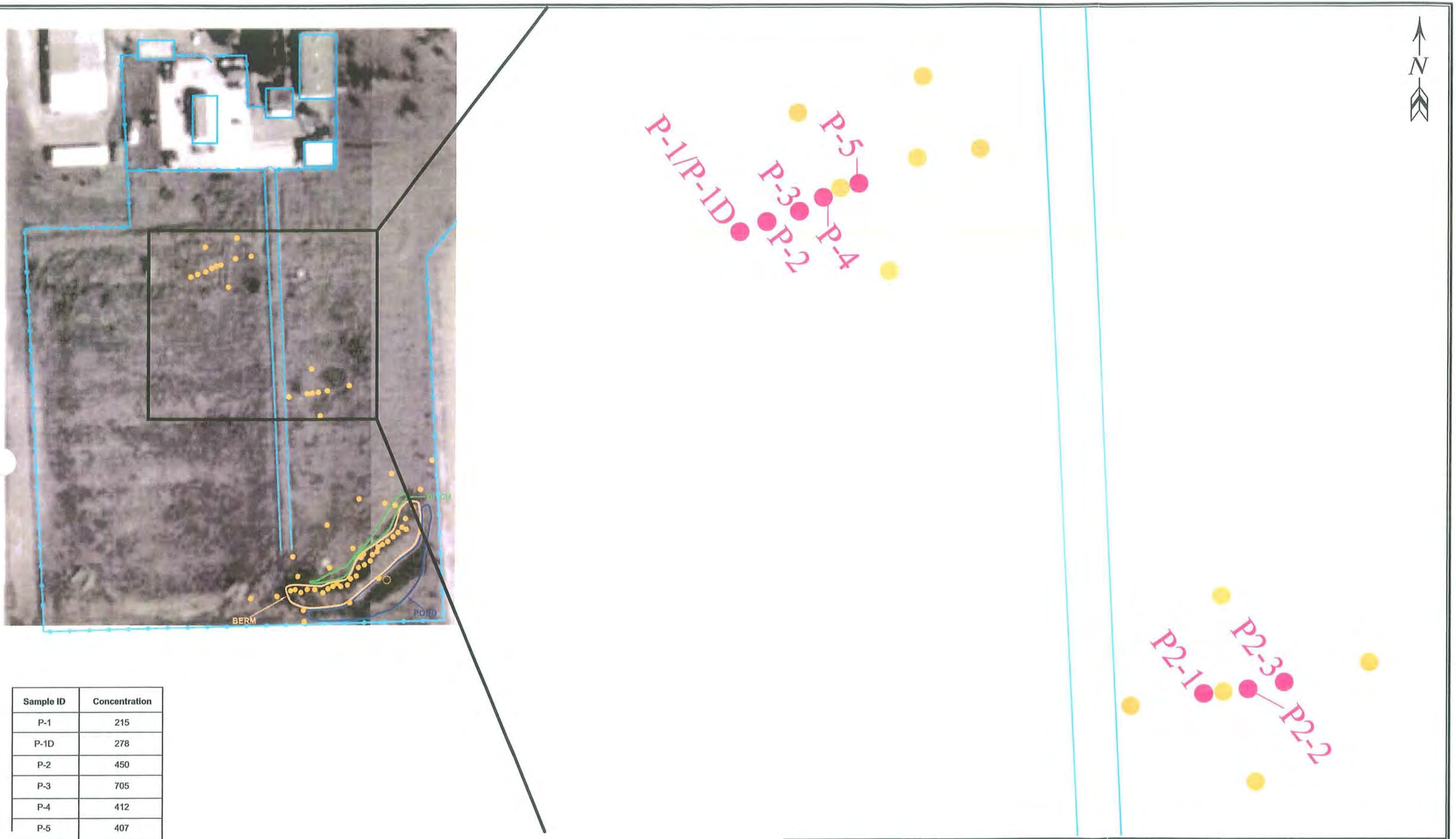
Surface Soil COC
Map - Magnesium
Backstop

Date: 06/05

Figure 4A-7(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
P-1	215
P-1D	278
P-2	450
P-3	705
P-4	412
P-5	407
P2-1	411
P2-2	237
P2-3	408

Scale
1 inch = 30 feet
0 30 60

Legend
- ● Sample location
- ● Sample location with COC exceedance (magnesium)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Magnesium) = 10 mg/kg

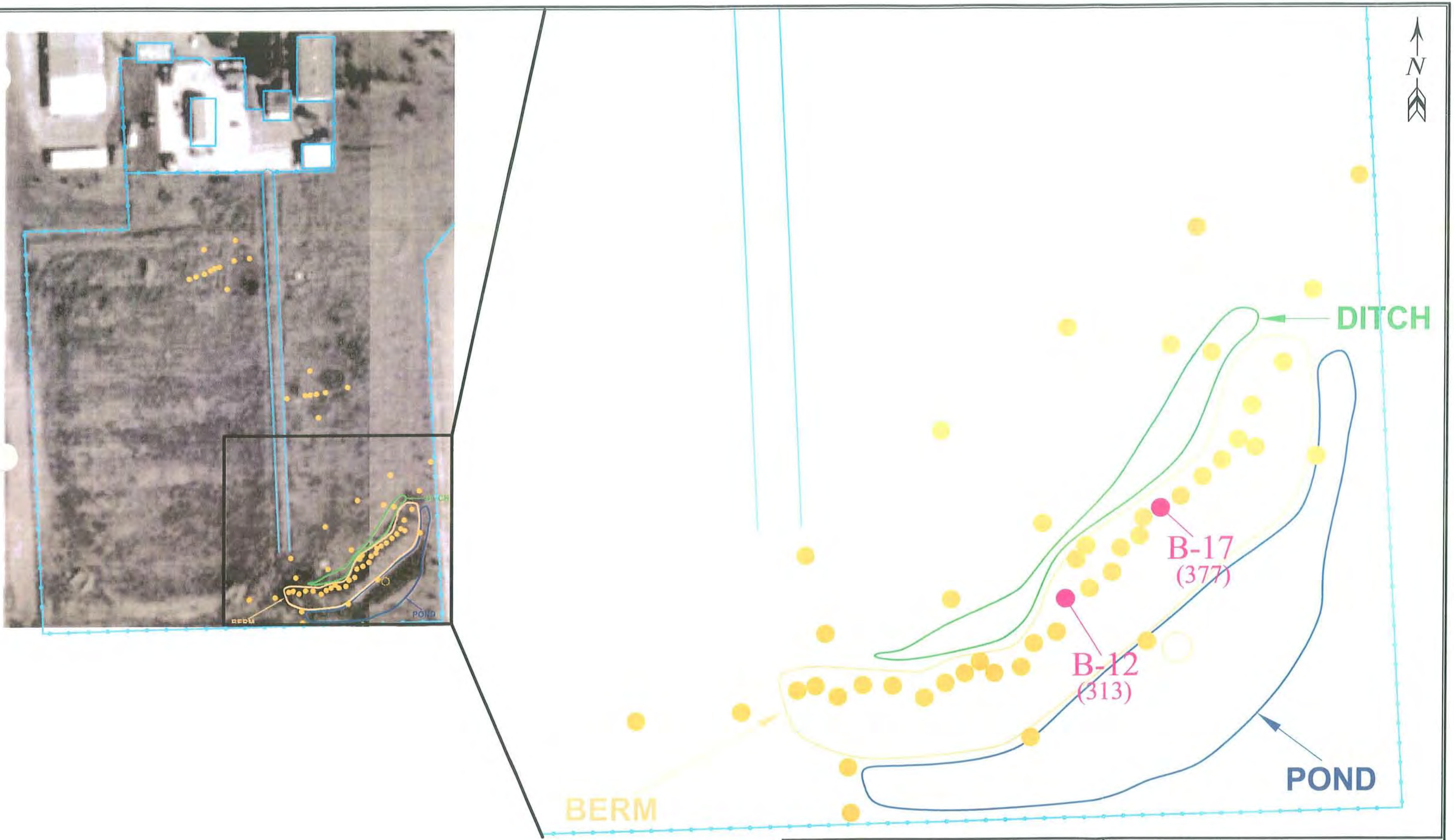
Surface Soil COC Map - Magnesium Platforms

Date: 06/05

Figure 4A-7(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend
- ● Sample location
- ● Sample location with COC exceedance (manganese)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Texas Specific Background Concentration (Manganese) = 300 mg/kg

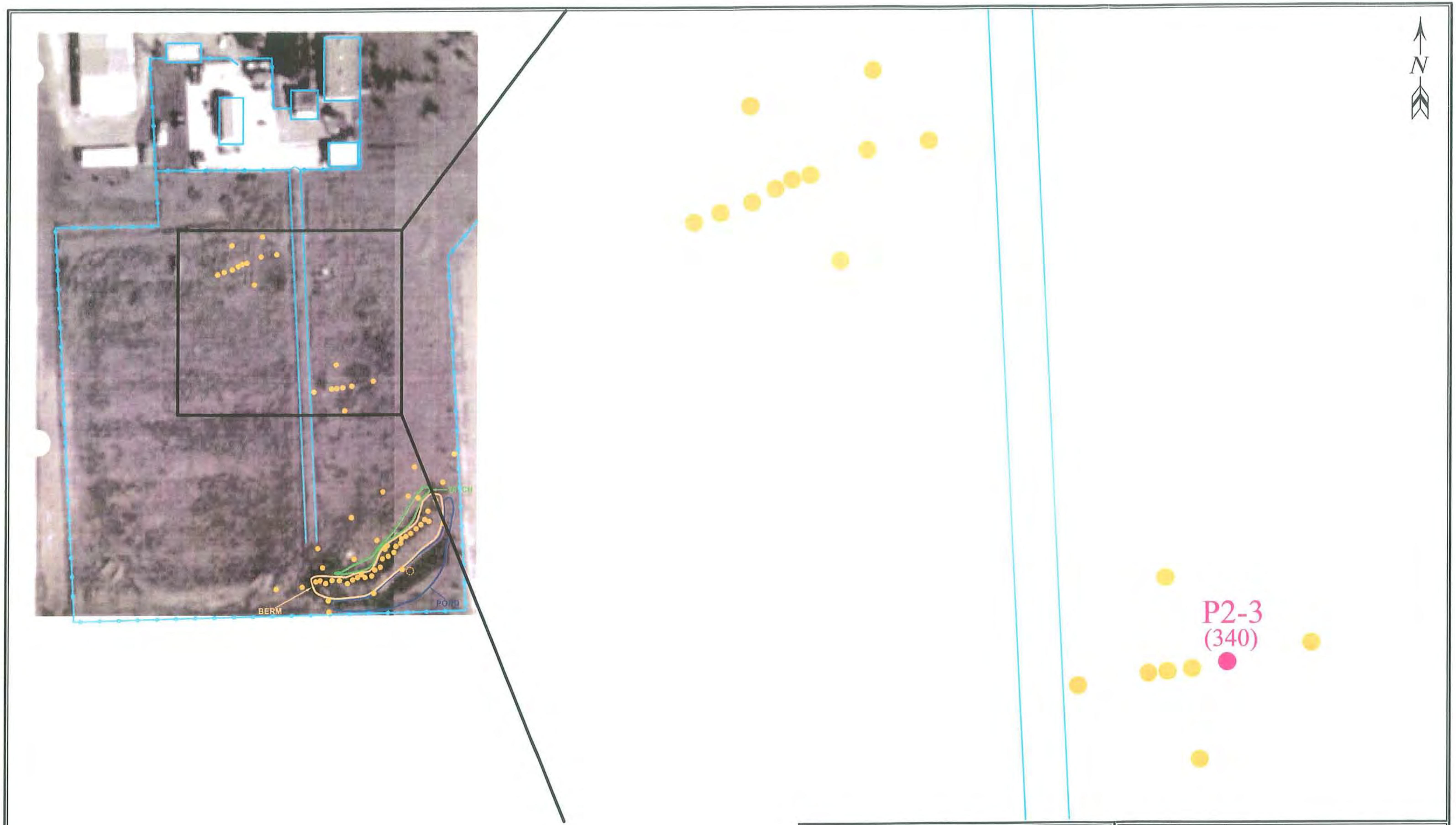
Surface Soil COC
Map - Manganese
Backstop

Date: 06/05

Figure 4A-8(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Legend
● Sample location
● Sample location with COC exceedance (manganese)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Manganese) = 300 mg/kg

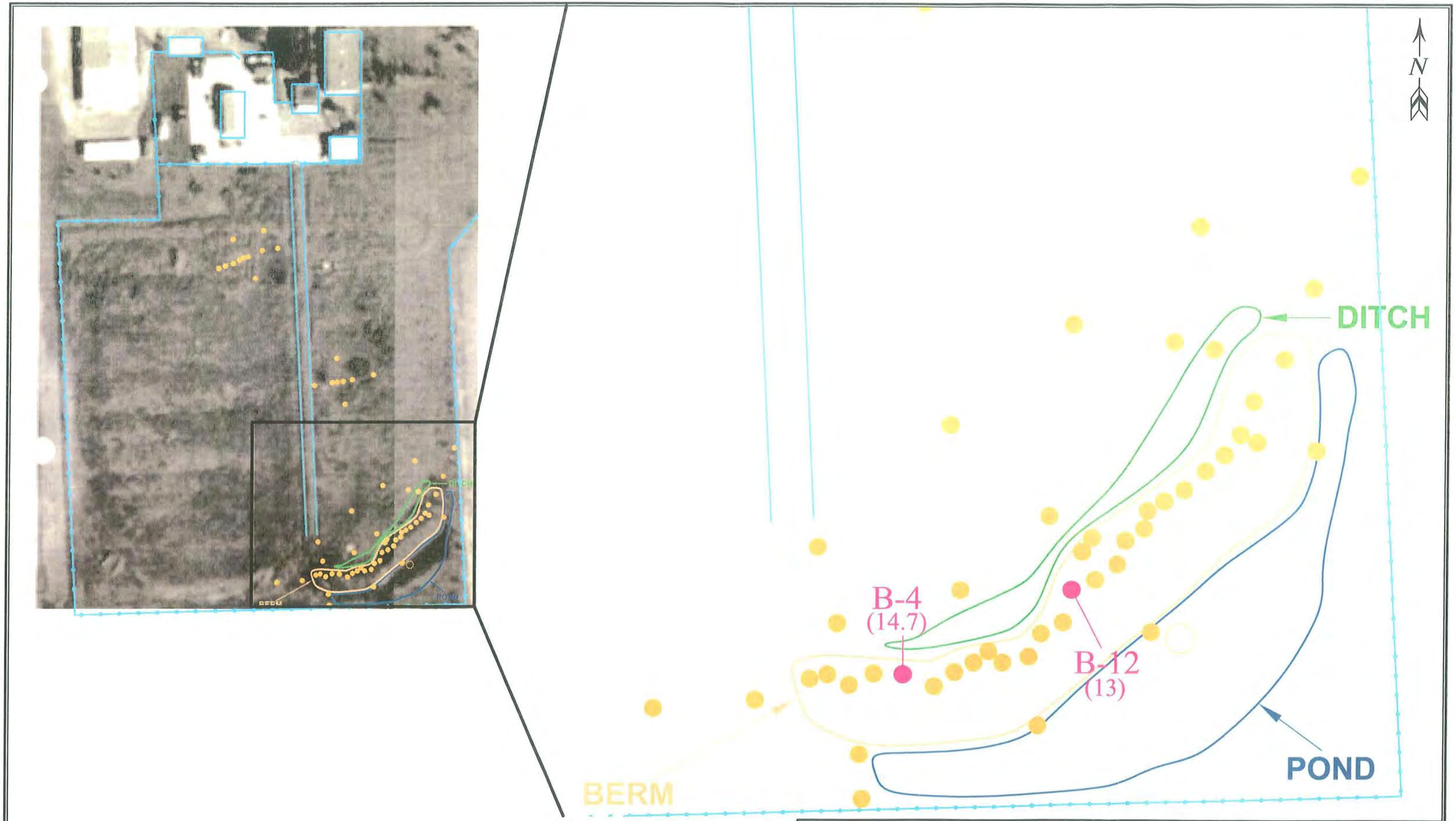
Surface Soil COC
Map - Manganese
Platforms

Date: 06/05

Figure 4A-8(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location

● Sample location with COC exceedance (nickel)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Texas Specific Background Concentration (Nickel) = 10 mg/kg

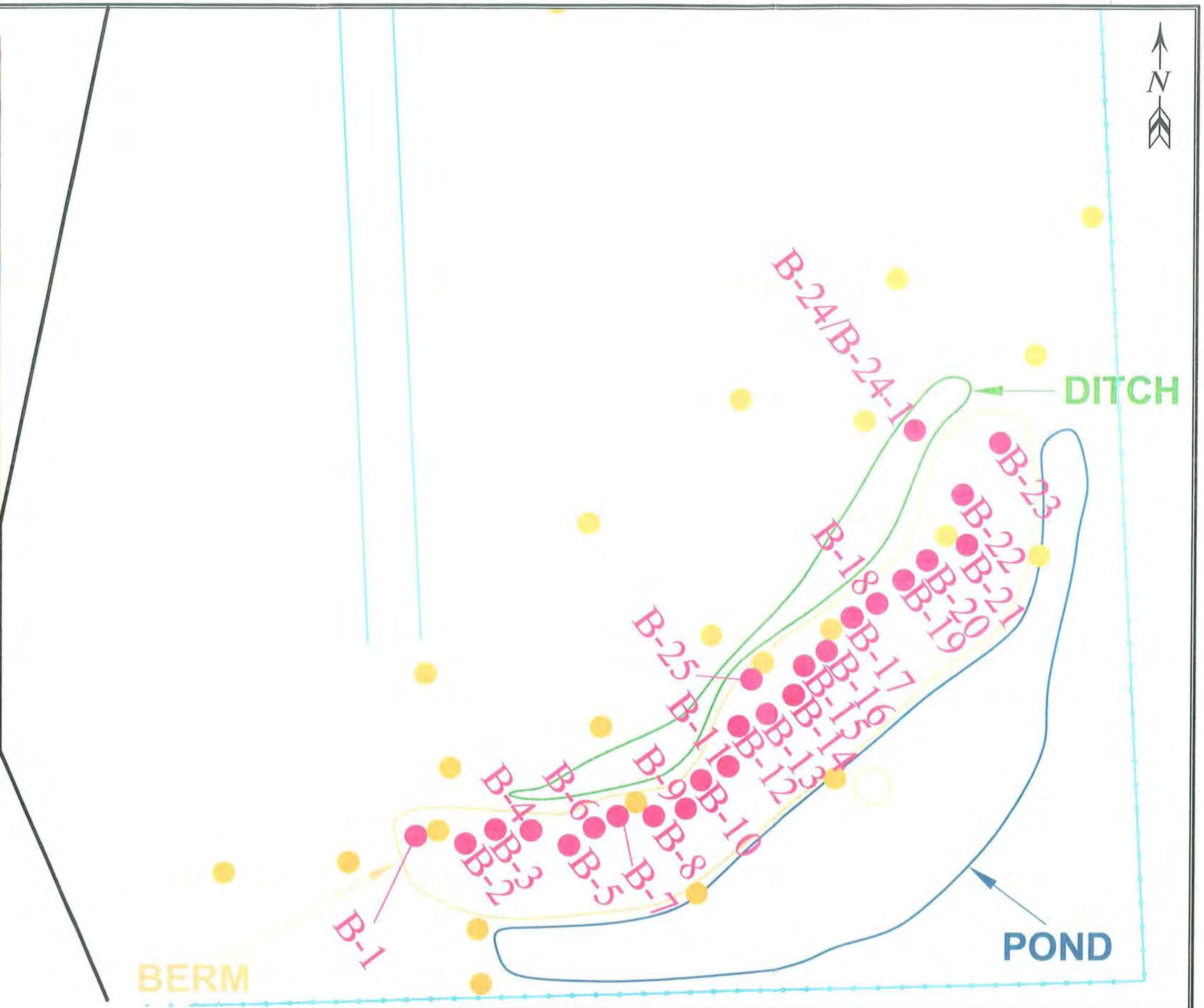
Surface Soil COC
Map - Nickel

Date: 06/05

Figure 4A-9

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
B-1	723
B-2	733
B-3	326
B-4	757
B-5	556
B-6	607
B-7	356
B-8	501
9	883
B-10	472
B-11	949
B-12	1,820

Sample ID	Concentration
B-13	1,680
B-14	911
B-15	321
B-16	1,790
B-17	1,450
B-18	875
B-19	787
B-20	981
B-21	619
B-22	614
B-23	885
B-24	1,020
B-25	574

Scale
1 inch = 30 feet
0 30 60

Legend

- ● Sample location
- ● Sample location with COC exceedance (potassium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Potassium) = 10 mg/kg

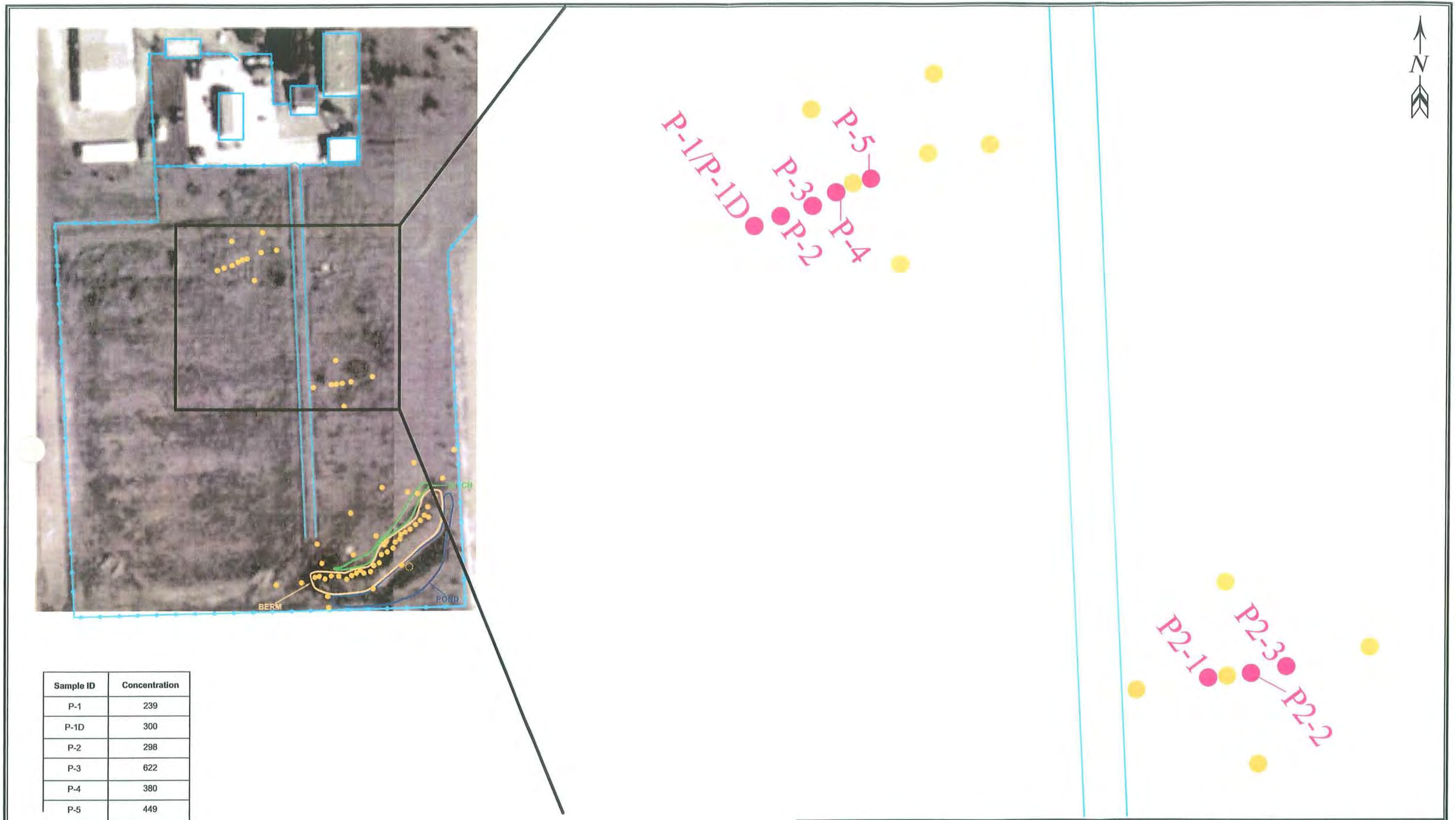
Surface Soil COC
Map - Potassium
Backstop

Date: 06/05

Figure 4A-10(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
P-1	239
P-1D	300
P-2	298
P-3	622
P-4	380
P-5	449
P2-1	767
P2-2	1,040
P2-3	1,030

Legend

●	Sample location
●	Sample location with COC exceedance (potassium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Potassium) = 10 mg/kg

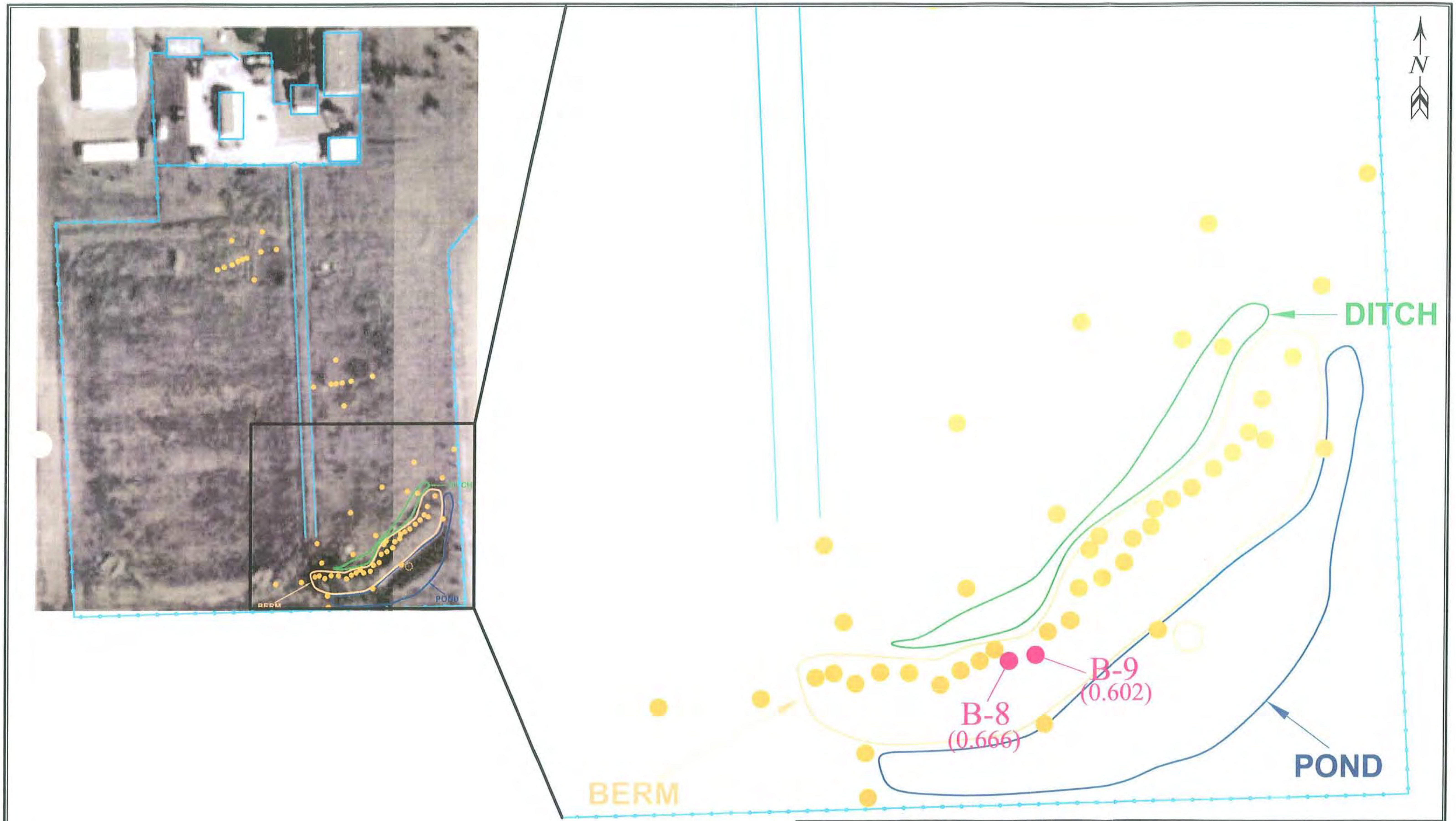
Surface Soil COC
Map - Potassium
Platforms

Date: 06/05

Figure 4A-10(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location

● Sample location with COC exceedance (silver)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Silver) = 0.24 mg/kg

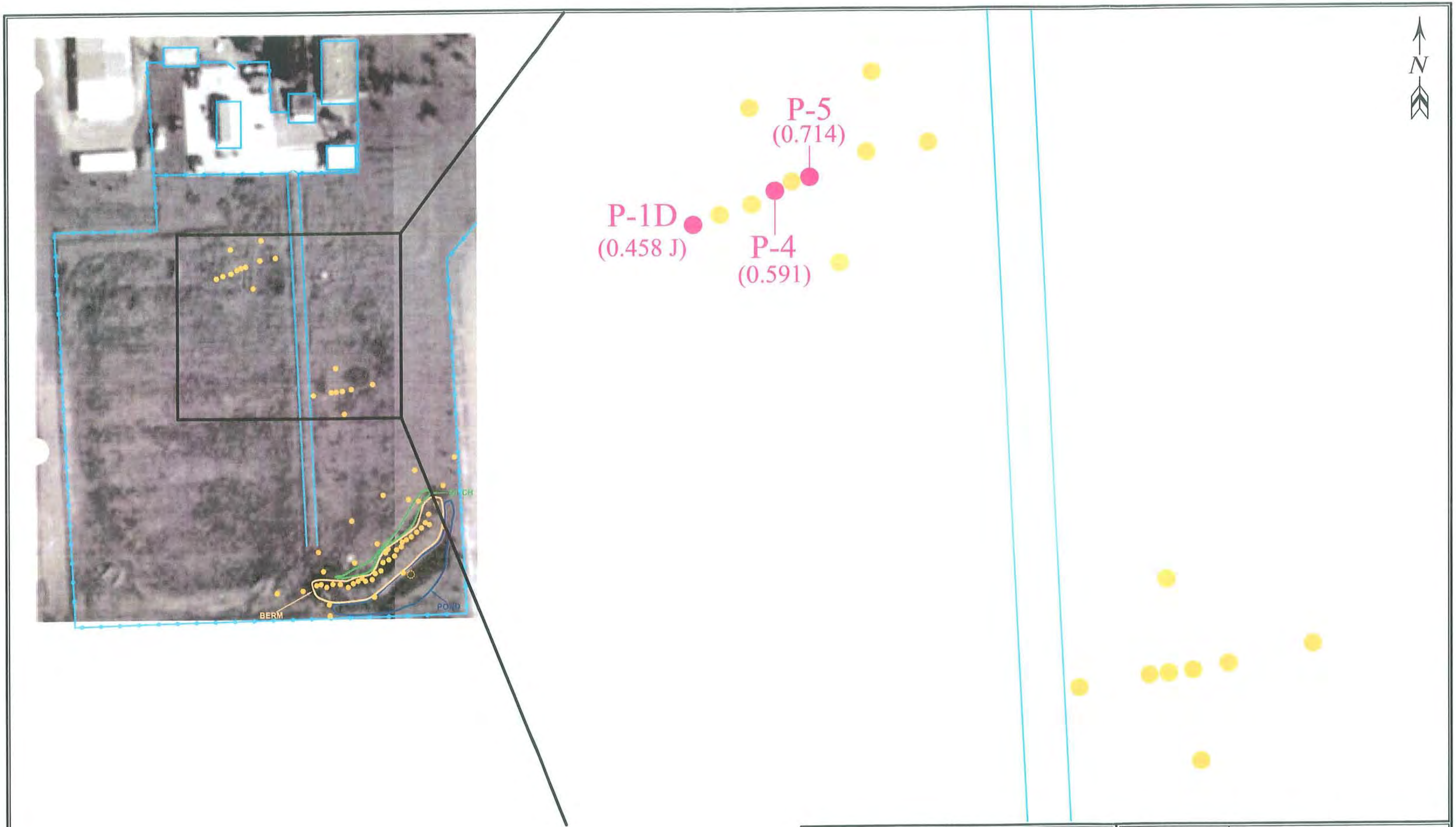
Surface Soil COC
Map - Silver
Backstop

Date: 06/05

Figure 4A-11(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

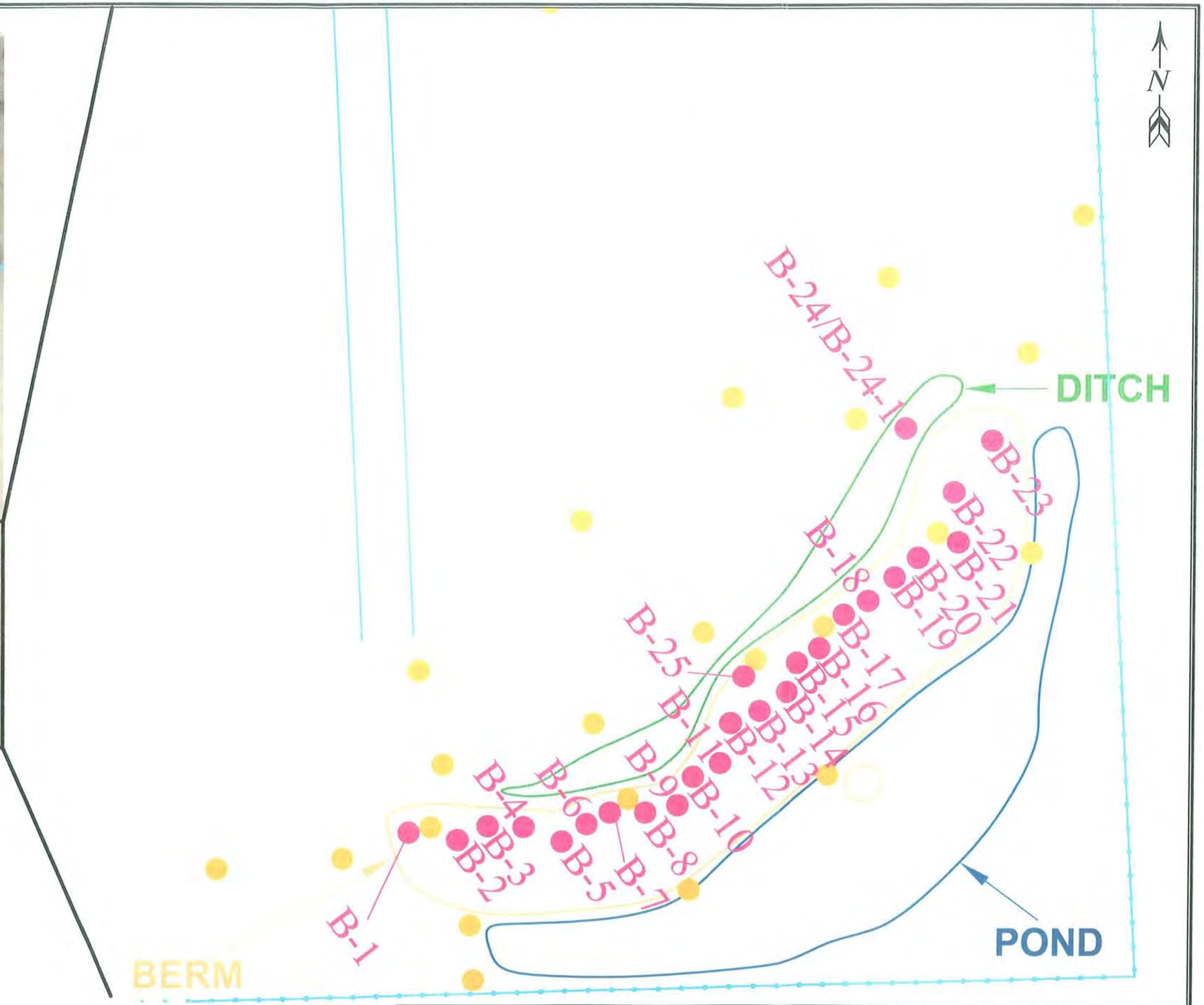
Legend

- ● Sample location
- ● Sample location with COC exceedance (silver)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Silver) = 0.24 mg/kg

Surface Soil COC Map - Silver Platforms	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 06/05	
Figure 4A-11(2)	*CORRIGAN CONSULTING, INC.*



Sample ID	Concentration
B-1	474
B-2	390
B-3	365
B-4	354
B-5	365
B-6	385
B-7	366
-8	447
9	906
B-10	880
B-11	695
B-12	846

Sample ID	Concentration
B-13	502
B-14	372
B-15	386
B-16	427
B-17	432
B-18	405
B-19	381
B-20	385
B-21	397
B-22	347
B-23	410
B-24	398
B-25	477

Scale
1 inch = 30 feet
0 30 60

Legend
- ● Sample location
- ● Sample location with COC exceedance (sodium)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Sodium) = 25 mg/kg

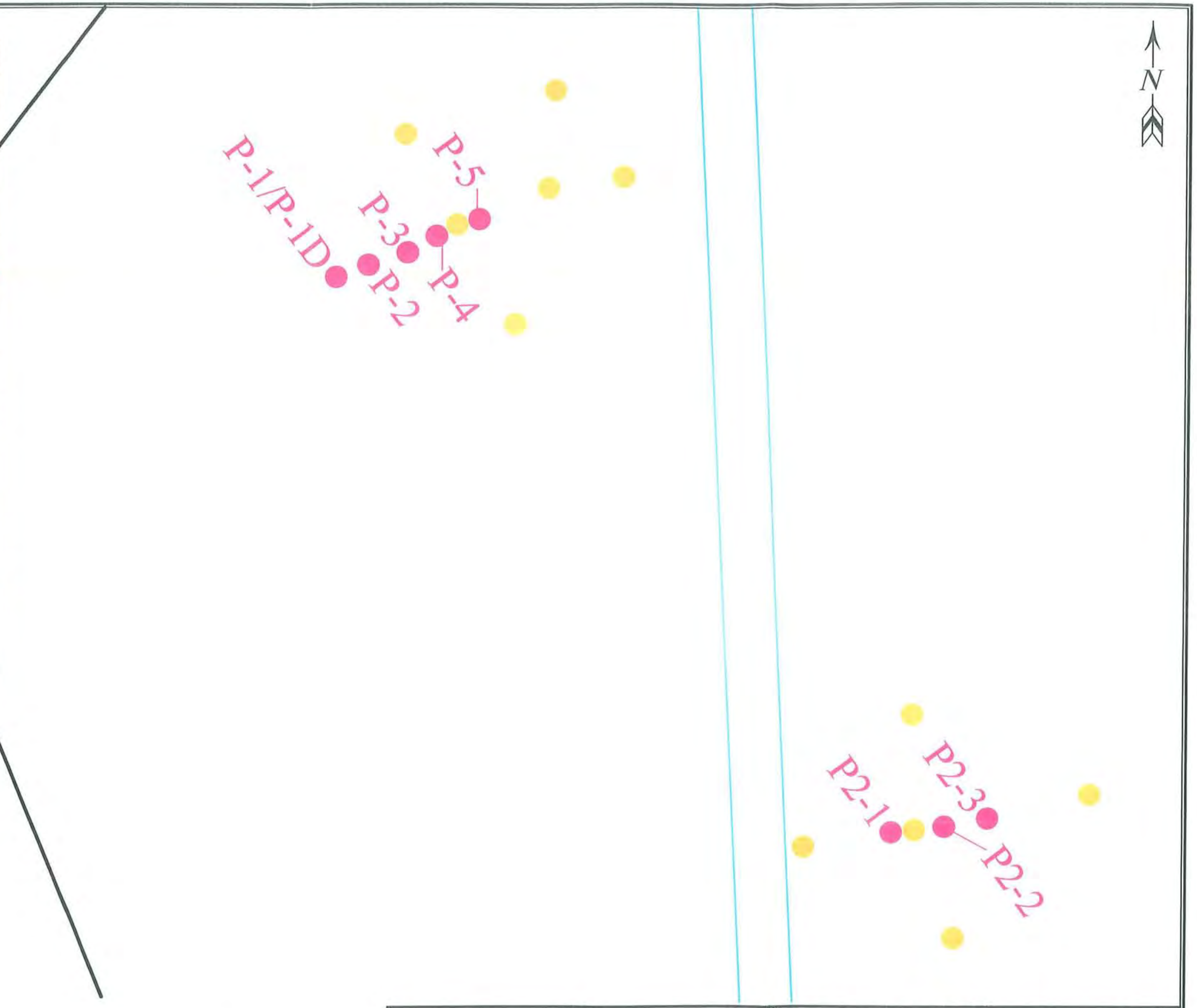
Surface Soil COC Map - Sodium Backstop

Date: 06/05

Figure 4A-12(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Sample ID	Concentration
P-1	410
P-1D	364
P-2	486
P-3	409
P-4	371
P-5	338
P2-1	65.3
P2-2	52.9
P2-3	77.1

Scale
1 inch = 30 feet
0 30 60

Legend

- 🟡 Sample location
- 🔴 Sample location with COC exceedance (sodium)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Laboratory MQL (Sodium) = 25 mg/kg

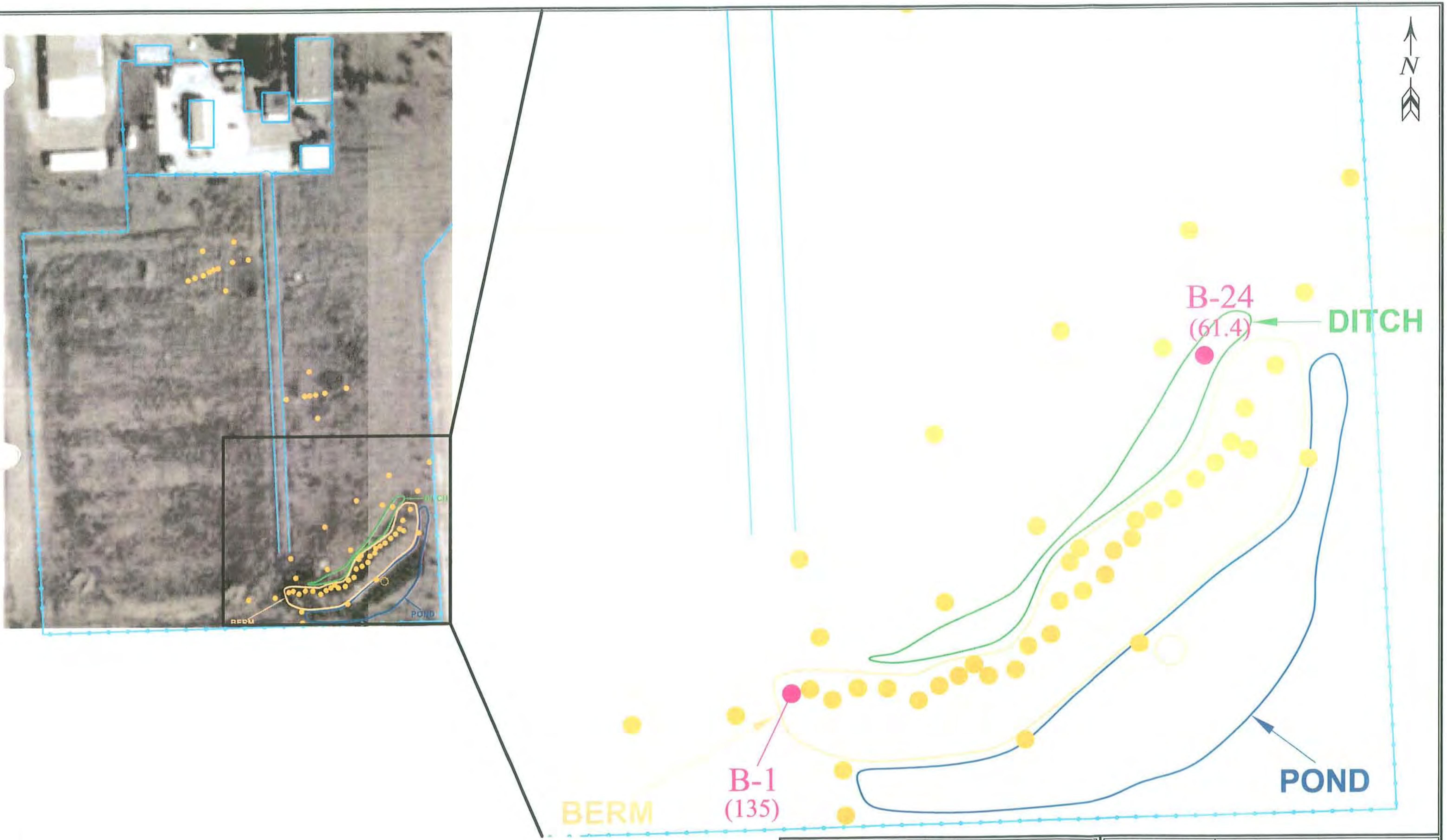
Surface Soil COC
Map - Sodium
Platforms

Date: 06/05

Figure 4A-12(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend

- ● Sample location
- ● Sample location with COC exceedance (zinc)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Zinc) = 30 mg/kg

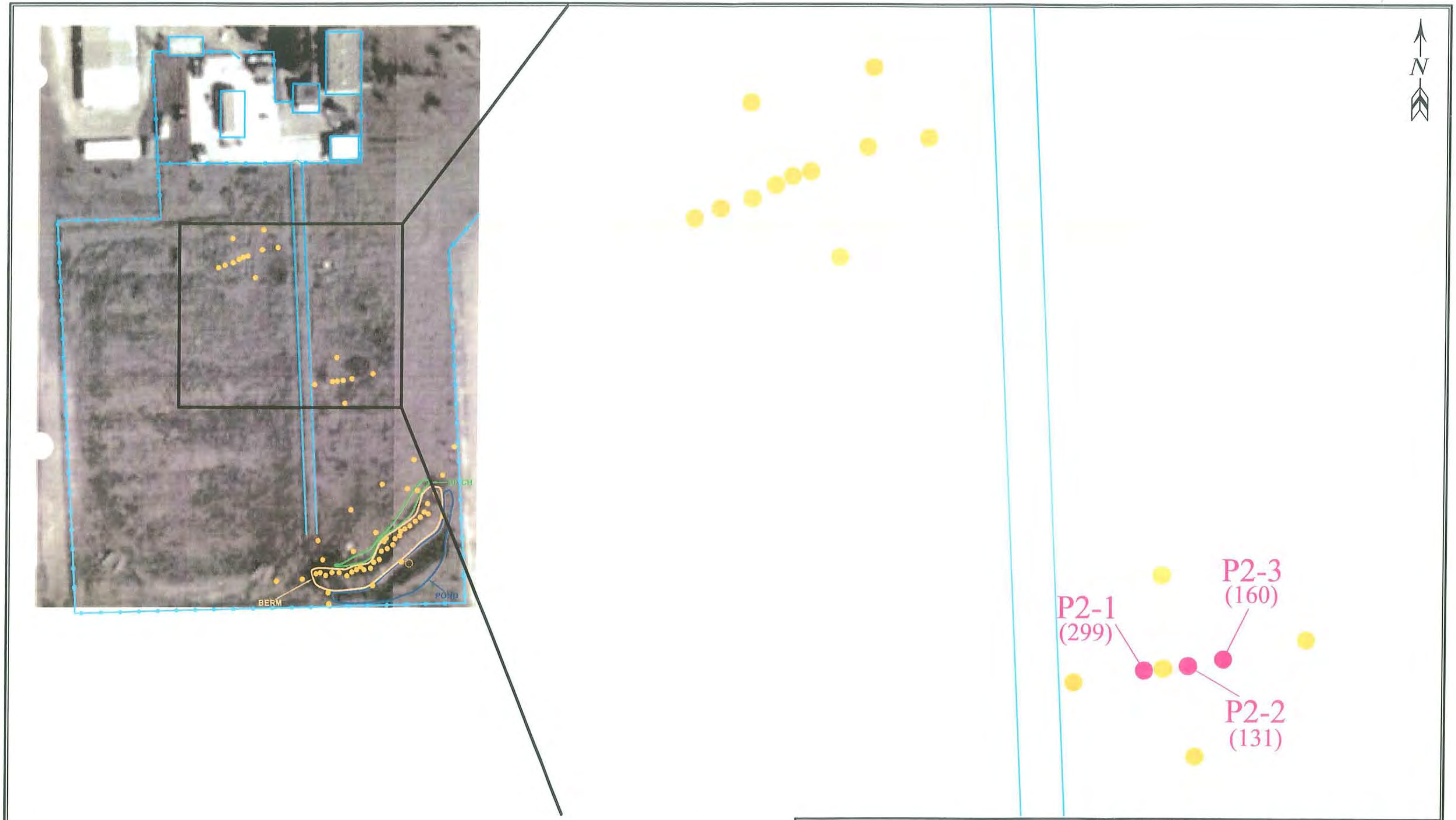
Surface Soil COC
Map - Zinc
Backstop

Date: 06/05

Figure 4A-13(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (zinc)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Zinc) = 30 mg/kg

Surface Soil COC
Map - Zinc
Platforms

Date: 06/05

Figure 4A-13(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

Section 5 Groundwater Assessment

Section 5.1 Derivation of Assessment Levels

Not applicable – groundwater was not assessed during this investigation

Section 5.2 Nature and Extent of COCs and NAPL in Groundwater

Not applicable – groundwater was not assessed during this investigation

Table 5A – Groundwater Residential Assessment Levels

COC	$^{GW}GW_{Ing}$ or $^{GW}GW_{Class3}$ (mg/L)	$^{Air}GW_{Inh\text{-}V}$		^{SW}GW[1] (mg/L)	^{Sed}GW[16] (mg/L)	MQL (mg/L)	Background (mg/L)	Maximum concentration			
		(mg/L)	Source area size (acres)					Sample ID	Sample depth (ft)	Sample date	Conc (mg/L)
Not applicable – groundwater was not assessed during this investigation											

Table 5B - Groundwater Data Summary
Not applicable – groundwater was not assessed during this investigation

Table 5C - Groundwater Geochemical Data Summary
Not applicable – groundwater was not assessed during this investigation

Table 5D - Groundwater Measurements
Not applicable – groundwater was not assessed during this investigation

Figure 5A - Groundwater Gradient Map
Not applicable – groundwater was not assessed during this investigation

Figure 5B - Groundwater COC Concentration Maps
Not applicable – groundwater was not assessed during this investigation

Figure 5C - Groundwater Geochemistry Maps
Not applicable – groundwater was not assessed during this investigation

Figure 5D - Cross Section Groundwater-to-Surface Water Pathway
Not applicable – groundwater was not assessed during this investigation

---

[1] PCLs for these pathways are not applicable to all sites. Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine when to calculate a PCL for this pathway.

Section 6 Surface Water Assessment and Critical PCL Development

Section 6.1 Type of Surface Water and Applicable Water Quality Criteria

Located on the property, there is a pond that has developed in a low-lying area behind the backstop on the southeastern side where soil was removed to construct the backstop/berm. Over time, water from rainfalls and surface runoff accumulated in the low-lying area. This pond was observed during all three site visits (September 2003, November 2003, and June 2004) and is presumably perennial. The pond is approximately 0.2-acre in size. The pond is not listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 – 307.10. It is an individual feature with no segments or fingers. The pond is not a source of drinking water for humans and is not used for recreational purposes. Based on the information provided in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded and the nearest water body considered surface waters of the State is Tres Palacious Creek located approximately one-quarter mile east of the nearest affected property.

Section 6.2 Surface Water Risk-Based Exposure Levels (RBELs) for Human Health and Aquatic Life Protection

Not applicable – surface water samples were not collected from Tres Palacious Creek.

Section 6.3 Nature and Extent of COCs in Surface Water

Not applicable – surface water samples were not collected from Tres Palacious Creek.

Section 6.4 Critical PCL for Surface Water

Not applicable – surface water samples were not collected from Tres Palacious Creek.

Table 6A - Surface Water Critical PCLs

COC	Background (mg/L)	MQL (mg/L)	Human Health[1] ($^{SW}SW_{HH}$)				Aquatic Life and Ecological[2] ($^{SW}SW_{eco}$)			^{SW}SW petroleum f discharge (mg/L)
					Contact recreation					
			Water and fish (mg/L)	Fish only (mg/L)	Incidental ingestion (mg/L)	Dermal contact (mg/L)	Acute (mg/L)	Chronic (mg/L)	Wildlife receptors (mg/L)	
Not applicable – surface water samples were not collected from Tres Palacious Creek										

Following Pages:

Table 6B - Surface Water Data Summary

Based on the information provided in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded from consideration as surface waters in the State. Surface water samples were not collected from Tres Palacious Creek. However, a surface water sample was collected from the pond located on the southeast side of the backstop. The sample location and results are included on Figure 6A.

Figure 6A - Surface Water PCLE Zone Map

Based on the information provided in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded from consideration as surface waters in the State. Surface water samples were not collected from Tres Palacious Creek. However, a surface water sample wasa collected from the pond located on the southeast side of the backstop. The sample location and results are included on Figure 6A.

Figure 6B - Photographs

Not applicable – photographs of Tres Palacious Creek were not taken.

---

[1] $^{SW}SW_{HH}$ – Surface water PCL protective of human health.

[2] $^{SW}SW_{eco}$ – Surface water PCL protective of aquatic life and wildlife ecological receptors. If a PCL was not developed under an ecological risk assessment, provide the value used (benchmark, MQL, background, or human health PCL), as appropriate.

[3] ^{SW}SW – Surface water PCL for discharge of petroleum fuel contaminated water. See Section 3.4 of *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24).

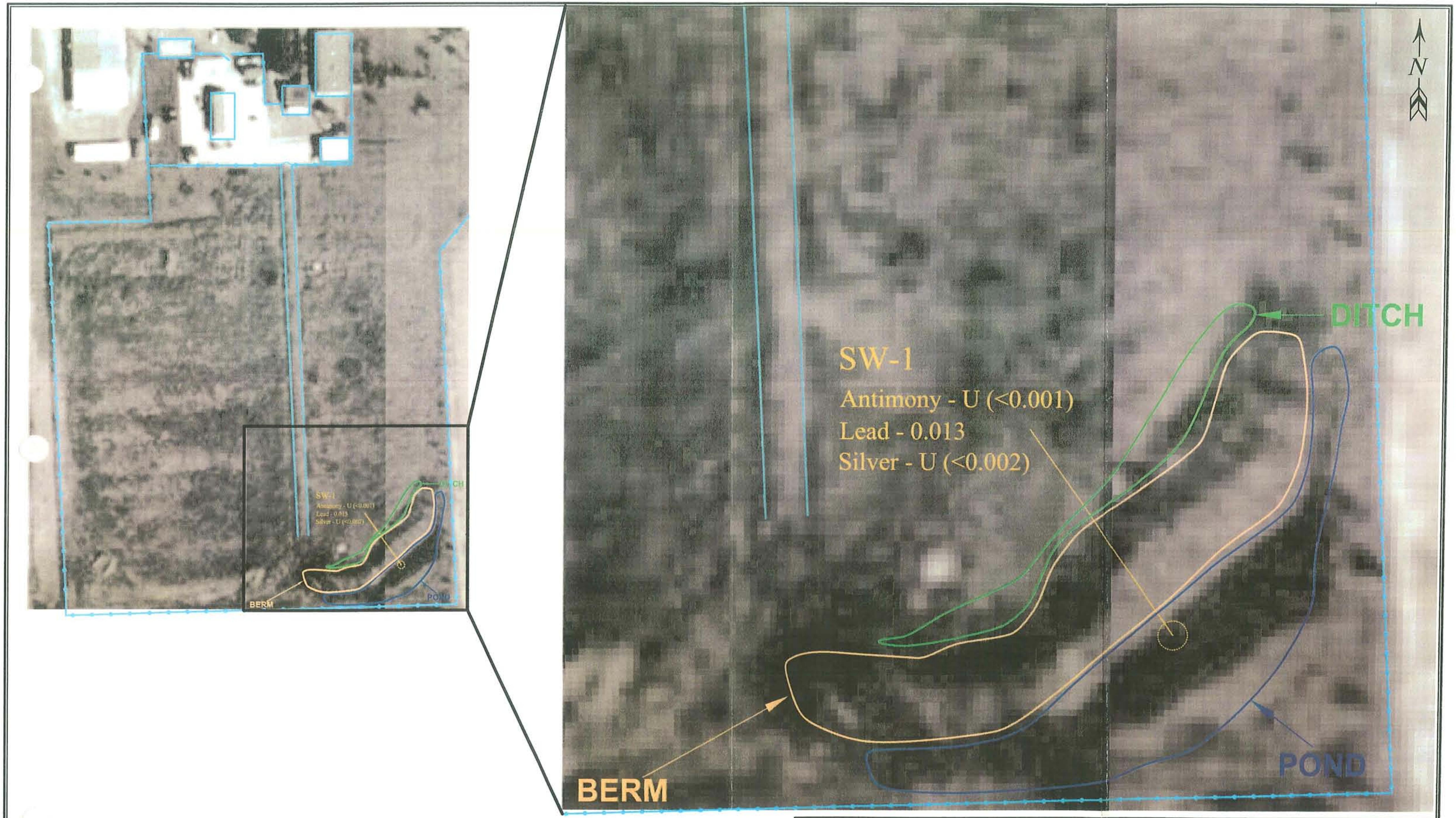
[4] Document the development of representative concentrations in Appendix 8.

TABLE 6B
Surface Water Data Summary

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Date		Antimony	Lead	Silver
		CAS	7440-36-0	7439-92-1	7440-22-4
		MQL	0.25	0.1	0.24
Surface Water Samples (mg/L)					
SW-1	06/02/04		U (<0.001)	0.013	U (<0.002)
SW-1D	06/02/04		U (<0.001)	0.013	U (<0.002)
Eco Risk Screening Level Benchmarks - Chronic			**0.692**	**0.0023**	**0.00062**

Notes:
CAS - chemical identification number
MQL - method quantitation limit
mg/L - milligrams per liter or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
Metals analysis by Method EPA 6020



Scale
1 inch = 30 feet
0 30 60

Legend

○ Surface water sample location

Notes

Concentrations reported in milligrams per liter (mg/L).

Surface Water PCLE
Zone Map

Date: 06/05

Figure 6A

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

Section 7 Sediment Assessment and Critical PCL Development

Section 7.1 Type of Sediment and Applicable Criteria

Located on the property, there is a pond that has developed in a low-lying area behind the backstop on the southeastern side where soil was removed to construct the backstop/berm. Over time, water from rainfall and surface runoff accumulated in the low-lying area and sediment has also accumulated. This pond was observed during all three site visits (September 2003, November 2003, and June 2004) and is presumably perennial. The pond is approximately 0.2-acre in size. The pond is not listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 – 307.10. It is an individual feature with no segments or fingers. The pond is not a source of drinking water for humans and is not used for recreational purposes. Based on the information provided in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded and the nearest water body considered surface waters of the State is Tres Palacious Creek located approximately one-quarter mile east of the nearest affected property.

Section 7.2 Sediment Risk-based Exposure Levels (RBELs) for Human Health

Not applicable – sediment samples were not collected from Tres Palacious Creek.

Section 7.3 Nature and Extent of COCs in Sediment

Not applicable – sediment samples were not collected from Tres Palacious Creek.

Section 7.4 Critical PCL for Sediment

Not applicable – sediment samples were not collected from Tres Palacious Creek.

Table 7A - Sediment Critical PCLs

COC	MQL (mg/kg)	Background (mg/kg)	Human Health ($^{Sed}Sed_{HH}$)[1]			Ecological ($^{Sed}Sed_{Eco}$)[2]		Conc (mg/kg)	
			Contact recreation		Ingestion of impacted fish/shellfish (mg/kg)				
			Incidental ingestion (mg/kg)	Dermal contact (mg/kg)		Benthics (mg/kg)	Wildlife receptors/fish (mg/kg)	Max	Rep[3]
Not applicable – sediment samples were not collected from Tres Palacious Creek									

Following Pages:

Table 7B - Sediment Data Summary

Based on the information provided in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded from consideration as surface waters in the State. Sediment samples were not collected from Tres Palacious Creek. However, a sediment sample was collected from the pond located on the southeast side of the backstop. The sample location and results are included on Figure 7A.

Figure 7A - Sediment PCLE Zone Map

however based on the information provided in 1)a and 1)b of Attachment 2A, Tier 1 Exclusion Criteria Checklist, the pond is not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State, and the pond is not consistently or routinely utilized as *valuable* habitat for natural communities, therefore the pond is excluded from consideration as surface waters in the State. Sediment samples were not collected from Tres Palacious Creek. However, a sediment sample was collected from the pond located on the southeast side of the backstop. The sample location and results are included on Figure 7A.

---

[1] $^{Sed}SED_{HH}$ – Sediment PCL protective of human health.

[2] $^{Sed}SED_{Eco}$ – Sediment PCL protective of ecological receptors. If a PCL was not developed under an ecological risk assessment, provide the value (benchmark, background, MQL, or human health PCL) used, as appropriate.

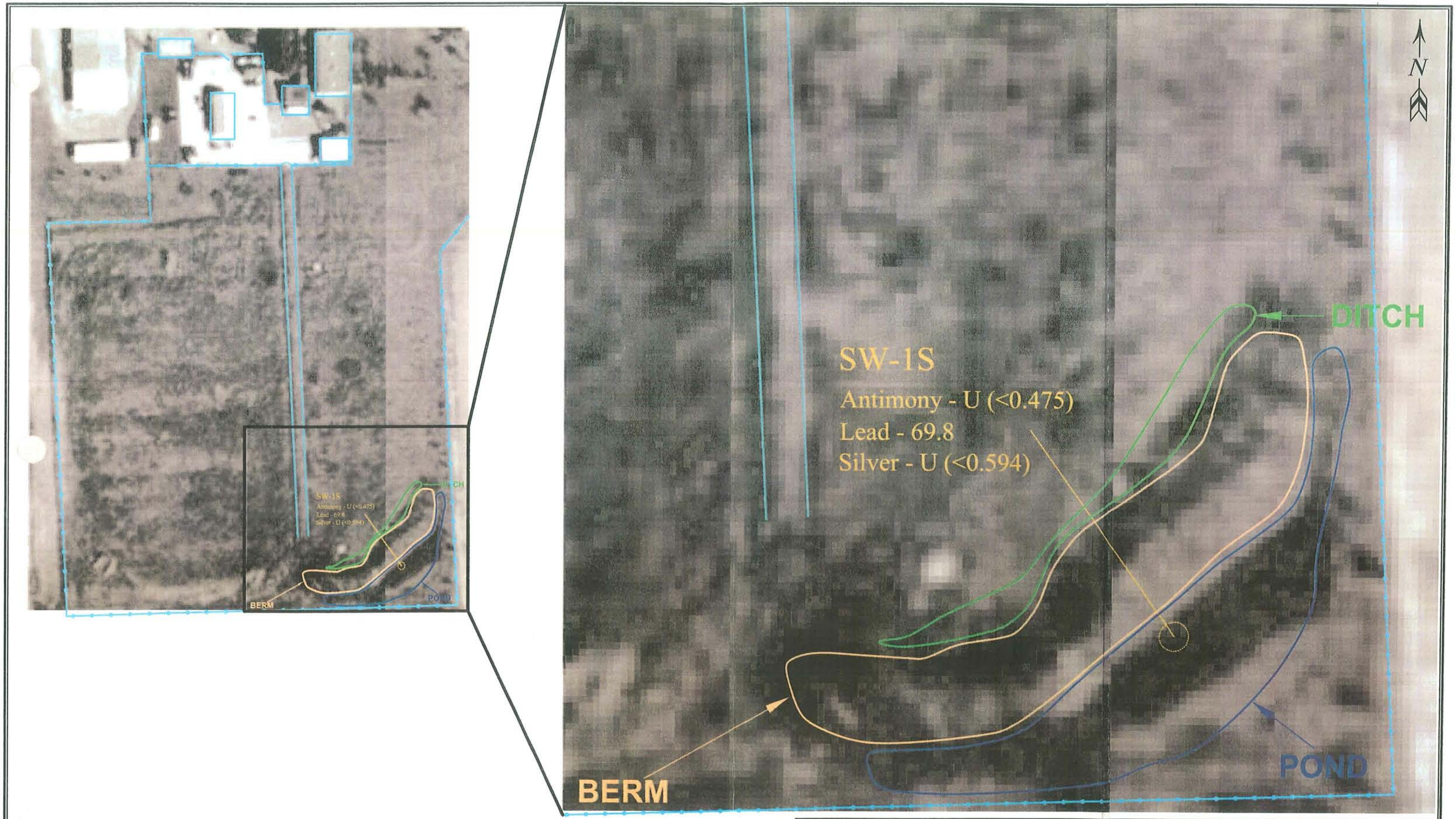
[3] Document the development of representative concentrations in Appendix 8.

TABLE 7B
Sediment Data Summary

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date		Antimony	Lead	Silver
			CAS	7440-36-0	7439-92-1	7440-22-4
			MQL	0.25	0.1	0.24
Sediment Samples (mg/kg)						
SW-1S	0 - 0.5	06/02/04		U (<0.475)	69.8	U (<0.594)
SW1SD	0 - 0.5	06/02/04		U (<0.561)	67.2	U (<0.701)
Eco Risk Screening Level Benchmarks - Chronic				**2**	**35**	**1**
Eco Risk Screening Level Benchmarks - Acute				**25**	**91**	**2.2**

Notes:
ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/kg - milligrams per kilogram or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
Metals analysis by Method EPA 6020



Scale
1 inch = 30 feet
0 30 60

Legend

○ Surface water sample location

Notes

Concentrations reported in milligrams per liter (mg/L)

Sediment PCLE Zone Map

Date: 06/05

Figure 7A

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

Section 8 Air Assessment and Critical PCL Development

Section 8.1 Risk-Based Exposure Levels

Not applicable – Air was not assessed during this investigation

Section 8.2 Nature and Extent of COCs in Air

Not applicable – Air was not assessed during this investigation

Table 8A - Outdoor Air Data Summary

Not applicable – Air was not assessed during this investigation

Figure 8A - Outdoor Air COC Concentration Maps

Not applicable – Air was not assessed during this investigation

Section 9 Ecological Risk Assessment

Not applicable - the affected property did not fail the Tier 1 Ecological Exclusion Criteria Checklist (Attachment 2A).

Reasoned Justification

Not applicable - the affected property did not fail the Tier 1 Ecological Exclusion Criteria Checklist (Attachment 2A).

Expedited Stream Evaluation

Not applicable - the affected property did not fail the Tier 1 Ecological Exclusion Criteria Checklist (Attachment 2A).

Tier 2 Screening Level Ecological Risk Assessment (SLERA)

Not applicable - the affected property did not fail the Tier 1 Ecological Exclusion Criteria Checklist (Attachment 2A).

Tier 3 Site-Specific Ecological Risk Assessment (SSERA)

Not applicable - the affected property did not fail the Tier 1 Ecological Exclusion Criteria Checklist (Attachment 2A).

Proposal for Ecological Services Analysis

Not applicable - the affected property did not fail the Tier 1 Ecological Exclusion Criteria Checklist (Attachment 2A).

Section 10 COC Screening

All VOCs and SVOCs were screened from PCL development. No VOCs were detected in samples above laboratory detection limits. Three SVOCs, bis (2-ethylhexyl) phthalate, di-n-butyl phthalate, and diethyl phthalate, were detected above laboratory detection limits but screened from PCL development in accordance with §350.71(k)(1) as the detected concentrations were below the Tier 1 PCLs. All metals except antimony, arsenic, lead, and mercury were screened from PCL development in accordance with §350.71(k)(1).

Section 10.1 Frequency of Detection

Not applicable

Section 10.2 Lab Contaminant or Blank Contaminant

Not applicable

Section 10.3 COC Not Sourced On-Site

Not applicable

Section 10.4 Appropriate Sample Quantitation Limits

Not applicable

Section 10.5 Screened COCs Expected to be Present Dropped from Future Sampling

Not applicable

Table 10A - COC Screening Summary Table

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the ≥20 samples in this medium[1] §350.71(k)(2)(A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
Bis (2-ethylhexyl) phthalate	Y	N	NA	Y	N	NA	NA	Y	NA
di-n-butyl phthalate	Y	N	NA	Y	N	NA	NA	Y	NA
Diethyl phthalate	Y	N	NA	Y	N	NA	NA	Y	NA
Aluminum	Y	N	NA	N	N	Y	NA	Y	NA
Barium	Y	N	NA	N	N	Y	NA	Y	NA
Beryllium	Y	N	NA	N	N	Y	NA	Y	NA
Cadmium	Y	N	NA	N	N	NA	NA	Y	NA
Calcium	Y	N	NA	N	Y	NA	NA	NA	NA
Chromium	Y	N	NA	N	Y	N	NA	Y	NA
Cobalt	Y	N	NA	N	N	Y	NA	Y	NA
Copper	Y	N	NA	N	N	Y	NA	Y	NA
Iron	Y	N	NA	N	N	N	NA	NA	NA
Magnesium	Y	N	NA	N	N	NA	NA	NA	NA
Manganese	Y	N	NA	N	N	Y	NA	Y	NA
Nickel	Y	N	NA	N	N	Y	NA	Y	NA
Potassium	Y	N	NA	N	N	NA	NA	NA	NA
Selenium	Y	N	NA	N	N	Y	NA	Y	NA
Silver	Y	N	NA	N	N	NA	NA	Y	NA
Sodium	Y	N	NA	N	N	NA	NA	NA	NA
Thallium	Y	N	NA	N	N	N	NA	Y	NA
Vanadium	Y	N	NA	N	N	N	NA	Y	NA
Zinc	Y	N	NA	N	N	Y	NA	Y	NA

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).
[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).
[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).
[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

Section 11 Soil Critical PCL Development

Section 11.1 Tier 2 or 3 PCL Development and Non-Default Parameters

Tier 2 and 3 Development

Tier 2 PCLs were developed for antimony, arsenic, lead, and mercury. The equation used to calculate the PCLs is as follows:

$$^{GW}Soil = \frac{(Groundwater\ PCL)\ LDF}{K_{sw}}$$

$$KSW = \frac{\rho_b}{\Theta_{ws} + K_d \rho_b + H' \Theta_{as}}$$

Where:

ρ_b = *Soil Bulk Density = 1.67 (Tier 1 Default)*
Θ_{ws} = *Volumetric Water Content of vadose zone soils = 0.16 (Tier 1 Default)*
Θ_{as} = *Volumetric air content of vadose zone soils = 0.21 (Tier 1 Default)*
K_d = *Soil-water partition coefficient varies with COC (pH dependent)*
H' = *Henry Law's Constant = 0 for each COC*

Non-Default Affected Property Parameters

With the exception of pH, Tier 1 default parameters were used to calculate the Tier 2 PCLs for antimony, arsenic, lead, and mercury. pH values were reported for five soil borings scattered throughout the affected properties and used to establish site-specific Tier 2 PCLs for the above-noted COCs. pH analysis was by Method SW-846-9045C.

Section 11.2 Soil PCL Adjustments

Not applicable

Section 11.3 Soil Critical PCLs

With the exception of antimony, arsenic, lead, and mercury, Tier 1 PCLs were considered the critical PCL for each COC assessed for. Tier 2 PCLs were developed for the above-noted metals using site specific information. The most probable exposure pathway for humans is through dermal contact with lead-impacted surface soils, although it is not anticipated due to the nature and use of the facility. The most probable exposure pathway for ecological receptors is through contact with surface soils and with plants rooted in the surface soils.

Table 11A - Surface Soil Critical PCLs (On-Site/Off-Site)

Date of the Tier 1 PCL tables used in the determination of PCLs: March 2005

On-Site Surface Soil Critical PCLs

Land use for purpose of critical PCL development: ___ Residential X Commercial/industrial

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^1$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^2$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep^3	
TAL Metals by 6020															
Aluminum	6.2E+5	1	1	5.2E+5	1	1	---	---	0.5	30,000	---	---	9,930	9,930	
Antimony	1.3E+2	1	1	5.4	1	1	---	---	0.25	1	81.17	---	14.5	14.5	
Arsenic	2.0E+2	1	1	5.0	1	1	---	---	0.25	5.9	5.82	---	5.32	5.32	
Barium	3.9E+4	1	1	4.4E+2	1	1	---	---	0.5	300	---	---	119	119	
Beryllium	2.5E+2	1	1	1.8	1	1	---	---	0.05	1.5	---	---	0.649	0.649	
Cadmium	8.5E+2	1	1	1.5	1	1	---	---	0.05	NE	---	---	0.586	0.586	
Calcium	NE	NE	1	NE	NE	1	---	---	25	NE	---	---	143,000D	143,000D	
Chromium	9.5E+4	1	1	2.4E+3	1	1	---	---	0.5	30	---	---	10.2B	10.2B	
Cobalt	4.1E+4	1	1	4.0E+3	1	1	---	---	0.5	7	---	---	15.9	15.9	
Copper	3.8E+4	1	1	1.0E+3	1	1	---	---	0.5	15	---	---	133	133	
Iron	NE	NE	NE	NE	NE	1	---	---	10	15,000	---	---	9,780	9,780	
Lead	1.6E+3	1	1	3.0	1	1	---	---	0.1	15	70.23	---	8,840D	8,840D	
Magnesium	NE	NE	NE	NE	NE	1	---	---	10	NE	---	---	2,400	2,400	
Manganese	3.6E+4	1	1	1.0E+4	1	1	---	---	0.5	300	---	---	834	834	
Mercury	6.2	1	1	0.0078	1	1	---	---	0.02	0.04	1.6	---	0.0857	0.0857	
Nickel	8.5E+3	1	1	4.7E+2	1	1	---	---	0.5	10	---	---	14.7	14.7	
Potassium	NE	NE	NE	NE	NE	1	---	---	10	NE	---	---	1,820	1,820	
Selenium	4.8E+3	1	1	2.3	1	1	---	---	0.25	0.3	---	---	0.519J	0.519J	
Silver	1.9E+3	1	1	1.4	1	1	---	---	0.24	NE	---	---	0.714	0.714	
Sodium	NE	NE	NE	NE	NE	1	---	---	25	NE	---	---	906	906	

---

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

[3] Provide justifications and calculations for use of representative concentrations in Appendix 8.

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^{1}$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^{2}$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep[3]	
Thallium	78	1	1	1.7	1	1	---	---	0.5	9.3	---	---	U	U	
Vanadium	2.4E+3	1	1	1.0E+4	1	1	---	---	0.5	50	---	---	20.8	20.8	
Zinc	2.5E+5	1	1	7.0E+3	1	1	---	---	0.5	30	---	---	299	299	
VOCs by 8260															
Benzene	67	1	1	0.026	1	1	---	---	0.005	---	---	---	U	U	
Bromobenzene	220	1	1	17	1	1	---	---	0.005	---	---	---	U	U	
Bromochloromethane	1.0E+3	1	1	9.1	1	1	---	---	0.005	---	---	---	U	U	
Bromodichloromethane	460	1	1	0.15	1	1	---	---	0.005	---	---	---	U	U	
Bromoform	1.0E+3	1	1	1.4	1	1	---	---	0.005	---	---	---	U	U	
MTBE	2.0E+3	1	1	1.9	1	1	---	---	0.005	---	---	---	U	U	
Tert-Butylbenzene	5.7E+3	1	1	3.0E+2	1	1	---	---	0.005	---	---	---	U	U	
Sec-Butylbenzene	6.7E+3	1	1	2.5E+2	1	1	---	---	0.005	---	---	---	U	U	
n-Butylbenzene	6.9E+3	1	1	3.6E+2	1	1	---	---	0.005	---	---	---	U	U	
Carbon Tetrachloride	34	1	1	0.062	1	1	---	---	0.005	---	---	---	U	U	
Chlorobenzene	1.2E+3	1	1	1.1	1	1	---	---	0.005	---	---	---	U	U	
Chloroethane	1.4E+5	1	1	92	1	1	---	---	0.010	---	---	---	U	U	
Chloroform	26	1	1	3.0	1	1	---	---	0.005	---	---	---	U	U	
Chloromethane	290	1	1	0.91	1	1	---	---	0.010	---	---	---	U	U	
2-Chlorotoluene	4.2E+3	1	1	27	1	1	---	---	0.005	---	---	---	U	U	
4-Chlorotoluene	6.7	1	1	32	1	1	---	---	0.005	---	---	---	U	U	
p-Cymene	8.8E+3	1	1	690	1	1	---	---	0.005	---	---	---	U	U	
1,2-Dibromo-3-Chloropropane	11	1	1	1.7E-3	1	1	---	---	0.005	---	---	---	U	U	
Dibromochloromethane	340	1	1	0.11	1	1	---	---	0.005	---	---	---	U	U	

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

[3] Provide justifications and calculations for use of representative concentrations in Appendix 8.

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^{1}$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^{2}$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep3	
1,2-Dichlorobenzene	1.1E+3	1	1	18	1	1	---	---	0.005	---	---	---	U	U	
1,3-Dichlorobenzene	170	1	1	20	1	1	---	---	0.005	---	---	---	U	U	
1,4-Dichlorobenzene	1.2E+3	1	1	2.1	1	1	---	---	0.005	---	---	---	U	U	
Dichlorodifluoromethane	7.0E+4	1	1	720	1	1	---	---	0.005	---	---	---	U	U	
1,2-Dichloroethane	22	1	1	0.014	1	1	---	---	0.005	---	---	---	U	U	
1,1-Dichloroethane	7.9E+3	1	1	28	1	1	---	---	0.005	---	---	---	U	U	
Trans-1,2-dichloroethene	9.3E+3	1	1	0.49	1	1	---	---	0.005	---	---	---	U	U	
Cis-1,2-Dichloroethene	6.4E+3	1	1	0.25	1	1	---	---	0.005	---	---	---	U	U	
1,1-Dichloroethene	4.0E+3	1	1	0.05	1	1	---	---	0.005	---	---	---	U	U	
2,2-Dichloropropane	86	1	1	0.27	1	1	---	---	0.005	---	---	---	U	U	
1,3-Dichloropropane	99	1	1	0.14	1	1	---	---	0.005	---	---	---	U	U	
1,2-Dichloropropane	86	1	1	0.023	1	1	---	---	0.005	---	---	---	U	U	
Trans-1,3-dichloropropene	99	1	1	0.08	1	1	---	---	0.005	---	---	---	U	U	
1,1-Dichloropropene	99	1	1	0.3	1	1	---	---	0.005	---	---	---	U	U	
Cis-1,3-Dichloropropene	53	1	1	0.015	1	1	---	---	0.005	---	---	---	U	U	
Ethylbenzene	1.8E+4	1	1	7.6	1	1	---	---	0.005	---	---	---	U	U	
Hexachlorobutadiene	41	1	1	4.1	1	1	---	---	0.005	---	---	---	U	U	
Isopropylbenzene	1.1E+4	1	1	1.0E+3	1	1	---	---	0.005	---	---	---	U	U	
Methylene Chloride	960	1	1	0.013	1	1	---	---	0.020	---	---	---	U	U	
Naphthalene	360	1	1	93	1	1	---	---	0.010	---	---	---	U	U	
n-Propylbenzene	7.3E+3	1	1	1.3E+2	1	1	---	---	0.005	---	---	---	U	U	
Styrene	2.9E+4	1	1	3.3	1	1	---	---	0.005	---	---	---	U	U	
1,1,1,2-Tetrachloroethane	130	1	1	3.2	1	1	---	---	0.005	---	---	---	U	U	
1,1,2,2-Tetrachloroethane	14	1	1	0.052	1	1	---	---	0.005	---	---	---	U	U	
Tetrachloroethylene	360	1	1	0.05	1	1	---	---	0.005	---	---	---	U	U	

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

3 Provide justifications and calculations for use of representative concentrations in Appendix 8.

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^1$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^2$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep3	
Toluene	8.2E+3	1	1	8.2	1	1	---	---	0.005	---	---	---	U	U	
1,2,4-Trichlorobenzene	5.2E+3	1	1	4.8	1	1	---	---	0.005	---	---	---	U	U	
1,2,3-Trichlorobenzene	1.6E+3	1	1	79	1	1	---	---	0.005	---	---	---	U	U	
1,1,2-Trichloroethane	35	1	1	0.02	1	1	---	---	0.005	---	---	---	U	U	
1,1,1-Trichloroethane	1.9E+4	1	1	1.6	1	1	---	---	0.005	---	---	---	U	U	
Trichloroethene	310	1	1	0.034	1	1	---	---	0.005	---	---	---	U	U	
Trichlorofluoromethane	5.0E+4	1	1	380	1	1	---	---	0.005	---	---	---	U	U	
1,2,3-Trichloropropane	4.1	1	1	5.1E-3	1	1	---	---	0.005	---	---	---	U	U	
1,2,4-Trimethylbenzene	190	1	1	140	1	1	---	---	0.005	---	---	---	U	U	
1,3,5-Trimethylbenzene	160	1	1	160	1	1	---	---	0.005	---	---	---	U	U	
Vinyl Chloride	15	1	1	0.022	1	1	---	---	0.002	---	---	---	U	U	
o-Xylene	6.6E+4	1	1	71	1	1	---	---	0.005	---	---	---	U	U	
m,p-Xylenes	9.3E+3	1	1	110	1	1	---	---	0.010	---	---	---	U	U	
SVOCs by 8270															
Acenaphthene	3.7E+4	1	1	710	1	1	---	---	0.167	---	---	---	U	U	
Acenaphthylene	3.7E+4	1	1	1.2E+3	1	1	---	---	0.167	---	---	---	U	U	
Aniline	180	1	1	0.82	1	1	---	---	0.667	---	---	---	U	U	
Anthracene	1.9E+5	1	1	2.1E+4	1	1	---	---	0.167	---	---	---	U	U	
Benzo(a)anthracene	24	1	1	40	1	1	---	---	0.167	---	---	---	U	U	
Benzo(a)pyrene	2.4	1	1	7.6	1	1	---	---	0.167	---	---	---	U	U	
Benzo(b)fluoranthene	24	1	1	130	1	1	---	---	0.167	---	---	---	U	U	
Benzo(g,h,i)perylene	1.9E+4	1	1	1.4E+5	1	1	---	---	0.167	---	---	---	U	U	
Benzo(k)fluoranthene	240	1	1	1.4E+3	1	1	---	---	0.167	---	---	---	U	U	
Benzoic Acid	960	1	1	570	1	1	---	---	1.00	---	---	---	U	U	
Benzyl Butyl Phthalate	2.8E+4	1	1	8.1E+3	1	1	---	---	0.167	---	---	---	U	U	

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

3 Provide justifications and calculations for use of representative concentrations in Appendix 8.

COC	$^{Tot}\text{Soil}_{Comb}$ PCL			$^{GW}\text{Soil}^{1}$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}\text{Soil}^{2}$ (mg/kg)	$^{Sed}\text{Soil}^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/ kg)	0.5-5 ft. (mg/kg)					Max	Rep3	
Bis(2-chloroethyoxy)methane	9.1	1	1	0.026	1	1	---	---	0.333	---	---	---	U	U	
Bis(2-chloroethyl)ether	4.9	1	1	4.7E-3	1	1	---	---	0.333	---	---	---	U	U	
Bis(2-chloroisopropyl)ether	150	1	1	0.43	1	1	---	---	0.333	---	---	---	U	U	
Bis(2-ethylhexyl)phthalate	560	1	1	160	1	1	---	---	0.167	---	---	---	0.172J	0.172J	
4-Bromophenyl-phenylether	1.2	1	1	0.79	1	1	---	---	0.333	---	---	---	U	U	
di-n-Butyl Phthalate	2.6E+4	1	1	9.9E+3	1	1	---	---	0.167	---	---	---	0.041J	0.041J	
4-chloro-3-methylphenol	3.2E+3	1	1	14	1	1	---	---	0.333	---	---	---	U	U	
4-Chloroaniline	1.2E+3	1	1	1.3	1	1	---	---	0.667	---	---	---	U	U	
2-Chloronaphthalene	5.0E+4	1	1	2.0E+3	1	1	---	---	0.333	---	---	---	U	U	
2-Chlorophenol	3.2E+3	1	1	4.9	1	1	---	---	0.333	---	---	---	U	U	
4-Chlorophenyl Phenyl Ether	0.98	1	1	0.072	1	1	---	---	0.333	---	---	---	U	U	
Chrysene	2.4E+3	1	1	3.5E+3	1	1	---	---	0.167	---	---	---	U	U	
Dibenz(a,h)Anthracene	2.4	1	1	21	1	1	---	---	0.167	---	---	---	U	U	
Dibenzofuran	2.7E+3	1	1	100	1	1	---	---	0.333	---	---	---	U	U	
1,2-Dichlorobenzene	1.1E+3	1	1	18	1	1	---	---	0.333	---	---	---	U	U	
1,3-Dichlorobenzene	170	1	1	20	1	1	---	---	0.333	---	---	---	U	U	
1,4-Dichlorobenzene	1.2E+3	1	1	2.1	1	1	---	---	0.333	---	---	---	U	U	
3,3-Dichlorobenzidine	42	1	1	0.14	1	1	---	---	0.333	---	---	---	U	U	
2,4-Dichlorophenol	1.8E+3	1	1	1.1	1	1	---	---	0.333	---	---	---	U	U	
Diethyl Phthalate	4.0E+3	1	1	470	1	1	---	---	0.167	---	---	---	0.091J	0.091J	
Dimethyl Phthalate	1.8E+3	1	1	190	1	1	---	---	0.167	---	---	---	U	U	
2,4-Dimethylphenol	4.7E+3	1	1	9.7	1	1	---	---	0.333	---	---	---	U	U	
4,6-dinitro-2-methyl phenol	63	1	1	0.28	1	1	---	---	0.333	---	---	---	U	U	

---

[1] $^{GW}\text{Soil}$ includes $^{GW}\text{Soil}_{Ing}$, $^{GW}\text{Soil}_{Class3}$, $^{Air}\text{GW-Soil}_{Inh-V}$, and $^{GW}\text{Soil}$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

3 Provide justifications and calculations for use of representative concentrations in Appendix 8.

COC	^{GW}Soil^{1} PCL			^{GW}Soil^{2} PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	^{SW}Soil^{3} (mg/kg)	^{Sed}Soil^{29} (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep4	
2,4-Dinitrophenol	1.4E+3	1	1	0.28	1	1	---	---	0.333	---	---	---	U	U	
2,4-Dinitrotoluene	28	1	1	0.012	1	1	---	---	0.333	---	---	---	U	U	
2,6-Dinitrotoluene	28	1	1	0.011	1	1	---	---	0.333	---	---	---	U	U	
Fluoranthene	2.5E+4	1	1	5.7E+3	1	1	---	---	0.167	---	---	---	U	U	
Fluorene	2.5E+4	1	1	890	1	1	---	---	0.167	---	---	---	U	U	
Hexachlorobenzene	8.7	1	1	1.1	1	1	---	---	0.333	---	---	---	U	U	
Hexachlorobutadiene	41	1	1	4.1	1	1	---	---	0.333	---	---	---	U	U	
Hexachlorocyclopentadiene	20	1	1	19	1	1	---	---	0.333	---	---	---	U	U	
Hexachloroethane	680	1	1	5.5	1	1	---	---	0.333	---	---	---	U	U	
Indeno(1,2,3-c,d)Pyrene	24	1	1	390	1	1	---	---	0.167	---	---	---	U	U	
Isophorone	3.7E+3	1	1	6.7	1	1	---	---	0.333	---	---	---	U	U	
2-Methylnaphthalene	2.5E+3	1	1	51	1	1	---	---	0.167	---	---	---	U	U	
2-methylphenol	3.5E+3	1	1	21	1	1	---	---	0.333	---	---	---	U	U	
3&4-Methylphenol	1.8E+3	1	1	1.9	1	1	---	---	0.333	---	---	---	U	U	
Naphthalene	360	1	1	93	1	1	---	---	0.167	---	---	---	U	U	
4-Nitroaniline	500	1	1	0.13	1	1	---	---	0.667	---	---	---	U	U	
3-Nitroaniline	180	1	1	0.076	1	1	---	---	0.333	---	---	---	U	U	
2-Nitroaniline	50	1	1	0.066	1	1	---	---	0.333	---	---	---	U	U	
Nitrobenzene	240	1	1	0.26	1	1	---	---	0.333	---	---	---	U	U	
2-Nitrophenol	620	1	1	0.4	1	1	---	---	0.333	---	---	---	U	U	
4-Nitrophenol	190	1	1	0.3	1	1	---	---	0.333	---	---	---	U	U	
N-Nitrosodi-n-Propylamine	1.4	1	1	7.9E-4	1	1	---	---	0.333	---	---	---	U	U	
N-Nitrosodiphenylamine	1.9E+3	1	1	6.3	1	1	---	---	0.333	---	---	---	U	U	
di-n-Octyl Phthalate	1.4E+4	1	1	1.0E+6	1	1	---	---	0.167	---	---	---	U	U	

[1] ^{GW}Soil includes ^{GW}Soil$_{Ing}$, ^{GW}Soil$_{Class3}$, ^{Air}GW-Soil$_{Inh-V}$, and ^{GW}Soil for secondary MCLs, as applicable.

[2] ^{GW}Soil includes ^{GW}Soil$_{Ing}$, ^{GW}Soil$_{Class3}$, ^{Air}GW-Soil$_{Inh-V}$, and ^{GW}Soil for secondary MCLs, as applicable.

[3] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

4 Provide justifications and calculations for use of representative concentrations in Appendix 8.

COC	^{GW}Soil^{1} PCL			^{GW}Soil^{2} PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	^{SW}Soil^{3} (mg/kg)	^{Sed}Soil^{29} (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep4	
Pentachlorophenol	110	1	1	0.018	1	1	---	---	0.333	---	---	---	U	U	
Phenanthrene	1.9E+4	1	1	1.2E+3	1	1	---	---	0.167	---	---	---	U	U	
Phenol	4.6E+3	1	1	57	1	1	---	---	0.333	---	---	---	U	U	
Pyrene	1.9E+4	1	1	3.3E+3	1	1	---	---	0.167	---	---	---	U	U	
Pyridine	250	1	1	0.21	1	1	---	---	0.333	---	---	---	U	U	
1,2,4-Trichlorobenzene	5.2E+3	1	1	4.8	1	1	---	---	0.333	---	---	---	U	U	
2,4,6-Trichlorophenol	1.1E+3	1	1	1.3	1	1	---	---	0.333	---	---	---	U	U	
2,4,5-Trichlorophenol	2.1E+4	1	1	100	1	1	---	---	0.333	---	---	---	U	U	

Off-Site Surface Soil Critical PCLs

Land use for purpose of critical PCL development:[5] Residential ____ Commercial/industrial ____

COC	^{Tot}Soil$_{Comb}$ PCL			^{GW}Soil**Error! Bookmark not defined.** PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	^{SW}Soil^{29} (mg/kg)	^{Sed}Soil^{29} (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep^{30}	
Not applicable															

---

[1] ^{GW}Soil includes ^{GW}Soil$_{Ing}$, ^{GW}Soil$_{Class3}$, ^{Air}GW-Soil$_{Inh-V}$, and ^{GW}Soil for secondary MCLs, as applicable.

[2] ^{GW}Soil includes ^{GW}Soil$_{Ing}$, ^{GW}Soil$_{Class3}$, ^{Air}GW-Soil$_{Inh-V}$, and ^{GW}Soil for secondary MCLs, as applicable.

[3] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

4 Provide justifications and calculations for use of representative concentrations in Appendix 8.

[5] Repeat the table if needed for different off-site land uses.

Table 11B - Subsurface Soil Critical PCLs (On-Site/Off-Site)

Date of the Tier 1 PCL tables used in the determination of PCLs: ____________________

On-Site Subsurface Soil Critical PCLs

Land use for purpose of critical PCL development: Residential ____ Commercial/industrial ____

COC	$^{Air}Soil_{Inh-V}$ PCL			$^{GW}Soil^{1}$ PCL			MQL (mg/kg)	Background (mg/kg)	Max conc (mg/kg)	Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)				
Not applicable – subsurface soils not assessed										

Off-Site Subsurface Soil Critical PCLs

Land use for purpose of PCL development[2]: Residential ____ Commercial/industrial ____

COC	$^{Air}Soil_{Inh-V}$ PCL			$^{GW}Soil^{52}$ PCL			MQL (mg/kg)	Background (mg/kg)	Max conc (mg/kg)	Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)				
Not applicable										

Following Pages:

Figure 11A - Surface Soil PCLE Zone Maps

Figure 11B - Subsurface Soil PCLE Zone Maps

Not applicable

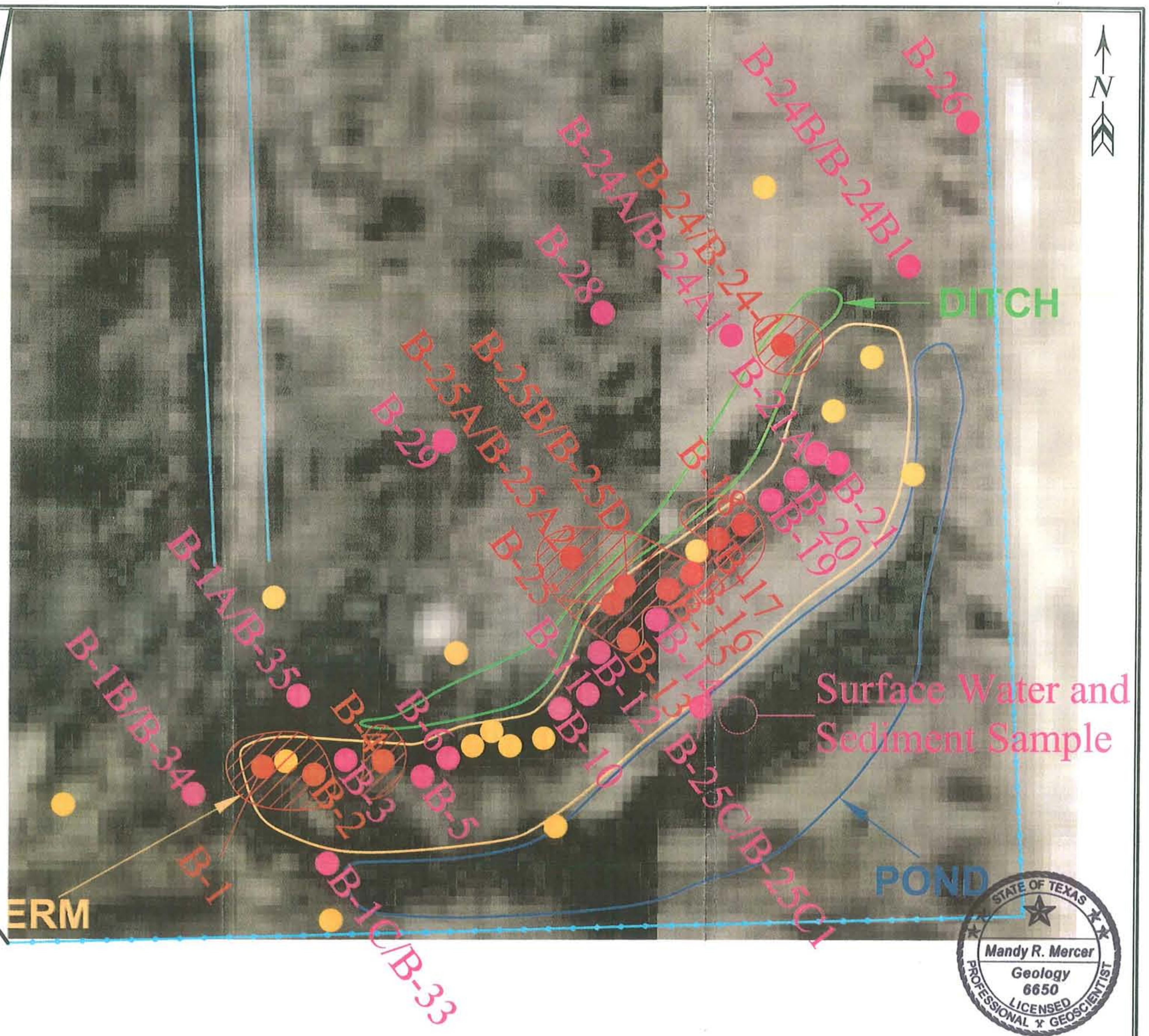
Figure 11C – Cross Sections of the PCLE Zone

Not applicable - Subsurface soil was not evaluated during this investigation. Surface soils were primarily clayey silt or silty clay.

---

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh-V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Repeat the table if needed for differing off-site land uses.



Mandy R. Mercer
Geology
6650

Sample ID	Concentration	Sample ID	Concentration	Sample ID	Concentration
B-1	**90.6**	B-13	**76.2**	B-24A	67
B-1A	30.5	B-14	20.4	B-24B	29.1
B-1B	28	B-15	**75.4**	B-24B1	20.1
B-1C	60.8	B-16	**103**	B-25	**8,840 D**
B-2	**393**	B-17	**128**	B-25A	**275**
B-3	31.7	B-18	**80.5**	B-25A2	20.9
B-4	**749**	B-19	51.5	B-25B	**670**
B-5	21.2	B-20	35.1	B-25C	17
B-6	62.4	B-21	65.2	B-25C1	15.5
B-10	18.3	B-21A	29.7	B-26	22.4
B-11	15.3	B-24	**79.4**	B-28	16.9
B-12	15.9	B-24-1	54.8	B-29	45.4

Scale
1 inch = 30 feet
0 30 60

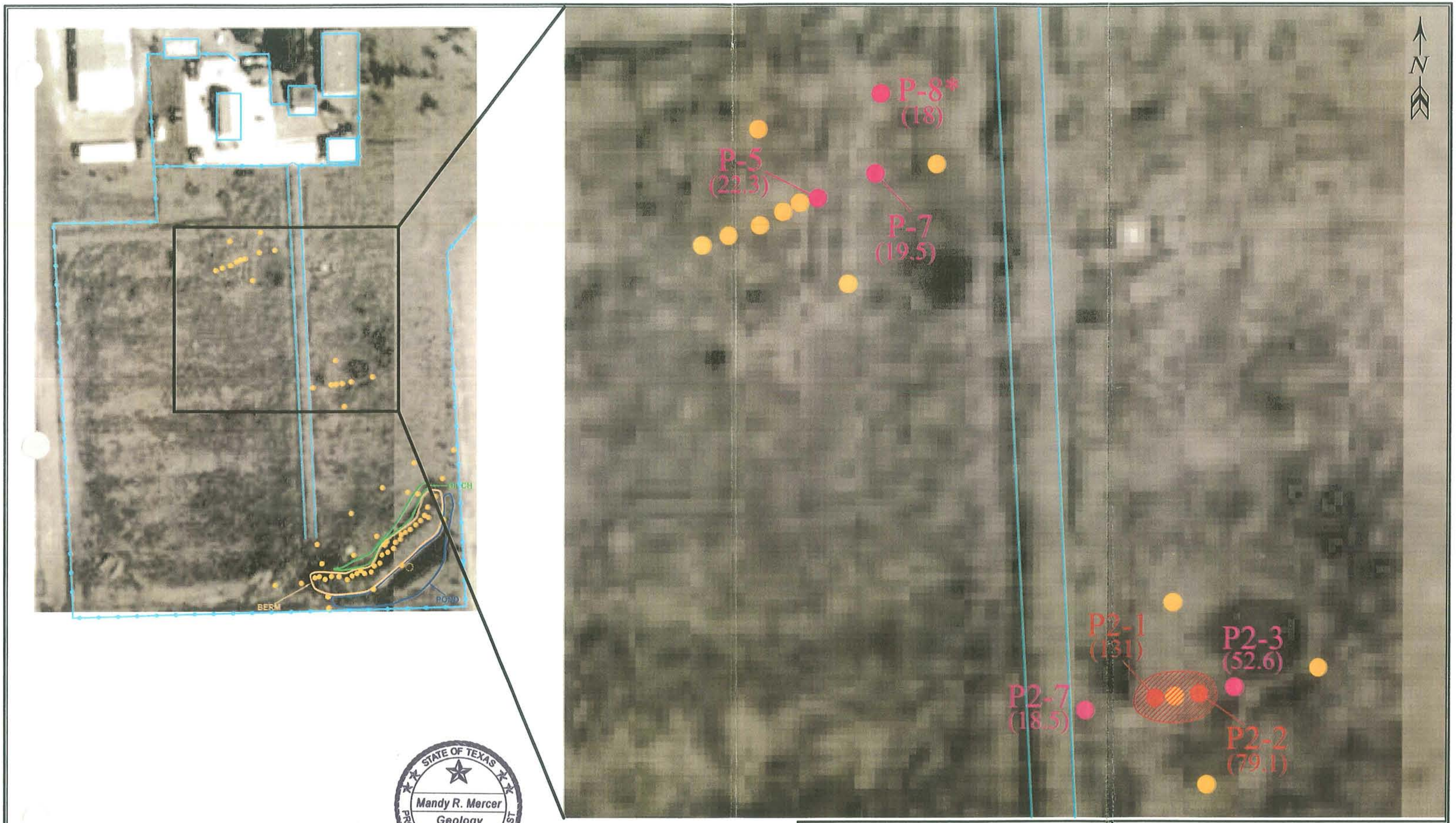
Legend
- ● Sample location
- ● Sample location with COC exceedance (lead)
- ⬤ PCLE Zone (lead)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Lead) = 15 mg/kg
Critical PCL (Lead) = 70.23 mg/kg

Surface Soil PCLE Zone Map - Lead Backstop
Date: 06/05
Figure 11A(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Mandy R. Mercer
Geology
6650

Scale
1 inch = 30 feet
0 30 60

Legend

- ● Sample location
- ● Sample location with COC exceedance (lead)
- ● PCLE Zone (lead)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)
Texas Specific Background Concentration (Lead) = 15 mg/kg
Critical PCL (Lead) = 70.23 mg/kg

Surface Soil PCLE
Zone Map - Lead
Platforms

Date: 06/05

Figure 11A(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

Section 12 Groundwater Critical PCL Development

Section 12.1 Tier 2 or 3 PCL Development and Non-Default Parameters

Not applicable – Groundwater was not assessed during this investigation

Section 12.2 Groundwater PCL Adjustments

Not applicable – Groundwater was not assessed during this investigation

Section 12.3 Groundwater Critical PCLs

Not applicable – Groundwater was not assessed during this investigation

Table 12A - Groundwater Critical PCLs - Full Plume POE

Not applicable – Groundwater was not assessed during this investigation

Table 12A. Groundwater Critical PCLs – Full Plume POE

Groundwater-bearing unit: ____

Repeat table for each applicable groundwater-bearing unit.

Date of the Tier 1 PCL tables used in the determination of PCLs: ____________

On-Site Groundwater Critical PCLs

Land use for purpose of PCL development: ____ Residential ____ Commercial/industrial

COC	$^{GW}GW_{Ing}$ PCL		$^{Air}GW_{Inh-V}$ PCL		Ecological PCL for groundwater[1]		MQL (mg/L)	Background (mg/L)	Conc (mg/L)		Remedy or NFA
	(mg/L)	Tier	(mg/L)	Tier	(mg/L)	Tier			Max	Rep[2]	
Not applicable – Groundwater was not assessed during this investigation											

Off-Site Groundwater Critical PCLs

Land use for purpose of PCL development[3]: ____ Residential ____ Commercial/industrial

COC	$^{GW}GW_{Ing}$ PCL		$^{Air}GW_{Inh-V}$ PCL		Ecological PCL for groundwater[1]		MQL (mg/L)	Background (mg/L)	Conc (mg/L)		Remedy or NFA
	(mg/L)	Tier	(mg/L)	Tier	(mg/L)	Tier			Max	Rep[55]	
Not applicable – Groundwater was not assessed during this investigation											

---

[1] This pathway is applicable for direct contact with groundwater, such as cave invertebrates or salamanders.

[2] Provide justifications and calculations for use of representative concentration in Appendix 8.

[3] Repeat the table if needed for different off-site land uses.

Table 12B - Groundwater-to-Surface Water PCLs

Not applicable – Groundwater was not assessed during this investigation

Table 12B. Groundwater-to-Surface Water PCLs

Groundwater-bearing unit: ______________________________

COC	SW critical PCL (mg/L)[1]	Groundwater-to-surface water dilution factor	^{SW}GW critical PCL[2] (mg/L)
Not applicable – Groundwater was not assessed during this investigation			

Table 12C - Groundwater-to-Sediment PCLs

Not applicable – Groundwater was not assessed during this investigation

Table 12C. Groundwater-to-Sediment PCLs

Groundwater-bearing unit: ______________________________

COC	Sed critical PCL (mg/kg)[3]	Surface water mixing factor[4]	K_{sed-w} (mg/L-gw/ mg/kg-sed)	^{Sed}GW critical PCL[5] (mg/L)
Not applicable – Groundwater was not assessed during this investigation				

---

[1] From Table 6A.

[2] Equals results of Table 12B second column divided by the value in the third column.

[3] From Table 7A.

[4] Default is 1.

[5] Equals product of Table 12C columns 2, 3, and 4.

Table 12D - Groundwater Critical PCL Evaluation - Surface Water/Sediment Discharge POE

Not applicable – Groundwater was not assessed during this investigation

Table 12D. Groundwater Critical PCL Evaluation - Surface Water/Sediment Discharge POE

Groundwater-bearing unit: ______________________________

COC	GW Critical PCL[1] (mg/L)	^{SW}GW critical PCL[2] (mg/L)	^{Sed}GW critical PCL[3] (mg/L)	Critical PCL for GW-SW POE[4] (mg/L)	Conc at GW-SW POE (mg/L)		At GW-SW POE, remedy or NFA?
					Max	Rep[5]	
Not applicable – Groundwater was not assessed during this investigation							

Figure 12A - Groundwater PCLE Zone Map

Not applicable – Groundwater was not assessed during this investigation

---

[1] From Table 12A, on-site or off-site, whichever is appropriate for this POE.

[2] From Table 12B

[3] From Table 12C

[4] Lowest of the values in the three previous columns.

[5] Provide justifications and calculations for use of representative concentrations in Appendix 9.

Section 13 Notifications

Section 13.1 Notification of Actual or Probable Exposure

Not applicable – Notifications not required

Section 13.2 Other Notifications

Not applicable – Notifications not required

Table 13A - Notification Summary

Not applicable – Notifications not required

Table 13A. Notification Summary

Property ID	Property owner name	Physical property address, city, zip	Property owner mailing address, city, state, zip	Property owner phone no.	Contact name, mailing address, city, state, zip (if different from owner)	Reason for notification
Not applicable – Notifications not required						

Figure 13A - Notification Map

Not applicable – Notifications not required

APPENDIX 1

Notifications

Not Applicable

APPENDIX 2

Boring Logs and Monitor Well Completion Details

Not Applicable

APPENDIX 3

Monitor Well Development and Purging Data

Not Applicable

APPENDIX 4

Registration and Institutional Controls

Not Available

APPENDIX 5

Water Well Records

ENVIRONMENTAL RESEARCH
ATLAS
Assessment, Compliance and Permitting Support

June 20, 2005

Mandy Mercer
Corrigan Consulting, Inc.
12000 Aerospace Ave., Ste. 450
Houston, Texas 77034

Re: Water Well Search
Roy Benavidez National Guard Armory
801 Armory Road (CR 406)
El Campo, Texas
Atlas Job #05-06-053

Dear Ms. Mercer:

Atlas Environmental Research has performed a water well search for the above referenced site using the records of the Texas Water Development Board (TWDB) and the Texas Commission on Environmental Quality (TCEQ). Included in this report you will find a complete well listing sorted by the different types of files in the state's water well system. You will also find a map delineating water wells within the area of review and copies of all available drillers logs.

Please do not hesitate to call me at 1-800-940-0977 if you have any questions concerning this project or questions concerning Atlas' water well research protocol. Thank you for utilizing Atlas' research services to meet your environmental information needs. I look forward to being of service to you in the future.

Sincerely,

Scott Anderson

Scott Anderson
Research Consultant

Enclosures/SA/

Atlas E.R. Water Well Search

Roy Benavidez National Guard Armory
801 Armory Road (CR 406)
El Campo, Texas
Atlas Job #05-06-053

Atlas Environmental Research has located **46** water wells in the area of review. In addition, **4** wells shown as "Location Unknown" in this report could not be accurately located with information provided by the driller.

Located Water Wells – 4

66-54-606
66-54-607
66-54-608
66-54-611

Plotted Water Wells – 35

66-54-6H (10 wells)
66-54-6NN (3 wells)
66-54-6QQ (3 wells)
66-54-6RR (9 wells)
66-54-6SS (5 wells)
66-54-9AAA (2 wells)
66-55-4H (3 wells)

Partially Numbered Water Wells – 11

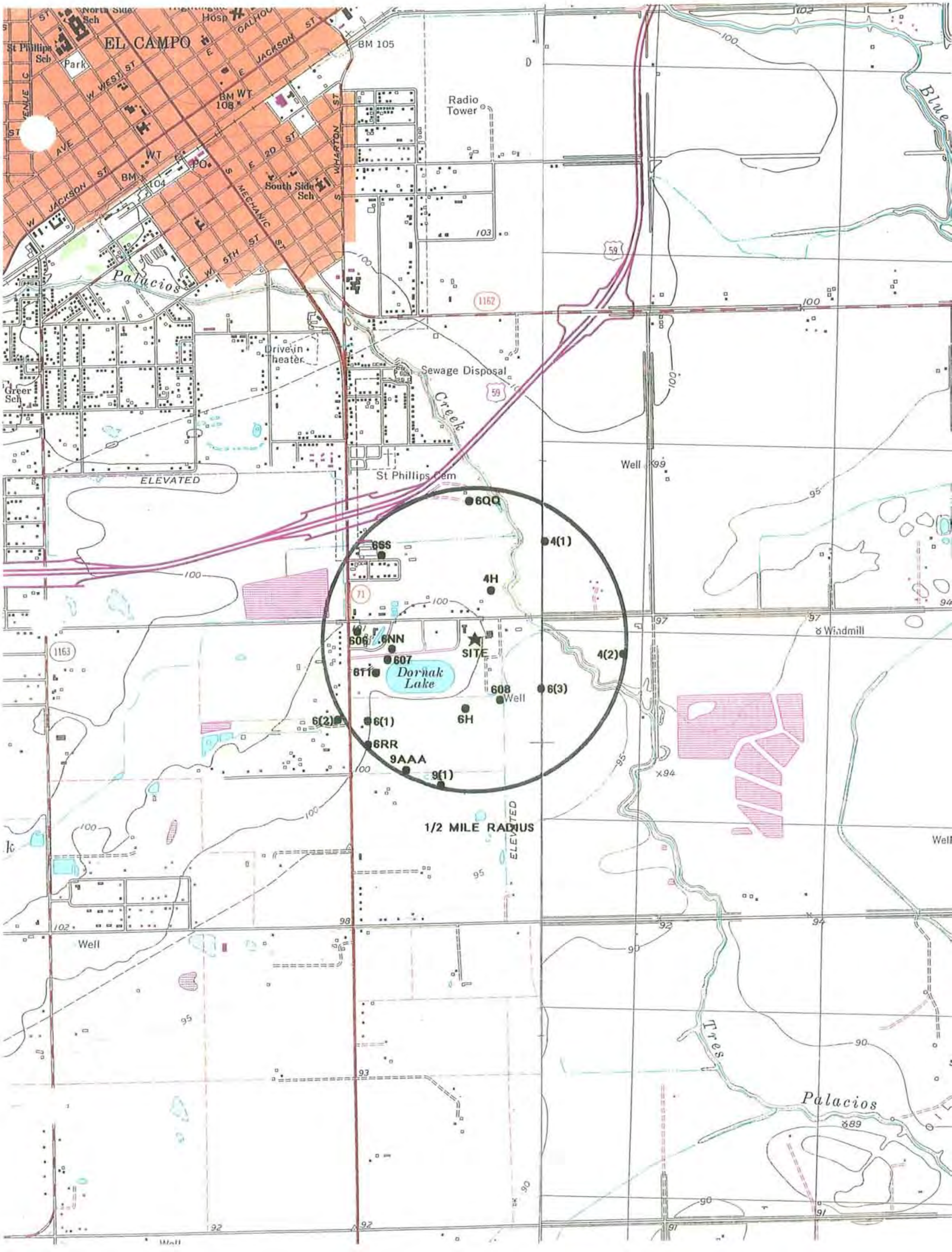
66-54-6(1)
66-54-6(2)
66-54-6(3)
66-54-6(4) Location Unknown
66-54-6(5) Location Unknown
66-54-6(6) Location Unknown
66-54-6(7) Location Unknown
66-54-9(1)
66-55-4(1)
66-55-4(2)
66-55-4(3)

Unnumbered Water Wells – 0

These wells have been labeled on the attached map with the final portion of the state well number. This portion of the state well number has also been highlighted on the corresponding drillers log. The information for each USGS quadrangle utilized for the well location map is listed below.

Quadrangle	Date	Contour Interval
El Campo, Texas	1965 (Photorevised 1981)	5 Feet
Pierce, Terxas	1952 (Photorevised 1980)	5 Feet

Quadrangle Scale: 1:24000; 1" = 2000'


EL CAMPO
North Side Sch
Hosp
St Phillips Sch
Park
BM 105
BM WT 108
Radio Tower
PO
South Side Sch
Palacios
Drive in theater
Sewage Disposal
Creek
Greer Sch
ELEVATED
St Phillips Cem
Well
6QQ
4(1)
6SS
4H
606
6NN
SITE
607
611
Dornak Lake
608 Well
6(3)
4(2)
6(2)
6(1)
6H
6RR
9AAA
9(1)
1/2 MILE RADIUS
ELEVATED
Windmill
Blue
Tres
Palacios
59
1162
71
1163
100
95
90
94
97
99
102
103
104
98
93
92
91
89

FORM 9-1642B
(DEC 68)

Well No. ZA 66-54-606

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR GEOLOGICAL SURVEY WATER RESOURCES DIVISION
(KKG-12/1/83)

MASTER CARD

Record by C. LOSETT Source of data DRL LOG Date 2-15-74 Map EL CAMPO

State TEXAS 4 9 County (or town) WHARTON Z A

Latitude: 2 9 1 0 2 9 N (deg, min, sec) N/S Longitude: 0 9 6 2 9 3 6 (degrees, min, sec) Sequential number: 1

Lat-long accuracy: 1 T ____ N/S, R ____ E/W, Sec ____, ____ ¼, ____ ¼, ____ ¼ ____ B & M

Local well number: ZA 66-54-606 Other number: ____

Local use: ____ Owner or name: AMERICAN LEGION

Owner or name: AMERICAN LEGION Address: EL CAMPO, TX

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, [✓ (P) Private], (S) State Agency, (W) Water Dist 67 P

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, [✓ (R) Rec], SWIMMING POOL (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other 68 R

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, [✓ (W) Withdraw], (X) Waste, (Z) Destroyed 69 W

DATA AVAILABLE: Well data ☐ 70 Freq. W/L meas.: NONE N 71 Field aquifer char. 72 ☐

Hyd. lab. data: ____ 73 ☐

Qual. water data; type: ____ 74 ☐

Freq. sampling: NONE ☐ 75 Pumpage inventory: yes no; period: ____ 76 ☐

Aperture cards: ____ yes 77 ☐

Log data: DRL. LOG D 78 79

WELL-DESCRIPTION CARD

TD = 160

SAME AS ON MASTER CARD 1 19 Depth well: 112 ft 1 1 2 (20 23) Meas. [✓ rep] DRL. LOG accuracy 24 3

Depth cased: (first perf.) N/A ft ____ (25 28) Casing type: STEEL ; Diam. 10/8 in 1 0 (29 30)

Finish: (C) porous concrete, [✓ (F) gravel w. (perf.)], (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) ____ other 31 F

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, [✓ (H) hyd rot], (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) ____ other 32 H

Date Drilled: 1955 9 5 5 (33 35) Pump intake setting: 70 ft 7 0 (36 38)

Driller: CROWELL BROS. name, LOUISE, TX address

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, [✓ (T) turb], (Z) other T 39 Deep Shallow D 40

Power (type): diesel, [✓ elec], nat gas, gasoline, hand, LP gas, wind; H.P. 15 T 41 Trans. or meter no. ____

Descrip. MP ____ ft above/below LSD, Alt. MP ____

Alt. LSD: 100 1 0 0 (42 45) Accuracy: (source) TOPO I 5 ft 47 3

Water Level ____ ft above/below MP; Ft above/below LSD ____ (48 51) Accuracy: ____ 52 ☐

Date meas: ____ (53 55) Yield: ____ gpm ____ (56 60) Method determined 61 ☐

Drawdown: ____ ft ____ (62 64) Accuracy: ☐ 65 Pumping period ____ hrs ____ (66 68)

QUALITY OF WATER DATA: Iron ppm ☐ 69 Sulfate ppm ☐ 70 Chloride ppm ☐ 71 Hard. ppm ☐ 72

Sp. Conduct ____ K x 10^6 ☐ 73 Temp. ____ °F ____ (74 76) Date sampled ____ (77 78)

Taste, color, etc. ____

Well No.

Well No. [illegible]

Latitude-longitude 24, 12, 19 (N) 76, 15, 36
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19)

Physiographic Province: Coastal Plain | 0 3 (20–21) | Section: ______

F (22) | Drainage Basin: ______ | 0 2 3 (23–25) | Subbasin: ______ ☐ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, [✓ (F) flat], (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat ______ (27) F

MAJOR AQUIFER: ______ system, ______ series | Q (38–39) | ______ aquifer, formation, group | C (50–51)

Lithology: ______ ☐☐ (32–33) Origin: ______ ☐ (34) Aquifer Thickness: ______ ft

☐☐☐ (35–37) Length of well open to: ______ ft ☐☐☐ (38–40) Depth to top of: ______ ft ☐☐☐ (41–43)

MINOR AQUIFER: ______ system, ______ series ☐☐ (44–45) ______ aquifer, formation, group ☐☐ (46–47)

Lithology: ______ ☐☐ (48–49) Origin: ______ ☐ (50) Aquifer Thickness: ______ ft

☐☐☐ (51–53) Length of well open to: ______ ft ☐☐☐ (54–56) Depth to top of: ______ ft ☐☐☐ (57–59)

Intervals Screened: ______

Depth to consolidated rock: ______ ft ☐☐☐☐ (60–63) Source of data: ______ ☐ (64)

Depth to basement: ______ ft ☐☐☐☐ (65–68) Source of data: ______ ☐ (69)

Surficial material: ______ ☐☐ (70–71) Infiltration characteristics: ______ ☐ (72)

Coefficient Trans: ______ gpd/ft ☐☐☐ (73–75) Coefficient Storage: ______ ☐☐☐ (76–78)

Coefficient Perm: ______ gpd/ft^2; Spec cap: ______ gpm/ft; Number of geologic cards: ______ ☐ (79)

76' 05 10"
24 05 [illegible]

Well No. ______

FORM 9-1142B
(DEC. 68)

Well No. ZA 66-54-607

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR GEOLOGICAL SURVEY WATER RESOURCES DIVISION

(RKG 11/2/79)

MASTER CARD

Record by C. LOSKOT Source of data DRL. LOG Date 2-10-74 Map EL CAMPO

State TEXAS 4 9 County (or town) WHARTON Z A

Latitude: 29 10 14 N (deg min sec) Longitude: 096 15 30 (degrees min sec) Sequential number: 1

Lat-long accuracy: ☐ T. ____ N S, R ____ E W, Sec ____, ____ ¼, ____ ¼, ____ ¼ ____ B & M

Local well number: ZA 66-54-607 Other number: ____

Local use: ☐ Owner or name: PAUL DORNAK

Owner or name: PAUL DORNAK Address: EL CAMPO, TX

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, [✓ (P) Private], (S) State Agency, (W) Water Dist ____ P

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, [✓ (N) Ind], (P) P S, [✓ (R) Rec], PWS
(S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other ____ R

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, [✓ (W) Withdraw], (X) Waste, (Z) Destroyed W

DATA AVAILABLE: Well data ☐ Freq. W/L meas.: 7-10-74, 3-3-75 I Field aquifer char. ☐

Hyd. lab. data: ____ ☐

Qual. water data; type: ____ ☐

Freq. sampling: NONE ☐ Pumpage inventory: yes no, period: ____ ☐

Aperture cards: ____ yes ☐

Log data: DRL. LOG D

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 114 ft 114 Meas. [✓ Rept] DRL. LOG accuracy 3

Depth cased: (first perf.) N/A ft ☐ Casing type: STEEL; Diam. 12 in 12

Finish: (C) porous concrete, [✓ (F) gravel w. (perf)], (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) ____ other F

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, [✓ (H) hyd rot], (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) ____ other 8" D.P. PIPE H

Date Drilled: 1952 952 Pump intake setting: 70 ft 70

Driller: LEONARD MICKELSON name, EL CAMPO, TX address

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, [✓ (T) turb], (Z) other T Deep Shallow D

Power (type): diesel, [✓ elec], nat gas, gasoline, hand, LP gas, wind; H.P. 40 V Trans. or meter no. ____

Descrip. MP top of casing ft [✓ above] below LSD, Alt. MP 4

Alt. LSD: 102 102 Accuracy: (source) topo ± 5 ft 3

Water Level 43.61 ft above [✓ below] MP, Ft above [✓ below] LSD 43 Accuracy: tape, cll A

Date meas: 3-3-75 375 Yield: ____ gpm ☐ Method determined ☐

Drawdown: ____ ft ☐ Accuracy: ____ ☐ Pumping period ____ hrs ☐

QUALITY OF WATER DATA: Iron ____ ppm ☐ Sulfate ____ ppm ☐ Chloride ____ ppm ☐ Hard. ____ ppm ☐

Sp. Conduct ____ K x 10^6 ☐ Temp. ____ °F ☐ Date sampled ____ ☐

Taste, color, etc.

W.L. = 44.54, 7-10-74 below L.S.D

43.00
1.91
44.91

102
-45
+57

Well No.

Well No. ZA 66-54-602

Latitude-longitude 27, 10, 14 [✓ N] S 96, 15, 30
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD (1–19) Physiographic Province: COASTAL PLAIN C 3 (20–21) Section: ______

______ F (22) Drainage Basin: ______ 5 2 3 (23–25) Subbasin: ______ ☐ (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, [✓ (F) flat], (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat ______ (27) F

MAJOR AQUIFER: ______ system, ______ series Q (28–29) ______ aquifer, formation, group C (30–31)

Lithology: ______ ☐ (32–33) Origin: ______ ☐ (34) Aquifer Thickness: ______ ft

☐ (35–37) Length of well open to: ______ ft ☐ (38–40) Depth to top of: ______ ft ☐ (41–43)

MINOR AQUIFER: ______ system, ______ series ☐ (44–45) ______ aquifer, formation, group ☐ (46–47)

Lithology: ______ ☐ (48–49) Origin: ______ ☐ (50) Aquifer Thickness: ______ ft

☐ (51–53) Length of well open to: ______ ft ☐ (54–56) Depth to top of: ______ ft ☐ (57–59)

Intervals Screened: ______

Depth to consolidated rock: ______ ft ☐ (60–63) Source of data: ______ ☐ (64)

Depth to basement: ______ ft ☐ (65–68) Source of data: ______ ☐ (69)

Surficial material: ______ ☐ (70–71) Infiltration characteristics: ______ ☐ (72)

Coefficient Trans: ______ gpd/ft ☐ (73–75) Coefficient Storage: ______ ☐ (76–78)

Coefficient Perm: ______ gpd/ft^2; Spec cap: ______ gpm/ft; Number of geologic cards: ______ ☐ (79)

Well No. ______

GPO 869-201

FORM 9-1142B
(DEC 1967)

Well No. ZA 66-54-608

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR   GEOLOGICAL SURVEY   WATER RESOURCES DIVISION

(KKS - 11/2/59)

MASTER CARD

Record by C. LOCKET   Source of data DRL. LOG   Date 7-17-74   Map EL CAMPO

State TEXAS   49   County (or town) WHARTON   ZA

Latitude: 291007 N (deg, min, sec)   Longitude: 0967508 E (degrees, min, sec)   Sequential number: 1

Lat-long accuracy: 1   T. ____ N/S, R ____ E/W, Sec ____, ____ ¼, ____ ¼, ____ ¼ ____ B & M

Local well number: ZA 66-54-608   Other number: ____

Local use: ☐   Owner or name: EDMUND MACH

Owner or name: EDMUND MACH   Address: EL CAMPO, Tx

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, [✓ (P) Private], (S) State Agency, (W) Water Dist ____ P

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, [✓ (I) Irr], (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, (U) Unused, (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other RICE   I

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, [✓ (W) Withdraw], (X) Waste, (Z) Destroyed   W

DATA AVAILABLE: Well data ☐   Freq. W/L meas.: NONE   N   Field aquifer char. ☐

Hyd. lab. data: ____ ☐

Qual. water data; type: ____ ☐

Freq. sampling: NONE ☐   Pumpage inventory: yes no, period: ____ ☐

Aperture cards: ____ yes ☐

Log data: DRL. LOG   D

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD   Depth well: 265 ft   265   Meas. [✓ rept] DRL LOG accuracy   3

Depth cased: (first perf.) 80 ft   80   Casing type: STEEL; Diam. 18/12 in   18

Finish: (C) porous concrete, [✓ (F) gravel w. (perf.)], (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., (S) screen, (T) sd. pt., (W) shored, (X) open hole, (Z) ____ other   F

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, [✓ (H) hyd rot], (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) ____ other   H

Date Drilled: 1952   952   Pump intake setting: 110 ft   110

Driller: LEONARD MICKELSON (name), EL CAMPO, Tx (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), (N) none, (P) piston, (R) rot, (S) submerg, [✓ (T) turb], (Z) other   T   Deep Shallow D

Power (type): diesel, elec, [✓ nat gas], gasoline, hand, LP gas, wind; H.P. 85   C   Trans. or meter no. ____

Descrip. MP ____ ft above/below LSD, Alt. MP ____

Alt. LSD: 79   79   Accuracy: (source) TOPO ± 5 ft   3

Water Level PUMPING ft above/below MP; Ft above/below LSD ☐   Accuracy: ____ ☐

Date meas: 7-17-74 ☐   Yield: ____ gpm ☐   Method determined ☐

Drawdown: ____ ft ☐   Accuracy: ____ ☐   Pumping period ____ hrs ☐

QUALITY OF WATER DATA: Iron ____ ppm ☐   Sulfate ____ ppm ☐   Chloride ____ ppm ☐   Hard. ____ ppm ☐

Sp. Conduct ____ K x 10^6 ☐   Temp. ____ °F ☐   Date sampled ☐

Taste, color, etc. ____

Well No. ____

Well No. ZA 66-51-603

Latitude-longitude 29 10 07 [✓ N] S 96 15 24
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD 1 19

Physiographic Province: COASTAL PLAIN CP 20 21 Section:

F 22 Drainage Basin: 523 22 25 Subbasin: 26

Topo of well site: (D) depression, (C) stream channel, (E) dunes, [✓ (F) flat], (H) hilltop, (K) sink, (L) swamp, (O) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat 27 F

MAJOR AQUIFER: system, series Q 28 29 aquifer, formation, group C 30 31

Lithology: 32 33 Origin: 34 Aquifer Thickness: ft

35 37 Length of well open to: 125 ft 125 38 40 Depth to top of: 80 ft 80 41 43

MINOR AQUIFER: system, series 44 45 aquifer, formation, group 46 47

Lithology: 48 49 Origin: 50 Aquifer Thickness: ft

51 53 Length of well open to: ft 54 56 Depth to top of: ft 57 59

Intervals Screened: 15": 80 to 105; 12": 105 to 109, 160 to 215, 223 to 264

Depth to consolidated rock: ft 60 63 Source of data: 64

Depth to basement: ft 65 68 Source of data: 69

Surficial material: 70 71 Infiltration characteristics: 72

Coefficient Trans: gpd/ft 73 75 Coefficient Storage: 76 78

Coefficient Perm: gpd/ft²; Spec cap: gpm/ft; Number of geologic cards: 79

105' - 18" CSG
160' - 12" CSG

Well No.

GPO 869-201

FORM 9-1642B
(DEC. 68)

Well No. 2A 66-54-611
(E-110)

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR GEOLOGICAL SURVEY WATER RESOURCES DIVISION

(TWE - 6/5/34)

MASTER CARD

Record by C. LOSKOT Source of data DRL. LOG Date 2-10-74 Map EL CAMPO

State TEXAS 4 9 County (or town) WHARTON 2 A

Latitude: 2 9 1 0 1 3 N Longitude: 0 9 6 1 5 3 2 Sequential number: 1

Lat-long accuracy: 1 T ____ N/S, R ____ E/W, Sec ____, ____ ¼, ____ ¼, ____ ¼ ____ B & M

Local well number: ZA 66-54-611 Other number: ____

Local use: ____ Owner or name: P. DORNAK

Owner or name: P DORNAK Address: EL CAMPO TX

Ownership: (C) County, (F) Fed Gov't, (M) City, (N) Corp or Co, [✓ (P) Private], (S) State Agency, (W) Water Dist ____ P

Use of water: (A) Air cond, (B) Bottling, (C) Comm, (D) Dewater, (E) Power, (F) Fire, (H) Dom, (I) Irr, (M) Med, (N) Ind, (P) P S, (R) Rec, (S) Stock, (T) Instit, [✓ (U) Unused], (V) Repressure, (W) Recharge, (X) Desal-P S, (Y) Desal-other, (Z) Other ____ U

Use of well: (A) Anode, (D) Drain, (G) Seismic, (H) Heat Res, (O) Obs, (P) Oil-gas, (R) Recharge, (T) Test, (U) Unused, (W) Withdraw, (X) Waste, [✓ (Z) Destroyed] Z

DATA AVAILABLE: Well data ☐ Freq. W/L meas.: '34, '38-'41, '42 I Field aquifer char. ☐

Hyd. lab. data: ____ ☐

Qual. water data; type: PARTIAL P

Freq. sampling: 6-5-34; 6-4-40 I Pumpage inventory: yes no, period: ____ ☐

Aperture cards: ____ yes ☐

Log data: ____ ☐ ☐

WELL-DESCRIPTION CARD

SAME AS ON MASTER CARD Depth well: 102 ft 1 0 2 Meas. [✓ repr] DRL. LOG accuracy 3

Depth cased: (first perf.) N/A ft ☐ Casing type: RDN ; Diam. 24/8 in 2 4

Finish: (C) porous concrete, (F) gravel w. (perf.), (G) gravel w. (screen), (H) horiz. gallery, (O) open end, (P) perf., [✓ (S) screen], (T) sd. pt., (W) shored, (X) open hole, (Z) ____ other S

Method Drilled: (A) air rot, (B) bored, (C) cable, (D) dug, [✓ (H) hyd rot], (J) jetted, (P) air percussion, (R) reverse rotary, (T) trenching, (V) driven, (W) drive wash, (Z) ____ other H

Date Drilled: 1924 9 2 4 Pump intake setting: ____ ft ☐

Driller: CHAS. MICKELSON (name), EL CAMPO, TX (address)

Lift (type): (A) air, (B) bucket, (C) cent, (J) jet, (L) multiple (cent.), (M) multiple (turb.), [✓ (N) none], (P) piston, (R) rot, (S) submerg, (T) turb, (Z) other N Deep Shallow D

Power (type): diesel, elec, nat gas, gasoline, hand, LP gas, wind; H.P. ____ ☐ Trans. or meter no. ____

Descrip. MP U.T.M ____ ft above below LSD, Alt. MP ____

Alt. LSD: 102 1 0 2 Accuracy: (source) topo I 5 ft 3

Water Level 20.99 ft above below MP; Ft above [✓ below] [✓ LSD] 2 1 Accuracy: TAPE, TWDB A

Date meas: 4-05-47 4 4 7 Yield: ____ gpm ☐ Method determined ☐

Drawdown: ____ ft ☐ Accuracy: ____ ☐ Pumping period ____ hrs ☐

QUALITY OF WATER DATA: Iron ____ ppm ☐ Sulfate ____ ppm ☐ Chloride ____ ppm ☐ Hard. ____ ppm ☐

Sp. Conduct ____ K x 10^6 ☐ Temp. ____ °F ☐ Date sampled 6-4-40 6 4 0

Taste, color, etc. ____

ObsWell

Well No.

Well No. ZA 66-54-611

Latitude-longitude 29,10,13 (N) 96,15,32
d m s d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD 1 19

Physiographic Province: COASTAL PLAIN 0 3 (20 21)

Section:

F (22) Drainage Basin: 5 2 3 (23 25)

Subbasin: (26)

Topo of well site: (D) depression, (C) stream channel, (E) dunes, [✓ (F) flat,] (H) hilltop, (K) sink, (L) swamp, (0) offshore, (P) pediment, (S) hillside, (T) terrace, (U) undulating, (V) valley flat (27) F

MAJOR AQUIFER: system, series C (28 29) aquifer, formation, group C (30 31)

Lithology: (32 33) Origin: (34) Aquifer Thickness: ft

(35 37) Length of well open to: ft (38 40) Depth to top of: ft (41 43)

MINOR AQUIFER: system, series (44 45) aquifer, formation, group (46 47)

Lithology: (48 49) Origin: (50) Aquifer Thickness: ft

(51 53) Length of well open to: ft (54 56) Depth to top of: ft (57 59)

Intervals Screened:

Depth to consolidated rock: ft (60 63) Source of data: (64)

Depth to basement: ft (65 68) Source of data: (69)

Surficial material: (70 71) Infiltration characteristics: (72)

Coefficient Trans: gpd/ft (73 75) Coefficient Storage: (76 78)

Coefficient Perm: gpd/ft^2; Spec cap: gpm/ft; Number of geologic cards: (79)

Well No.

GPO 869-207

#3

6H

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Au 'exas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. [illegible]
Located on map [illegible]
Received: [illegible]

1) OWNER Jerry Shelton (Name) Address 1420 N. Mechanic (Street or RFD) El Campo (City) Tx. (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 2.2 miles in S. E (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. #3 Map on 66-45-9V

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 5/18/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	106

From (ft.)	To (ft.)	Description and color of formation material
0	21	top soil & clay
21	30	white sand
30	48	course red sand + sm. gravel
48	50	hard stks.
50	54	sm. gravel
54	69	clay
69	72	sand
7[illegible]	80	clay
80	85	streaks
85	92	sand
92	97	clay
97	106	tan sand

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 96 ft. to 106 ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	plastic	0	96	Sch 40
4	N.	plastic Gator	96	106	.010

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 44 ft. below land surface Date 5/18/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☑ Estimated
Yield: 18 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME J. A. Johnson, Jr. (Type or Print) Water Well Drillers Registration No. 960

ADDRESS Rt. 2, Bx 157 (Street or RFD) El Campo (City), Texas (State) 77437 (Zip)

(Signed) J A Johnson Jr (Water Well Driller) J. A. Johnson Water Well Service (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

6H

Send [illegible]al copy by
certi[illegible]ail to the
Texas [illegible]er Development Board
P. O. Box 12386
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-24-65
Located on map [illegible]
Received: 75.7
[illegible]

1) OWNER:
Person having well drilled Mrs. Nora Mehrens (Name) Address Star Rt (Street or RFD) ElCampo (City) Tex (State)

Landowner Same (Name) Address ______ (Street or RFD) ______ (City) ______ (State)

2) LOCATION OF WELL:
County Wharton, 2 miles in SE (N.E., S.W., etc.) direction from Lo. ElCampo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

North

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor ______ League ______
Block ______ Survey ______
Abstract No. ______
(NW¼ NE¼ SW¼ SE¼) of Section ______

3) TYPE OF WORK (Check):
[✓ New Well] Deepening Reconditioning Plugging

4) PROPOSED USE (Check):
[✓ Domestic] Industrial Municipal Irrigation Test Well Other

5) TYPE OF WELL (Check):
[✓ Rotary] Driven Dug Cable Jetted Bored

6) WELL LOG:
Diameter of hole 4½ in. Depth drilled 80 ft. Depth of completed well 80 ft. Date drilled 8-26-72
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	74	CLAY R
74	51	SAND
51	[illegible]	CLAY W
65	[illegible]0	

(Use reverse side if necessary)

9) Casing:
Type: Old [✓ New] Steel [✓ Plastic] Other
Cemented from ______ ft. to ______ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
2	0	74	S40

10) SCREEN:
Type Pl
Perforated [✓ Slotted]

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
2	74	80	014

7) COMPLETION (Check):
[✓ Straight wall] Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 44 ft. below land surface Date ______
Artesian pressure ______ lbs. per square inch Date ______
Depth to pump bowls, cylinder, jet, etc., ______ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.
Bailer test ______ gpm with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gpm
Temperature of water ______

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? Good depth of strata 15

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. PRAYTOR (Type or Print) Water Well Drillers Registration No. 407

ADDRESS Box 603 (Street or RFD) ElCampo (City) Tex (State)

(Signed) W. C. Praytor (Water Well Driller) Praytor Drlg (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

TWDBE-GW-53

#21 Pup

Send original copy by
certified mail to the
Texas [illegible]artment of Water Resources
P. O. [illegible] 3087
Aus[illegible]s 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map yes
Received: c.f.S

1) OWNER Dr. J.A. Morant (Name) Address 1009 N. Mechanic (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 2.3 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ____ Block No. ____ Township ____
Abstract No. ____ Survey Name ____
Distance and direction from two intersecting section or survey lines ____

☑ See attached map. map on 66-54-6WW

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other

6) WELL LOG:

Date drilled 3/25/82

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	104

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other
If Gravel Packed give interval . . . from ____ ft. to ____ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	19	topsoil + clay
19	55	coarse wt sand & sm gravel
55	58	clay
58	65	coarse wt sand
65	72	clay, sand + rock stks
72	75	clay
[illegible]	84	sand tan
[illegible]	86	clay
86	95	fine tan sand
95	96	clay
96	99	coarse tan sand & sm gravel
99	100	clay
100	104	coarse tan sand + sm gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
4	N	plastic	0	94	Sch 40
4	N	plastic-Mator	94	104	.010

CEMENTING DATA
Cemented from ____ ft. to ____ ft.
Method used ____
Cemented by ____ (Company or Individual)

9) WATER LEVEL:
Static level 47 ft. below land surface Date 3/25/82
Artesian flow ____ gpm. Date ____

10) PACKERS: Type Depth

RECEIVED
AUG 17 1982
DEPT. OF
WATER RESOURCES

11) TYPE PUMP:
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., 80' ft.

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 15 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835
ADDRESS Rt 2 Bx 120 (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)
(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Serv (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

WATER RESOURCES COPY

#15 DUP 6H

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. [illegible] 13087
Au[illegible] xas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map YES
Received: CIFS.

1) OWNER Pete Lara (Name) Address 110 Oscar (Street or RFD) El Campo (City), Tx (State) (Zip)

2) LOCATION OF WELL: County Wharton 23 miles in S.E (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☒ ~~See~~ attached map. Map on 66-62-1 J

3) TYPE OF WORK (Check):
☑ ~~New Well~~ ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ ~~Domestic~~ ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ ~~Mud Rotary~~ ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 5/14/80

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
41/2	Surface	100

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ ~~Gravel~~ Packed ☐ Other ______
If Gravel Packed give interval . . . from 95 ft. to 100 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	20	top soil & clay
20	55	course sand
55	56	clay break
56	65	coarse sand & sm. gravel
65	69	clay
69	84	sand
8[illegible]	86	clay break
[illegible]	95	sand & clay streaks
95	100	course sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N.	plastic	0	95	sch 40
2	N.	plastic Yaton	95	100	.010

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 46 ft. below land surface Date 5/14/80
Artesian flow ______ gpm. Date ______

RECEIVED
NOV 19 1981
CR/TDWR

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☑ ~~Jet~~ ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, [✓ jet], etc., 60 ft.

13) WATER QUALITY:
Did you knowingly penetrate ~~any strata~~ which contained undesirable water? ☐ Yes ☒ ~~No~~
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

12) WELL TESTS:
☐ Type Test: ☒ ~~Pump~~ ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME A-Johnson, Jr Mary H- Johnson (Type or Print) Water Well Drillers Registration No. 960 & 1835

ADDRESS Rt. 2, Bx. 157 (Street or RFD) El Campo (City) TX. (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J A-Johnson Water Well Serv. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

11

DUP 6H

Send original copy by
certified mail to the
Texas Department of Water Resources
P.O 13087
Au xas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map
Received:

1) OWNER Dr. J. A. Mount (Name) Address 1009 N. Mechanic (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 2.2 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☒ See attached map. map on 66-68-1J

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 5/14/80

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	100

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 90 ft. to 100 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	23	top soil + clay
23	53	sand
53	63	clay
63	85	sand
85	86	clay break
86	100	coarse sand

(Use reverse side if necessary)

NOV 19 1981
GW/TDWR

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	plastic	0	90	sch 40
4	N	plastic - Gator	90	100	.010

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 46 ft. below land surface Date 5/14/80
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 20 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME J A Johnson Jr & Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 960 - 1835
ADDRESS Rt 2, Bx 157 (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)
(Signed) Mary H. Johnson (Water Well Driller) J A Johnson Water Well Servi (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

#14 Da 76H

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map [illegible]
Received: [illegible]

1) OWNER J. D. Langley (Name) Address Salley's Mobile Home Park #33, El Campo, TX. 77437 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL
County Wharton 2.3 miles in S. E (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. map on 66-63-6G

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 10/6/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4½	Surface	83

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 78 ft. to 83 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	23	top soil & clay
23	55	course red sand
55	67	clay
67	83	coarse sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	plastic	0	78	sch 40
2	N	plastic	78	83	.012

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

RECEIVED
NOV 19 1981
TDWR

9) WATER LEVEL:
Static level 46 ft. below land surface Date 10/6/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, [✓ jet], etc., 60 ft.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835

ADDRESS Rt. 2, Bx 157 (Street or RFD) El Campo, (City) TX 77437 (State) (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Serv. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

Dep

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Aus xas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map yes
Received: C.F. 81

1) OWNER Bert Conner (Name) Address 1600 Ellwood (Street or RFD) El Campo (City) Texas (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 3 miles in S (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ____ Block No. ____ Township ____
Abstract No. ____ Survey Name ____
Distance and direction from two intersecting section or survey lines ____

☑ See attached map.

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ____

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ____

6) WELL LOG:

Date drilled 4-7-82

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6	Surface	105

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ____
If Gravel Packed give interval . . . from ____ ft. to ____ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	top soil
3	25	red clay
25	44	sand
44	64	red clay
64	105	sand

SEP 20 1982

RECEIVED
APR 16 1982
DEPT. OF
WATER RESOURCES

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	New	Plastic	0	95	40
4	New	Plastic slotted	95	105	.006

CEMENTING DATA
Cemented from 0 ft. to 22 ft.
Method used Poured from top
Cemented by Same (Company or Individual)

9) WATER LEVEL:
Static level 45 ft. below land surface Date 4-7-82
Artesian flow ____ gpm. Date ____

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Fresh Depth of strata 41
Was a chemical analysis made? ☐ Yes ☑ No

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

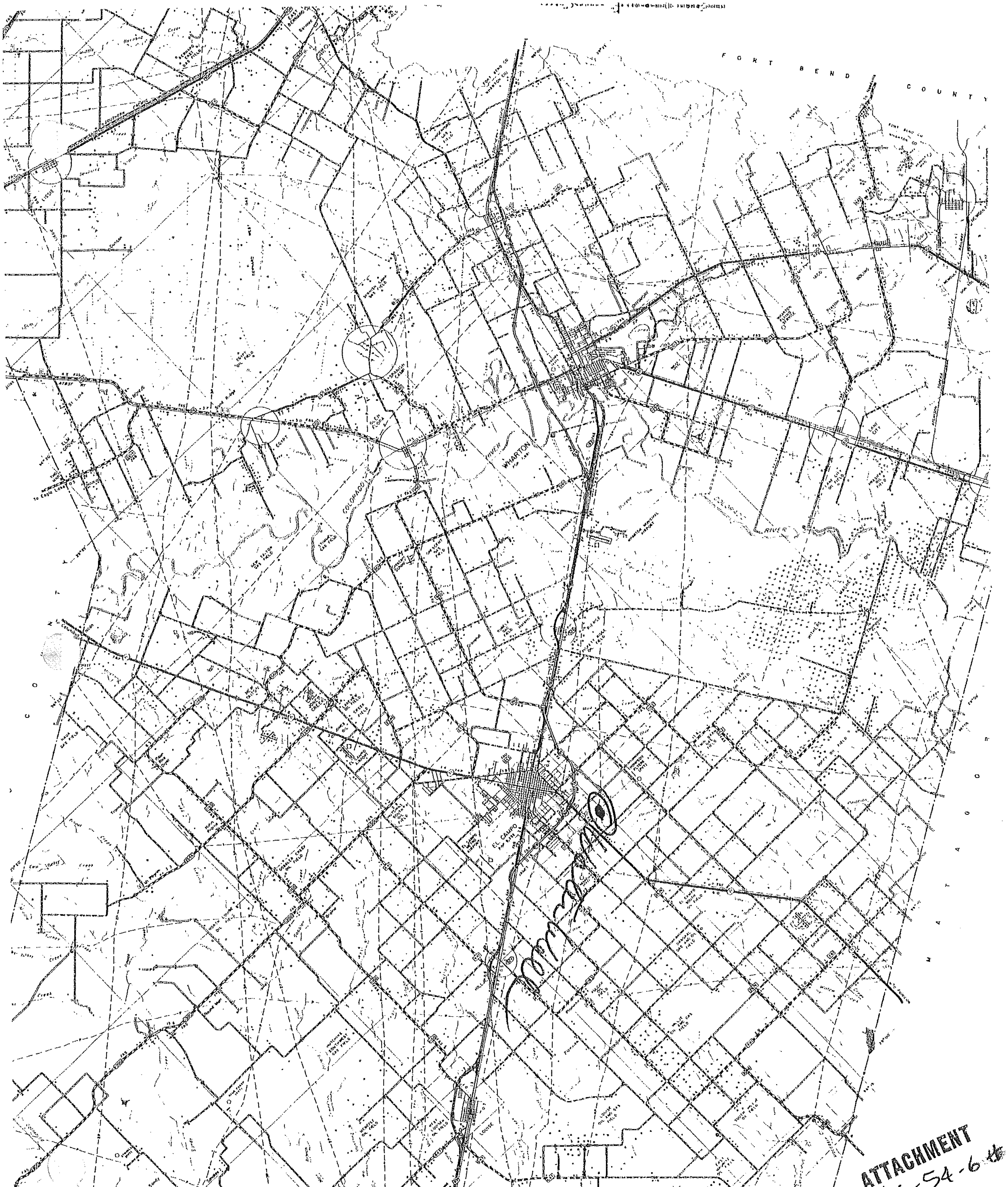
I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Willie Prazak Jr (Type or Print) Water Well Drillers Registration No. 1722

ADDRESS 2502 Velga Rd. (Street or RFD) Wharton (City) Texas (State) 77488 (Zip)

(Signed) Willie Prazak Jr. (Water Well Driller) Willie Prazak Water Well Serv. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.



ATTACHMENT
66-54-6

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O 3087
Aus as 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map yes
Received: C.F.S.

1) OWNER Laurence Kainer (Name) Address Box 23B (Street or RFD) El Campo (City) Texas (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 1 miles in S (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map.

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 1-16-82

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4	Surface	107

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	4	top soil
4	24	red clay
24	52	sand
52	56	gray clay
56	64	sand stone & sand
64	107	sand-course

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
2	New	Plastic	0	97	40
2	New	Plastic slotted	97	107	006

CEMENTING DATA
Cemented from 0 ft. to 25 ft.
Method used Poured from top
Cemented by same (Company or Individual)

9) WATER LEVEL:
Static level 48 ft. below land surface Date 1-16-82
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

RECEIVED
SEP 20 1982
OK/TDWR

11) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 60 ft.

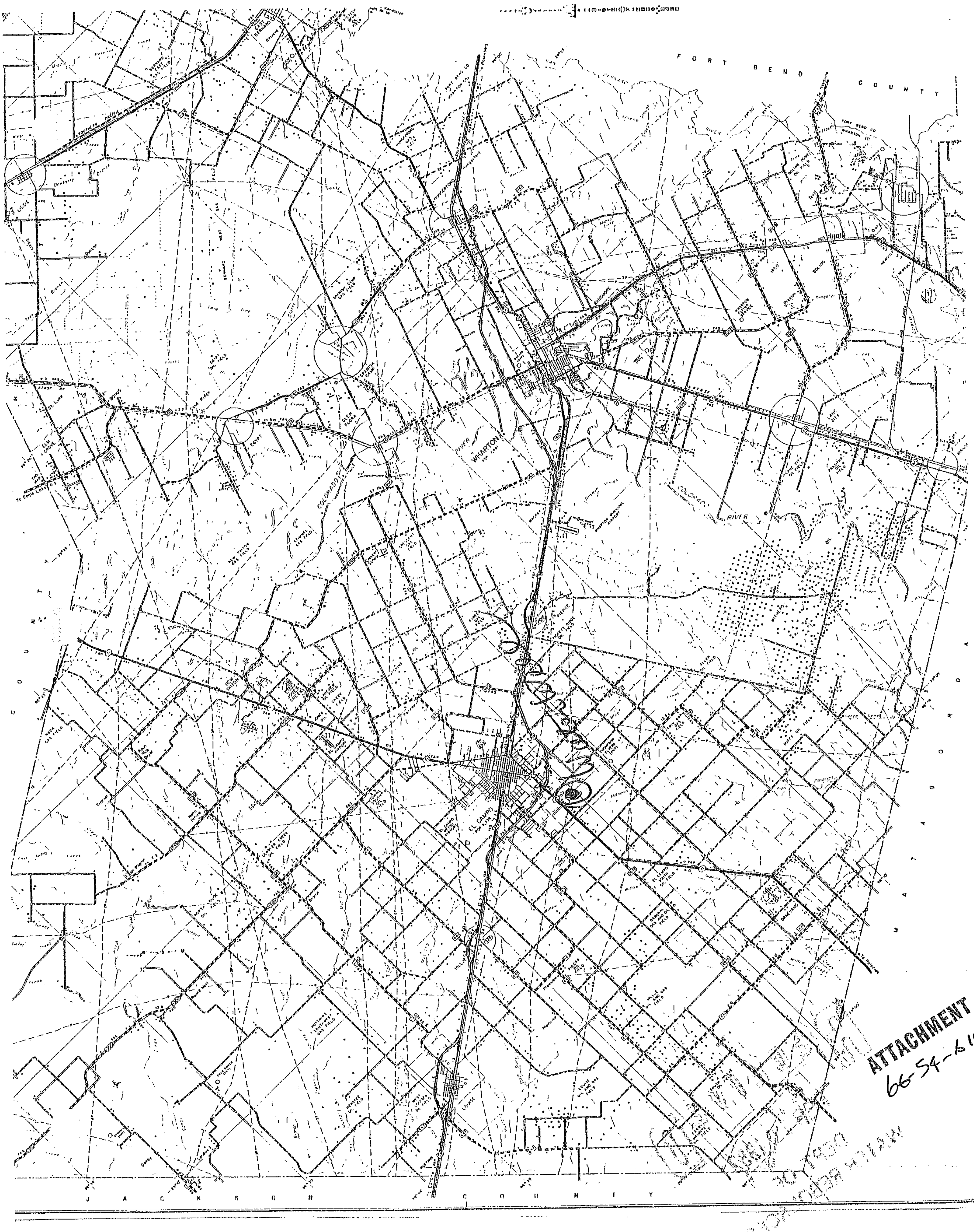
12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? fresh Depth of strata 43
Was a chemical analysis made? ☐ Yes ☑ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Willie Prazak Jr. (Type or Print) Water Well Drillers Registration No. 1722
ADDRESS 2502 Nelson Rd (Street or RFD) Wharton (City) Texas (State) 77488 (Zip)
(Signed) Willie Prazak Jr (Water Well Driller) Willie Prazak Water Well Serv. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.



ATTACHMENT
66-54-61A

6H

File original copy with
Texas Water Commission
P. O 12311, Capitol Station
Aus xas 78711

State of Texas

DRILLERS LOG AND WELL DATA REPORT

For use by TWC only
Well No. 66-59-6H
Located on map yes
By [illegible] Date 65
Map no. 241

1) Well Owner: G. W. Hicks (Name) 915 Spruce St (Street or RFD) ElCampo (City) Texas (State)

2) Land Owner: " " (Name) " " " (Street or RFD) " (City) " (State)

3) Intended use: Industrial ☐ ; Municipal ☐ ; Irrigation ☐ ; Other Home

4) Location of well: County Wharton Labor ____ League ____ Abstract No. ____

NW¼ NE¼ SW¼ SE¼ of Section South ½ of Block Block No. 21 Survey corrected Adding Add. To City of ElCampo
(Circle as many as are known)
Adjacent To S.E City Limits 1.25 Acres Land

____ miles in ____ (NE, SW, etc.) direction

from ____ (Town)

North

Sketch map of well location with distances from two section or survey lines, and to landmarks, roads, and creeks.

DRILLERS LOG OF WELL

Method of drilling: Rotary Diameter of hole 4¼ in. Date drilled 8-3-65

All measurements made from 0 ft. above ground level.

From (ft)	To (ft)	Description and color of formation material	From (ft)	To (ft)	Description and color of formation material
0	11	Clay Red			
11	35	Sand			
35	37	Clay Red			
37	[illegible]0	Sand			
50	55	Clay grey			
55	67	Sand			

(Use continuation sheets if necessary)

COMPLETION DATA

COMPLETION

Straight wall ☑
Under reamed ☐
Gravel packed ☐
Open hole ☐
Other ____

CASING

Type: Old ☐ New ☑

Cemented from ____ ft.
to ____ ft.

Diameter (inches)	Setting from (ft)	Setting to (ft)
2	0	63

SCREEN

Type Keystone Plastic

Perforated ☐ Slotted ☐

Diameter (inches)	Setting from (ft)	Setting to (ft)
2	63	67

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

W. C. Brayton (Signature) Brayton Drilling & Well Serv. (Company Name) Reg. No. 630

Please attach electric log, chemical analysis, and other pertinent information if available.

If well was tested by your company or if you installed the permanent pump please complete the following:

WATER LEVEL AND PUMP DATA

Static water level 35
ft. below Ground Level

Pumping level

fe	hours	gpm

Pump type ____
Designed pumping rate ____ gpm ☐ gph ☐
Type power unit ____
Horsepower ____
Depth to bowls, cylinder, jet, etc., ____ ft. below pump base.

Name of contractor testing well or installing permanent pump if other than your company: Owner

C-34 (62-4)

Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O 13087
Au: as 78711

State of Texas

WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6H
Located on map yes
Received: c.f.s.

1) OWNER Leslie Mitchell (Name) Address 907 Mabel St (Street or RFD) El Campo (City) Tex (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 4.5 miles in S (N.E., S.W., etc.) direction from U.S. P.O. El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______
☑ See attached map.

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☑ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check): ☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 8-30-79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9"	Surface	105'

7) BOREHOLE COMPLETION:
☑ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0-	6	surface
6-	15	red shale
15-	30	red shale + red fine sand
30-	37	red shale & sand
37-	45	gravel + Br sand
45-	51	gravel
51	[illegible]0	gray shale
6[illegible]	[illegible]5	gray shale & sand
75-	80	fine sand & shale
80-	110	"salt + pepper" gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	PVC sch 40	0'	100'	
2	N	PVC wrapped on PVC	100	105	16 g

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 50 ft. below land surface Date 9-1-79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth
NA

11) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 60' ft.

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 600T gpm with ______ ft. drawdown after ______ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

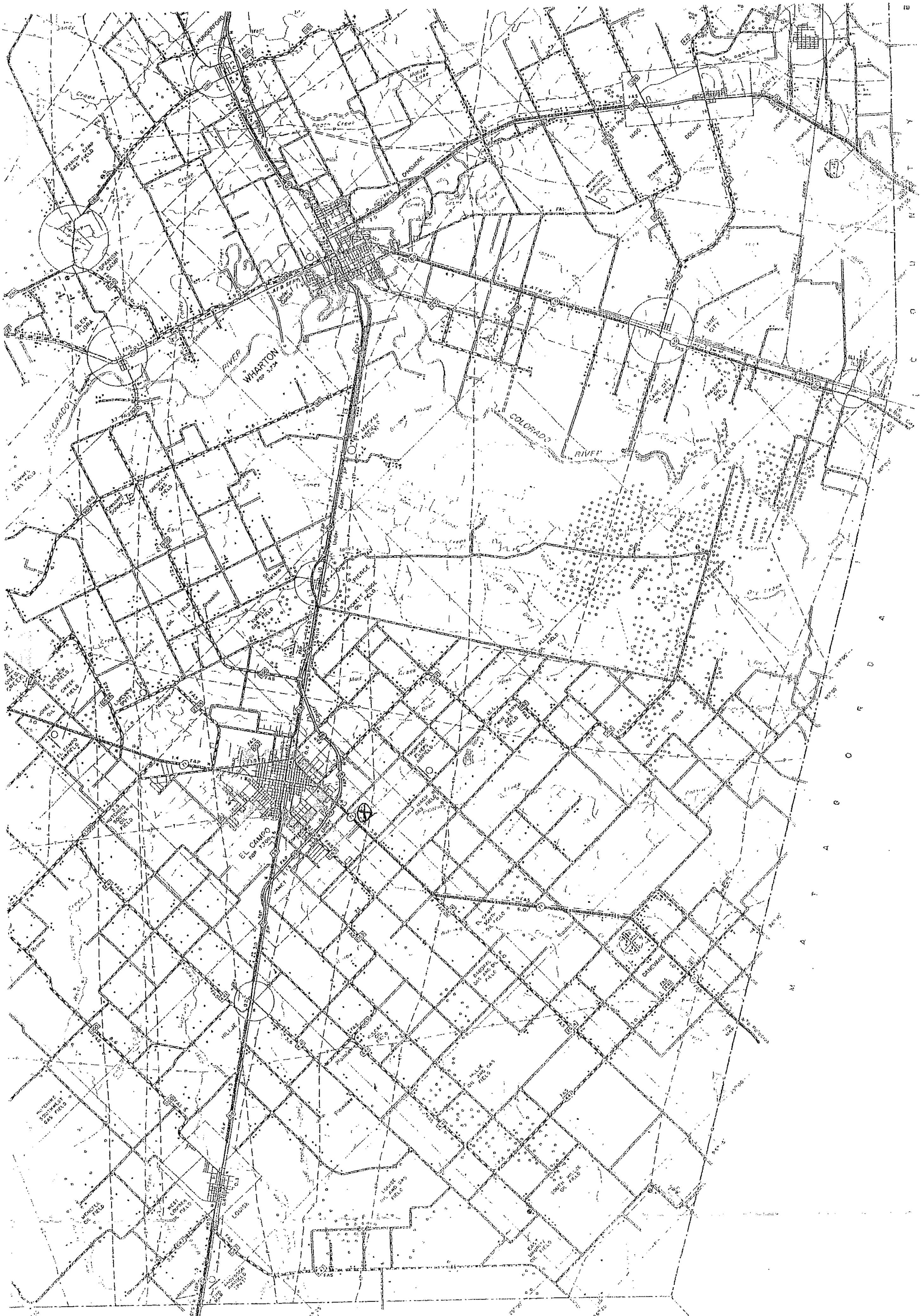
I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Guy C Conner (Type or Print) Water Well Drillers Registration No. 477

ADDRESS 1604 Ellwood (Street or RFD) ElCampo (City) Texas (State) 77437 (Zip)

(Signed) Guy C Conner (Water Well Driller) Guy C. Conner & Son (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.


HUNGERFORD
BOLING
WHARTON
COLORADO
RIVER
LANE CITY
GLEN FLORA
SPANISH CAMP
SPANISH CAMP GAS FIELD
CRESCENT GAS FIELD
PIERCE
ALLEN FIELD
DUFFY OIL FIELD
EL CAMPO
POP 7700
JANET
HILLJE
HILLJE OIL AND GAS FIELD
DANEVANG
SOUTH HILLJE OIL FIELD
LOUISE
MAGNET
WITHERS
MATAGORDA
COUNTY

6NN

Send o[illegible]nal copy by
certi[illegible]ail to the
Texas [illegible] Development Board
P. O. [illegible] 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-54-6NN
Located on map Yes
Received: 73

1) OWNER:
Person having well drilled Knights OF Columbos (Name) Address Bx 482 (Street or RFD) ElCampo (City) Tex (State)
Landowner Same (Name) Address " (Street or RFD) " (City) " (State)

2) LOCATION OF WELL:
County Wharton, 2 miles in S (N.E., S.W., etc.) direction from P.O. ElCampo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

66-53-3F

North ↑

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.
Labor ____ League ____
Block ____ Survey ____
Abstract No. ____
(NW¼ NE¼ SW¼ SE¼) of Section ____

3) TYPE OF WORK (Check):
[✓ New Well] Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
[✓ Domestic] Industrial Municipal
Irrigation Test Well Other

5) TYPE OF WELL (Check):
[✓ Rotary] Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 7 in. Depth drilled 87 ft. Depth of completed well 87 ft. Date drilled 9-26-73
All measurements made from ____ ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0-	24	Clay R
24-	40	S
40-	70	Clay R
70-	[illegible]8	Sand

(Use reverse side if necessary)

9) Casing:
Type: Old [✓ New] Steel [✓ Plastic] Other
Cemented from ____ ft. to ____ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
4	0	80	S 40

10) SCREEN:
Type KeyStone Pl
Perforated Slotted

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
4	80	88	014

7) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 46 ft. below land surface Date ____
Artesian pressure ____ lbs. per square inch Date ____
Depth to pump bowls, cylinder, jet, etc., ____ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.
Bailer test ____ gpm with ____ ft. drawdown after ____ hrs.
Artesian flow ____ gpm
Temperature of water ____

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? Good depth of strata 18

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Prayton (Type or Print) Water Well Drillers Registration No. 407
ADDRESS Box 63 (Street or RFD) ElCampo (City) Tex (State)
(Signed W. C. Prayton (Water Well Driller) Prayton Drlg (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

WDBE-WD-8

6NN

Send al copy by
cert ail to the
Texas Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-54-6 NN
Located on map yes
Received: 76

1) OWNER:
Person having well drilled Bill Humphrey (Name) Address Myett Av. (Street or RFD) El Campo (City) Tex (State)
Landowner Little League (Name) Address El Campo (Street or RFD) (City) Tex (State)

2) LOCATION OF WELL:
County Wharton , 3 miles in East (N.E., S.W., etc.) direction from Legion Center (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

North ↑

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.
Labor ______ League ______
Block ______ Survey ______
Abstract No. ______
(NW¼ NE¼ SW¼ SE¼) of Section ______

3) TYPE OF WORK (Check):
[✓ New Well] Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
Domestic Industrial Municipal
[✓ Irrigation] Test Well Other

5) TYPE OF WELL (Check):
[✓ Rotary] Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 7 in. Depth drilled 127 ft. Depth of completed well 127 ft. Date drilled 9-26-76
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0 - 5		TopSoil
5-23		Clay R
23-	[illegible]	Sand
39-	[illegible]	Clay R
41-54		Sand
54-78		Clay R
78 - 127		Sand & Gravel

(Use reverse side if necessary)

9) Casing:
Type: Old [✓ New] Steel [✓ Plastic] Other
Cemented from ______ ft. to ______ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
4	0	117	Sch. 40

10) SCREEN:
Type PL-
Perforated [✓ Slotted]

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
4	117	127	.018

7) COMPLETION (Check):
[✓ Straight wall] Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 46 ft. below land surface Date ______
Artesian pressure ______ lbs. per square inch Date ______
Depth to pump bowls, cylinder, jet, etc., ______ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom? ______
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.
Bailer test ______ gpm with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gpm
Temperature of water ______

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? Good depth of strata 49

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Praytor (Type or Print) Water Well Drillers Registration No. 407
ADDRESS P.O. Box 63 (Street or RFD) El Campo (City) Tex (State)
(Signed) ______ (Water Well Driller) Praytor Drlg. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

WDBE-WD-8

#14 DUP

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. [illegible] 13087
Au[illegible]as 78711

State of Texas
WATER WELL REPORT
ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6NN
Located on map: yes
Received: RWB

1) OWNER R. O. Cortez, Jr. (Name) Address Brent Rd. (Street or RFD) El Campo (City) Tx. (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 2.2 miles in S. E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☒ ~~See attached map.~~ ON 66-54-54

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:
Date drilled 4/~~13~~ 17/81

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	109

7) BOREHOLE COMPLETION:
☐ Open Hole ☒ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	7	top soil & red clay
7	8	silty red sand
8	20	white clay
20	55	coarse sand & sm. gravel
55	63	red clay
63	73	coarse sand
7[illegible]	81	clay w/sand streaks
[illegible]	89	sand
89	91	clay
91	101	coarse sand & sm. gravel
101	102	hard
102	109	coarse sand & sm. gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
4	N.	plastic	0	99	Sch 40
4	N.	plastic-Yota	99	109	.010

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 47 ft. below land surface Date 4/17/81
Artesian flow ______ gpm. Date ______

10) PACKERS:

Type	Depth
1 formation	90

11) TYPE PUMP:
☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 80 ft.

12) WELL TESTS:
☐ Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 14 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME A. Johnson Jr. / Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 860 V 1835
ADDRESS Rt 2, Bx 170 (Street or RFD) El Campo (City), Tx (State) 77437 (Zip)
(Signed) Mary H. Johnson (Water Well Driller) J. A. Johnson Water Well Service (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

6QQ

Send [illegible] copy by
certi[illegible] mail to the
Texas Water Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-54-6QQ
Located on map VAS
Received: [illegible]

1) OWNER:
Person having well drilled Jesse May Dornak (Name) Address El Campo (Street or RFD) (City) Tex (State)

Landowner Same (Name) Address (Street or RFD) (City) (State)

2) LOCATION OF WELL:
County Wharton, 2 miles in S (N.E., S.W., etc.) direction from Po. El Campo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

66-55-1m

North ↑

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor ______ League ______
Block ______ Survey ______
Abstract No. ______
(NW¼ NE¼ SW¼ SE¼) of Section ______

3) TYPE OF WORK (Check):
[✓ New Well] Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
[✓ Domestic] Industrial Municipal
Irrigation Test Well Other

5) TYPE OF WELL (Check):
[✓ Rotary] Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 4½ in. Depth drilled 84 ft. Depth of completed well 84 ft. Date drilled 7-28-75
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	5	Top soil
5	40	Clay R
40		Sand
52	73	Clay R
73	84	Sand

(Use reverse side if necessary)

9) Casing:
Type: Old [✓ New] Steel [✓ Plastic] Other
Cemented from ______ ft. to ______ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
2	0	78	Sch-40

10) SCREEN:
Type Pl-
Perforated [✓ Slotted]

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
2	78	84	.012

7) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 48 ft. below land surface Date ______
Artesian pressure ______ lbs. per square inch Date ______
Depth to pump bowls, cylinder, jet, etc., ______ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.
Bailer test ______ gpm with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gpm
Temperature of water ______

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? Good depth of strata 11

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Praytor (Type or Print) Water Well Drillers Registration No. 407

ADDRESS P.O. Box 63 (Street or RFD) El Campo (City) Tex (State)

(Signed) W. C. Praytor (Water Well Driller) Praytor Drlg- (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

WDBE-WD-8

#22

Dup 6RR

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O 13087
Au as 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6QQ
Located on map
Received:

1) OWNER Frank Vesely (Name) Address ~~R.R.~~ D.S.R (Street or RFD) El Campo (City), Tx (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 1.9 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☒ See attached map. map on 66-63-6G

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:
Date drilled 11/5/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9 1/2	Surface	107

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 102 ft. to 107 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	25	top soil & clay
25	50	course sand
50	64	clay
64	78	sand
78	98	sand & clay streaks
98	107	course sand & sm gravel

NOV 19 1981
TDWR

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N.	plastic	0	102	Sch 40
2	N.	plastic	102	107	.018

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 46 ft. below land surface Date 11/5/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☒ Estimated
Yield: 15 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835

ADDRESS Rt. 2, Bx 157 (Street or RFD) El Campo (City), Tx (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J. A. Johnson Water Well Serv (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

#12

6QQ [illegible]

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6QQ
Located on map [illegible]
Received: [illegible]

1) OWNER John Luco (Name) Address P.O. Bx 1117 (Street or RFD) El Campo, (City) Tx. (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 1.6 miles in S.E (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. map on 66-63-[illegible]

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 9/30/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	110

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 100 ft. to 110 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	10	topsoil & clay
10	46	coarse sand
46	55	clay
55	59	fine sand
59	61	clay
61	75	sand
75	83	coarse sand + sm. gravel
[illegible]	89	clay
[illegible]	110	coarse sand

(Use reverse side if necessary)

NOV 19 1981

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
4	N	plastic	0	100	Sch 40
4	N	plastic	100	110	.012

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 41 ft. below land surface Date 9/30/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder
☐ Other ______
Depth to [✓ pump bowls], cylinder, jet, etc., 80 ft.

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 20 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME ~~Mary~~ Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835

ADDRESS Rt 2 Bx 157 (Street or RFD) El Campo (City) TX (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Serv. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79) DEPARTMENT OF WATER RESOURCES COPY

WRR+Dup

Send il copy by
certi ail to the
Texas Water Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-54-6RR
Located on map yes
Received: 78

1) OWNER:
Person having well drilled V. J. MACH Jr. (Name) Address Rt. D.S.R. (Street or RFD) ElcampoTex (City) (State)

Landowner Same (Name) Address (Street or RFD) (City) (State)

2) LOCATION OF WELL:
County Wharton, 3 miles in SE (N.E., S.W., etc.) direction from [illegible] ElCampo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

[illegible] 66-55-2K

North

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.
Labor League
Block Survey
Abstract No.
(NW¼ NE¼ SW¼ SE¼) of Section

3) TYPE OF WORK (Check):
[✓ New Well] Deepening Reconditioning Plugging

4) PROPOSED USE (Check):
[✓ Domestic] Industrial Municipal Irrigation Test Well Other Stock

5) TYPE OF WELL (Check):
Rotary Driven Dug Cable Jetted Bored

6) WELL LOG:
Diameter of hole 4½ in. Depth drilled 100 ft. Depth of completed well 100 ft. Date drilled 9-21-77
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	5	TOPSoil
5	1[illegible]	CLAY R
13	[illegible]	SAND
33	38	SAND
38	53	SAND
53	70	CLAY W
70	100	SAND

(Use reverse side if necessary)

9) Casing:
Type: Old [✓ New] Steel [✓ Plastic] Other
Cemented from ft. to ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
02	0	94	S 40

10) SCREEN:
Type PL-
Perforated [✓ Slotted]

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
2	94	100	.012

7) COMPLETION (Check):
[✓ Straight wall] Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 47 ft. below land surface Date
Artesian pressure lbs. per square inch Date
Depth to pump bowls, cylinder, jet, etc., ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: gpm with ft. drawdown after hrs.
Bailer test gpm with ft. drawdown after hrs.
Artesian flow gpm
Temperature of water

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No.
Type of water? Good depth of strata 30

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Prayter (Type or Print) Water Well Drillers Registration No. 407

ADDRESS Rt1 BOX 63 (Street or RFD) ELCAMPO (City) Tex (State)

(Signed) W. C. Prayter (Water Well Driller) Prayter Drlg. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

WDBE-WD-8

#3 RECEIVED JUL 2 1979 DEPT. OF WATER RESOURCES

WRR Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Aust[illegible]as 78711

State of Texas
WATER WELL REPORT

For TDWR use only
Well No. 66-54 6RK
Located on map yes
Received: 79 Sfc

1) OWNER Lloyd Winfield (Name) Address Hw 71 S. (Street or RFD) El Campo Tx (City) (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 2.4 miles in S.E (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. 3 Map on 66-46-6N

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:
Date drilled 6/20/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4 1/2	Surface	95

From (ft.)	To (ft.)	Description and color of formation material
0	16	topsoil & clay
16	35	light red sand
35	38	clay brake
38	48	sand
48	50	clay brk.
5[illegible]	54	corse sand
[illegible]	58	clay
58	68	fine sand
68	69	clay brk.
69	85	sand
85	95	course sand

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 90 ft. to 95 ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
2	N	plastic	0	90	Sch 40
2	N.	plastic-Yates	90	95	.012

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 44 ft. below land surface Date 6/20/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbin ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, [✓ jet] etc., 60 ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☑ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835

ADDRESS Rt 2, Bx 157 (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Serv. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

#6

RECEIVED
JUL 2 1979
DEPT. OF
WATER RESOURCES

URRa

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O [illegible] 13087
Au[illegible]as 78711

State of Texas
WATER WELL REPORT

For TDWR use only
Well No. 66-54-6[illegible]
Located on map [illegible]
Received: 79 [illegible]

1) OWNER David Juarez (Name) Address 313 E. Carrell, El Campo, Tx 77437 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Wharton, 2.4 miles in S E (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. 6 Map on 66-46-6N

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:
Date drilled 6/14/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4 1/2	Surface	100

From (ft.)	To (ft.)	Description and color of formation material
0	23	topsoil & clay
23	45	sand
45	48	clay
48	56	sand
56	63	clay
6[illegible]	73	sand
[illegible]	84	sand & clay stks.
84	89	sand
89	92	clay brk.
92	100	coarse sand

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 95 ft. to 100 ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N.	plastic	0	95	sch. 40
2	N.	plastic-Yolon	95	100	.010

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 44 ft. below land surface Date 6/14/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbin ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☑ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835
ADDRESS Rt. 2, Bx 757 (Street or RFD) El Campo (City), Tx (State) 77437 (Zip)
(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Service (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

X

6RR Dup

Send [illegible] copy by
certif[illegible] mail to the
Texas Water Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-54-6RR
Located on map yes
Received: 75

1) OWNER:
Person having well drilled Hubert Graham (Name) Address (Street or RFD) El Campo (City) Tex (State)

Landowner Same (Name) Address (Street or RFD) (City) (State)

2) LOCATION OF WELL:
County Wharton, 2½ miles in SE (N.E., S.W., etc.) direction from Po El Campo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

Drawn 66-52-1P

North ↑

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor ______ League ______
Block ______ Survey ______
Abstract No. ______
(NW¼ NE¼ SW¼ SE¼) of Section ______

3) TYPE OF WORK (Check):
[✓ New Well] Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
Domestic Industrial Municipal
Irrigation Test Well Other Rent House

5) TYPE OF WELL (Check):
[✓ Rotary] Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 4½ in. Depth drilled 90 ft. Depth of completed well 90 ft. Date drilled 12-9-74
All measurements made from 0 ft. above ground level.

From (ft.) To (ft.)	Description and color of formation material
0-21	Clay B
21-[illegible]	S
3[illegible]34	CW
34-51	S
51-56	CW
56-65	S
65-80	CW
80-90	S

(Use reverse side if necessary)

9) Casing:
Type: Old New Steel Plastic Other
Cemented from ______ ft. to ______ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
2	0	84	Sch 40

10) SCREEN:
Type Pl
Perforated [✓ Slotted]

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
2	84	90	.012

7) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 45 ft. below land surface Date ______
Artesian pressure ______ lbs. per square inch Date ______
Depth to pump bowls, cylinder, jet, etc., ______ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.
Bailer test ______ gpm with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gpm
Temperature of water ______

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? Good depth of strata 80

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Praytor (Type or Print) Water Well Drillers Registration No. 407

ADDRESS P.O. Box 63 (Street or RFD) El Campo (City) Tex (State)

(Signed) W C Praytor (Water Well Driller) Praytor Drlg (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

WDBE-WO-8

#15

6RR DUP

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
A[illegible] Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6RR
Located on map YES
Received: RWB

1) OWNER Clarence Osina (Name) Address 305 W. Norris (Street or RFD) El Campo, (City) TX (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 2.3 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☒ See attached map. ON 66-54-54

3) TYPE OF WORK (Check): ☒ New Well ☒ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☒ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check): ☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 7/22/81

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4 1/2	Surface	104

7) BOREHOLE COMPLETION: ☐ Open Hole ☒ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	7	topsoil + clay
7	23	red clay
23	45	sand
45	49	clay
49	57	coarse sand + sm. gravel
57	69	clay
69	98	sand
[illegible]	104	coarse sand + sm. gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	plastic	0	99	sch 40
2	N	plastic - Yater	99	104	.010

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 47 ft. below land surface Date 7/22/81
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP: ☐ Turbine ☒ Jet ☐ Submersible ☐ Cylinder ☐ Other ______
Depth to pump bowls, cylinder, [✓ jet] etc., 60 ft.

12) WELL TESTS: ☐ Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME A-Johnson Jr. & Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 960 & 1635

ADDRESS RT-2 BX 170 (Street or RFD) El Campo (City) TX (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) JA-Johnson Water Well Serv (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

#1

DUP
6RR Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Au[illegible]exas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-6RR
Located on map YES
Received: RWB

1) OWNER Kenco Sales (Name) Address Hw 59 W (Street or RFD) El Campo (City), Tx. (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 1.8 miles in S.W. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☒ See attached map. ON 66-54-54

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 8/1/80

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	113

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 103 ft. to 113 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	35	top soil + clay
35	57	sand
57	58	Clay
58	79	fine sand
79	80	Clay
80	100	course sand
100	108	fine sand
1[illegible]	1[illegible]7	very course sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N.	plastic	0	103	sch 40
4	N.	plastic	103	113	.012

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 46 ft. below land surface Date 8/1/80
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 84 ft.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

12) WELL TESTS:
☐ Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 25 gpm with 8 ft. drawdown after 1 hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME A. Johnson, Jr. + Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 960 + 1835

ADDRESS Rt. 2, Bx. ~~157~~ 170 (Street or RFD) El Campo (City), Tx. (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Service (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

#4

WRR Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. [illegible]
Located on map [illegible]
Received: [illegible]

1) OWNER Riceland Builders (Name) Address 312 Merchant, El Campo, Tx 77437 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL: County Wharton 2.2 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. #4 Map # 66-45-7V

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 5/16/79

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4 1/2	Surface	95

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 90 ft. to 95 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	22	top soil & clay
22	53	red sand
53	69	clay
69	72	tan sand
72	75	clay
75	95	coarse tan sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N.	plastic	0	90	Sch 40
2	N	plastic-Gator	90	95	.012

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 44 ft. below land surface Date 5/16/79
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, [✓ jet], etc., 60 ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☑ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME J. A. Johnson, Jr. (Type or Print) Water Well Drillers Registration No. 960

ADDRESS Rt. 2, Bx 157 (Street or RFD) El Campo, (City) Tx (State) 77437 (Zip)

(Signed) J. A. Johnson Jr. (Water Well Driller) J A Johnson Water Well Service (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79) DEPARTMENT OF WATER RESOURCES COPY

1

WRR Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O 13087
Au cas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. [illegible]
Located on map [illegible]
Received: [illegible]

1) OWNER ~~Vauter~~ Jim Vauter (Name) Address Rt. 1 (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 1.3 miles in S.W. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. map on 66-62-1J

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 1/28/80

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
~~[illegible]~~ 4 1/2	Surface	110
~~[illegible]~~		

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other [illegible]
If Gravel Packed give interval . . . from 10.5 ft. to 110 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	10	top soil & clay
10	33	sand
33	46	coarse sand w/clay streaks
46	62	clay
62	77	sand
77	104	fine sand
[illegible]	110	coarse sand + sm-gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N.	plastic	0	105	540
2	N.	plastic-slotted Gator Plastics	105	110	.012

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

NOV 19 1981
(R/TDWR

9) WATER LEVEL:
Static level 46 ft. below land surface Date 1/28/80
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, [✓ jet], etc., 60 ft.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

12) WELL TESTS:
Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 10 gpm with 0 ft. drawdown after 1 hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H. Johnson (Type or Print) Water Well Drillers Registration No. 1835

ADDRESS Rt 2, Bx 157 (Street or RFD) El Campo (City), Tx (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J.A. Johnson Water Well Service (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

6RR

Send al copy by
certi ail to the
Texas r Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

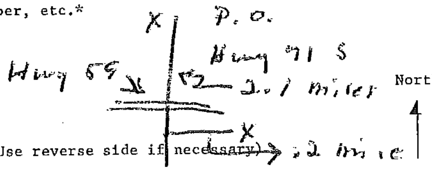
For TWDB use only
Well No. 66-54-6RR
Located on map 405
Received: 771
4k

1) OWNER:
Person having well drilled Blanche STivova (Name) Address 2326 5th (Street or RFD) Stafford (City), Texas (State)

Landowner (Same) (Name) Address (Street or RFD) (Same) (City) (State)

2) LOCATION OF WELL:
County Wharton , 2.5 miles in S (N.E., S.W., etc.) direction from El Campo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*



(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor ______ League ______

Block ______ Survey ______

Abstract No. ______

(NW¼ NE¼ SW¼ SE¼) of Section ______

3) TYPE OF WORK (Check):
New Well ✓ Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
Domestic ✓ Industrial Municipal
Irrigation Test Well Other

5) TYPE OF WELL (Check):
Rotary ✓ Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 4" in. Depth drilled 105 ft. Depth of completed well 95 ft. Date drilled 01-19-77
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	22	Shale (Gray - Brown)
22	40	Sand (Fine - Med)
40	45	Shale (Redish Brown)
45	55	Sand & Gravel
55	70	Shale (Brown - White)
70	98	Sand & Gravel
98	105	Shale (Brown)

(Use reverse side if necessary)

9) Casing:
Type: Old New ✓ Steel Plastic ✓ Other
Cemented from ______ ft. to ______ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
2"	0	90'	
2"	90'	95'	16Ga

10) SCREEN:
Type 2" x 5' x 16Ga Underbar Sch 80
Perforated Slotted

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
2"	90'	95'	16Ga

7) COMPLETION (Check):
Straight wall ✓ Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 45 ft. below land surface Date 01-19-77
Artesian pressure ______ lbs. per square inch Date ______
Depth to pump bowls, cylinder, jet, etc., ______ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes No ✓ If yes, by whom?
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.
Bailer test ______ gpm with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gpm
Temperature of water ______

12) WATER QUALITY:
Was a chemical analysis made? Yes No ✓
Did any strata contain undesirable water? Yes No ✓
Type of water? Fresh depth of strata 70-98'

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Bob E Smith Inc (Type or Print) Water Well Drillers Registration No. 477

ADDRESS P.O. Box 85 (Street or RFD) El Campo (City) Texas (State)

(Signed) Guy Conner (Water Well Driller) Bob E Smith Inc (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

TWDBE-WD-8

Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O[illegible] 13087
Au[illegible]xas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-655
Located on map yes
Received: c.f.s.

1) OWNER David Cormier (Name) Address DSR - Box (Street or RFD) El Campo (City) Tex (State) 77437 (Zip)

2) LOCATION OF WELL:
County Wharton 2 1/2 miles in S (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map.

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:
3-26-80
Date drilled ~~[illegible]~~

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
2	Surface	105

7) BOREHOLE COMPLETION:
☑ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0-	4	surface soil
4-	15	shale - red
15-	16	shale red
16-	30	Br sand
30-	33	Br sand
33-	45	gr shale
4[illegible]	60	gr shale + gr sand
[illegible]	75	gr. shale
75-	85	gr shale
85-	105	Br sand + St gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
2	N	PVC sch 40	0	100	
2	N	Welco PVC	100	105	16g

CEMENTING DATA
Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 41 ft. below land surface Date 3-26-80
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 43' ft.

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 400 gph with — ft. drawdown after — hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Guy C Conner (Type or Print) Water Well Drillers Registration No. 477

ADDRESS 1604 Ellwood (Street or RFD) El Campo (City) Texas (State) 77437 (Zip)

(Signed) Guy C Conner (Water Well Driller) Guy C Conner & Son (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.


COLORADO COUNTY
JACKSON COUNT
COLORADO RIVER
WHARTON
EL CAMPO
POP 7,700
GLEN FLORA
EGYPT
EGYPT OIL FIELD
NEW TAITON GAS FIELD
NEW TAITON
CRESCENT GAS FIELD
PIERCE
HILLJE
LOUISE
To Eagle Lake
To Edna
D. W. Jackson Survey 1098

655

Send [illegible]al copy by
certi[illegible]ail to the
Texas [illegible] Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

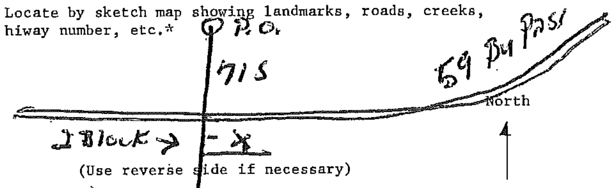
For TWDB use only
Well No. 66-54-655
Located on map ues
Received: 7-77
dlr

1) OWNER:
Person having well drilled Gene Mathews (Name) Address 17A DSR (Street or RFD) El Campo (City) Tex (State)

Landowner Same (Name) Address (Street or RFD) Same (City) (State)

2) LOCATION OF WELL:
County Wharton , miles in (N.E., S.W., etc.) direction from (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*



(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor League
Block Survey
Abstract No.
(NW¼ NE¼ SW¼ SE¼) of Section

3) TYPE OF WORK (Check):
[✓ New Well] Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
[✓ Domestic] Industrial Municipal
Irrigation Test Well Other

5) TYPE OF WELL (Check):
[✓ Rotary] Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 6 3/4" in. Depth drilled 107' ft. Depth of completed well 107' ft. Date drilled 08-09-77
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	18	Shale (Gray-Red-White)
18	35	Sand (Fine Med)
35	[illegible]3	Sand & Shale
53	[illegible]3	Shale (Red Tan White)
63	85	Sand W/ Shale
85	107	Sand & Gravel

(Use reverse side if necessary)

7) COMPLETION (Check):
[✓ Straight wall] Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 41' ft. below land surface Date 08-09-77
Artesian pressure lbs. per square inch Date
Depth to pump bowls, cylinder, jet, etc., ft. below land surface.

1

9) Casing:
Type: Old [✓ New] Steel [✓ Plastic] Other
Cemented from ft. to ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
4"	0'	97'	
4"	97"	107	16Ga

10) SCREEN:
Type 4"X10'X16Ga Underbar Schg Co
[✓ Perforated] [✓ Slotted]

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
4"	97	107	16Ga

11) WELL TESTS:
Was a pump test made? Yes [✓ No] If yes, by whom?
Yield: gpm with ft. drawdown after hrs.
Bailer test gpm with ft. drawdown after hrs.
Artesian flow gpm
Temperature of water

12) WATER QUALITY:
Was a chemical analysis made? Yes [✓ No]
Did any strata contain undesirable water? Yes [✓ No]
Type of water? Fresh depth of strata 85'-107'

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Bob Smith Drilling Co (Type or Print) Water Well Drillers Registration No. #1775

ADDRESS P.O. Box 85 (Street or RFD) El Campo (City) Texas (State)

(Signed) (Water Well Driller) Bob Smith Drilling Co (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

WDBE-WD-8

Rec'd

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O 13087
Aus as 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-685
Located on map YES
Received: CFB

1) OWNER Sosario Resendez (Name) Address ~~182~~ 1117 S. Washington (Street or RFD) (City) Tex (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 1/2 miles in S (N.E., S.W., etc.) direction from Po-El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☐ See attached map.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other Rent

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 6-26-81

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4½	Surface	104

7) BOREHOLE COMPLETION:
☐ Open Hole ☒ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	Topsoil
3	8	Clay R
8	33	Sand
33	43	Sdy. Clay
43	54	Sand
54	73	Clay W
75	[illegible]	Sand

(Use reverse side if necessary)

RECEIVED
SEP 20 1982
CR/TDWR

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2	N	PL- Sch.40	0	98	
2	N	" Screen	98	107	.013

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 53 ft. below land surface Date ______
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☐ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata 29
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Payton (Type or Print) Water Well Drillers Registration No. 407

ADDRESS P.O. Box 63 (Street or RFD) El Campo (City) Tex (State) 77437 (Zip)

(Signed) W. C. Payton (Water Well Driller) Payton Drilling (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

655

Send il copy by
certi nail to the
Texas Water Development Board
P. O. Box 13087
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. 66-54-655
Located on map ✓
Received: 7-8-77
alb

1) OWNER:
Person having well drilled Clarence Yackeh (Name) Address 506 N Liberty (Street or RFD) El Campo (City) Tex (State)

Landowner Same (Name) Address ✓ ✓ (Street or RFD) ✓ (City) (State)

2) LOCATION OF WELL:
County Wharton, ______ miles in ______ (N.E., S.W., etc.) direction from ______ (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*
Well at 506 N Liberty
El Campo Tex
North ↑
(Use reverse side if necessary)

or Give legal location with distances and directions from adjacent sections or survey lines.
Labor ______ League ______
Block ______ Survey ______
Abstract No. ______
(NW¼ NE¼ SW¼ SE¼) of Section ______

3) TYPE OF WORK (Check):
New Well ✓ Deepening
Reconditioning Plugging

4) PROPOSED USE (Check):
Domestic ✓ Industrial Municipal
Irrigation Test Well Other

5) TYPE OF WELL (Check):
Rotary ✓ Driven Dug
Cable Jetted Bored

6) WELL LOG:
Diameter of hole 4½ in. Depth drilled 90 ft. Depth of completed well 90 ft. Date drilled 9-26-77
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	5	Top Soil
5	[illegible]	Clay R
12	[illegible]	Sand
33	35	Clay R
35	90	Sand

(Use reverse side if necessary)

7) COMPLETION (Check):
Straight wall Gravel packed Other
Under reamed Open Hole

8) WATER LEVEL:
Static level 44 ft. below land surface Date ______
Artesian pressure ______ lbs. per square inch Date ______
Depth to pump bowls, cylinder, jet, etc., ______ ft. below land surface.

9) Casing:
Type: Old New ✓ Steel Plastic ✓ Other
Cemented from ______ ft. to ______ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
2	0	84	S 40

10) SCREEN:
Type PL
Perforated Slotted ✓

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
2	84	90	.012

11) WELL TESTS:
Was a pump test made? Yes No If yes, by whom?
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.
Bailer test ______ gpm with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gpm
Temperature of water ______

12) WATER QUALITY:
Was a chemical analysis made? Yes No
Did any strata contain undesirable water? Yes No
Type of water? Good depth of strata 55

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. Praytor (Type or Print) Water Well Drillers Registration No. 407

ADDRESS PO Box 63 (Street or RFD) El Campo (City) Tex (State)

(Signed) W. C. Praytor (Water Well Driller) Praytor Drlg (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

TWDBE-WD-8

Dup
66-54-655

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. [illegible] 13087
Aust[illegible] [illegible]s 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER El Campo Livestock Commission (Name) Address _______ (Street or RFD) El Campo (City) Tex (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton _______ 1 miles in S (N.E., S.W., etc.) direction from El Campo (Town)

☐ Legal description:
Section No. _______ Block No. _______ Township _______
Abstract No. _______ Survey Name _______
Distance and direction from two intersecting section or survey lines _______

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☑ See attached map.

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☑ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Other _______

5) DRILLING METHOD (Check): ☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other _______

6) WELL LOG:

Date drilled 2-7-83

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
	Surface	

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other _______
If Gravel Packed give interval . . . from _______ ft. to _______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	2	Top soil
2	18	Red clay
18	23	sand
23	44	red clay
44	81	Sand
81	84	Gray clay
8[illegible]	115	sand
[illegible]	116	gray clay
116	121	sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
4	New	Plastic	0	110	40
4	New	Plastic slotted	110	120	.008

CEMENTING DATA
Cemented from 0 ft. to 20 ft.
Method used Poured from top
Cemented by same (Company or Individual)

9) WATER LEVEL:
Static level 45 ft. below land surface Date 2-7-83
Artesian flow _______ gpm. Date _______

RECEIVED
FEB 14 1983
DEPT. OF
WATER RESOURCES

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _______
Depth to pump bowls, cylinder, jet, etc., _______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _______ gpm with _______ ft. drawdown after _______ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? fresh Depth of strata 36
Was a chemical analysis made? ☐ Yes ☑ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

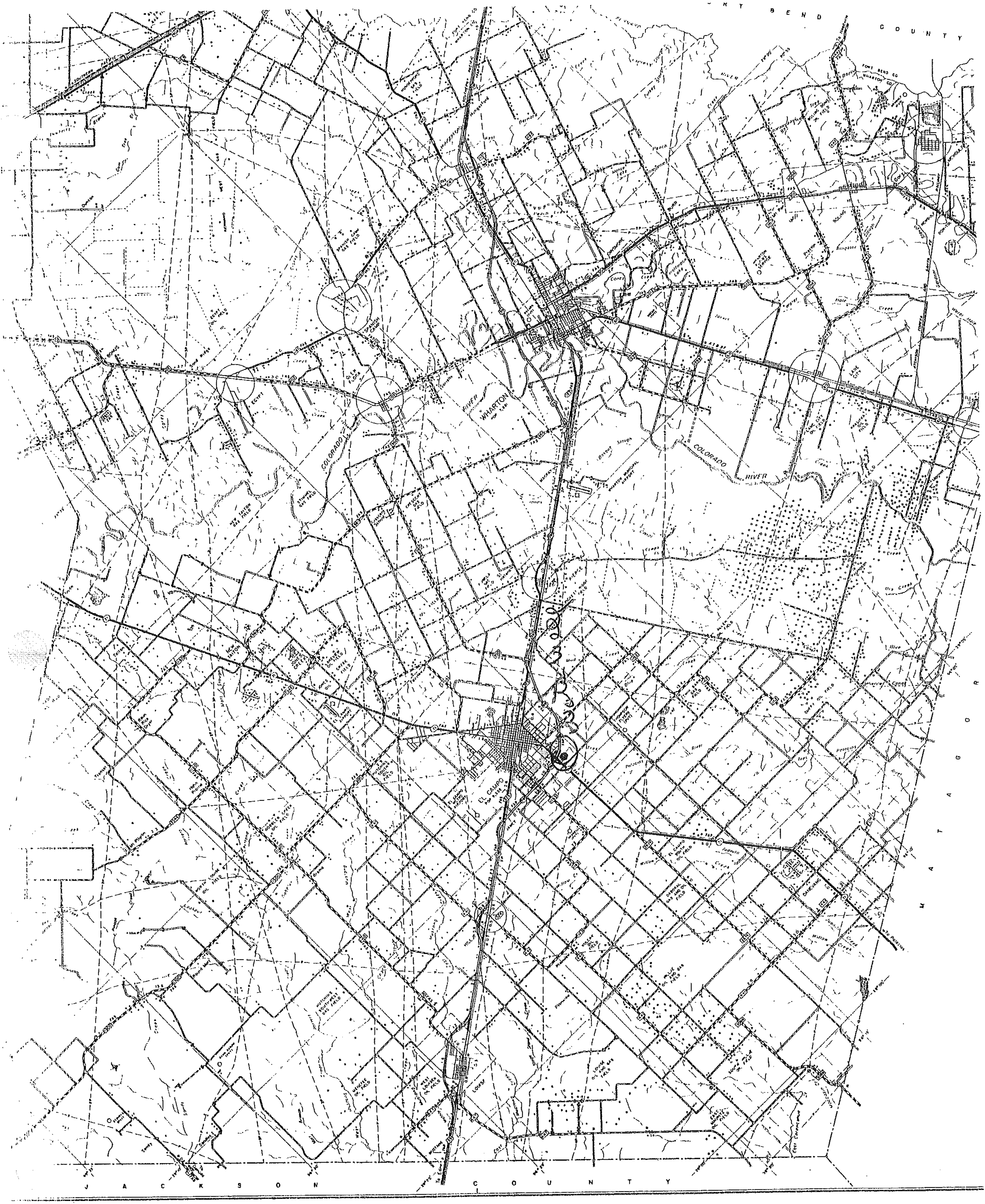
COMPANY NAME Willie Razak Water Well Serv (Type or Print) Water Well Driller's License No. 1722

ADDRESS 2502 Volgas Rd (Street or RFD) Wharton (City) Texas (State) 77488 (Zip)

(Signed) Willie Razak Jr. (Licensed Water Well Driller) (Signed) _______ (Registered Driller Trainee)

For TDWR use only
Well No. 66-54-655
Located on map XSC4S.

Please attach electric log, chemical analysis, and other pertinent information, if available.



El Campo Livestock Comm. 2-7-83

Dup

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-9AAA
Located on map Yes DLF
Received:

1) OWNER Buck Wangler (Name) Address (Street or RFD) El Campo (City) Tex (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 3 1/2 miles in S (N.E., S.W., etc.) direction from El Campo Tex (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map.

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other

6) WELL LOG:

Date drilled 4-20-81

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4	Surface	110

From (ft.)	To (ft.)	Description and color of formation material
0 –	14	Red shale & Surface
14 –	26	Gray & Br Shale
26 –	48	Br Sand
48 –	52	Fr Gravel
52	68	Br Shale
68 –	91	Br Sand & Shale
91 –	110	Fr Gravel & Sand

(Use reverse side if necessary)

RECEIVED
JAN 18 1984
DEPT. OF
WATER RESOURCES

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	Sch 40 PVC	0	106	
4	N	Sch 40 Wesco	100 –	110	-2

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level 42 ft. below land surface Date 4-20-8
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder
☐ Other
Depth to pump bowls, cylinder, jet, etc., 80 ft.

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 1000 gpm with —— ft. drawdown after —— hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Guy C Conner (Type or Print) Water Well Drillers Registration No. 477

ADDRESS 1604 Elwood St (Street or RFD) El Campo (City) Texas (State) 77437 (Zip)

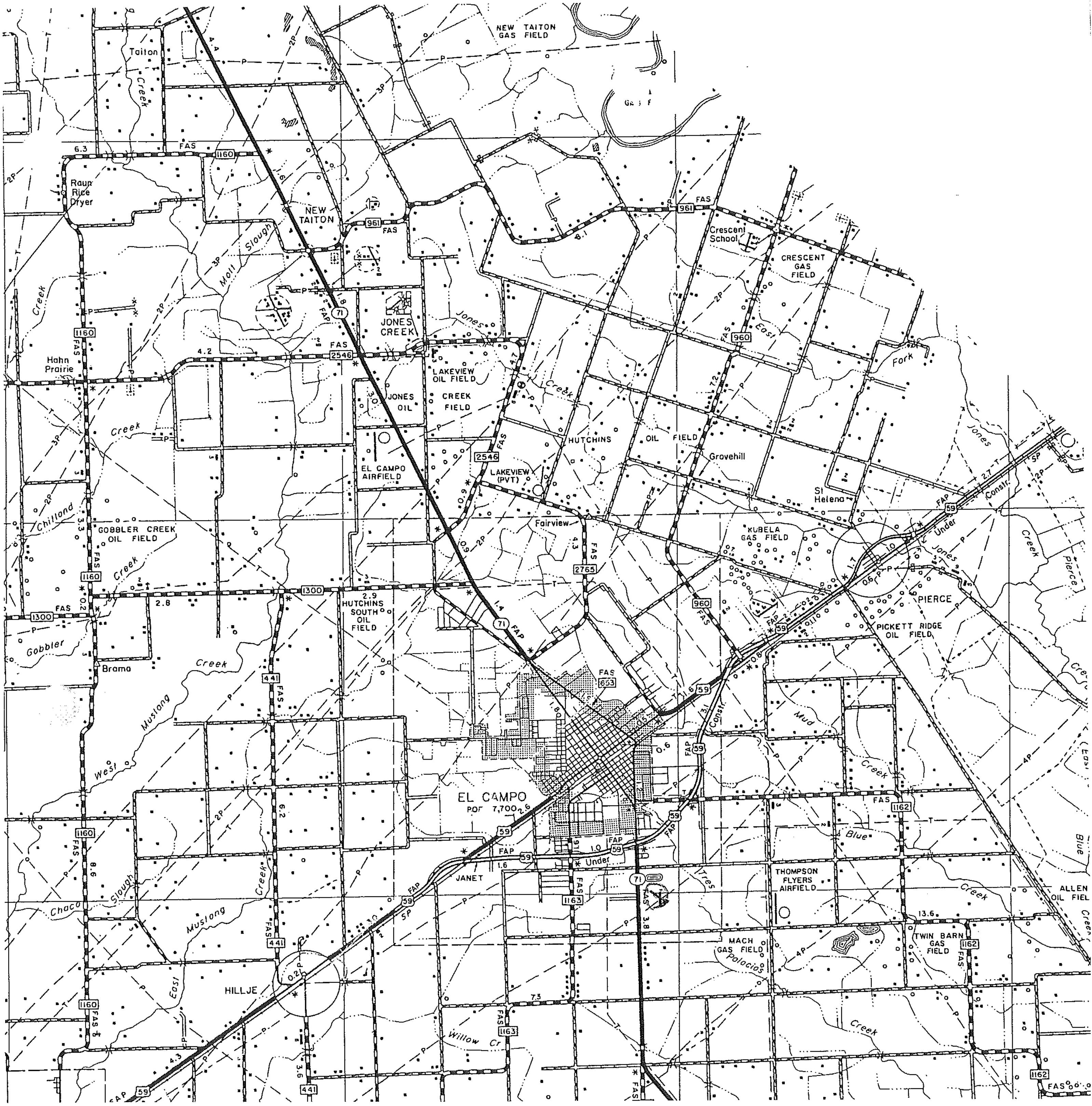
(Signed) Guy C Conner (Water Well Driller) Guy C. Conner & Son (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

Dup

TDWR-0392 (Rev. 1-12-79) DEPARTMENT OF WATER RESOURCES COPY

66-54-9AAA



NEW TAITON GAS FIELD
Taiton
Creek
Raun Rice Dryer
NEW TAITON
Moll Slough
FAS
1160
961
2546
71
FAP
JONES CREEK
Hahn Prairie
LAKEVIEW OIL FIELD
JONES OIL
CREEK FIELD
HUTCHINS
OIL FIELD
Grovehill
Crescent School
CRESCENT GAS FIELD
960
East Fork
Jones Creek
EL CAMPO AIRFIELD
LAKEVIEW (PVT)
Chilland
GOBBLER CREEK OIL FIELD
Fairview
2765
St Helena
KUBELA GAS FIELD
Under Constr.
PIERCE
PICKETT RIDGE OIL FIELD
1300
HUTCHINS SOUTH OIL FIELD
Gobbler
Brama
Creek
441
653
Muslang
West
Mud Creek
EL CAMPO
POP 7,700
59
1162
Blue Creek
Slough
Chaco
JANET
1163
Tres
THOMPSON FLYERS AIRFIELD
ALLEN OIL FIEL
MACH GAS FIELD
Palacios
TWIN BARN GAS FIELD
HILLJE
East
Willow Cr
Creek
SP
4P
3P
2P
P
T
4.4
6.3
1.6
8.1
4.2
1.8
4.7
7.2
3.0
0.9
3.3
2.8
2.9
1.4
4.3
0.2
2.7
1.0
1.7
0.6
0.8
3.1
6.2
2.6
8.6
1.6
13.6
7.3
3.8
3.6
0.2

#32

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

For TDWR use only
Well No. 66-54-9AAA
Located on map yes
Received: C.F.S.

1) OWNER Charles Borak (Name) Address 1605 Michael (Street or RFD) El Campo (City) Tx (State) 7743 (Zip)

2) LOCATION OF WELL: County Wharton 2.83 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ____ Block No. ____ Township ____
Abstract No. ____ Survey Name ____
Distance and direction from two intersecting section or survey lines ____

☑ See attached map. map on 66-53-7G

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ____

5) DRILLING METHOD (Check):
☑ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ____

6) WELL LOG:

Date drilled 6/8/83

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	102

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ____
If Gravel Packed give interval . . . from ____ ft. to ____ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	12	top soil + clay
12	14	silt + clay
14	23	clay
23	38	coarse sand + sm. gravel
38	40	clay
40	50	Coarse sand + sm. gravel
50	69	clay
69	71	sand
71	74	clay
74	83	Coarse sand
83	86	Clay
86	102	Coarse sand

RECEIVED
AUG 29 1983
DEPT. OF
WATER RESOURCES

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	plastic	0	92	40
4	N.	plastic	92	102	.0

CEMENTING DATA
Cemented from 0 ft. to 10 ft.
Method used trem. pipe
Cemented by Johnson W.W. Serv. (Company or Individual)

9) WATER LEVEL:
Static level 45 ft. below land surface Date 6/8/83
Artesian flow ____ gpm. Date ____

10) PACKERS:

	Type	Depth
1	formation	10'
2	"	68'

11) TYPE PUMP:
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., 80 ft.

12) WELL TESTS:
☐ Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 20 gpm with 0 ft. drawdown after 1 hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Mary H Johnson + J A Johnson Jr. (Type or Print) Water Well Drillers Registration No. 1835 + 960

ADDRESS Rt. 2, Bx 170 (Street or RFD) El Campo (City) TX (State) 77437 (Zip)

(Signed) Mary H. Johnson (Water Well Driller) J A Johnson Water Well Serv (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 1-12-79)

DEPARTMENT OF WATER RESOURCES COPY

RECEIVED
JAN - 4 1979
DEPT. OF
WATER RESOURCES

Dup 4H

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
A[illegible] Texas 78711

State of Texas
WATER WELL REPORT

For TDWR use only
Well No. 66-55-4H
Located on map
Received:

1) OWNER Horald Hermansen (Name) Address Armory Road (Street or RFD) El Campo (City) Texas (State) (Zip)

2) LOCATION OF WELL:
County Wharton, 1/2 miles in SE (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ____ Block No. ____ Township ____
Abstract No. ____ Survey Name ____
Distance and direction from two intersecting section or survey lines ____

☒ See attached map.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ____

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ____

6) WELL LOG:

Date drilled 12-20-78

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4 1/4"	Surface	112'

7) BOREHOLE COMPLETION:
☐ Open Hole ☒ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ____
If Gravel Packed give interval . . . from ____ ft. to ____ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	35	Shale (Gray Tan Red)
35	47	Sand & Gravel
47	62	Shale (white)
62	112	Sand & Gravel

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	[✓ New] or Used	Steel, [✓ Plastic], etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2"		Schg 40 PVC	0	77	
2"		Slotted	77	87	146

CEMENTING DATA

Cemented from ____ ft. to ____ ft.
Method used ____
Cemented by ____ (Company or Individual)

9) WATER LEVEL:
Static level 44 ft. below land surface Date 12-20-78
Artesian flow ____ gpm. Date ____

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbin ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☒ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Bob Smith (Type or Print) Water Well Drillers Registration No. 1775

ADDRESS P.O. Box 85 (Street or RFD) El Campo (City) Texas (State) (Zip)

(Signed) Del E. Smith (Water Well Driller) Bob Smith Drilling Co. (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

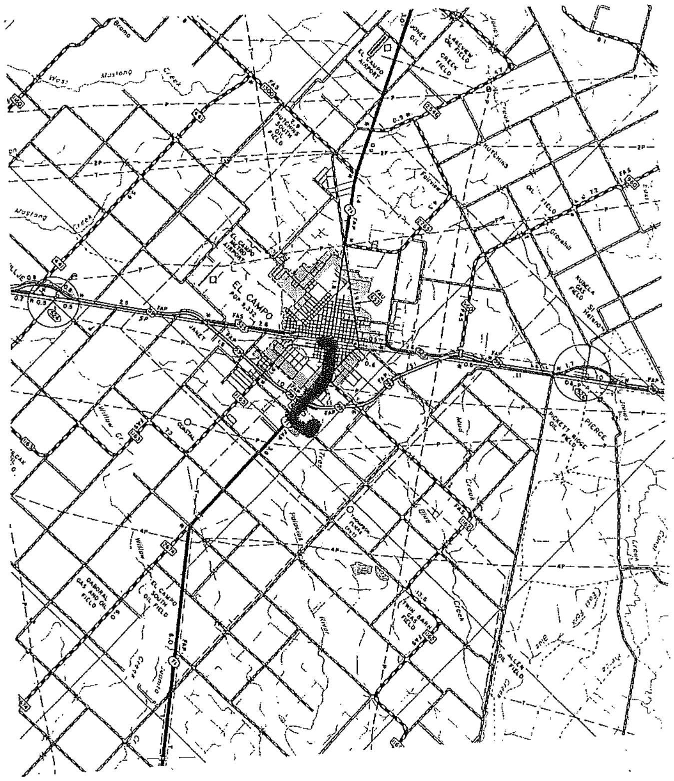
2) LOCATION OF WELL:

The sketch showing the well location must be as accurate as possible, showing landmarks, in sufficient detail so that the well may be plotted on a General Highway Map of the county in which the well is located.

Reference points from which distances are measured and directions given should be of a permanent nature (e.g. highway intersections, center of towns, river and creek bridges, railroad crossings). The distance and direction from the nearest town should always be indicated.

When giving a legal description include a sketch showing location of the well within the described area, e.g. survey abstract.

Information furnished in Section 2 of the TDWR-0392 is very important. Unless the well can be accurately located on a map the value of the other data contained in the Report is greatly reduced.



411

GW 7

Send original copy by
certified mail to the
Texas Water Development Board
P. O. Box 12386
Austin, Texas 78711

State of Texas

WATER WELL REPORT

For TWDB use only
Well No. [illegible]
Located on map [illegible]
Received:
Form GW 8
Form GW 9

1) OWNER:
Person having well drilled OSCAR McClure (Name) Address El Campo (Street or RFD) Tex (City) (State)

Landowner Same (Name) Address (Street or RFD) (City) (State)

2) LOCATION OF WELL:
County Wharton Labor League Abstract No. 571

NW¼ NE¼ SW¼ SE¼ of Section Block No. 5A1 Survey J. B. Morford
(Circle as many as are known)

9 miles in SE (N.E., S.W., etc.) direction from P.O. El Campo (Town).

NORTH

Sketch map of well location with distances from adjacent section or survey lines, and to landmarks, roads, and creeks.

3) TYPE OF WORK (Check):
New Well ☑ Deepening ☐
Reconditioning ☐ Plugging ☐

4) PROPOSED USE (Check):
Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

5) TYPE OF WELL (Check):
Rotary ☑ Driven ☐ Dug ☐
Cable ☐ Jetted ☐ Bored ☐

6) WELL LOG:
Diameter of hole 4¼ in. Depth drilled 88 ft. Depth of completed well 88 ft. Date drilled 12-1-68
All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material	From (ft.)	To (ft.)	Description and color of formation material
0	20	CLAY R			
20	48	SAND			
48	60	CLAY R			
60	88	SAND			
					(Use reverse side if necessary)

7) COMPLETION (Check):
Straight wall ☑ Gravel packed ☐ Other ☐
Under reamed ☐ Open hole ☐

8) WATER LEVEL:
Static level 41 ft. below land surface Date
Artesian pressure lbs. per square inch Date

9) CASING:
Type: old ☐ New ☑ Steel ☐ Plastic ☐ Other ☐
Cemented from ft. to ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage
2	0	83	

10) SCREEN:
Type KeyStone Plastic
Perforated ☐ Slotted ☐

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot size
2	83	88	014

11) WELL TESTS:
Was a pump test made? ☐ Yes ☐ No If yes by whom?
Yield: gpm with ft. drawdown after hrs
Bailer test gpm with ft. drawdown after hrs
Artesian flow gpm Date
Temperature of water
Was a chemical analysis made? ☐ Yes ☐ No
Did any strata contain undesirable water? ☐ Yes ☑ No
Type of water? Good depth of strata 28

12) PUMP DATA: Owner
Manufacturer's Name
Type H.P.
Designed pumping rate gpm ☐ gph ☐
Type power unit
Depth to bowls, cylinder, jet, etc., ft. below land surface.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME W. C. PRAYTOR (Type or Print) Water Well Drillers Registration No. 407
Address Box 63 (Street or RFD) El Campo 77437 (City) Tex (State)
(Signed) W C Praytor (Water Well Driller) Praytor Drilling & Well Serv (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

66-55-4H

Send original copy by
certified mail to the
Texas Department of Water Resources
P. O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Langdon (Name) Address El Campo (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Wharton, 2 miles in SE (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

No 20 ☒ See attached map. map on 66-47-2BB

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ Domestic ☐ Industrial ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Other ______

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ______

6) WELL LOG:

Date drilled 4-19-83

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
	Surface	
6½		80

From (ft.)	To (ft.)	Description and color of formation material
0	4	surf
4	12	clay
12	30	sand
30	40	clay
40	65	sand
65	70	clay
70	80	sand

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☒ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4"	N	plastic	1½	60	
4"	N	"	60	80	1/8

CEMENTING DATA

Cemented from ______ ft. to ______ ft.
Method used ______
Cemented by ______ (Company or Individual)

9) WATER LEVEL:
Static level ______ ft. below land surface Date ______
Artesian flow ______ gpm. Date ______

10) PACKERS: Type Depth

RECEIVED
AUG 23 1983
DEPT. OF
WATER RESOURCES

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☒ Jetted ☐ Estimated
Yield: 45 gpm with ______ ft. drawdown after ______ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME Jackson Co. Water Well (Type or Print) Water Well Driller's License No. 1803

ADDRESS Box 745 (Street or RFD) Edna (City) Texas (State) 77957 (Zip)

(Signed) ______ (Licensed Water Well Driller) (Signed) ______ (Registered Driller Trainee)

DWP

For TDWR use only
Well No. 66-55-4H
Located on map yes C.F.S.

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDWR-0392 (Rev. 5-27-82)

DEPARTMENT OF WATER RESOURCES COPY

STATE OF TEXAS WELL REPORT for Tracking #37033

Owner:	**KENNY CERNY**	Owner Well #:	**No Data**
Address:	**HCR 62 BOX 37-A** **ELCAMPO , TX 77437**	Grid #:	**66-54-6** (1)
Well Location:	**0.7 MILE S. ON HWY. 71 OFF HWY.59** **ELCAMPO , TX 77437**	Latitude:	**29° 10' 04" N**
Well County:	**Wharton**	Longitude:	**096° 15' 34" W**
Elevation:	**No Data**	GPS Brand Used:	**GARMIN GPS III PLUS**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Date: Started: **2/16/2004**
Completed: **2/17/2004**

Diameter of Hole: Diameter: **7 1/2 in From Surface To 140 ft**

Drilling Method: **Mud Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data: 1st Interval: **From +1 ft to 3 ft with 2 CEMENT (#sacks and material)**
2nd Interval: **From 3 ft to 10 ft with 7 BENTONITE (#sacks and material)**
3rd Interval: **No Data**
Method Used: **HANDMIX**
Cemented By: **CARLTON UTESEY**
Distance to Septic Field or other Concentrated Contamination: **101 ft**
Distance to Property Line: **126 ft**
Method of Verification: **TAPE MEASURE**
Approved by Variance: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: Static level: **39 ft. below land surface on 2/17/2004**
Artesian flow: **No Data**

Packers: **1 SHALE TRAP 20'**
1 SHALE TRAP 50'
1 SHALE TRAP 67'

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **Jetted**
Yield: **38 GPM with (No Data) ft drawdown after (No Data) hours**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No**
Did the driller knowingly penetrate any strata which contained undesirable 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 log(s) being returned for completion and resubmittal.

Company Information:	**C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.** **1101 N. WELLS** **EDNA , TX 77957**
Driller License Number:	**4313**
Licensed Well Driller Signature:	**CARLTON UTESEY**
Registered Driller Apprentice Signature:	**REBECCA UTESEY**
Apprentice Registration Number:	**WWDAPP00001187**
Comments:	**No Data**

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 (Tracking #**37033**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	**8**	**TOPSOIL**
8	**20**	**RED CLAY**
20	**34**	**MEDIUM-COURSE BROWN SAND**
34	**40**	**C. BR. SAND & CLAY STRIPS**
40	**47**	**COURSE BROWN SAND**
47	**50**	**BROWN CLAY & WHITE ROCK**
50	**55**	**COURSE BROWN SAND**
55	**57**	**BROWN CLAY**
57	**68**	**ROCK & GRAY CLAY**
68	**87**	**COURSE BROWN SAND (L.H.)**
87	**89**	**BROWN CLAY**
89	**100**	**MEDIUM SAND**
100	**107**	**C. BR. SAND & GRAY CLAY**
107	**112**	**COURSE BROWN SAND**
112	**131**	**BROWN CLAY**
131	**140**	**GRAY CLAY**

CASING, BLANK PIPE & WELL SCREEN DATA

Dia.	New/Used	Type	Setting From/To
4"	**NEW**	**SCH. 40 PVC CASING**	**+2 - 90**
4"	**NEW**	**SCH. 40 PVC SLOTTED**	**90 - 100 .008**

STATE OF TEXAS WELL REPORT for Tracking #37038

Owner:	**STEVE KORENEK**	Owner Well #:	**No Data**
Address:	**HCR 62 BOX 37** **ELCAMPO , TX 77437**	Grid #:	**66-54-6** (2)
Well Location:	**0.7 MILE S. ON HWY. 71 OFF HWY. 59** **ELCAMPO , TX 77437**	Latitude:	**29° 10' 04" N**
Well County:	**Wharton**	Longitude:	**096° 15' 44" W**
Elevation:	**No Data**	GPS Brand Used:	**GARMIN GPS III PLUS**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Date:	Started: **2/18/2004** Completed: **2/19/2004**
Diameter of Hole:	Diameter: **7 1/2 in From Surface To 130 ft**
Drilling Method:	**Mud Rotary**
Borehole Completion:	**Straight Wall**
Annular Seal Data:	1st Interval: **From +1 ft to 3 ft with 2 CEMENT (#sacks and material)** 2nd Interval: **From 3 ft to 10 ft with 5 BENTONITE (#sacks and material)** 3rd Interval: **No Data** Method Used: **HANDMIX** Cemented By: **CARLTON UTESEY** Distance to Septic Field or other Concentrated Contamination: **No Data** Distance to Property Line: **71 ft** Method of Verification: **TAPE MEASURE** Approved by Variance: **No Data**
Surface Completion:	**Surface Sleeve Installed**

Water Level:	Static level: **44 ft. below land surface on 2/19/2004** Artesian flow: **No Data**
Packers:	**1 SHALE TRAP 20'** **1 SHALE TRAP 57'** **1 SHALE TRAP 106'**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**Jetted** Yield: **39 GPM with (No Data) ft drawdown after (No Data) hours**

Water Quality:	Type of Water: **No Data** Depth of Strata: **No Data** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable 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 log(s) being returned for completion and resubmittal.

Company Information:	**C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.** **1101 N. WELLS** **EDNA , TX 77957**
Driller License Number:	**4313**
Licensed Well Driller Signature:	**CARLTON UTESEY**
Registered Driller Apprentice Signature:	**REBECCA UTESEY**
Apprentice Registration Number:	**WWDAPP00001187**
Comments:	**No Data**

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 (Tracking **#37038**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	**2**	**TOPSOIL**
2	**5**	**TAN CLAY**
5	**19**	**RED CLAY**
19	**24**	**GRAY CLAY**
24	**27**	**RED CLAY**
27	**36**	**COURSE BROWN SAND**
36	**43**	**GRAY CLAY**
43	**49**	**SANDSTONE, SAND & GRAY CLAY**
49	**56**	**VERY COURSE BROWN SAND**
56	**58**	**SAND & BROWN CLAY (H)**
58	**69**	**ROCK & GRAY CLAY**
69	**85**	**COURSE-MED. BROWN SAND (LH)**
85	**92**	**SAND & CLAY STRIPS**
92	**98**	**COURSE BROWN SAND (S & H)**
98	**109**	**BROWN CLAY & SAND**
109	**119**	**C. BROWN SAND & PEA GRAVEL**
119	**130**	**GRAY CLAY**

CASING, BLANK PIPE & WELL SCREEN DATA

Dia.	New/Used	Type	Setting From/To
4"	**NEW**	**SCH. 40 PVC CASING**	**+2 - 109**
4"	**NEW**	**SCH. 40 PVC SLOTTED**	**109 - 119 .008**

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER EL Campo Little League (Name) ADDRESS Amory Rd (Street or RFD) EL Campo (City) TX. (State) 7797 (Zip)

2) LOCATION OF WELL: County Wharton, 5 miles in S (NE, SW, etc.) direction from EL Campo (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. ____ Block No. ____ Township ____ Abstract No. ____ Survey Name ____

Distance and direction from two intersecting section or survey lines ____

☒ SEE ATTACHED MAP

3) TYPE OF WORK (Check): ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☒ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): ☒ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other ____

6) WELL LOG:

Date Drilling:
Started 7-19- 1990
Completed 7-21- 1990

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
7 7/8	Surface	120

7) BOREHOLE COMPLETION: ☐ Open Hole ☒ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other ____

If Gravel Packed give interval . . . from ____ ft. to ____ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	20	Clay
20	26	Shale
26	38	Sand
28	40	Hard streak
10	50	Shale
50	65	Sand
65	67	Clay
67	73	Sand
73	75	Clay
75	87	Sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.)		Gage Casting Screen
			From	To	
4	N	Plastic slotted	95	115	010
5	N	Plastic Sch. 40	95	surface	

9) CEMENTING DATA [Rule 287.44(1)]

Cemented from 0 ft. to 10 ft. No. of Sacks Used 10

____ ft. to ____ ft. No. of Sacks Used ____

Method used Hand mixed

Cemented by ~~Billy D~~ Herd Tormor

RECEIVED
JAN 16 1991
TEXAS WATER COMMISSION

13) TYPE PUMP: ☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder ☐ Other ____

Depth to pump bowls, cylinder, jet, etc., 90 ft.

10) SURFACE COMPLETION

☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]

☐ Pitless Adapter Used [Rule 287.44(3)(B)]

☐ Approved Alternative Procedure Used [Rule 287.71]

14) WELL TESTS: Type Test: ☐ Pump ☐ Bailer ☒ Jetted ☐ Estimated

Yield: 50-60 gpm with ____ ft. drawdown after ____ hrs.

11) WATER LEVEL: Static level 40 ft. below land surface Date 7-21-90

Artesian flow ____ gpm. Date ____

15) WATER QUALITY: Did the drilling penetrate any strata which contained undesirable constituents?

☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"

Type of water? ____ Depth of strata ____

Was a chemical analysis made? ☐ Yes ☐ No

12) PACKERS:

	Type	Depth
1	Rubber	95
1	"	10

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Liddell Drilling Co. (Type or print) WELL DRILLER'S LICENSE NO. 2609 NW

ADDRESS Box 86 (Street or RFD) Nursery (City) Texas (State) 77976 (Zip)

(Signed) Billy D Liddell (Licensed Well Driller) (Signed) ____ (Registered Driller Trainee)

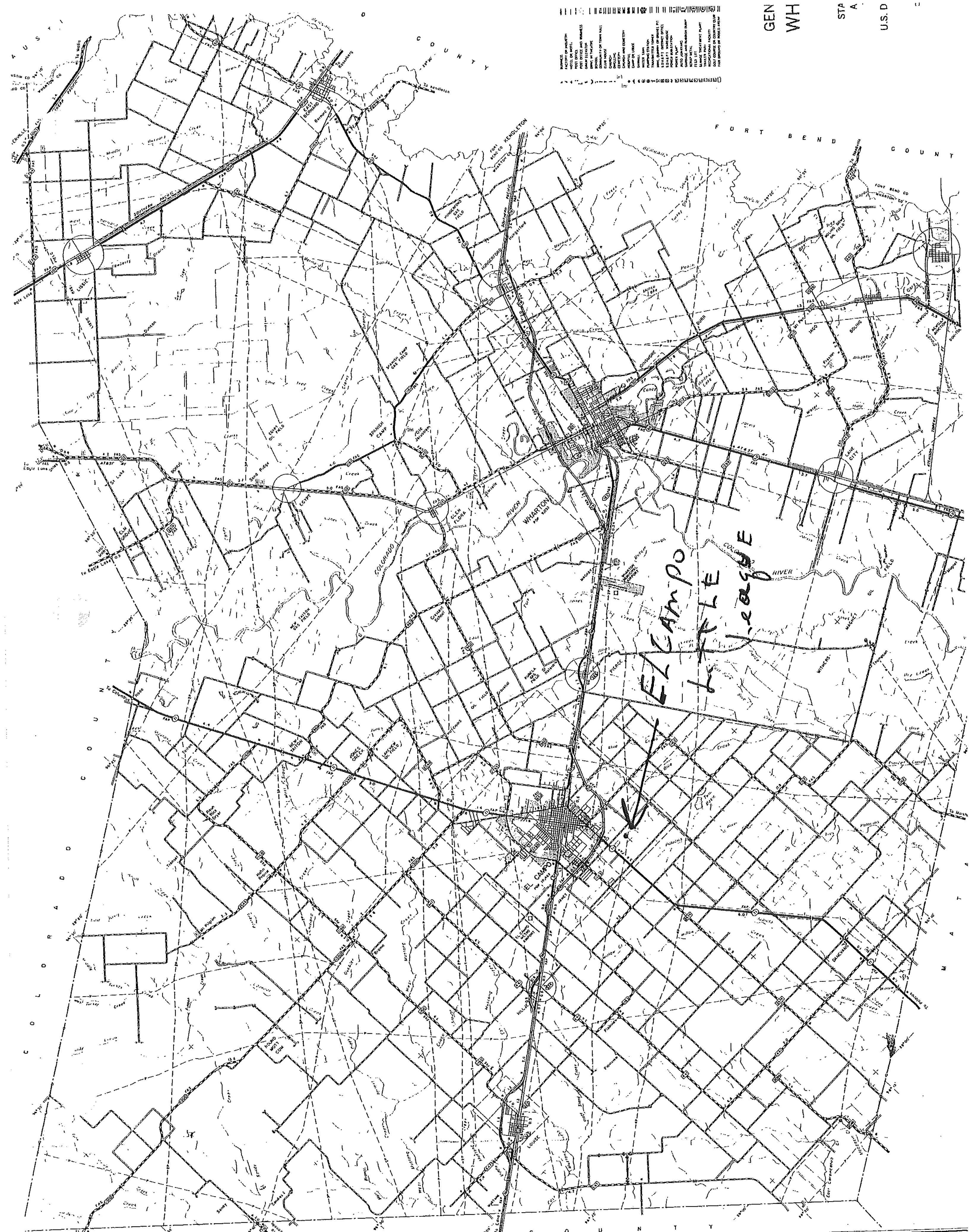
Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. 66-54-6 Located on map ____

(3)

WWD-012 (Rev. 09/21/88)

TEXAS WATER COMMISSION COPY



EL CAMPO
LITTLE
League

24

ATTENTION OWNER: Confidentiality
Privilege Notice on Reverse Side

STATE OF TEXAS
WATER WELL REPORT

1) O[illegible]R: SOUTH TEXAS DRILLING ADDRESS: 9310 BROADWAY, BLDG. # 1 CITY: SAN ANTONIO STATE: TX ZIP: 78217-

2) [illegible]SS OF WELL:
County: WHARTON GRID #
Street or RFD:
City, State, Zip code: EL CAMPO , TX -

3) TYPE OF WORK: NEW WELL

4) PROPOSED USE: INDUSTRIAL
If Public Supply well, were plans submitted to the TNRCC?

5) 66-59-6 (4)

N^

6) WELL LOG: 01917

DATE DRILLING:
STARTED: 05/06/00
COMPLETED: 05/06/00

DIAMETER OF HOLE

DIAMETER	FROM	TO
7 1/4	0	220

7) DRILLING METHOD:
MUD ROTARY

8) BOREHOLE COMPLETION:
STRAIGHT WALL
IF GRAVEL... FROM FT. TO FT.
FROM FT. TO FT.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

DIA	NEW/USED	DESCRIPTION	FROM	TO	GAGE CASING SCREEN
4	N	PVC	0	200	
4	N	SLOTTED SCREEN	200	220	.016

GEOLOGICAL DESCRIPTION:

FROM	TO	DESCRIPTION
0	25	SURFACE SOIL
25	35	CLAY
35	45	SAND
45	55	CLAY
55	75	SAND
75	90	CLAY
90	[illegible]10	SAND
110	130	CLAY
130	150	SAND
150	180	CLAY
180	220	COARSE SAND

9) CEMENTING DATA:
Cemented from No. of Sacks Used
0 FT. TO 15 FT.
FT. TO FT.
Method used: MANUAL
Cemented by: DRILLER
Distance to septic field lines: ft.
Method of verification of above distance:

10) SURFACE COMPLETION:
APPROVED ALT PROC.

11) WATER LEVEL:
STATIC LEVEL : FT. DATE:
ARTESIAN FLOW: GPM. DATE:

12) PACKERS: TYPE DEPTH

13) TYPE PUMP:
DEPTH TO PUMP:

14) WELL TEST:
JETTED
YIELD: GPM WITH FT DRAWDOWN AFTER HRS

15) WATER QUALITY:
TYPE OF WATER: DEPTH OF STRATA:
NO STRATA OF UNDESIRABLE WATER PENETRATED
NO CHEMICAL ANALYSIS MADE

COMPANY NAME: JOE FERGUSON DRILLING INC WATER WELL DRILLER'S LICENSE NO.: 1804 1968
ADDRESS: P. O. DRAWER I CITY: EDNA STATE: TX ZIP CODE: 77957

FOR TWC USE ONLY
WELL NO. ____
LOCATED ON MAP ____

I HEREBY CERTIFY THAT THIS WELL WAS DRILLED BY ME (OR UNDER MY SUPERVISION) AND THAT EACH AND ALL OF THE STATEMENTS HEREIN ARE TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I UNDERSTAND THAT FAILURE TO COMPLETE ITEMS 1 THRU 15 WILL RESULT IN THE LOG(S) BEING RETURNED FOR COMPLETION AND RESUBMITTAL.

(signed) Ronnie Berry
(LICENSED WATER WELL DRILLER)

(signed) ____
(REGISTERED DRILLER TRAINEE)

Send original copy by certified mail to: TNRCC, P.O. Bo 87, Austin, TX 78711-3087

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Advisory Council
P.O. Box 13087
Austin, TX 78711-3087
512-371-6299

OWNER Floyd D. Fisher (Name) ADDRESS 1415 E. Jackson (Street or RFD) El Campo (City) TX. (State) 77437 (Zip)

2) ADDRESS OF WELL: County Wharton .5 S.E. of El Campo City Limit (Street or RFD) (City) (State) (Zip) STATE WELL # 66-54-6(5)

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Monitor ☐ Environmental Soil Boring ☒ Domestic
☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

N

6) WELL LOG:
Date Drilling:
Started 11-17-1994
Completed 11-17-1994

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6-3/4	Surface	95

7) DRILLING METHOD (Check): ☐ Driven
☐ Air Rotary ☒ Mud Rotary ☐ Bored
☐ Air Hammer ☐ Cable Tool ☐ Jetted
☐ Other

From (ft.)	To (ft.)	Description and color of formation material
0	21	Clay
21	26	Sand
26	44	Clay
44	58	Sand
58	65	Shale
65	72	Sand
72	83	Clay
83	95	Sand

(Use reverse side if necessary)

RECEIVED
NOV 27 1995
TEXAS [illegible]

8) Borehole Completion (Check): ☐ Open Hole ☒ Straight Wall
☐ Underreamed ☐ Gravel Packed ☐ Other
If Gravel Packed give interval ... from ft. to ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
	N	Plastic	0	85	Sch 40
	N	Plastic slotted	85	95	.010

9) CEMENTING DATA [Rule 338.44(1)]
Cemented from 0 ft. to 15 ft. No. of sacks used 13
ft. to ft. No. of sacks used
Method used hand mixed
Cemented by Billy D. Liddell
Distance to septic system field lines 185 ft.
Method of verification of above distance Owner & Driller measured

13) TYPE PUMP:
☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder
☐ Other
Depth to pump bowls, cylinder, jet, etc., 70 ft.

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☒ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

14) WELL TESTS:
Type test: ☐ Pump ☐ Bailer ☒ Jetted ☐ Estimated
Yield: gpm with ft. drawdown after hrs.

11) WATER LEVEL:
Static level 47 ft. below land surface Date 11-17-94
Artesian flow gpm. Date

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Depth of strata
Was a chemical analysis made? ☐ Yes ☐ No

12) PACKERS:

	Type	Depth
1	rubber	15
1	rubber	80

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Liddell Drilling Co. (Type or print) WELL DRILLER'S LICENSE NO. 2609WPKL

ADDRESS 637 US 77 South (Street or RFD) Victoria (City) Tx (State) 77905 (Zip)

(Signed) Billy D Liddell (Licensed Well Driller) (Signed) (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 09-01-93)

TNRCC COPY

Attention Owner:
Confidentiality Privilege Notice
on reverse side of owner's copy.

Tex Department of License and Regulati

Water Well Driller/Pump Installer Program
P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616
Toll free (800)803-9202
Email address: water.well@license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name	Address	City	State	Zip
MYUR PATEL	2114 AUTUMN FERN	KATY	TX.	77459

2) WELL LOCATION

County	Physical Address	City	State	Zip
WHARTON	1404 BROADWAY	EL CAMPO	TX.	

Lat. Long. Grid # 66-54-6 (6)

3) Type of Work
☒ New Well ☐ Reconditioning
☐ Replacement ☐ Deepening

4) Proposed Use (check) ☐ Monitor ☐ Environmental Soil Boring ☐ Domestic
☐ Industrial ☐ Irrigation ☐ Injection ☒ Public Supply ☐ De-watering ☐ Testwell
☐ Rig Supply If Public Supply well, were plans submitted? ☒ Yes ☐ No

5) N↑

6) Drilling Date
Started 1 / 25 / 01
Completed 1 / 26 / 01

Diameter of Hole

Dia.(in)	From (ft)	To (ft)
8½	0	307

7) Drilling Method (check) ☐ Driven
☐ Air Rotary ☒ Mud Rotary ☐ Bored
☐ Air Hammer ☐ Cable Tool ☐ Jetted
☐ Other

[illegible] (Depth) Description and color of formation material

0-25	CLAY
25-65	SAND
65-80	CLAY
80-175	SAND
175-200	CLAY
200-215	SAND
215-230	CLAY
230-250	SAND
250-270	CLAY
270-307	SAND

(Use reverse side of Well Owner's copy, If necessary)

8) Borehole Completion ☐ Open Hole ☐ Straight Wall
☐ Under-reamed ☐ Gravel Packed ☒ Other 2 STRING
If Gravel Packed give the interval from ft. to ft.

Casing, Blank Pipe, and Well Screen Data

Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc Screen Mfg., if commercial	Setting (ft)		Gage Casing Screen
			From	To	
5	N	PVC CASING	0	285	
2.5	"	" LINER	275	287	
"	"	" SCREEN	287	307	.012

9) Cementing Data
Cementing from 285 ft. to 0 ft. #of sacks used 25
0 ft. to 10 ft. #of sacks used 15
Method Used HALLIBURTON
Cementing By SDI
Distance to septic system field or other concentrated contamination ____ft.
Method of verification of above distance TO BE INSTALLED

13) Plugged ☐ Well plugged within 48 hours
Casing left in well: Cement/Bentonite placed in well:

From (ft)	To (ft)	From (ft)	To (ft)	Sacks used

10) Surface Completion
☒ Specified Surface Slab Installed
☐ Specified Surface Sleeve Installed
☐ Pitless Adapter Used
☐ Approved Alternative Procedure Used

14) Type Pump
☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder
☐ Other
Depth to pump bowls, cylinder, jet etc., 140 ft.

11) Water Level
Static level 70 ft. below Date 1 / 26 / 01
Artesian Flow ____ gpm. Date / /

15) Water Test
Typetest ☐ Pump ☐ Bailer ☒ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

12) Packers

Type	Depth
K=PACKER	275

16) Water Quality
Did you knowingly penetrate a strata which contain undesirable constituents.
☐ YES ☒ NO If yes, did you submit a REPORT OF UNDESIRABLE WATER
Type of water Depth of Strata
Was a chemical analysis made ☐ Yes ☒ No

Co y or individual's Name (type or print) SCOTT DRILLING, INC. Lic. No. 4839 WI
Address 11915 GREEN PINE CIRCLE City HOUSTON State TX Zip 77066

Signature Licensed Driller/Pump Installer	Date	Signature Apprentice	Date
Scott Robinson	3 / 15 / 01	D. J. Juneau	3 / 15 / 01

·5 mi S/NL
·5 mi W/E

#12

Please use black ink.
Send original copy by
certified mail to the
Texas Water Commission
P.O. Box 13087
Au Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Leon Bannert (Name) Address FM 1301 (Street or RFD) Boling (City) Texas (State) 77420 (Zip)

2) LOCATION OF WELL:
County Wharton Co. ______ miles in ______ (N.E., S.W., etc.) direction from ______ (Town)

Driller must complete the legal description to the right with distence and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______

☑ See attached map. on 65-49-3 No MAP

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☑ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ Other ______

5) DRILLING METHOD (Check): ☐ Driven
☑ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Other ______

6) WELL LOG:
Date Drilling:
Started 10-10 1986
Completed 11-1 1986

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
4½	Surface	103

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	Surface Soil Br.
3	17	Clay red
17	23	Sand fine Br.
23	46	Clay red
46	76	Clay & Sand Br.
76	103	Sand Grayish

(Use reverse side if necessary)

CEIVED
AR 19 87
Commission

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
2"	N	Bay Pvc	0	79	Sch40
2"	N	Slotted Pvc	79	99	Sch40
		King & Queen Ind.			.010

9) CEMENTING DATA [Rule 319.44(b)]
Cemented from 0 ft. to 10 ft. No. of Sacks Used 2
______ ft. to ______ ft. No. of Sacks Used ______
Method used Slurry
Cemented by Lyle E. Burns

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 319.44(c)]
☐ Pitless Adapter Used [Rule 319.44(d)]
☐ Approved Alternative Procedure Used [Rule 319.71]

11) WATER LEVEL:
Static level 36 ft. below land surface Date 10-18-86
Artesian flow ______ gpm. Date ______

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☑ Jet ☐ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., ______ ft.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☑ No

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.

I here by certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Burns Water Well Drilling (Type or Print) Water Well Driller's License No. 1700

ADDRESS Route 1 Box 10-A (Street or RFD) Boling (City), Texas (State) 77420 (Zip)

(Signed) Lyle E. Burns (Licensed Water Well Driller) (Signed) ______ (Registered Driller Trainee)

For TWC use only
Well No. 66-54-6 (7)
Located on map

Please attach electric log, chemical analysis, and other pertinent information, if available.

TWC-0392 (Rev. 06-10-85)

TEXAS WATER COMMISSION COPY

25

Please use black ink.
Send original copy by
certified mail to the
Texas Water Commission
P.O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Dr. J A Morent (Name) Address 1009 N. Mechanic (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton 2.4 miles in S. E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ____ Block No. ____ Township ____
Abstract No. ____ Survey Name ____
Distance and direction from two intersecting section or survey lines ____
☒ See attached map. ON 66-47-1

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☒ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ Other

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Driven
☐ Air Rotary ☐ Cable Tool ☐ Other

6) WELL LOG:
Date Drilling:
Started 5/13 1987
Completed 5/14 1987

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	100

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other
If Gravel Packed give interval . . . from 90 ft. to 100 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	topsoil
3	24	red clay
24	56	tan sand
56	70	clay
70	79	course tan sand
79	81	clay brk.
81	100	course tan sand

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
4	N	plastic	0	90	Sch 40
4	N.	plastic slotted	90	100	.012

9) CEMENTING DATA [Rule 319.44(b)]
Cemented from 0 ft. to 15 ft. No. of Sacks Used 8
____ ft. to ____ ft. No. of Sacks Used ____
Method used spotted
Cemented by Johnson Water Well Serv.

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 319.44(c)]
☐ Pitless Adapter Used [Rule 319.44(d)]
☒ Approved Alternative Procedure Used [Rule 319.71]

11) WATER LEVEL:
Static level 44 ft. below land surface Date 5/14/87
Artesian flow ____ gpm. Date ____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., 80 ft.

RECEIVED
SEP 14 1987
TEXAS WATER COMMISSION

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME J A Johnson Water Well Serv. (Type or Print) Water Well Driller's License No. 1835

ADDRESS Rt 2, Bx 170 (Street or RFD) El Campo (City) TX (State) 77437 (Zip)

(Signed) Mary H. Johnson (Licensed Water Well Driller) (Signed) ____ (Registered Driller Trainee)

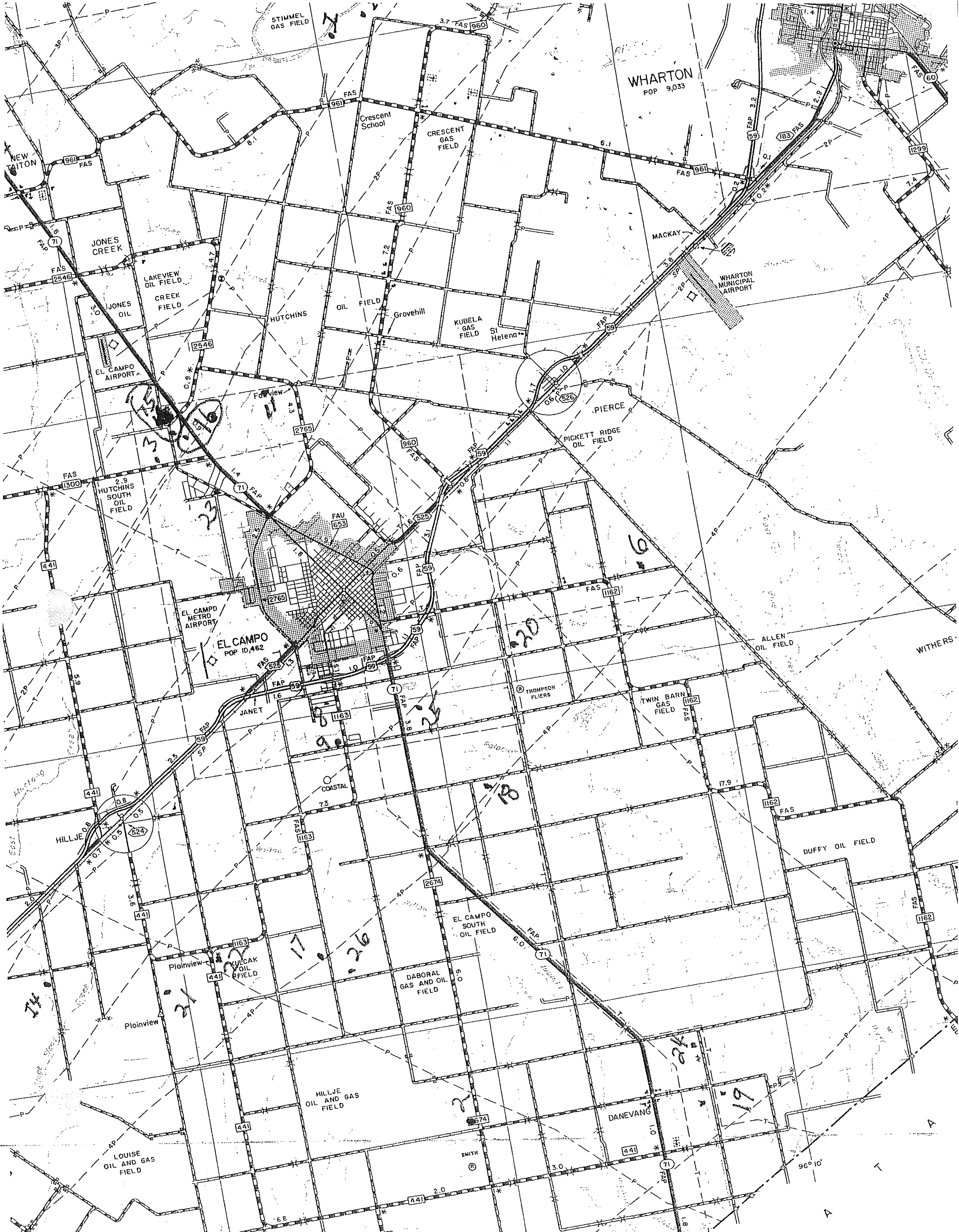
For TWC use only
Well No. 66-54-9
Located on map ____

(1)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TWC-0392 (Rev. 06-10-85)

TEXAS WATER COMMISSION COPY


STIMMEL GAS FIELD
WHARTON
POP 9,033
Crescent School
CRESCENT GAS FIELD
NEW TAITON
JONES CREEK
LAKEVIEW OIL FIELD
JONES OIL
CREEK FIELD
HUTCHINS
OIL FIELD
Grovehill
KUBELA GAS FIELD
St Helena
MACKAY
WHARTON MUNICIPAL AIRPORT
EL CAMPO AIRPORT
Fairview
PIERCE
PICKETT RIDGE OIL FIELD
HUTCHINS SOUTH OIL FIELD
EL CAMPO METRO AIRPORT
EL CAMPO
POP 10,462
JANET
THOMPSON FLIERS
ALLEN OIL FIELD
WITHERS
TWIN BARN GAS FIELD
COASTAL
HILLJE
DUFFY OIL FIELD
EL CAMPO SOUTH OIL FIELD
Plainview
KULCAK OIL FIELD
DABORAL GAS AND OIL FIELD
Plainview
HILLJE OIL AND GAS FIELD
DANEVANG
LOUISE OIL AND GAS FIELD
SMITH
96° 10'
FAS 960
FAS 961
FAS 2546
FAS 1300
FAS 1162
FAS 1163
FAS 525
FAS 441
FAP 59
FAP 71
FAS 183
FAS 60
1299
2765
526
FAU 653
524
2674
674
7
15
16
3
11
23
6
20
8
9
25
18
17
26
22
21
14
24
2
19

S d original copy by certified mail to: Texas Water Com. on, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas
WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

OWNER wilbur Rod (Name) ADDRESS PO Box 52 (Street or RFD) El Campo (City) TX (State) 77437 (Zip)

2) LOCATION OF WELL: County WHARTON, 2 miles in S (NE, SW, etc.) direction from El Campo (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. ______ Block No. ______ Township ______ Abstract No. ______ Survey Name ______

Distance and direction from two intersecting section or survey lines ______

☒ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):** ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** ☒ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☐ Driven ☒ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other ______

6) **WELL LOG:**
Date Drilling:
Started 9-7- 1989
Completed 9-7- 1989

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
4	Surface	101

7) **BOREHOLE COMPLETION:** ☐ Open Hole ☒ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from ______ ft. to ______ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	4	TOP SOIL
4	11	RED ClAY
11	50	SAnd
50	57	GRAY ClAY
57	101	SAnd

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
2	N	PlASTic	0	90	Sh40
2	N	PlASTic SlOTTED	90	100	.006

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from TOP ft. to 70 ft. No. of Sacks Used 12
______ ft. to ______ ft. No. of Sacks Used ______
Method used PRESSUR GROUTED Cemment
Cemented by 1914W

RECEIVED
NOV 10 1989
TEXAS WATER COMMISSION

13) **TYPE PUMP:** ☐ Turbine ☒ Jet ☐ Submersible ☐ Cylinder ☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 60 ft.

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ______ gpm with ______ ft. drawdown after ______ hrs.

11) **WATER LEVEL:**
Static level 40 ft. below land surface Date 9-7-89
Artesian flow ______ gpm. Date ______

15) **WATER QUALITY:**
Did the drilling penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? FRESh Depth of strata 44
Was a chemical analysis made? ☐ Yes ☒ No

12) **PACKERS:** Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME PRAZAK WATER WELLS (Type or print) WELL DRILLER'S LICENSE NO. ______

ADDRESS 2502 NE16A RD (Street or RFD) Wharton (City) TX (State) 77488 (Zip)

(Signed) ~~Ed~~ Daniel Duba (Licensed Well Driller) (Signed) ______ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. 66-55-4 Located on map ______

WWD-012 (Rev. 09/21/88)

TEXAS WATER COMMISSION COPY

(1)


WHARTON
RIVER
COLORADO
EL CAMPO
LOUISE
COUNTY

Please use black ink.
Send original copy by certified mail to the
Texas Water Commission
P.O. Box 13087
Austin, Texas 78711

#1

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Mallard & Mallard (Name) Address Box 7291 (Street or RFD) Beaumont, (City) Tex (State) 77706 (Zip)

2) LOCATION OF WELL:
County Wharton 2 miles in S (N.E., S.W., etc.) direction from El Campo (Town)
Standard Oil SOHI.

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ____ Block No. ____ Township ____
Abstract No. ____ Survey Name ____
Distance and direction from two intersecting section or survey lines ____

Merines #1

☑ See attached map. on 66-53-4

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☑ Industrial ☐ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ Other ____

5) DRILLING METHOD (Check):
☐ Driven
☑ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Other ____

6) WELL LOG:
Date Drilling:
Started 6/12 1987
Completed ____ 19__

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	
0		230

From (ft.)	To (ft.)	Description and color of formation material
0	10	Surface soil
10	118	Fine sand
118	155	Clay
155	230	Coarse sand

(Use reverse side if necessary)

JUL 1

7) BOREHOLE COMPLETION:
☐ Open Hole ☑ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other ____
If Gravel Packed give interval . . . from ____ ft. to ____ ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.)		Gage Casing Screen
			From	To	
4	N	PVC	0	220	
4	N	screen	220	230	1/4

9) CEMENTING DATA [Rule 319.44(b)]
Cemented from 0 ft. to 10 ft. No. of Sacks Used ____
____ ft. to ____ ft. No. of Sacks Used ____
Method used Manual
Cemented by Driller

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 319.44(c)]
☐ Pitless Adapter Used [Rule 319.44(d)]
☑ Approved Alternative Procedure Used [Rule 319.71]

11) WATER LEVEL:
Static level 70 ft. below land surface Date 6/12/87
Artesian flow ____ gpm. Date ____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☐ Bailer ☑ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☐ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

I here by certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME (Type or Print) Water Well Driller's License No. 1804

ADDRESS (Street or RFD) (City) (State) (Zip)

JOE FERGUSON WATER WELL
DRILLING, INC.
P.O. Drawer I
Edna, Texas 77957
512-[illegible]-2890

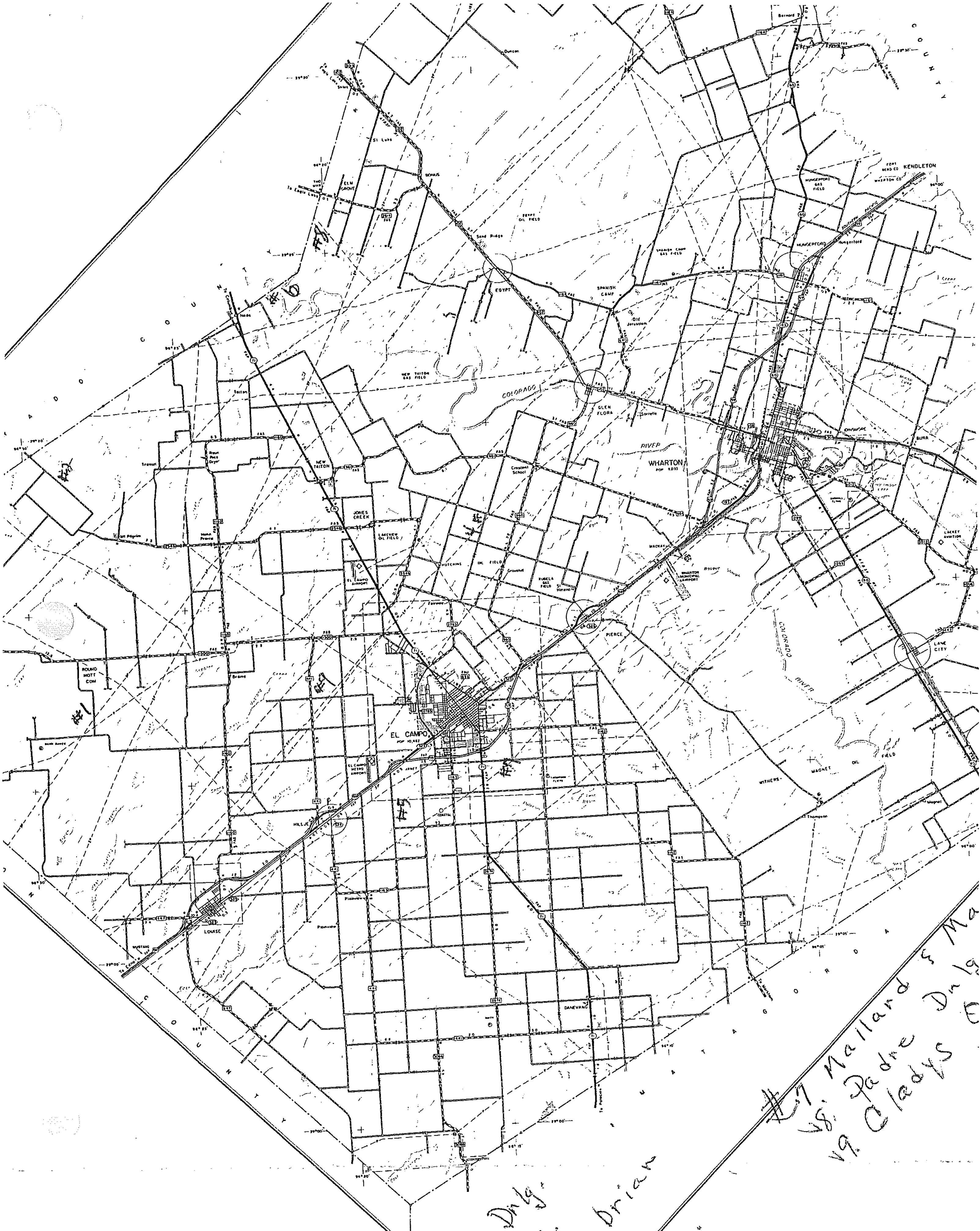
(Signed) Darrell Ferguson (Licensed Water Well Driller) (Signed) (Registered Driller Trainee)

For TWC use only
Well No. 66-55-4
Located on map ____

Please attach electric log, chemical analysis, and other pertinent information, if available.

TWC-0392 (Rev. 06-10-85)

TEXAS WATER COMMISSION COPY



#7 Mallard & Ma

v8. Padre Dulg

v9. Gladys C

M Dulg.

lg. en brian

Co

10 .3m. N/S .7m. E/W

Please use black ink.
Send original copy by
certified mail to the
Texas Water Commission
P.O. Box 13087
Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Norrie Thompson (Name) Address Rt 2 (Street or RFD) El Campo (City) Tx (State) 77437 (Zip)

2) LOCATION OF WELL: County Wharton, 2.4 miles in S.E. (N.E., S.W., etc.) direction from El Campo (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. ______ Block No. ______ Township ______
Abstract No. ______ Survey Name ______
Distance and direction from two intersecting section or survey lines ______
☑ See attached map. map on 66-54-9

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☑ Domestic ☐ Industrial ☐ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ Other ______

5) DRILLING METHOD (Check): ☐ Driven ☑ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other ______

6) WELL LOG:
Date Drilling:
Started 5/15 1986
Completed 5/15/ 1986

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
6 1/4	Surface	90

From (ft.)	To (ft.)	Description and color of formation material
0	1	sand top soil
1	6	light red clay
6	15	dark orange sand
15	24	light red sand
24	25	clay
25	35	course sand & cl. streaks
35	54	very course sand & sm. gravel
54	60	gray clay
60	65	lite tan sand
65	67	clay
67	72	course sand w/clay streaks
72	75	clay
75	77	sand w/clay streaks
77	80	course tan sand
80	90	course tan sand & sm. gravel

RECEIVED
SEP - 2 1986
TEXAS WATER COMMISSION

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☐ Other ______
If Gravel Packed give interval . . . from 80 ft. to 90 ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	U	plastic	0	80	Sch 40
4	U	plastic slotted	80	90	.012

9) CEMENTING DATA [Rule 319.44(b)]
Cemented from 0 ft. to 15 ft. No. of Sacks Used 6
______ ft. to ______ ft. No. of Sacks Used ______
Method used [illegible]
Cemented by Johnson Water Well Serv

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 319.44(c)]
☐ Pitless Adapter Used [Rule 319.44(d)]
☑ Approved Alternative Procedure Used [Rule 319.71]

11) WATER LEVEL:
Static level 38 ft. below land surface Date 5/15/86
Artesian flow ______ gpm. Date ______

12) PACKERS: Type Depth
~~rubber 15~~

13) TYPE PUMP:
☐ Turbine ☐ Jet ☑ Submersible ☐ Cylinder
☐ Other ______
Depth to pump bowls, cylinder, jet, etc., 75 ft.

14) WELL TESTS:
Type Test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 20 gpm with 0 ft. drawdown after 1 hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☑ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ______ Depth of strata ______
Was a chemical analysis made? ☐ Yes ☐ No

I here by certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME J A Johnson Water Wel Serv (Type or Print) Water Well Driller's License No. 1835

ADDRESS Rt. 2 Bx 170 (Street or RFD) El Campo (City) TX (State) 77437 (Zip)

(Signed) Mary H Johnson (Licensed Water Well Driller) (Signed) ______ (Registered Driller Trainee)

For TWC use only
Well No. 66-55-4
Located on map ______

Please attach electric log, chemical analysis, and other pertinent information, if available.

TWC-0392 (Rev. 06-10-85)

TEXAS WATER COMMISSION COPY

(3)

APPENDIX 6

Monitor Well Records

Not Applicable

APPENDIX 7

Aquifer Testing Data

Not Applicable

APPENDIX 8

Statistics Data Tables and Calculations

Not Applicable

APPENDIX 9

Development of Non-Default RBELs and PCLs

Tier 2 ^{GW}SOIL PCL Calculation for Antimony

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

State of Texas
Mandy R. Mercer
Geology
6650
Licensed Professional Geoscientist

Calculation of Tier 2 ^{GW}SOIL PCL - ANTIMONY

Equations from TNRCC Risk Reduction Rules (TRRP) 350.75 (b)(1)

$$^{GW}SOIL = \frac{\text{Groundwater PCL} * \text{LDF}}{K_{sw}} \cdot \frac{L_2}{L_1}$$

^{GW}SOIL = 81.17 mg/kg

$$K_{sw} = \frac{r_b}{U_{ws} + K_d\, r_b + H'\, U_{as}}$$

K_{sw} = 0.0222

LDF = 20

			SOURCE:
Groundwater Critical PCL for COC =		0.006	Antimony, Residential $^{GW}GW_{ING}$
S [illegible]ulk Density (g-soil/cu cm-soil)	r_b	1.67	Tier one Default
Volumentric Water Content of vadose zone soils (cu cm-water/cu cm-soil)	U_{ws}	0.16	Tier one Default
Volumetric air content of vadose zone soils (cu cm-air/cu cm-soils)	U_{as}	0.21	Tier one Default
Soil-water partition Coefficient	K_d	45	Figure 30 TAC 350.73(e)(1)(C) (page 31) non pH-dependent
Henry's Law Constant	H'	0	Figure 30 TAC 350.73(e)
Thickness of affected soils (cm)	L_1	30.48	From sampling data
Depth from top of affected soils to top of aquifer (cm)	L_2	457.2	Most conservative

Tier 2 ^{GW}SOIL PCL Calculation for Arsenic

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED
PROFESSIONAL GEOSCIENTIST

Calculation of Tier 2 ^{GW}SOIL PCL - ARSENIC

Equations from TNRCC Risk Reduction Rules (TRRP) 350.75 (b)(1)

$$^{GW}SOIL = \frac{\text{Groundwater PCL * LDF .}}{K_{sw}} \quad \frac{L_2}{L_1}$$

$^{GW}SOIL = \boxed{5.82}$ mg/kg

$$K_{sw} = \frac{r_b}{U_{ws} + K_d\, r_b + H'\, U_{as}}$$

$K_{sw} = \boxed{0.0344}$

$LDF = \boxed{20}$

			SOURCE:
Groundwater Critical PCL for COC =		0.010	Arsenic, Residential $^{GW}GW_{ING}$
S[illegible]ulk Density (g-soil/cu cm-soil)	r_b	1.67	Tier one Default
Volumentric Water Content of vadose zone soils (cu cm-water/cu cm-soil)	U_{ws}	0.16	Tier one Default
Volumetric air content of vadose zone soils (cu cm-air/cu cm-soils)	U_{as}	0.21	Tier one Default
Soil-water partition Coefficient	K_d	29	Figure 30 TAC 350.73(e)(1)(C) (page 31) pH = 6.75
Henry's Law Constant	H'	0	Figure 30 TAC 350.73(e)
Thickness of affected soils (cm)	L_1	457.2	From sampling data
Depth from top of affected soils to top of aquifer (cm)	L_2	457.2	Most conservative

Tier 2 ^{GW}SOIL PCL Calculation for Lead

Texas Department of Transportation
Mission Maintenance Facility
Mission, Texas

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED PROFESSIONAL GEOSCIENTIST

Calculation of Tier 2 ^{GW}SOIL PCL - LEAD

Equations from TNRCC Risk Reduction Rules (TRRP) 350.75 (b)(1)

$$^{GW}SOIL = \frac{\text{Groundwater PCL} * LDF}{K_{sw}} \cdot \frac{L_2}{L_1}$$

$$K_{sw} = \frac{r_b}{U_{ws} + K_d r_b + H' U_{as}}$$

$^{GW}SOIL = \boxed{70.23}$ mg/kg

$K_{sw} = \boxed{0.0043}$

$LDF = \boxed{20}$

			SOURCE:
Groundwater Critical PCL for COC =		0.015	Lead, Residential $^{GW}GW_{ING}$
S[illegible]ulk Density (g-soil/cu cm-soil)	r_b	1.67	Tier one Default
Volumentric Water Content of vadose zone soils (cu cm-water/cu cm-soil)	U_{ws}	0.16	Tier one Default
Volumetric air content of vadose zone soils (cu cm-air/cu cm-soils)	U_{as}	0.21	Tier one Default
Soil-water partition Coefficient	K_d	234	Figure 30 TAC 350.73(e)(1)(A) (page 29) pH = 5.0 - 9.0
Henry's Law Constant	H'	0	Figure 30 TAC 350.73(e)
Thickness of affected soils (cm)	L_1	457.2	From sampling data
Depth from top of affected soils to top of aquifer (cm)	L_2	457.2	Most conservative

Tier 2 ^{GW}SOIL PCL Calculation for Mercury

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED
PROFESSIONAL GEOSCIENTIST

Calculation of Tier 2 ^{GW}SOIL PCL - MERCURY

Equations from TNRCC Risk Reduction Rules (TRRP) 350.75 (b)(1)

$$^{GW}SOIL = \frac{\text{Groundwater PCL} * LDF}{K_{sw}} \cdot \frac{L_2}{L_1}$$

$^{GW}SOIL = \boxed{1.60}$ mg/kg

$$K_{sw} = \frac{r_b}{U_{ws} + K_d\, r_b + H'\, U_{as}}$$

$K_{sw} = \boxed{0.0249}$

$LDF = \boxed{20}$

			SOURCE:
Groundwater Critical PCL for COC =		0.002	Mercury, Residential $^{GW}GW_{ING}$
S[illegible]ulk Density (g-soil/cu cm-soil)	r_b	1.67	Tier one Default
Volumentric Water Content of vadose zone soils (cu cm-water/cu cm-soil)	U_{ws}	0.16	Tier one Default
Volumetric air content of vadose zone soils (cu cm-air/cu cm-soils)	U_{as}	0.21	Tier one Default
Soil-water partition Coefficient	K_d	40	Figure 30 TAC 350.73(e)(1)(C) (page 31) pH = 6.75
Henry's Law Constant	H'	0	Figure 30 TAC 350.73(e)
Thickness of affected soils (cm)	L_1	457.2	From sampling data
Depth from top of affected soils to top of aquifer (cm)	L_2	457.2	Most conservative

Surface and Subsurface Soil - ^{GW}Soil

Tier 2 Evaluation

Specify media to which tables apply X Surface soil ____ Subsurface soil

Specify if table is for on-site or off-site property X On-site ____ Off-site
Off-site land use(s) for purpose of PCL development[1]: X Residential X Commercial/industrial

	Soil bulk density ρ_b (g/cm^3)	Volumetric water content θ_{ws} (cm^3/cm^3)	Volumetric air content θ_{as} (cm^3/cm^3)	Fraction organic carbon foc (g/g)	Groundwater Darcy velocity U_{gw} (cm/year)	Aquifer thickness b_{gw} (m)	Ground-water gradient i (m/m)	Hydraulic conductivity K (m/day)	Average annual precipitation P (cm/yr)	Net infiltration rate I_f (cm/yr)	Saturated hydraulic conductivity of vadose zone soils K_{vs} (cm/s)
Tier 1 defaults	1.67	0.16	0.21	0.002	NA	NA	NA	NA	NA	NA	NA
Tier 2 values											

COC	Critical GW PCL (from Table 12A)		Affected soil thickness L_1 (cm)	Depth from top of affected soil to gw table L_2 (cm)	Source area width parallel to gw flow W_s (m)	GW mixing zone thickness δ_{gw} (m)	Soil-leachate partition factor K_{sw} (mg/L/mg/kg)	Lateral dilution factor LDF	^{GW}Soil PCL (mg/kg)
	(mg/L)	pathway[2]							
Antimony	0.006	$^{GW}GW_{ING}$	30.48	457.2	---	---	0.0222	20	81.17
Arsenic	0.010	$^{GW}GW_{ING}$	457.2	457.2	---	---	0.0344	20	5.82
Lead	0.015	$^{GW}GW_{ING}$	457.2	457.2	---	---	0.0043	20	70.23
Mercury	0.002	$^{GW}GW_{ING}$	457.2	457.2	---	---	0.0249	20	1.60

---

[1] Repeat the table if needed for different off-site land uses.

[2] Specify the pathway for the critical groundwater PCL ($^{GW}GW_{Ing}$, $^{GW}GW_{Class3}$, $^{Air}GW_{Inh\text{-}V}$, ecological PCL (eco), ^{SW}GW, etc.)

CORRIGAN CONSULTING, INC.

Date: 6/21/05

Sheet 1 of 1

CALCULATION FORM

Project Name: AGD El Campo APAR

Project No.: 03-134

Calculation: Convert total silver concentration to dissolved silver concentration

Conversion formula per "Procedures to Implement The Texas Surface Water Quality Standards":

$$\frac{Cd}{CT} = \frac{1}{1 + (Kp \times TSS \times 10^{-6})}$$

where: Cd = dissolved metal concentration
CT = total metal concentration
Kp = partition coefficient
TSS = total suspended solids

$$Kp = 10^{b} \times (TSS)^{m}$$

where: Kp = partition coefficient
b = intercept (Table 7)
TSS = total suspended solids (Table 5)
m = slope (Table 7)

$$Kp = 10^{6.38} \times 14^{-1.03} = 158{,}302.63$$

$$\frac{Cd}{0.002} = \frac{1}{1 + (158{,}302.63 \times 14 \times 10^{-6})}$$

$$\frac{Cd}{0.002} = 0.3109 \quad Cd = 0.00062 \text{ mg/L}$$

Seal:

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED
PROFESSIONAL GEOSCIENTIST

Signature: Mandy Mercer

Date: 8/17/05

CORRIGAN CONSULTING, INC.

Date:	6/21/05		
Sheet	1	of	1

CALCULATION FORM

Project Name: AGD El Campo APAR

Project No.: 03-134

Calculation: Convert total lead concentration to dissolved lead concentration

Conversion formula per "Procedures to Implement the Texas Surface Water Quality Standards":

$$\frac{C_d}{C_T} = \frac{1}{1 + (K_p \times TSS \times 10^{-6})}$$

where C_d = dissolved metals concentration
C_T = total metal concentration
K_p = partition coefficient
TSS = Total Suspended Solids

$$K_p = 10^b \times (TSS)^m$$

where K_p = partition coefficient
b = intercept (Table 7)
TSS = total suspended solids (Table 5)
m = slope (Table 7)

$$K_p = 10^{6.45} \times (14)^{-0.80} = 341{,}269.57$$

$$\frac{C_d}{0.013} = \frac{1}{1 + (341{,}269.57 \times 14 \times 10^{-6})}$$

$$\frac{C_d}{0.013} = 0.1731 \qquad C_d = 0.0023 \text{ mg/L}$$

Seal:

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED
PROFESSIONAL GEOSCIENTIST

Signature: Mandy Mercer

Date: 8/17/05

APPENDIX 10

Laboratory Data Packages and Data Usability Summary

Analytical Report 236979

for

Corrigan Consulting, Inc.

Project Manager: Mark Holmes

El Campo SAFR

03-134

15-OCT-03

XENCO Laboratories

11381 Meadowglen, Suite L Houston, TX 77082 Ph:(281) 589-0692 Fax:(281) 589-0695

XENCO
Laboratories

15-OCT-03

Project Manager: **Mark Holmes**
Corrigan Consulting, Inc.
12000 Aerospace Ave. Suite 450
Houston , TX 77034

Reference: XENCO Report No: **236979**
El Campo SAFR
Project Address: 801 Armory Rd., El Campo, TX

Mark Holmes:

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 Chain of Custody Numbered 236979. All results being reported under this Chain of Custody apply to the samples analyzed and properly identified with a Laboratory ID number.

All the results for the quality control samples were reviewed. Also, all parameters for data reduction and validation were reviewed. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, completeness or properly flagged.

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 COC No. 236979 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,

Brent Barron
Laboratory 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 - San Antonio - Austin - Tampa - Miami - Latin America

XENCO Laboratories

☒ 11381 Meadowglen, Ste L, Houston TX 77082 281-589-0692
☐ 5309 Wurzbach Rd, Ste 104, San Antonio, TX 78238 210-509-3334
☐ 11078 Morrison Ln, Ste D. Dallas, TX 75229 972-481-9999
☐ 5757 N.W. 158th Street, Miami Lakes, Fl 33014 305-823-8500
☐ 2618 South Falkenburg Rd, Riverview, Fl 33569 813-620-2000

LYSIS REQUEST & CHAIN OF CUSTODY RECORD

Page 1 of 4

Serial #: 140429

Company: Corrigan Consulting, Inc.
Phone: 281-922-4766
Project Name-State: El Campo SAFR ☐ Previously done at XENCO
Project ID: 03-134
Site/Location: 801 Armory Rd, El Campo, Texas
Proj. Manager (PM): Mark Holmes
Fax Results to ☒ PM and / or
e-mail Final Report to: Kristen, Nicole
Fax No: 281-922-4767
Invoice to ☐ Accounting ☒ Invoice with Final Report ☐ Invoice must have a P.O.
Bill to:
Quote No: **P.O No:** ☐ Call for a P.O.
Reg Program: CLP AFCEE [✓ TRRP] DW UST Other:
Special DLs (GW DW [✓ TRRP] QAPP MDLs See Lab PM Included Call PM)
Specifications: Level I II III IV Custom with Raw Data EDD Dry Basis
See lab data request package - Debbie Simmons
Sampler Name Nicole Stoltz Signature Nicole Stoltz

Lab Only: 236979-A

TAT: 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d. Standard TAT is Quote Specific, please circle your required TAT.

	Sample ID	Sampling Date	Time	Depth [✓ ft] "In" m	Matrix A P S W	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	BTEX by 8021 8260 602 624 Other	BTEX-MTBE by 8021 8260 624 Other	TPH by TX1005 FL-Pro 418.1 8015GRO 8015DRO 1664	PAHs by 8270 8100 8310	Metals by 6010 or 6020 8RCRA Tot Pb TCLP8 13PP 23TAL	VOCs by 8021 [✓ 8260] 624 VOA VOH PPs TCL TCLP	SVOCs by [✓ 8270] 625 PAHs BN&A TCL PPs TCLP	FL Preburn or Revised Preburn	TAL Metals by 6020	Explosives by 8330	pH	TAT 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold: Analysis Disposal	Remarks
1	P-5	091603	1558	0-0.5	S		X	1	4	CG	C									X			X			
2	P-4	091603	1549	0-0.5	S		X	3	4	CG	C						X	X		X	X	X	X			
3	P-3	091603	1546	0-0.5	S		X	1	4	CG	C									X			X			
4	P-2	091603	1543	0-0.5	S		X	1	4	CG	C									X			X			
5	B-25D	091603	1335	0-0.5	S		X	3	4	CG	C						X	X		X	X		X			
6	B-15	091603	1308	0-0.5	S		X	1	4	CG	C									X			X			
7	P-1D	091603	1540	0-0.5	S		X	1	4	CG	C									X			X			
8	B-25	091603	1335	0-0.5	S		X	3	4	CG	C						X	X		X	X		X			
9	B-19	091603	1334	0-0.5	S		X	1	4	CG	C									X			X			
10	P-1	091603	1540	0-0.5	S		X	1	4	CG	C									X			X			

From: Rcv by: Date Addn:

	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1	Nicole Stoltz NS	091703 1140		9/17/03 1140
2				
3		9/17/03 1320	Lab:	9/17/03 13:20

Total Containers per COC: 44 Cooler Temp: 2.0 °C

Specific Fax Due Date: ☐ Rush Preliminary Results Cost Approved

☐ Rush Data Package cost preapproved

Rush Charges are Pre-Approved upon Requesting them. All Terms Apply

Preservatives: Various (V), HCl pH<2 (H), H2SO4 pH<2 (S), HNO3 pH<2 (N), Asbc Acid&NaOH (A), ZnAc&NaOH (Z), (Cool,<4C) (C), None (NA), See Label (L), Other (O) ____

Cont. Size: 4oz (4), 8oz (8), 32oz (32), 40ml VOA (V), 1L (1), 500ml (5), Tedlar Bag (B), Wipe (W), Other ____ **Cont. Type:** Glass Amb (A), Glass Clear (C), Plastic (P), Other (O) ____

Matrix: Air (A), Product (P), Solid(S), Water (W)

Committed to Excellence in Service and Quality www.xenco.com

XENCO Laboratories

☒ 11381 Meadowglen, Ste L, Houston TX 77082 281-589-0692
☐ 5309 Wurzbach Rd, Ste 104, San Antonio, TX 78238 210-509-3334
☐ 11078 Morrison Ln, Ste D, Dallas, TX 75229 972-481-9999
☐ 5757 N.W. 158th Street, Miami Lakes, Fl 33014 305-823-8500
☐ 2618 South Falkenburg Rd, Riverview, Fl 33569 813-620-2000

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

Page of 4

Serial #: 140425

Lab Only: 236979-14

Company: Corrigan Consulting, Inc. **Phone:** 281-922-4766

Project Name-State: El Campo SAFR ☐ Previously done at XENCO **Project ID:** 03-134

Site/Location: 801 Armory Rd. El Campo, Texas **Proj. Manager (PM):** Mark Holmes

Fax Results to ☐ PM and / or e-mail Final Report to: Kristen, Nicole **Fax No:** 281-922-4767

Invoice to ☐ Accounting ☒ Invoice with Final Report ☐ Invoice must have a P.O.

Bill to:

Quote No: **P.O No:** ☐ Call for a P.O.

Reg Program: CLP AFCEE [✓ TRRP] DW UST Other:

Special DLs (GW DW [✓ TRRP] QAPP MDLs See Lab PM Included Call PM)

Specifications: Level I II III IV Custom with Raw Data EDD Dry Basis

See lab data request pkg - Debbie Simmons

Sampler Name Nicole Stotts Signature

TAT: 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d. Standard TAT is Quote Specific, please circle your required TAT.

	Sample ID	Sampling Date	Time	Depth (ft) In" m	Matrix A P S W	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	BTEX by 8021 8260 602 624 Other	BTEX-MTBE by 8021 8260 624 Other	TPH by TX1005 FL-Pro 418.1 8015GRO 8015DRO 1664	PAHs by 8270 8100 8310	Metals by 6010 or 6020 8RCRA Tot Pb TCLP8 13PP 23TAL	VOCs by 8021 [✓ 8260] 624 VOA VOH PPs TCL TCLP	SVOCs by [✓ 8270] 625 PAHs BN&A TCL PPs TCLP	FL Preburn or Revised Preburn	TAL Metals by 6020	Explosives by 8330	pH	TAT 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold: Analysis Disposal	Remarks
1	B-1	091603	1220	0-0.5	S		X	1	4	CG	C									X			X			
2	B-2	091603	1225	0-0.5	S		X	1	4	CG	C									X			X			
3	B-3	091603	1230	0-0.5	S		X	1	4	CG	C									X			X			
4	B-4	091603	1233	0-0.5	S		X	1	4	CG	C									X			X			
5	B-5	091603	1236	0-0.5	S		X	1	4	CG	C									X	X		X			
6	B-6	091603	1303	0-0.5	S		X	1	4	CG	C									X			X			
7	B-7	091603	1305	0-0.5	S		X	1	4	CG	C									X			X			
8	B-8	091603	1308	0-0.5	S		X	1	4	CG	C									X			X			
9	B-9	091603	1311	0-0.5	S		X	1	4	CG	C									X			X			
10	B-10	091603	1315	0-0.5	S		X	1	4	CG	C									X			X			

Addn: From: Rcv by: Date

	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1		NS 091703 1140		9/17/03 1140
2				
3		9/17/03 1320	Lab:	9/17/03 13:20

Total Containers per COC: Cooler Temp:

Specific Fax Due Date: ☐ Rush Preliminary Results Cost Approved

☐ Rush Data Package cost preapproved

Rush Charges are Pre-Approved upon Requesting them. All Terms Apply

Preservatives: Various (V), HCl pH<2 (H), H2SO4 pH<2 (S), HNO3 pH≤2 (N), Asbc Acid&NaOH (A), ZnAc&NaOH (Z), (Cool,<4C) (C), None (NA), See Label (L), Other (O) ______

Cont. Size: 4oz (4), 8oz (8), 32oz (32), 40ml VOA (V), 1L (1), 500ml (5), Tedlar Bag (B), Wipe (W), Other ______ **Cont. Type:** Glass Amb (A), Glass Clear (C), Plastic (P), Other (O) ______

Matrix (A), Product (P), Solid(S), Water (W)

Committed to Excellence in Service and Quality www.xenco.com

XENCO Laboratories

☒ 11381 Meadowglen, Ste L, Houston TX 77082 281-589-0692
☐ 5309 Wurzbach Rd, Ste 104, San Antonio, TX 78238 210-509-3334
☐ 11078 Morrison Ln, Ste D. Dallas, TX 75229 972-481-9999
☐ 5757 N.W. 158th Street, Miami Lakes, Fl 33014 305-823-8500
☐ 2618 South Falkenburg Rd, Riverview, Fl 33569 813-620-2000

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

Page 3 of 4

Serial #: 140426

Company: Corrigan Consulting, Inc.
Phone: 281-922-4766
Project Name-State: El Campo SAFR ☐ Previously done at XENCO
Project ID: 03-134
Site/Location: 801 Armory Rd El Campo, Texas
Proj. Manager (PM): Mark Holmes
Fax Results to ☒ PM and / or **Fax No:** 281-922-4767
e-mail Final Report to: Kristen, Nicole
Invoice to ☐ Accounting ☒ Invoice with Final Report ☐ Invoice must have a P.O.
Bill to:
Quote No: **P.O No:** ☐ Call for a P.O.
Reg Program: CLP AFCEE [✓ TRRP] DW UST Other:
Special DLs (GW DW [✓ TRRP] QAPP MDLs See Lab PM Included Call PM)
Specifications: Level I II III IV Custom with Raw Data EDD Dry Basis
See lab data request pkg - Barbara Simmons
Sampler Name: Nicole Stoltz Signature: Nicole Stoltz

Lab Only: 236979-A

TAT: 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d. Standard TAT is Quote Specific, please circle your required TAT.

	Sample ID	Sampling Date	Time	Depth ft' in" m	Matrix A P S W	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	BTEX by 8021 8260 602 624 Other	BTEX-MTBE by 8021 8260 624 Other	TPH by TX1005 FL-Pro 418.1 8015GRO 8015DRO 1664	PAHs by 8270 8100 8310	Metals by 6010 or 6020 8RCRA Tot Pb TCLP8 13PP 23TAL	VOCs by 8021 [✓ 8260] 624 VOA VOH PPs TCL TCLP	SVOCs by [✓ 8270] 625 PAHs BN&A TCL PPs TCLP	FL Preburn or Revised Preburn	TAL Metals by 6020	Explosives by 8330	PH	TAT 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold: Analysis Disposal	Remarks	Addn:	
1	RS091603	091603	1600	—	W		X	6	V	V	V						X	X		X	X		X					1
2	B-11	091603	1318	0-0.5	S		X	1	4	CG	C									X		X	X					2
3	B-12	091603	1317	0-0.5	S		X	1	4	CG	C									X			X					3
4	B-13	091603	1314	0-0.5	S		X	1	4	CG	C									X			X					4
5	B-14	091603	1311	0-0.5	S		X	1	4	CG	C									X			X					5
6	B-16	091603	1247	0-0.5	S		X	1	4	CG	C									X			X					6
7	B-17	091603	1240	0-0.5	S		X	1	4	CG	C									X			X					7
8	B-18	091603	1237	0-0.5	S		X	1	4	CG	C									X		X	X					8
9	B-20	091603	1231	0-0.5	S		X	1	4	CG	C									X			X					9
10	B-21	091603	1229	0-0.5	S		X	1	4	CG	C									X			X					10

	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1	Nicole Stoltz	NS 091703 1140		9/17/03 1140
2				
3		9/17/03 1352	Lab:	9/17/03 12:20

Total Containers per COC:
Cooler Temp:
Specific Fax Due Date: ☐ Rush Preliminary Results Cost Approved
☐ Rush Data Package cost preapproved
Rush Charges are Pre-Approved upon Requesting them. All Terms Apply

Preservatives: Various (V), HCl pH<2 (H), H2SO4 pH<2 (S), HNO3 pH<2 (N), Asbc Acid&NaOH (A), ZnAc&NaOH (Z), (Cool,<4C) (C), None (NA), See Label (L), Other (O) ______
Cont. Size: 4oz (4), 8oz (8), 32oz (32), 40ml VOA (V), 1L (1), 500ml (5), Tedlar Bag (B), Wipe (W), Other ______ **Cont. Type:** Glass Amb (A), Glass Clear (C), Plastic (P), Other (O) ______
Matrix: Air (A), Product (P), Solid(S), Water (W)

Committed to Excellence in Service and Quality www.xenco.com

XENCO Laboratories

☒ 11381 Meadowglen, Ste L Houston TX 77082 281-589-0692
☐ 5309 Wurzbach Rd, Ste 104, San Antonio, TX 78238 210-509-3334
☐ 11078 Morrison Ln, Ste D, Dallas, TX 75229 972-481-9999

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

☐ 5757 N.W. 158th Street, Miami Lakes, Fl 33014 305-823-8500
☐ 2618 South Falkenburg Rd, Riverview, Fl 33569 813-620-2000 **Serial #:** 140427

Page 4 of 4

Company Corrigan Consulting, Inc. **Phone** 281 922 4766
Project Name-State El Campo SAFR ☐ Previously done at XENCO **Project ID** 03-134
Site/Location 801 Armory Rd El Campo, Texas **Proj. Manager (PM)** Mark Holmes
Fax Results to ☒ PM and / or e-mail Final Report to: Kristen, Nicole **Fax No:** 281 922-4767
Invoice to ☐ Accounting ☒ Invoice with Final Report ☐ Invoice must have a P.O.
Bill to:
Quote No: **P.O No:** ☐ Call for a P.O.
Reg Program: CLP AFCEE [✓ TRRP] DW UST Other:
Special DLs (GW DW [✓ TRRP] QAPP MDLs See Lab PM Included Call PM)
Specifications: Level I II III IV Custom with Raw Data EDD Dry Basis
See lab data request pkg — ~~[illegible]~~
Sampler Name Nicole Stoltz Signature Nicole Stoltz

Lab Only: 236979-14
TAT: 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d. Standard TAT is Quote Specific, please circle your required TAT.

	Sample ID	Sampling Date	Time	Depth ft' In" m	Matrix A P S W	Composite	Grab	# Containers	Container Size	Container Type	Preservatives	BTEX by 8021 8260 602 624 Other	BTEX-MTBE by 8021 8260 624 Other	TPH by TX1005 FL-Pro 418.1 8015GRO 8015DRO 1664	PAHs by 8270 8100 8310	Metals by 6010 or 6020 8RCRA Tot Pb TCLP8 13PP 23TAL	VOCs by 8021 8260 624 VOA VOH PPs TCL TCLP	SVOCs by 8270 625 PAHs BN&A TCL PPs TCLP	FL Preburn or Revised Preburn	TAL Metals	pH	TAT 5h 12h 24h 48h 3d 5d [✓ 7d] 10d 14d 21d	Addn: PAH above mg/L W, mg/Kg S Highest Hit	Hold: Analysis Disposal	Remarks
1	B-22	091603	1225	0-0.5	S		X	1	4	CG	C									X		X			
2	B-23	091603	1227	0-0.5	S		X	1	4	CG	C									X	X	X			
3	B-24	091603	1218	0-0.5	S		X	1	4	CG	C									X		X			
4	end of record																								
5																									
6																									
7																									
8																									
9																									
10																									

From:
Rcv by:
Date
Addn:

	Relinquished by (Initials and Sign)	Date & Time	Relinquished to (Initials and Sign)	Date & Time
1	Nicole Stoltz	NS 091703 1140	[illegible]	9/17/03 1140
2				
3	[illegible]	9/17/03 13:20	Lab: [illegible]	9/17/03 13:20

Total Containers per COC: Cooler Temp:
Specific Fax Due Date: ☐ Rush Preliminary Results Cost Approved
☐ Rush Data Package cost preapproved
Rush Charges are Pre-Approved upon Requesting them. All Terms Apply

Preservatives: Various (V), HCl pH<2 (H), H2SO4 pH<2 (S), HNO3 pH<2 (N), Asbc Acid&NaOH (A), ZnAc&NaOH (Z), (Cool,<4C) (C), None (NA), See Label (L), Other (O) ____
Cont. Size: 4oz (4), 8oz (8), 32oz (32), 40ml VOA (V), 1L (1), 500ml (5), Tedlar Bag (B), Wipe (W), Other ____ **Cont. Type:** Glass Amb (A), Glass Clear (C), Plastic (P), Other (O) ____
Matrix:), Product (P), Solid(S), Water (W)

mmitted to Excellence in Service and Quality www.xenco.com

XENCO Laboratories

REQUEST FOR ADDITIONS / CORRECTIONS FORM

☐ 11381 Meadowglen, Suite L Houston, TX 77082 - 281- 589-0692 - Fax: 281-589-1006
☐ 11078 Morrison Ln, Suite D Dallas, TX 75229 - 972-481-9999- Fax: 972-481-9998
☐ 5309 Wurzbach Rd., Suite 104 San Antonio, TX 78238 - 210- 509-3334 - Fax: 210-509-3333

This form is a supplement to
COC No: 236979 A B C D E
Page ______ of ______

This information should be taken from the original COC.

Contractor: Corrigan Consulting Phone ( )
Project Name: El Campo SAFR
Project I. D. No. 03-134
Project Manager: Mark Holmes
Project Location:

☒ ADDITION
☐ CORRECTION
☐ CANCELATION
☐ NO ADDITION
☐ ON HOLD

Requested by: Nicole Stoltz Date: 10/6/03 14:50

Lab ID	Field ID	Date/Time	Depth	Matrix	Sample Description	SPLP Ag	H.T.E.	SPLP Pb + Sb	H.T.E.		H.T.E.		H.T.E.		H.T.E.	TAT ASAP 24 hrs 48 hrs 3 days ~~5 days~~ [✓ Other Std] Remarks
236979-001	P-5	9/16/03		S		X										
236979-018	B-8	9/16/03		S		X										
236979-008	B-25	9/16/03		S				X								

COMMENTS:

Add Taken By: ds

D/T: 10/6/03 14:50

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-5**
Matrix: SOIL
Lab Sample Id: **236979-001**
Date Collected: Sep-16-03 15:52
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 11.74
Prep Method: 3051
Date Anal: Sep-26-03 15:58
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	2180	0.500	1.13	0.2250	0.510	mg/kg		2
Antimony	7440-36-0	0.374	0.250	0.567	0.1600	0.363	mg/kg	J	2
Arsenic	7440-38-2	2.87	0.250	0.567	0.0450	0.102	mg/kg		2
Barium	7440-39-3	25.2	0.500	1.13	0.1100	0.249	mg/kg		2
Beryllium	7440-41-7	0.261	0.050	0.113	0.0250	0.057	mg/kg		2
Cadmium	7440-43-9	0.079	0.050	0.113	0.0350	0.079	mg/kg	J	2
Calcium	7440-70-2	1050	25.0	56.7	13.80	31.2	mg/kg		2
Chromium	7440-47-3	6.14	0.500	1.13	0.0450	0.102	mg/kg		2
Cobalt	7440-48-4	3.13	0.500	1.13	0.1000	0.227	mg/kg		2
Copper	7440-50-8	4.38	0.500	1.13	0.1050	0.238	mg/kg		2
Iron	7439-89-6	3900	10.0	22.7	2.600	5.89	mg/kg		2
Lead	7439-92-1	22.3	0.100	0.227	0.1000	0.227	mg/kg		2
Magnesium	7439-95-4	407	10.0	22.7	7.500	17.0	mg/kg		2
Manganese	7439-96-5	195	0.500	1.13	0.0750	0.170	mg/kg		2
Mercury	7439-97-6	0.0340	0.0200	0.0453	0.0100	0.0227	mg/kg	J	2
Nickel	7440-02-0	2.83	0.500	1.13	0.0550	0.125	mg/kg		2
Potassium	2133-26-8	449	10.0	22.7	8.500	19.3	mg/kg		2
Selenium	7782-49-2	U	0.250	0.567	0.2000	0.453	mg/kg	U	2
Silver	7440-22-4	0.714	0.240	0.567	0.2000	0.453	mg/kg		2
Sodium	7440-23-5	338	25.0	56.7	12.50	28.3	mg/kg		2
Thallium	7440-28-0	U	0.500	1.13	0.1600	0.363	mg/kg	U	2
Vanadium	7440-62-2	13.2	0.500	1.13	0.1000	0.227	mg/kg		2
Zinc	7440-66-6	8.09	0.500	1.13	0.2000	0.453	mg/kg		2

Analytical Method: **SPLP Metals by EPA 6020**
% Moist:
Prep Method: 3015
Date Anal: Oct-13-03 14:08
Analyst: IRF
Date Prep: Oct-13-03 09:30
Tech: IRF
Anal seq: 643523
Prep seq: 463246

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Silver	7440-22-4	U	0.010	0.050	0.0024	0.012	mg/L	U	5

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 14:02
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642726
Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		11.7					%		

Version: 1.029

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-4**	Matrix: SOIL		
Lab Sample Id: **236979-002**	Date Collected: Sep-16-03 15:49	Date Received: Sep-17-03 13:20	

Analytical Method: **VOAs by SW-846 8260B**		% Moist: 13.76	Prep Method: 5030B
Date Anal: Sep-19-03 13:17	Analyst: CYE	Date Prep: Sep-19-03 11:40	Tech: CYE
Anal seq: 642809		Prep seq: 462809	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Benzene	71-43-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromobenzene	108-86-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromochloromethane	74-97-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromodichloromethane	75-27-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromoform	75-25-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromomethane	74-83-9	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
MTBE	1634-04-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
tert-Butylbenzene	98-06-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Sec-Butylbenzene	135-98-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
n-Butylbenzene	104-51-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Carbon Tetrachloride	56-23-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chlorobenzene	108-90-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chloroethane	75-00-3	U	0.010	0.011	0.0020	0.002	mg/kg	U	1
Chloroform	67-66-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chloromethane	74-87-3	U	0.010	0.011	0.0020	0.002	mg/kg	U	1
2-Chlorotoluene	95-49-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
4-Chlorotoluene	106-43-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
p-Cymene (p-Isopropyltoluene)	99-87-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dibromo-3-Chloropropane	96-12-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dibromochloromethane	124-48-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dibromomethane	74-95-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichlorobenzene	95-50-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3-Dichlorobenzene	541-73-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,4-Dichlorobenzene	106-46-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dichlorodifluoromethane	75-71-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichloroethane	107-06-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloroethane	75-34-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
trans-1,2-dichloroethene	156-60-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
cis-1,2-Dichloroethene	156-59-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloroethene	75-35-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
2,2-Dichloropropane	594-20-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3-Dichloropropane	142-28-9	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichloropropane	78-87-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
trans-1,3-dichloropropene	10061-02-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloropropene	563-58-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
cis-1,3-Dichloropropene	10061-01-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Ethylbenzene	100-41-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Hexachlorobutadiene	87-68-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
isopropylbenzene	98-82-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Methylene Chloride	75-09-2	U	0.020	0.023	0.0040	0.004	mg/kg	U	1
Naphthalene	91-20-3	U	0.010	0.011	0.0020	0.002	mg/kg	U	1
n-Propylbenzene	103-65-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Styrene	100-42-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,1,2-Tetrachloroethane	630-20-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,2,2-Tetrachloroethane	79-34-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-4**
Matrix: SOIL
Lab Sample Id: **236979-002**
Date Collected: Sep-16-03 15:49
Date Received: Sep-17-03 13:20

Analytical Method: **VOAs by SW-846 8260B**
% Moist: 13.76
Prep Method: 5030B
Date Anal: Sep-19-03 13:17
Analyst: CYE
Date Prep: Sep-19-03 11:40
Tech: CYE
Anal seq: 642809
Prep seq: 462809

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Tetrachloroethylene	127-18-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Toluene	108-88-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,3-Trichlorobenzene	87-61-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,2-Trichloroethane	79-00-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,1-Trichloroethane	71-55-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Trichloroethene	79-01-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Trichlorofluoromethane	75-69-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,3-Trichloropropane	96-18-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,4-Trimethylbenzene	95-63-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3,5-trimethylbenzene	108-67-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Vinyl Chloride	75-01-4	U	0.002	0.002	0.0004	0.001	mg/kg	U	1
o-Xylene	95-47-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
m,p-Xylenes		U	0.010	0.011	0.0020	0.002	mg/kg	U	1

Version: 1.029

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-4**
Matrix: SOIL
Lab Sample Id: **236979-002**
Date Collected: Sep-16-03 15:49
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 13.76
Prep Method: 3051
Date Anal: Sep-26-03 16:45
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	2600	0.500	1.16	0.2250	0.522	mg/kg		2
Antimony	7440-36-0	U	0.250	0.580	0.1600	0.371	mg/kg	U	2
Arsenic	7440-38-2	2.49	0.250	0.580	0.0450	0.104	mg/kg		2
Barium	7440-39-3	20.7	0.500	1.16	0.1100	0.255	mg/kg		2
Beryllium	7440-41-7	0.301	0.050	0.116	0.0250	0.058	mg/kg		2
Cadmium	7440-43-9	0.081	0.050	0.116	0.0350	0.081	mg/kg	J	2
Calcium	7440-70-2	997	25.0	58.0	13.80	31.9	mg/kg		2
Chromium	7440-47-3	4.37	0.500	1.16	0.0450	0.104	mg/kg		2
Cobalt	7440-48-4	2.28	0.500	1.16	0.1000	0.232	mg/kg		2
Copper	7440-50-8	4.36	0.500	1.16	0.1050	0.244	mg/kg		2
Iron	7439-89-6	3370	10.0	23.2	2.600	6.03	mg/kg		2
Lead	7439-92-1	12.3	0.100	0.232	0.1000	0.232	mg/kg		2
Magnesium	7439-95-4	412	10.0	23.2	7.500	17.4	mg/kg		2
Manganese	7439-96-5	153	0.500	1.16	0.0750	0.174	mg/kg		2
Mercury	7439-97-6	0.0348	0.0200	0.0464	0.0100	0.0232	mg/kg	J	2
Nickel	7440-02-0	2.64	0.500	1.16	0.0550	0.128	mg/kg		2
Potassium	2133-26-8	380	10.0	23.2	8.500	19.7	mg/kg		2
Selenium	7782-49-2	U	0.250	0.580	0.2000	0.464	mg/kg	U	2
Silver	7440-22-4	0.591	0.240	0.580	0.2000	0.464	mg/kg		2
Sodium	7440-23-5	371	25.0	58.0	12.50	29.0	mg/kg		2
Thallium	7440-28-0	U	0.500	1.16	0.1600	0.371	mg/kg	U	2
Vanadium	7440-62-2	11.2	0.500	1.16	0.1000	0.232	mg/kg		2
Zinc	7440-66-6	7.90	0.500	1.16	0.2000	0.464	mg/kg		2

Sample Id: **P-4** Matrix: SOIL

Lab Sample Id: **236979-002** Date Collected: Sep-16-03 15:49 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: 13.76 Prep Method: 3550B

Date Anal: Sep-19-03 18:46 Analyst: MAD Date Prep: Sep-17-03 15:30 Tech: MAD

Anal seq: 642736 Prep seq: 462773

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Acenaphthene	83-32-9	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Acenaphthylene	208-96-8	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Aniline (Phenylamine, Aminobenzene)	62-53-3	U	0.667	0.771	0.0353	0.041	mg/kg	U	1
Anthracene	120-12-7	U	0.167	0.193	0.0446	0.052	mg/kg	U	1
Benzo(a)anthracene	56-55-3	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Benzo(a)pyrene	50-32-8	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Benzo(b)fluoranthene	205-99-2	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Benzo(g,h,i)perylene	191-24-2	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Benzo(k)fluoranthene	207-08-9	U	0.167	0.193	0.0340	0.039	mg/kg	U	1
Benzoic Acid	65-85-0	U	1.00	1.16	0.2980	0.345	mg/kg	U	1
Benzyl Butyl Phthalate	85-68-7	U	0.167	0.193	0.0382	0.044	mg/kg	U	1
bis(2-chloroethoxy) methane	111-91-1	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
bis(2-chloroethyl) ether	111-44-4	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
bis(2-chloroisopropyl) ether	108-60-1	U	0.333	0.385	0.0455	0.053	mg/kg	U	1
bis(2-ethylhexyl) phthalate	117-81-7	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
4-Bromophenyl-phenylether	101-55-3	U	0.333	0.385	0.0452	0.052	mg/kg	U	1
di-n-Butyl Phthalate	84-74-2	0.041	0.167	0.193	0.0333	0.039	mg/kg	J	1
4-chloro-3-methylphenol	59-50-7	U	0.333	0.385	0.0407	0.047	mg/kg	U	1
4-Chloroaniline	106-47-8	U	0.667	0.771	0.0333	0.039	mg/kg	U	1
2-Chloronaphthalene	91-58-7	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
2-Chlorophenol	95-57-8	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
4-Chlorophenyl Phenyl Ether	7005-72-3	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
Chrysene	218-01-9	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Dibenz(a,h)Anthracene	53-70-3	U	0.167	0.193	0.0404	0.047	mg/kg	U	1
Dibenzofuran	132-64-9	U	0.333	0.385	0.0369	0.043	mg/kg	U	1
1,2-Dichlorobenzene	95-50-1	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
1,3-Dichlorobenzene	541-73-1	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
1,4-Dichlorobenzene	106-46-7	U	0.333	0.385	0.0376	0.043	mg/kg	U	1
3,3-Dichlorobenzidine	91-94-1	U	0.333	0.385	0.0637	0.074	mg/kg	U	1
2,4-Dichlorophenol	120-83-2	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
Diethyl Phthalate	84-66-2	0.091	0.167	0.193	0.0333	0.039	mg/kg	J	1
Dimethyl Phthalate	131-11-3	U	0.167	0.193	0.0379	0.044	mg/kg	U	1
2,4-Dimethylphenol	105-67-9	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
4,6-dinitro-2-methyl phenol	534-52-1	U	0.333	0.385	0.0377	0.044	mg/kg	U	1
2,4-Dinitrophenol	51-28-5	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
2,4-Dinitrotoluene	121-14-2	U	0.333	0.385	0.0436	0.050	mg/kg	U	1
2,6-Dinitrotoluene	606-20-2	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
Fluoranthene	206-44-0	U	0.167	0.193	0.0367	0.043	mg/kg	U	1
Fluorene	86-73-7	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Hexachlorobenzene	118-74-1	U	0.333	0.385	0.0337	0.039	mg/kg	U	1
Hexachlorobutadiene	87-68-3	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
Hexachlorocyclopentadiene	77-47-4	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
Hexachloroethane	67-72-1	U	0.333	0.385	0.0357	0.041	mg/kg	U	1
Indeno(1,2,3-c,d)Pyrene	193-39-5	U	0.167	0.193	0.0487	0.056	mg/kg	U	1
Isophorone	78-59-1	U	0.333	0.385	0.0540	0.062	mg/kg	U	1

Sample Id: **P-4** Matrix: SOIL

Lab Sample Id: **236979-002** Date Collected: Sep-16-03 15:49 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: 13.76 Prep Method: 3550B

Date Anal: Sep-19-03 18:46 Analyst: MAD Date Prep: Sep-17-03 15:30 Tech: MAD

Anal seq: 642736 Prep seq: 462773

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
2-Methylnaphthalene	91-57-6	U	0.167	0.193	0.0350	0.041	mg/kg	U	1
2-methylphenol	95-48-7	U	0.333	0.385	0.0415	0.048	mg/kg	U	1
3&4-Methylphenol		U	0.333	0.385	0.0675	0.078	mg/kg	U	1
Naphthalene	91-20-3	U	0.167	0.193	0.0357	0.041	mg/kg	U	1
4-Nitroaniline	100-01-6	U	0.667	0.771	0.0560	0.065	mg/kg	U	1
3-Nitroaniline	99-09-2	U	0.333	0.385	0.0709	0.082	mg/kg	U	1
2-Nitroaniline	88-74-4	U	0.333	0.385	0.0348	0.040	mg/kg	U	1
Nitrobenzene	98-95-3	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
2-Nitrophenol	88-75-5	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
4-Nitrophenol	100-02-7	U	0.333	0.385	0.0579	0.067	mg/kg	U	1
N-Nitrosodi-n-Propylamine	621-64-7	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
N-Nitrosodiphenylamine	86-30-6	U	0.333	0.385	0.0402	0.047	mg/kg	U	1
di-n-Octyl Phthalate	117-84-0	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Pentachlorophenol	87-86-5	U	0.333	0.385	0.0474	0.055	mg/kg	U	1
Phenanthrene	85-01-8	U	0.167	0.193	0.0333	0.039	mg/kg	U	1
Phenol	108-95-2	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
Pyrene	129-00-0	U	0.167	0.193	0.0380	0.044	mg/kg	U	1
Pyridine	110-86-1	U	0.333	0.385	0.1230	0.142	mg/kg	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.333	0.385	0.0333	0.039	mg/kg	U	1
2,4,6-Trichlorophenol	88-06-2	U	0.333	0.385	0.0368	0.043	mg/kg	U	1
2,4,5-Trichlorophenol	95-95-4	U	0.333	0.385	0.0333	0.039	mg/kg	U	1

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:06 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		13.8					%		

Analytical Method: **Soil pH by SW-846 9045C** % Moist: Prep Method:

Date Anal: Sep-19-03 18:10 Analyst: THAKO Date Prep: Tech: THAKO

Anal seq: 642773 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
pH		6.75					SU		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-3** Matrix: SOIL
Lab Sample Id: **236979-003** Date Collected: Sep-16-03 15:46 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 14.5 Prep Method: 3051
Date Anal: Sep-26-03 16:51 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF
Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4780	0.500	1.17	0.2250	0.526	mg/kg		2
Antimony	7440-36-0	U	0.250	0.585	0.1600	0.374	mg/kg	U	2
Arsenic	7440-38-2	1.43	0.250	0.585	0.0450	0.105	mg/kg		2
Barium	7440-39-3	30.6	0.500	1.17	0.1100	0.257	mg/kg		2
Beryllium	7440-41-7	0.444	0.050	0.117	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	0.082	0.050	0.117	0.0350	0.082	mg/kg	J	2
Calcium	7440-70-2	1550	25.0	58.5	13.80	32.2	mg/kg		2
Chromium	7440-47-3	5.84	0.500	1.17	0.0450	0.105	mg/kg		2
Cobalt	7440-48-4	2.06	0.500	1.17	0.1000	0.234	mg/kg		2
Copper	7440-50-8	5.71	0.500	1.17	0.1050	0.246	mg/kg		2
Iron	7439-89-6	4210	10.0	23.4	2.600	6.08	mg/kg		2
Lead	7439-92-1	10.2	0.100	0.234	0.1000	0.234	mg/kg		2
Magnesium	7439-95-4	705	10.0	23.4	7.500	17.5	mg/kg		2
Manganese	7439-96-5	113	0.500	1.17	0.0750	0.175	mg/kg		2
Mercury	7439-97-6	0.0351	0.0200	0.0468	0.0100	0.0234	mg/kg	J	2
Nickel	7440-02-0	4.04	0.500	1.17	0.0550	0.129	mg/kg		2
Potassium	2133-26-8	622	10.0	23.4	8.500	19.9	mg/kg		2
Selenium	7782-49-2	U	0.250	0.585	0.2000	0.468	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.585	0.2000	0.468	mg/kg	U	2
Sodium	7440-23-5	409	25.0	58.5	12.50	29.2	mg/kg		2
Thallium	7440-28-0	U	0.500	1.17	0.1600	0.374	mg/kg	U	2
Vanadium	7440-62-2	10.6	0.500	1.17	0.1000	0.234	mg/kg		2
Zinc	7440-66-6	11.9	0.500	1.17	0.2000	0.468	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:08 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.5					%		

Version: 1.029

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-2**
Lab Sample Id: **236979-004**
Matrix: SOIL
Date Collected: Sep-16-03 15:43
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 11.95
Prep Method: 3051
Date Anal: Sep-26-03 16:57
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	2640	0.500	1.14	0.2250	0.511	mg/kg		2
Antimony	7440-36-0	U	0.250	0.568	0.1600	0.363	mg/kg	U	2
Arsenic	7440-38-2	1.59	0.250	0.568	0.0450	0.102	mg/kg		2
Barium	7440-39-3	21.1	0.500	1.14	0.1100	0.250	mg/kg		2
Beryllium	7440-41-7	0.307	0.050	0.114	0.0250	0.057	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.114	0.0350	0.080	mg/kg	U	2
Calcium	7440-70-2	1420	25.0	56.8	13.80	31.2	mg/kg		2
Chromium	7440-47-3	4.34	0.500	1.14	0.0450	0.102	mg/kg		2
Cobalt	7440-48-4	1.59	0.500	1.14	0.1000	0.227	mg/kg		2
Copper	7440-50-8	4.82	0.500	1.14	0.1050	0.239	mg/kg		2
Iron	7439-89-6	2730	10.0	22.7	2.600	5.91	mg/kg		2
Lead	7439-92-1	12.0	0.100	0.227	0.1000	0.227	mg/kg		2
Magnesium	7439-95-4	450	10.0	22.7	7.500	17.0	mg/kg		2
Manganese	7439-96-5	96.3	0.500	1.14	0.0750	0.170	mg/kg		2
Mercury	7439-97-6	0.0227	0.0200	0.0454	0.0100	0.0227	mg/kg	J	2
Nickel	7440-02-0	2.51	0.500	1.14	0.0550	0.125	mg/kg		2
Potassium	2133-26-8	298	10.0	22.7	8.500	19.3	mg/kg		2
Selenium	7782-49-2	U	0.250	0.568	0.2000	0.454	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.568	0.2000	0.454	mg/kg	U	2
Sodium	7440-23-5	486	25.0	56.8	12.50	28.4	mg/kg		2
Thallium	7440-28-0	U	0.500	1.14	0.1600	0.363	mg/kg	U	2
Vanadium	7440-62-2	9.45	0.500	1.14	0.1000	0.227	mg/kg		2
Zinc	7440-66-6	8.76	0.500	1.14	0.2000	0.454	mg/kg		2

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 14:10
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642726
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		11.9					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25D** Matrix: SOIL
Lab Sample Id: **236979-005** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **VOAs by SW-846 8260B** % Moist: 15.17 Prep Method: 5030B
Date Anal: Sep-19-03 13:38 Analyst: CYE Date Prep: Sep-19-03 11:42 Tech: CYE
Anal seq: 642809 Prep seq: 462809

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Benzene	71-43-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromobenzene	108-86-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromochloromethane	74-97-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromodichloromethane	75-27-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromoform	75-25-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromomethane	74-83-9	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
MTBE	1634-04-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
tert-Butylbenzene	98-06-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Sec-Butylbenzene	135-98-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
n-Butylbenzene	104-51-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Carbon Tetrachloride	56-23-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chlorobenzene	108-90-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chloroethane	75-00-3	U	0.010	0.012	0.0020	0.002	mg/kg	U	1
Chloroform	67-66-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chloromethane	74-87-3	U	0.010	0.012	0.0020	0.002	mg/kg	U	1
2-Chlorotoluene	95-49-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
4-Chlorotoluene	106-43-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
p-Cymene (p-Isopropyltoluene)	99-87-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dibromo-3-Chloropropane	96-12-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dibromochloromethane	124-48-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dibromomethane	74-95-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichlorobenzene	95-50-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3-Dichlorobenzene	541-73-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,4-Dichlorobenzene	106-46-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dichlorodifluoromethane	75-71-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichloroethane	107-06-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloroethane	75-34-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
trans-1,2-dichloroethene	156-60-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
cis-1,2-Dichloroethene	156-59-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloroethene	75-35-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
2,2-Dichloropropane	594-20-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3-Dichloropropane	142-28-9	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichloropropane	78-87-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
trans-1,3-dichloropropene	10061-02-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloropropene	563-58-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
cis-1,3-Dichloropropene	10061-01-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Ethylbenzene	100-41-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Hexachlorobutadiene	87-68-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
isopropylbenzene	98-82-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Methylene Chloride	75-09-2	U	0.020	0.023	0.0040	0.005	mg/kg	U	1
Naphthalene	91-20-3	U	0.010	0.012	0.0020	0.002	mg/kg	U	1
n-Propylbenzene	103-65-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Styrene	100-42-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,1,2-Tetrachloroethane	630-20-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,2,2-Tetrachloroethane	79-34-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1

Sample Id: **B-25D** Matrix: SOIL
Lab Sample Id: **236979-005** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **VOAs by SW-846 8260B** % Moist: 15.17 Prep Method: 5030B
Date Anal: Sep-19-03 13:38 Analyst: CYE Date Prep: Sep-19-03 11:42 Tech: CYE
Anal seq: 642809 Prep seq: 462809

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Tetrachloroethylene	127-18-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Toluene	108-88-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,3-Trichlorobenzene	87-61-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,2-Trichloroethane	79-00-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,1-Trichloroethane	71-55-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Trichloroethene	79-01-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Trichlorofluoromethane	75-69-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,3-Trichloropropane	96-18-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,4-Trimethylbenzene	95-63-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3,5-trimethylbenzene	108-67-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Vinyl Chloride	75-01-4	U	0.002	0.002	0.0004	0.001	mg/kg	U	1
o-Xylene	95-47-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
m,p-Xylenes		U	0.010	0.012	0.0020	0.002	mg/kg	U	1

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25D** Matrix: SOIL

Lab Sample Id: **236979-005** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 15.17 Prep Method: 3051

Date Anal: Sep-29-03 13:13 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF

Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3350	0.500	1.18	0.2250	0.530	mg/kg		2
Antimony	7440-36-0	3.09	0.250	0.589	0.1600	0.377	mg/kg		2
Arsenic	7440-38-2	1.58	0.250	0.589	0.0450	0.106	mg/kg		2
Barium	7440-39-3	80.4	0.500	1.18	0.1100	0.259	mg/kg		2
Beryllium	7440-41-7	0.330	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	0.236	0.050	0.118	0.0350	0.083	mg/kg		2
Calcium	7440-70-2	143000	25.0	14700	13.80	8100	mg/kg	D	500
Chromium	7440-47-3	3.96	0.500	1.18	0.0450	0.106	mg/kg		2
Cobalt	7440-48-4	2.62	0.500	1.18	0.1000	0.236	mg/kg		2
Copper	7440-50-8	133	0.500	1.18	0.1050	0.248	mg/kg		2
Iron	7439-89-6	4290	10.0	23.6	2.600	6.13	mg/kg		2
Lead	7439-92-1	1010	0.100	0.236	0.1000	0.236	mg/kg		2
Magnesium	7439-95-4	1340	10.0	23.6	7.500	17.7	mg/kg		2
Manganese	7439-96-5	197	0.500	1.18	0.0750	0.177	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0472	0.0100	0.0236	mg/kg	U	2
Nickel	7440-02-0	5.13	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	658	10.0	23.6	8.500	20.0	mg/kg		2
Selenium	7782-49-2	0.519	0.250	0.589	0.2000	0.472	mg/kg	J	2
Silver	7440-22-4	U	0.240	0.589	0.2000	0.472	mg/kg	U	2
Sodium	7440-23-5	437	25.0	58.9	12.50	29.5	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.377	mg/kg	U	2
Vanadium	7440-62-2	11.2	0.500	1.18	0.1000	0.236	mg/kg		2
Zinc	7440-66-6	18.8	0.500	1.18	0.2000	0.472	mg/kg		2

Sample Id: **B-25D** Matrix: SOIL
Lab Sample Id: **236979-005** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: 15.17 Prep Method: 3550B
Date Anal: Sep-19-03 23:02 Analyst: MAD Date Prep: Sep-17-03 15:33 Tech: MAD
Anal seq: 642736 Prep seq: 462773

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Acenaphthene	83-32-9	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Acenaphthylene	208-96-8	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Aniline (Phenylamine, Aminobenzene)	62-53-3	U	0.667	0.786	0.0353	0.042	mg/kg	U	1
Anthracene	120-12-7	U	0.167	0.196	0.0446	0.053	mg/kg	U	1
Benzo(a)anthracene	56-55-3	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Benzo(a)pyrene	50-32-8	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Benzo(b)fluoranthene	205-99-2	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Benzo(g,h,i)perylene	191-24-2	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Benzo(k)fluoranthene	207-08-9	U	0.167	0.196	0.0340	0.040	mg/kg	U	1
Benzoic Acid	65-85-0	U	1.00	1.18	0.2980	0.352	mg/kg	U	1
Benzyl Butyl Phthalate	85-68-7	U	0.167	0.196	0.0382	0.045	mg/kg	U	1
bis(2-chloroethoxy) methane	111-91-1	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
bis(2-chloroethyl) ether	111-44-4	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
bis(2-chloroisopropyl) ether	108-60-1	U	0.333	0.393	0.0455	0.054	mg/kg	U	1
bis(2-ethylhexyl) phthalate	117-81-7	0.172	0.167	0.196	0.0333	0.039	mg/kg	J	1
4-Bromophenyl-phenylether	101-55-3	U	0.333	0.393	0.0452	0.053	mg/kg	U	1
di-n-Butyl Phthalate	84-74-2	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
4-chloro-3-methylphenol	59-50-7	U	0.333	0.393	0.0407	0.048	mg/kg	U	1
4-Chloroaniline	106-47-8	U	0.667	0.786	0.0333	0.039	mg/kg	U	1
2-Chloronaphthalene	91-58-7	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
2-Chlorophenol	95-57-8	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
4-Chlorophenyl Phenyl Ether	7005-72-3	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
Chrysene	218-01-9	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Dibenz(a,h)Anthracene	53-70-3	U	0.167	0.196	0.0404	0.048	mg/kg	U	1
Dibenzofuran	132-64-9	U	0.333	0.393	0.0369	0.044	mg/kg	U	1
1,2-Dichlorobenzene	95-50-1	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
1,3-Dichlorobenzene	541-73-1	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
1,4-Dichlorobenzene	106-46-7	U	0.333	0.393	0.0376	0.044	mg/kg	U	1
3,3-Dichlorobenzidine	91-94-1	U	0.333	0.393	0.0637	0.075	mg/kg	U	1
2,4-Dichlorophenol	120-83-2	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
Diethyl Phthalate	84-66-2	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Dimethyl Phthalate	131-11-3	U	0.167	0.196	0.0379	0.045	mg/kg	U	1
2,4-Dimethylphenol	105-67-9	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
4,6-dinitro-2-methyl phenol	534-52-1	U	0.333	0.393	0.0377	0.045	mg/kg	U	1
2,4-Dinitrophenol	51-28-5	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
2,4-Dinitrotoluene	121-14-2	U	0.333	0.393	0.0436	0.051	mg/kg	U	1
2,6-Dinitrotoluene	606-20-2	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
Fluoranthene	206-44-0	U	0.167	0.196	0.0367	0.043	mg/kg	U	1
Fluorene	86-73-7	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Hexachlorobenzene	118-74-1	U	0.333	0.393	0.0337	0.040	mg/kg	U	1
Hexachlorobutadiene	87-68-3	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
Hexachlorocyclopentadiene	77-47-4	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
Hexachloroethane	67-72-1	U	0.333	0.393	0.0357	0.042	mg/kg	U	1
Indeno(1,2,3-c,d)Pyrene	193-39-5	U	0.167	0.196	0.0487	0.057	mg/kg	U	1
Isophorone	78-59-1	U	0.333	0.393	0.0540	0.064	mg/kg	U	1

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25D** Matrix: SOIL
Lab Sample Id: **236979-005** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: 15.17 Prep Method: 3550B
Date Anal: Sep-19-03 23:02 Analyst: MAD Date Prep: Sep-17-03 15:33 Tech: MAD
Anal seq: 642736 Prep seq: 462773

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
2-Methylnaphthalene	91-57-6	U	0.167	0.196	0.0350	0.041	mg/kg	U	1
2-methylphenol	95-48-7	U	0.333	0.393	0.0415	0.049	mg/kg	U	1
3&4-Methylphenol		U	0.333	0.393	0.0675	0.080	mg/kg	U	1
Naphthalene	91-20-3	U	0.167	0.196	0.0357	0.042	mg/kg	U	1
4-Nitroaniline	100-01-6	U	0.667	0.786	0.0560	0.066	mg/kg	U	1
3-Nitroaniline	99-09-2	U	0.333	0.393	0.0709	0.084	mg/kg	U	1
2-Nitroaniline	88-74-4	U	0.333	0.393	0.0348	0.041	mg/kg	U	1
Nitrobenzene	98-95-3	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
2-Nitrophenol	88-75-5	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
4-Nitrophenol	100-02-7	U	0.333	0.393	0.0579	0.068	mg/kg	U	1
N-Nitrosodi-n-Propylamine	621-64-7	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
N-Nitrosodiphenylamine	86-30-6	U	0.333	0.393	0.0402	0.047	mg/kg	U	1
di-n-Octyl Phthalate	117-84-0	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Pentachlorophenol	87-86-5	U	0.333	0.393	0.0474	0.056	mg/kg	U	1
Phenanthrene	85-01-8	U	0.167	0.196	0.0333	0.039	mg/kg	U	1
Phenol	108-95-2	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
Pyrene	129-00-0	U	0.167	0.196	0.0380	0.045	mg/kg	U	1
Pyridine	110-86-1	U	0.333	0.393	0.1230	0.145	mg/kg	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.333	0.393	0.0333	0.039	mg/kg	U	1
2,4,6-Trichlorophenol	88-06-2	U	0.333	0.393	0.0368	0.043	mg/kg	U	1
2,4,5-Trichlorophenol	95-95-4	U	0.333	0.393	0.0333	0.039	mg/kg	U	1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:12 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.2					%		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston, TX

El Campo SAFR

Sample Id:	**B-15**	Matrix:	SOIL		
Lab Sample Id:	**236979-006**	Date Collected:	Sep-16-03 13:08	Date Received:	Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 15.51 Prep Method: 3051

Date Anal: Sep-26-03 17:03 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF

Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4470	0.500	1.18	0.2250	0.533	mg/kg		2
Antimony	7440-36-0	U	0.250	0.592	0.1600	0.379	mg/kg	U	2
Arsenic	7440-38-2	1.98	0.250	0.592	0.0450	0.107	mg/kg		2
Barium	7440-39-3	97.6	0.500	1.18	0.1100	0.260	mg/kg		2
Beryllium	7440-41-7	0.615	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.118	0.0350	0.083	mg/kg	U	2
Calcium	7440-70-2	7700	25.0	59.2	13.80	32.5	mg/kg		2
Chromium	7440-47-3	7.14	0.500	1.18	0.0450	0.107	mg/kg		2
Cobalt	7440-48-4	2.77	0.500	1.18	0.1000	0.237	mg/kg		2
Copper	7440-50-8	8.69	0.500	1.18	0.1050	0.249	mg/kg		2
Iron	7439-89-6	5230	10.0	23.7	2.600	6.15	mg/kg		2
Lead	7439-92-1	75.4	0.100	0.237	0.1000	0.237	mg/kg		2
Magnesium	7439-95-4	1160	10.0	23.7	7.500	17.8	mg/kg		2
Manganese	7439-96-5	114	0.500	1.18	0.0750	0.178	mg/kg		2
Mercury	7439-97-6	0.0237	0.0200	0.0473	0.0100	0.0237	mg/kg	J	2
Nickel	7440-02-0	5.41	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	621	10.0	23.7	8.500	20.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.592	0.2000	0.473	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.592	0.2000	0.473	mg/kg	U	2
Sodium	7440-23-5	386	25.0	59.2	12.50	29.6	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.379	mg/kg	U	2
Vanadium	7440-62-2	17.1	0.500	1.18	0.1000	0.237	mg/kg		2
Zinc	7440-66-6	10.2	0.500	1.18	0.2000	0.473	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:14 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.5					%		

Sample Id:	**P-1D**	Matrix: SOIL	
Lab Sample Id:	**236979-007**	Date Collected: Sep-16-03 15:40	Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 12.74 Prep Method: 3051

Date Anal: Sep-26-03 17:09 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF

Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	2000	0.500	1.15	0.2250	0.516	mg/kg		2
Antimony	7440-36-0	U	0.250	0.573	0.1600	0.367	mg/kg	U	2
Arsenic	7440-38-2	2.36	0.250	0.573	0.0450	0.103	mg/kg		2
Barium	7440-39-3	18.1	0.500	1.15	0.1100	0.252	mg/kg		2
Beryllium	7440-41-7	0.229	0.050	0.115	0.0250	0.057	mg/kg		2
Cadmium	7440-43-9	0.092	0.050	0.115	0.0350	0.080	mg/kg	J	2
Calcium	7440-70-2	1060	25.0	57.3	13.80	31.5	mg/kg		2
Chromium	7440-47-3	3.80	0.500	1.15	0.0450	0.103	mg/kg		2
Cobalt	7440-48-4	1.97	0.500	1.15	0.1000	0.229	mg/kg		2
Copper	7440-50-8	4.17	0.500	1.15	0.1050	0.241	mg/kg		2
Iron	7439-89-6	2670	10.0	22.9	2.600	5.96	mg/kg		2
Lead	7439-92-1	12.1	0.100	0.229	0.1000	0.229	mg/kg		2
Magnesium	7439-95-4	278	10.0	22.9	7.500	17.2	mg/kg		2
Manganese	7439-96-5	127	0.500	1.15	0.0750	0.172	mg/kg		2
Mercury	7439-97-6	0.0229	0.0200	0.0458	0.0100	0.0229	mg/kg	J	2
Nickel	7440-02-0	2.22	0.500	1.15	0.0550	0.126	mg/kg		2
Potassium	2133-26-8	300	10.0	22.9	8.500	19.5	mg/kg		2
Selenium	7782-49-2	U	0.250	0.573	0.2000	0.458	mg/kg	U	2
Silver	7440-22-4	0.458	0.240	0.573	0.2000	0.458	mg/kg	J	2
Sodium	7440-23-5	364	25.0	57.3	12.50	28.7	mg/kg		2
Thallium	7440-28-0	U	0.500	1.15	0.1600	0.367	mg/kg	U	2
Vanadium	7440-62-2	9.75	0.500	1.15	0.1000	0.229	mg/kg		2
Zinc	7440-66-6	9.56	0.500	1.15	0.2000	0.458	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:16 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		12.7					%		

Sample Id: **B-25** Matrix: SOIL
Lab Sample Id: **236979-008** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **VOAs by SW-846 8260B** % Moist: 12.55 Prep Method: 5030B
Date Anal: Sep-19-03 14:00 Analyst: CYE Date Prep: Sep-19-03 11:44 Tech: CYE
Anal seq: 642809 Prep seq: 462809

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Benzene	71-43-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromobenzene	108-86-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromochloromethane	74-97-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromodichloromethane	75-27-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromoform	75-25-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Bromomethane	74-83-9	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
MTBE	1634-04-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
tert-Butylbenzene	98-06-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Sec-Butylbenzene	135-98-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
n-Butylbenzene	104-51-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Carbon Tetrachloride	56-23-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chlorobenzene	108-90-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chloroethane	75-00-3	U	0.010	0.011	0.0020	0.002	mg/kg	U	1
Chloroform	67-66-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Chloromethane	74-87-3	U	0.010	0.011	0.0020	0.002	mg/kg	U	1
2-Chlorotoluene	95-49-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
4-Chlorotoluene	106-43-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
p-Cymene (p-Isopropyltoluene)	99-87-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dibromo-3-Chloropropane	96-12-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dibromochloromethane	124-48-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dibromomethane	74-95-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichlorobenzene	95-50-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3-Dichlorobenzene	541-73-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,4-Dichlorobenzene	106-46-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Dichlorodifluoromethane	75-71-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichloroethane	107-06-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloroethane	75-34-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
trans-1,2-dichloroethene	156-60-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
cis-1,2-Dichloroethene	156-59-2	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloroethene	75-35-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
2,2-Dichloropropane	594-20-7	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3-Dichloropropane	142-28-9	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2-Dichloropropane	78-87-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
trans-1,3-dichloropropene	10061-02-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1-Dichloropropene	563-58-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
cis-1,3-Dichloropropene	10061-01-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Ethylbenzene	100-41-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Hexachlorobutadiene	87-68-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
isopropylbenzene	98-82-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Methylene Chloride	75-09-2	U	0.020	0.023	0.0040	0.005	mg/kg	U	1
Naphthalene	91-20-3	U	0.010	0.011	0.0020	0.002	mg/kg	U	1
n-Propylbenzene	103-65-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Styrene	100-42-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,1,2-Tetrachloroethane	630-20-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,2,2-Tetrachloroethane	79-34-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25**
Matrix: SOIL
Lab Sample Id: **236979-008**
Date Collected: Sep-16-03 13:35
Date Received: Sep-17-03 13:20

Analytical Method: **VOAs by SW-846 8260B**
% Moist: 12.55
Prep Method: 5030B
Date Anal: Sep-19-03 14:00
Analyst: CYE
Date Prep: Sep-19-03 11:44
Tech: CYE
Anal seq: 642809
Prep seq: 462809

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Tetrachloroethylene	127-18-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Toluene	108-88-3	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,3-Trichlorobenzene	87-61-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,2-Trichloroethane	79-00-5	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,1,1-Trichloroethane	71-55-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Trichloroethene	79-01-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Trichlorofluoromethane	75-69-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,3-Trichloropropane	96-18-4	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,2,4-Trimethylbenzene	95-63-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
1,3,5-trimethylbenzene	108-67-8	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
Vinyl Chloride	75-01-4	U	0.002	0.002	0.0004	0.001	mg/kg	U	1
o-Xylene	95-47-6	U	0.005	0.006	0.0010	0.001	mg/kg	U	1
m,p-Xylenes		U	0.010	0.011	0.0020	0.002	mg/kg	U	1

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25**	Matrix: SOIL		
Lab Sample Id: **236979-008**	Date Collected: Sep-16-03 13:35	Date Received: Sep-17-03 13:20	
Analytical Method: **TAL Metals by EPA 6020**		% Moist: 12.55	Prep Method: 3051
Date Anal: Sep-29-03 12:50	Analyst: IRF	Date Prep: Sep-25-03 13:00	Tech: IRF
Anal seq: 643005		Prep seq: 462893	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3640	0.500	1.14	0.2250	0.515	mg/kg		2
Antimony	7440-36-0	14.5	0.250	0.572	0.1600	0.366	mg/kg		2
Arsenic	7440-38-2	2.32	0.250	0.572	0.0450	0.103	mg/kg		2
Barium	7440-39-3	90.1	0.500	1.14	0.1100	0.252	mg/kg		2
Beryllium	7440-41-7	0.423	0.050	0.114	0.0250	0.057	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.114	0.0350	0.080	mg/kg	U	2
Calcium	7440-70-2	70600	25.0	5890	13.80	3240	mg/kg	D	200
Chromium	7440-47-3	4.73	0.500	1.14	0.0450	0.103	mg/kg		2
Cobalt	7440-48-4	3.17	0.500	1.14	0.1000	0.229	mg/kg		2
Copper	7440-50-8	73.3	0.500	1.14	0.1050	0.240	mg/kg		2
Iron	7439-89-6	5730	10.0	22.9	2.600	5.95	mg/kg		2
Lead	7439-92-1	8840	0.100	23.6	0.1000	23.6	mg/kg	D	200
Magnesium	7439-95-4	1250	10.0	22.9	7.500	17.2	mg/kg		2
Manganese	7439-96-5	242	0.500	1.14	0.0750	0.172	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0457	0.0100	0.0229	mg/kg	U	2
Nickel	7440-02-0	5.68	0.500	1.14	0.0550	0.126	mg/kg		2
Potassium	2133-26-8	574	10.0	22.9	8.500	19.4	mg/kg		2
Selenium	7782-49-2	U	0.250	0.572	0.2000	0.457	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.572	0.2000	0.457	mg/kg	U	2
Sodium	7440-23-5	477	25.0	57.2	12.50	28.6	mg/kg		2
Thallium	7440-28-0	U	0.500	1.14	0.1600	0.366	mg/kg	U	2
Vanadium	7440-62-2	16.9	0.500	1.14	0.1000	0.229	mg/kg		2
Zinc	7440-66-6	22.8	0.500	1.14	0.2000	0.457	mg/kg		2

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25** Matrix: SOIL
Lab Sample Id: **236979-008** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: 12.55 Prep Method: 3550B
Date Anal: Sep-19-03 23:46 Analyst: MAD Date Prep: Sep-17-03 15:36 Tech: MAD
Anal seq: 642736 Prep seq: 462773

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Acenaphthene	83-32-9	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Acenaphthylene	208-96-8	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Aniline (Phenylamine, Aminobenzene)	62-53-3	U	0.667	0.762	0.0353	0.040	mg/kg	U	1
Anthracene	120-12-7	U	0.167	0.190	0.0446	0.051	mg/kg	U	1
Benzo(a)anthracene	56-55-3	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Benzo(a)pyrene	50-32-8	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Benzo(b)fluoranthene	205-99-2	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Benzo(g,h,i)perylene	191-24-2	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Benzo(k)fluoranthene	207-08-9	U	0.167	0.190	0.0340	0.039	mg/kg	U	1
Benzoic Acid	65-85-0	U	1.00	1.14	0.2980	0.341	mg/kg	U	1
Benzyl Butyl Phthalate	85-68-7	U	0.167	0.190	0.0382	0.044	mg/kg	U	1
bis(2-chloroethoxy) methane	111-91-1	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
bis(2-chloroethyl) ether	111-44-4	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
bis(2-chloroisopropyl) ether	108-60-1	U	0.333	0.381	0.0455	0.052	mg/kg	U	1
bis(2-ethylhexyl) phthalate	117-81-7	0.060	0.167	0.190	0.0333	0.038	mg/kg	J	1
4-Bromophenyl-phenylether	101-55-3	U	0.333	0.381	0.0452	0.052	mg/kg	U	1
di-n-Butyl Phthalate	84-74-2	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
4-chloro-3-methylphenol	59-50-7	U	0.333	0.381	0.0407	0.047	mg/kg	U	1
4-Chloroaniline	106-47-8	U	0.667	0.762	0.0333	0.038	mg/kg	U	1
2-Chloronaphthalene	91-58-7	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
2-Chlorophenol	95-57-8	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
4-Chlorophenyl Phenyl Ether	7005-72-3	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
Chrysene	218-01-9	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Dibenz(a,h)Anthracene	53-70-3	U	0.167	0.190	0.0404	0.046	mg/kg	U	1
Dibenzofuran	132-64-9	U	0.333	0.381	0.0369	0.042	mg/kg	U	1
1,2-Dichlorobenzene	95-50-1	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
1,3-Dichlorobenzene	541-73-1	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
1,4-Dichlorobenzene	106-46-7	U	0.333	0.381	0.0376	0.043	mg/kg	U	1
3,3-Dichlorobenzidine	91-94-1	U	0.333	0.381	0.0637	0.073	mg/kg	U	1
2,4-Dichlorophenol	120-83-2	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
Diethyl Phthalate	84-66-2	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Dimethyl Phthalate	131-11-3	U	0.167	0.190	0.0379	0.043	mg/kg	U	1
2,4-Dimethylphenol	105-67-9	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
4,6-dinitro-2-methyl phenol	534-52-1	U	0.333	0.381	0.0377	0.043	mg/kg	U	1
2,4-Dinitrophenol	51-28-5	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
2,4-Dinitrotoluene	121-14-2	U	0.333	0.381	0.0436	0.050	mg/kg	U	1
2,6-Dinitrotoluene	606-20-2	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
Fluoranthene	206-44-0	U	0.167	0.190	0.0367	0.042	mg/kg	U	1
Fluorene	86-73-7	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Hexachlorobenzene	118-74-1	U	0.333	0.381	0.0337	0.039	mg/kg	U	1
Hexachlorobutadiene	87-68-3	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
Hexachlorocyclopentadiene	77-47-4	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
Hexachloroethane	67-72-1	U	0.333	0.381	0.0357	0.041	mg/kg	U	1
Indeno(1,2,3-c,d)Pyrene	193-39-5	U	0.167	0.190	0.0487	0.056	mg/kg	U	1
Isophorone	78-59-1	U	0.333	0.381	0.0540	0.062	mg/kg	U	1

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-25** Matrix: SOIL
Lab Sample Id: **236979-008** Date Collected: Sep-16-03 13:35 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: 12.55 Prep Method: 3550B
Date Anal: Sep-19-03 23:46 Analyst: MAD Date Prep: Sep-17-03 15:36 Tech: MAD
Anal seq: 642736 Prep seq: 462773

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
2-Methylnaphthalene	91-57-6	U	0.167	0.190	0.0350	0.040	mg/kg	U	1
2-methylphenol	95-48-7	U	0.333	0.381	0.0415	0.047	mg/kg	U	1
3&4-Methylphenol		U	0.333	0.381	0.0675	0.077	mg/kg	U	1
Naphthalene	91-20-3	U	0.167	0.190	0.0357	0.041	mg/kg	U	1
4-Nitroaniline	100-01-6	U	0.667	0.762	0.0560	0.064	mg/kg	U	1
3-Nitroaniline	99-09-2	U	0.333	0.381	0.0709	0.081	mg/kg	U	1
2-Nitroaniline	88-74-4	U	0.333	0.381	0.0348	0.040	mg/kg	U	1
Nitrobenzene	98-95-3	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
2-Nitrophenol	88-75-5	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
4-Nitrophenol	100-02-7	U	0.333	0.381	0.0579	0.066	mg/kg	U	1
N-Nitrosodi-n-Propylamine	621-64-7	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
N-Nitrosodiphenylamine	86-30-6	U	0.333	0.381	0.0402	0.046	mg/kg	U	1
di-n-Octyl Phthalate	117-84-0	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Pentachlorophenol	87-86-5	U	0.333	0.381	0.0474	0.054	mg/kg	U	1
Phenanthrene	85-01-8	U	0.167	0.190	0.0333	0.038	mg/kg	U	1
Phenol	108-95-2	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
Pyrene	129-00-0	U	0.167	0.190	0.0380	0.043	mg/kg	U	1
Pyridine	110-86-1	U	0.333	0.381	0.1230	0.140	mg/kg	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.333	0.381	0.0333	0.038	mg/kg	U	1
2,4,6-Trichlorophenol	88-06-2	U	0.333	0.381	0.0368	0.042	mg/kg	U	1
2,4,5-Trichlorophenol	95-95-4	U	0.333	0.381	0.0333	0.038	mg/kg	U	1

Analytical Method: **SPLP Metals by EPA 6020** % Moist: Prep Method: 3015
Date Anal: Oct-13-03 14:20 Analyst: IRF Date Prep: Oct-13-03 09:30 Tech: IRF
Anal seq: 643523 Prep seq: 463246

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	0.056	0.003	0.015	0.0032	0.016	mg/L		5
Lead	7439-92-1	28.4	0.002	0.010	0.0017	0.009	mg/L		5

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:18 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		12.5					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-19** Matrix: SOIL
Lab Sample Id: **236979-009** Date Collected: Sep-16-03 12:34 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 17.42 Prep Method: 3051
Date Anal: Sep-26-03 17:15 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF
Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4480	0.500	1.21	0.2250	0.545	mg/kg		2
Antimony	7440-36-0	U	0.250	0.605	0.1600	0.388	mg/kg	U	2
Arsenic	7440-38-2	1.77	0.250	0.605	0.0450	0.109	mg/kg		2
Barium	7440-39-3	51.6	0.500	1.21	0.1100	0.266	mg/kg		2
Beryllium	7440-41-7	0.472	0.050	0.121	0.0250	0.061	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.121	0.0350	0.085	mg/kg	U	2
Calcium	7440-70-2	4370	25.0	60.5	13.80	33.3	mg/kg		2
Chromium	7440-47-3	5.29	0.500	1.21	0.0450	0.109	mg/kg		2
Cobalt	7440-48-4	2.86	0.500	1.21	0.1000	0.242	mg/kg		2
Copper	7440-50-8	10.5	0.500	1.21	0.1050	0.254	mg/kg		2
Iron	7439-89-6	4420	10.0	24.2	2.600	6.30	mg/kg		2
Lead	7439-92-1	51.5	0.100	0.242	0.1000	0.242	mg/kg		2
Magnesium	7439-95-4	850	10.0	24.2	7.500	18.2	mg/kg		2
Manganese	7439-96-5	147	0.500	1.21	0.0750	0.182	mg/kg		2
Mercury	7439-97-6	0.0242	0.0200	0.0484	0.0100	0.0242	mg/kg	J	2
Nickel	7440-02-0	5.18	0.500	1.21	0.0550	0.133	mg/kg		2
Potassium	2133-26-8	787	10.0	24.2	8.500	20.6	mg/kg		2
Selenium	7782-49-2	U	0.250	0.605	0.2000	0.484	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.605	0.2000	0.484	mg/kg	U	2
Sodium	7440-23-5	381	25.0	60.5	12.50	30.3	mg/kg		2
Thallium	7440-28-0	U	0.500	1.21	0.1600	0.388	mg/kg	U	2
Vanadium	7440-62-2	12.0	0.500	1.21	0.1000	0.242	mg/kg		2
Zinc	7440-66-6	13.0	0.500	1.21	0.2000	0.484	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:20 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		17.4					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P-1**	Matrix: SOIL		
Lab Sample Id: **236979-010**	Date Collected: Sep-16-03 15:40	Date Received: Sep-17-03 13:20	

Analytical Method: **TAL Metals by EPA 6020** % Moist: 11.69 Prep Method: 3051

Date Anal: Sep-26-03 17:52 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF

Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	1670	0.500	1.13	0.2250	0.510	mg/kg		2
Antimony	7440-36-0	0.408	0.250	0.566	0.1600	0.362	mg/kg	J	2
Arsenic	7440-38-2	3.50	0.250	0.566	0.0450	0.102	mg/kg		2
Barium	7440-39-3	21.2	0.500	1.13	0.1100	0.249	mg/kg		2
Beryllium	7440-41-7	0.204	0.050	0.113	0.0250	0.057	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.113	0.0350	0.079	mg/kg	U	2
Calcium	7440-70-2	767	25.0	56.6	13.80	31.1	mg/kg		2
Chromium	7440-47-3	3.97	0.500	1.13	0.0450	0.102	mg/kg		2
Cobalt	7440-48-4	3.58	0.500	1.13	0.1000	0.226	mg/kg		2
Copper	7440-50-8	3.75	0.500	1.13	0.1050	0.238	mg/kg		2
Iron	7439-89-6	3410	10.0	22.6	2.600	5.89	mg/kg		2
Lead	7439-92-1	12.3	0.100	0.226	0.1000	0.226	mg/kg		2
Magnesium	7439-95-4	215	10.0	22.6	7.500	17.0	mg/kg		2
Manganese	7439-96-5	294	0.500	1.13	0.0750	0.170	mg/kg		2
Mercury	7439-97-6	0.0227	0.0200	0.0453	0.0100	0.0227	mg/kg	J	2
Nickel	7440-02-0	2.74	0.500	1.13	0.0550	0.125	mg/kg		2
Potassium	2133-26-8	239	10.0	22.6	8.500	19.3	mg/kg		2
Selenium	7782-49-2	U	0.250	0.566	0.2000	0.453	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.566	0.2000	0.453	mg/kg	U	2
Sodium	7440-23-5	410	25.0	56.6	12.50	28.3	mg/kg		2
Thallium	7440-28-0	U	0.500	1.13	0.1600	0.362	mg/kg	U	2
Vanadium	7440-62-2	13.1	0.500	1.13	0.1000	0.226	mg/kg		2
Zinc	7440-66-6	6.49	0.500	1.13	0.2000	0.453	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:22 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		11.7					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-1** Matrix: SOIL
Lab Sample Id: **236979-011** Date Collected: Sep-16-03 12:20 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 16.54 Prep Method: 3051
Date Anal: Sep-26-03 17:58 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF
Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	5340	0.500	1.20	0.2250	0.539	mg/kg		2
Antimony	7440-36-0	0.599	0.250	0.599	0.1600	0.383	mg/kg		2
Arsenic	7440-38-2	1.03	0.250	0.599	0.0450	0.108	mg/kg		2
Barium	7440-39-3	79.8	0.500	1.20	0.1100	0.264	mg/kg		2
Beryllium	7440-41-7	0.527	0.050	0.120	0.0250	0.060	mg/kg		2
Cadmium	7440-43-9	0.371	0.050	0.120	0.0350	0.084	mg/kg		2
Calcium	7440-70-2	6970	25.0	59.9	13.80	32.9	mg/kg		2
Chromium	7440-47-3	9.63	0.500	1.20	0.0450	0.108	mg/kg		2
Cobalt	7440-48-4	2.76	0.500	1.20	0.1000	0.240	mg/kg		2
Copper	7440-50-8	12.5	0.500	1.20	0.1050	0.252	mg/kg		2
Iron	7439-89-6	4370	10.0	24.0	2.600	6.23	mg/kg		2
Lead	7439-92-1	90.6	0.100	0.240	0.1000	0.240	mg/kg		2
Magnesium	7439-95-4	1050	10.0	24.0	7.500	18.0	mg/kg		2
Manganese	7439-96-5	177	0.500	1.20	0.0750	0.180	mg/kg		2
Mercury	7439-97-6	0.0360	0.0200	0.0479	0.0100	0.0240	mg/kg	J	2
Nickel	7440-02-0	6.73	0.500	1.20	0.0550	0.132	mg/kg		2
Potassium	2133-26-8	723	10.0	24.0	8.500	20.4	mg/kg		2
Selenium	7782-49-2	U	0.250	0.599	0.2000	0.479	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.599	0.2000	0.479	mg/kg	U	2
Sodium	7440-23-5	474	25.0	59.9	12.50	30.0	mg/kg		2
Thallium	7440-28-0	U	0.500	1.20	0.1600	0.383	mg/kg	U	2
Vanadium	7440-62-2	10.6	0.500	1.20	0.1000	0.240	mg/kg		2
Zinc	7440-66-6	135	0.500	1.20	0.2000	0.479	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:24 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		16.5					%		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id:	**B-2**	Matrix: SOIL			
Lab Sample Id:	**236979-012**	Date Collected: Sep-16-03 12:25		Date Received: Sep-17-03 13:20	

Analytical Method: **TAL Metals by EPA 6020** % Moist: 19.48 Prep Method: 3051

Date Anal: Sep-26-03 18:03 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF

Anal seq: 643005 Prep seq: 462893

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	6010	0.500	1.24	0.2250	0.559	mg/kg		2
Antimony	7440-36-0	1.79	0.250	0.621	0.1600	0.397	mg/kg		2
Arsenic	7440-38-2	0.981	0.250	0.621	0.0450	0.112	mg/kg		2
Barium	7440-39-3	63.7	0.500	1.24	0.1100	0.273	mg/kg		2
Beryllium	7440-41-7	0.621	0.050	0.124	0.0250	0.062	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.124	0.0350	0.087	mg/kg	U	2
Calcium	7440-70-2	4890	25.0	62.1	13.80	34.2	mg/kg		2
Chromium	7440-47-3	6.06	0.500	1.24	0.0450	0.112	mg/kg		2
Cobalt	7440-48-4	3.30	0.500	1.24	0.1000	0.248	mg/kg		2
Copper	7440-50-8	49.9	0.500	1.24	0.1050	0.261	mg/kg		2
Iron	7439-89-6	4470	10.0	24.8	2.600	6.46	mg/kg		2
Lead	7439-92-1	393	0.100	0.248	0.1000	0.248	mg/kg		2
Magnesium	7439-95-4	898	10.0	24.8	7.500	18.6	mg/kg		2
Manganese	7439-96-5	111	0.500	1.24	0.0750	0.186	mg/kg		2
Mercury	7439-97-6	0.0248	0.0200	0.0497	0.0100	0.0248	mg/kg	J	2
Nickel	7440-02-0	4.71	0.500	1.24	0.0550	0.137	mg/kg		2
Potassium	2133-26-8	733	10.0	24.8	8.500	21.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.621	0.2000	0.497	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.621	0.2000	0.497	mg/kg	U	2
Sodium	7440-23-5	390	25.0	62.1	12.50	31.0	mg/kg		2
Thallium	7440-28-0	U	0.500	1.24	0.1600	0.397	mg/kg	U	2
Vanadium	7440-62-2	11.9	0.500	1.24	0.1000	0.248	mg/kg		2
Zinc	7440-66-6	29.5	0.500	1.24	0.2000	0.497	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:26 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642726 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		19.5					%		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-3**
Matrix: SOIL
Lab Sample Id: **236979-013**
Date Collected: Sep-16-03 12:30
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 14.6
Prep Method: 3051
Date Anal: Sep-26-03 18:09
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	2530	0.500	1.17	0.2250	0.527	mg/kg		2
Antimony	7440-36-0	0.468	0.250	0.585	0.1600	0.375	mg/kg	J	2
Arsenic	7440-38-2	1.57	0.250	0.585	0.0450	0.105	mg/kg		2
Barium	7440-39-3	58.4	0.500	1.17	0.1100	0.258	mg/kg		2
Beryllium	7440-41-7	0.375	0.050	0.117	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.117	0.0350	0.082	mg/kg	U	2
Calcium	7440-70-2	2210	25.0	58.5	13.80	32.2	mg/kg		2
Chromium	7440-47-3	3.64	0.500	1.17	0.0450	0.105	mg/kg		2
Cobalt	7440-48-4	3.10	0.500	1.17	0.1000	0.234	mg/kg		2
Copper	7440-50-8	5.13	0.500	1.17	0.1050	0.246	mg/kg		2
Iron	7439-89-6	2750	10.0	23.4	2.600	6.09	mg/kg		2
Lead	7439-92-1	31.7	0.100	0.234	0.1000	0.234	mg/kg		2
Magnesium	7439-95-4	493	10.0	23.4	7.500	17.6	mg/kg		2
Manganese	7439-96-5	190	0.500	1.17	0.0750	0.176	mg/kg		2
Mercury	7439-97-6	0.0234	0.0200	0.0468	0.0100	0.0234	mg/kg	J	2
Nickel	7440-02-0	3.45	0.500	1.17	0.0550	0.129	mg/kg		2
Potassium	2133-26-8	326	10.0	23.4	8.500	19.9	mg/kg		2
Selenium	7782-49-2	U	0.250	0.585	0.2000	0.468	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.585	0.2000	0.468	mg/kg	U	2
Sodium	7440-23-5	365	25.0	58.5	12.50	29.3	mg/kg		2
Thallium	7440-28-0	U	0.500	1.17	0.1600	0.375	mg/kg	U	2
Vanadium	7440-62-2	11.0	0.500	1.17	0.1000	0.234	mg/kg		2
Zinc	7440-66-6	8.42	0.500	1.17	0.2000	0.468	mg/kg		2

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 14:28
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642726
Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		14.6					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-4**
Lab Sample Id: **236979-014**
Matrix: SOIL
Date Collected: Sep-16-03 12:33
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 15.28
Prep Method: 3051
Date Anal: Sep-26-03 19:14
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3990	0.500	1.18	0.2250	0.531	mg/kg		2
Antimony	7440-36-0	2.68	0.250	0.590	0.1600	0.378	mg/kg		2
Arsenic	7440-38-2	2.09	0.250	0.590	0.0450	0.106	mg/kg		2
Barium	7440-39-3	90.8	0.500	1.18	0.1100	0.260	mg/kg		2
Beryllium	7440-41-7	0.496	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	0.177	0.050	0.118	0.0350	0.083	mg/kg		2
Calcium	7440-70-2	5790	25.0	59.0	13.80	32.5	mg/kg		2
Chromium	7440-47-3	4.36	0.500	1.18	0.0450	0.106	mg/kg		2
Cobalt	7440-48-4	15.9	0.500	1.18	0.1000	0.236	mg/kg		2
Copper	7440-50-8	29.0	0.500	1.18	0.1050	0.248	mg/kg		2
Iron	7439-89-6	4750	10.0	23.6	2.600	6.14	mg/kg		2
Lead	7439-92-1	749	0.100	0.236	0.1000	0.236	mg/kg		2
Magnesium	7439-95-4	961	10.0	23.6	7.500	17.7	mg/kg		2
Manganese	7439-96-5	834	0.500	1.18	0.0750	0.177	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0472	0.0100	0.0236	mg/kg	U	2
Nickel	7440-02-0	14.7	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	757	10.0	23.6	8.500	20.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.590	0.2000	0.472	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.590	0.2000	0.472	mg/kg	U	2
Sodium	7440-23-5	354	25.0	59.0	12.50	29.5	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.378	mg/kg	U	2
Vanadium	7440-62-2	18.0	0.500	1.18	0.1000	0.236	mg/kg		2
Zinc	7440-66-6	19.8	0.500	1.18	0.2000	0.472	mg/kg		2

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 14:30
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642726
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.3					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-5**
Matrix: SOIL
Lab Sample Id: **236979-015**
Date Collected: Sep-16-03 12:36
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 16.44
Prep Method: 3051
Date Anal: Sep-26-03 18:15
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3970	0.500	1.20	0.2250	0.539	mg/kg		2
Antimony	7440-36-0	U	0.250	0.598	0.1600	0.383	mg/kg	U	2
Arsenic	7440-38-2	0.957	0.250	0.598	0.0450	0.108	mg/kg		2
Barium	7440-39-3	135	0.500	1.20	0.1100	0.263	mg/kg		2
Beryllium	7440-41-7	0.491	0.050	0.120	0.0250	0.060	mg/kg		2
Cadmium	7440-43-9	0.096	0.050	0.120	0.0350	0.084	mg/kg	J	2
Calcium	7440-70-2	10800	25.0	59.8	13.80	32.9	mg/kg		2
Chromium	7440-47-3	4.55	0.500	1.20	0.0450	0.108	mg/kg		2
Cobalt	7440-48-4	1.77	0.500	1.20	0.1000	0.239	mg/kg		2
Copper	7440-50-8	6.19	0.500	1.20	0.1050	0.251	mg/kg		2
Iron	7439-89-6	3390	10.0	23.9	2.600	6.22	mg/kg		2
Lead	7439-92-1	21.2	0.100	0.239	0.1000	0.239	mg/kg		2
Magnesium	7439-95-4	943	10.0	23.9	7.500	18.0	mg/kg		2
Manganese	7439-96-5	94.5	0.500	1.20	0.0750	0.180	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0479	0.0100	0.0239	mg/kg	U	2
Nickel	7440-02-0	3.96	0.500	1.20	0.0550	0.132	mg/kg		2
Potassium	2133-26-8	556	10.0	23.9	8.500	20.3	mg/kg		2
Selenium	7782-49-2	U	0.250	0.598	0.2000	0.479	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.598	0.2000	0.479	mg/kg	U	2
Sodium	7440-23-5	365	25.0	59.8	12.50	29.9	mg/kg		2
Thallium	7440-28-0	U	0.500	1.20	0.1600	0.383	mg/kg	U	2
Vanadium	7440-62-2	10.4	0.500	1.20	0.1000	0.239	mg/kg		2
Zinc	7440-66-6	9.94	0.500	1.20	0.2000	0.479	mg/kg		2

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 14:32
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642726
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		16.4					%		

Analytical Method: **Soil pH by SW-846 9045C**
% Moist:
Prep Method:
Date Anal: Sep-19-03 18:15
Analyst: THAKO
Date Prep:
Tech: THAKO
Anal seq: 642773
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
pH		8.21					SU		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-6** Matrix: SOIL
Lab Sample Id: **236979-016** Date Collected: Sep-16-03 13:03 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 14.39 Prep Method: 3051
Date Anal: Sep-26-03 18:21 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF
Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3880	0.500	1.17	0.2250	0.526	mg/kg		2
Antimony	7440-36-0	U	0.250	0.584	0.1600	0.374	mg/kg	U	2
Arsenic	7440-38-2	1.13	0.250	0.584	0.0450	0.105	mg/kg		2
Barium	7440-39-3	56.5	0.500	1.17	0.1100	0.257	mg/kg		2
Beryllium	7440-41-7	0.479	0.050	0.117	0.0250	0.058	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.117	0.0350	0.082	mg/kg	U	2
Calcium	7440-70-2	3280	25.0	58.4	13.80	32.1	mg/kg		2
Chromium	7440-47-3	4.39	0.500	1.17	0.0450	0.105	mg/kg		2
Cobalt	7440-48-4	2.65	0.500	1.17	0.1000	0.234	mg/kg		2
Copper	7440-50-8	7.63	0.500	1.17	0.1050	0.245	mg/kg		2
Iron	7439-89-6	3520	10.0	23.4	2.600	6.07	mg/kg		2
Lead	7439-92-1	62.4	0.100	0.234	0.1000	0.234	mg/kg		2
Magnesium	7439-95-4	922	10.0	23.4	7.500	17.5	mg/kg		2
Manganese	7439-96-5	127	0.500	1.17	0.0750	0.175	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0467	0.0100	0.0234	mg/kg	U	2
Nickel	7440-02-0	4.31	0.500	1.17	0.0550	0.128	mg/kg		2
Potassium	2133-26-8	607	10.0	23.4	8.500	19.9	mg/kg		2
Selenium	7782-49-2	U	0.250	0.584	0.2000	0.467	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.584	0.2000	0.467	mg/kg	U	2
Sodium	7440-23-5	385	25.0	58.4	12.50	29.2	mg/kg		2
Thallium	7440-28-0	U	0.500	1.17	0.1600	0.374	mg/kg	U	2
Vanadium	7440-62-2	10.5	0.500	1.17	0.1000	0.234	mg/kg		2
Zinc	7440-66-6	12.2	0.500	1.17	0.2000	0.467	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:34 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.4					%		

Version: 1.029

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id:	**B-7**	Matrix: SOIL			
Lab Sample Id:	**236979-017**	Date Collected:	Sep-16-03 13:05	Date Received:	Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 15.37 Prep Method: 3051

Date Anal: Sep-26-03 18:27 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF

Anal seq: 643005 Prep seq: 462893

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	3170	0.500	1.18	0.2250	0.532	mg/kg		2
Antimony	7440-36-0	U	0.250	0.591	0.1600	0.378	mg/kg	U	2
Arsenic	7440-38-2	1.23	0.250	0.591	0.0450	0.106	mg/kg		2
Barium	7440-39-3	35.1	0.500	1.18	0.1100	0.260	mg/kg		2
Beryllium	7440-41-7	0.437	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.118	0.0350	0.083	mg/kg	U	2
Calcium	7440-70-2	2660	25.0	59.1	13.80	32.5	mg/kg		2
Chromium	7440-47-3	3.80	0.500	1.18	0.0450	0.106	mg/kg		2
Cobalt	7440-48-4	2.08	0.500	1.18	0.1000	0.236	mg/kg		2
Copper	7440-50-8	4.89	0.500	1.18	0.1050	0.248	mg/kg		2
Iron	7439-89-6	2750	10.0	23.6	2.600	6.14	mg/kg		2
Lead	7439-92-1	8.54	0.100	0.236	0.1000	0.236	mg/kg		2
Magnesium	7439-95-4	670	10.0	23.6	7.500	17.7	mg/kg		2
Manganese	7439-96-5	131	0.500	1.18	0.0750	0.177	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0473	0.0100	0.0236	mg/kg	U	2
Nickel	7440-02-0	3.21	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	356	10.0	23.6	8.500	20.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.591	0.2000	0.473	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.591	0.2000	0.473	mg/kg	U	2
Sodium	7440-23-5	366	25.0	59.1	12.50	29.5	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.378	mg/kg	U	2
Vanadium	7440-62-2	10.6	0.500	1.18	0.1000	0.236	mg/kg		2
Zinc	7440-66-6	7.33	0.500	1.18	0.2000	0.473	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:36 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642726 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		15.4					%		

Sample Id: **B-8**
Matrix: SOIL
Lab Sample Id: **236979-018**
Date Collected: Sep-16-03 13:08
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 17.38
Prep Method: 3051
Date Anal: Sep-26-03 18:33
Analyst: IRF
Date Prep: Sep-25-03 13:00
Tech: IRF
Anal seq: 643005
Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4550	0.500	1.21	0.2250	0.545	mg/kg		2
Antimony	7440-36-0	U	0.250	0.605	0.1600	0.387	mg/kg	U	2
Arsenic	7440-38-2	1.07	0.250	0.605	0.0450	0.109	mg/kg		2
Barium	7440-39-3	53.8	0.500	1.21	0.1100	0.266	mg/kg		2
Beryllium	7440-41-7	0.593	0.050	0.121	0.0250	0.061	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.121	0.0350	0.085	mg/kg	U	2
Calcium	7440-70-2	3420	25.0	60.5	13.80	33.3	mg/kg		2
Chromium	7440-47-3	4.54	0.500	1.21	0.0450	0.109	mg/kg		2
Cobalt	7440-48-4	1.86	0.500	1.21	0.1000	0.242	mg/kg		2
Copper	7440-50-8	6.54	0.500	1.21	0.1050	0.254	mg/kg		2
Iron	7439-89-6	3740	10.0	24.2	2.600	6.29	mg/kg		2
Lead	7439-92-1	10.9	0.100	0.242	0.1000	0.242	mg/kg		2
Magnesium	7439-95-4	1090	10.0	24.2	7.500	18.2	mg/kg		2
Manganese	7439-96-5	84.8	0.500	1.21	0.0750	0.182	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0484	0.0100	0.0242	mg/kg	U	2
Nickel	7440-02-0	4.56	0.500	1.21	0.0550	0.133	mg/kg		2
Potassium	2133-26-8	501	10.0	24.2	8.500	20.6	mg/kg		2
Selenium	7782-49-2	U	0.250	0.605	0.2000	0.484	mg/kg	U	2
Silver	7440-22-4	0.666	0.240	0.605	0.2000	0.484	mg/kg		2
Sodium	7440-23-5	447	25.0	60.5	12.50	30.3	mg/kg		2
Thallium	7440-28-0	U	0.500	1.21	0.1600	0.387	mg/kg	U	2
Vanadium	7440-62-2	12.3	0.500	1.21	0.1000	0.242	mg/kg		2
Zinc	7440-66-6	8.91	0.500	1.21	0.2000	0.484	mg/kg		2

Analytical Method: **SPLP Metals by EPA 6020**
% Moist:
Prep Method: 3015
Date Anal: Oct-13-03 14:14
Analyst: IRF
Date Prep: Oct-13-03 09:30
Tech: IRF
Anal seq: 643523
Prep seq: 463246

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Silver	7440-22-4	U	0.010	0.050	0.0024	0.012	mg/L	U	5

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 14:38
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642726
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		17.4					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-9** Matrix: SOIL
Lab Sample Id: **236979-019** Date Collected: Sep-16-03 13:11 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 13.66 Prep Method: 3051
Date Anal: Sep-26-03 18:39 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF
Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4790	0.500	1.16	0.2250	0.521	mg/kg		2
Antimony	7440-36-0	U	0.250	0.579	0.1600	0.371	mg/kg	U	2
Arsenic	7440-38-2	1.84	0.250	0.579	0.0450	0.104	mg/kg		2
Barium	7440-39-3	66.7	0.500	1.16	0.1100	0.255	mg/kg		2
Beryllium	7440-41-7	0.521	0.050	0.116	0.0250	0.058	mg/kg		2
Cadmium	7440-43-9	0.093	0.050	0.116	0.0350	0.081	mg/kg	J	2
Calcium	7440-70-2	31100	25.0	589	13.80	324	mg/kg	D	20
Chromium	7440-47-3	6.09	0.500	1.16	0.0450	0.104	mg/kg		2
Cobalt	7440-48-4	3.54	0.500	1.16	0.1000	0.232	mg/kg		2
Copper	7440-50-8	6.29	0.500	1.16	0.1050	0.243	mg/kg		2
Iron	7439-89-6	5470	10.0	23.2	2.600	6.02	mg/kg		2
Lead	7439-92-1	10.6	0.100	0.232	0.1000	0.232	mg/kg		2
Magnesium	7439-95-4	1910	10.0	23.2	7.500	17.4	mg/kg		2
Manganese	7439-96-5	186	0.500	1.16	0.0750	0.174	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0463	0.0100	0.0232	mg/kg	U	2
Nickel	7440-02-0	8.32	0.500	1.16	0.0550	0.127	mg/kg		2
Potassium	2133-26-8	883	10.0	23.2	8.500	19.7	mg/kg		2
Selenium	7782-49-2	U	0.250	0.579	0.2000	0.463	mg/kg	U	2
Silver	7440-22-4	0.602	0.240	0.579	0.2000	0.463	mg/kg		2
Sodium	7440-23-5	906	25.0	57.9	12.50	29.0	mg/kg		2
Thallium	7440-28-0	U	0.500	1.16	0.1600	0.371	mg/kg	U	2
Vanadium	7440-62-2	14.7	0.500	1.16	0.1000	0.232	mg/kg		2
Zinc	7440-66-6	11.6	0.500	1.16	0.2000	0.463	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:40 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		13.7					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-10** Matrix: SOIL
Lab Sample Id: **236979-020** Date Collected: Sep-16-03 13:15 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 18.08 Prep Method: 3051
Date Anal: Sep-26-03 18:44 Analyst: IRF Date Prep: Sep-25-03 13:00 Tech: IRF
Anal seq: 643005 Prep seq: 462893

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4870	0.500	1.22	0.2250	0.549	mg/kg		2
Antimony	7440-36-0	U	0.250	0.610	0.1600	0.391	mg/kg	U	2
Arsenic	7440-38-2	0.781	0.250	0.610	0.0450	0.110	mg/kg		2
Barium	7440-39-3	147	0.500	1.22	0.1100	0.269	mg/kg		2
Beryllium	7440-41-7	0.525	0.050	0.122	0.0250	0.061	mg/kg		2
Cadmium	7440-43-9	0.098	0.050	0.122	0.0350	0.085	mg/kg	J	2
Calcium	7440-70-2	23600	25.0	61.0	13.80	33.6	mg/kg		2
Chromium	7440-47-3	4.43	0.500	1.22	0.0450	0.110	mg/kg		2
Cobalt	7440-48-4	3.15	0.500	1.22	0.1000	0.244	mg/kg		2
Copper	7440-50-8	5.48	0.500	1.22	0.1050	0.256	mg/kg		2
Iron	7439-89-6	3720	10.0	24.4	2.600	6.35	mg/kg		2
Lead	7439-92-1	18.3	0.100	0.244	0.1000	0.244	mg/kg		2
Magnesium	7439-95-4	1270	10.0	24.4	7.500	18.3	mg/kg		2
Manganese	7439-96-5	82.2	0.500	1.22	0.0750	0.183	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0488	0.0100	0.0244	mg/kg	U	2
Nickel	7440-02-0	4.79	0.500	1.22	0.0550	0.134	mg/kg		2
Potassium	2133-26-8	472	10.0	24.4	8.500	20.8	mg/kg		2
Selenium	7782-49-2	U	0.250	0.610	0.2000	0.488	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.610	0.2000	0.488	mg/kg	U	2
Sodium	7440-23-5	880	25.0	61.0	12.50	30.5	mg/kg		2
Thallium	7440-28-0	U	0.500	1.22	0.1600	0.391	mg/kg	U	2
Vanadium	7440-62-2	9.06	0.500	1.22	0.1000	0.244	mg/kg		2
Zinc	7440-66-6	9.55	0.500	1.22	0.2000	0.488	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:42 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642726 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		18.1					%		

Sample Id: **RS091603**	Matrix: WATER		
Lab Sample Id: **236979-021**	Date Collected: Sep-16-03 16:00	Date Received: Sep-17-03 13:20	

Analytical Method: **VOAs by SW-846 8260B**		% Moist:	Prep Method: 5030B
Date Anal: Sep-23-03 21:08	Analyst: CYE	Date Prep: Sep-23-03 16:27	Tech: CYE
Anal seq: 642892		Prep seq: 462860	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Benzene	71-43-2	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Bromobenzene	108-86-1	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Bromochloromethane	74-97-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Bromodichloromethane	75-27-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Bromoform	75-25-2	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Bromomethane	74-83-9	U	0.005	0.005	0.0010	0.001	mg/L	U	1
MTBE	1634-04-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
tert-Butylbenzene	98-06-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Sec-Butylbenzene	135-98-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
n-Butylbenzene	104-51-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Carbon Tetrachloride	56-23-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Chlorobenzene	108-90-7	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Chloroethane	75-00-3	U	0.010	0.010	0.0020	0.002	mg/L	U	1
Chloroform	67-66-3	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Chloromethane	74-87-3	U	0.010	0.010	0.0020	0.002	mg/L	U	1
2-Chlorotoluene	95-49-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
4-Chlorotoluene	106-43-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
p-Cymene (p-Isopropyltoluene)	99-87-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2-Dibromo-3-Chloropropane	96-12-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Dibromochloromethane	124-48-1	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Dibromomethane	74-95-3	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2-Dichlorobenzene	95-50-1	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,3-Dichlorobenzene	541-73-1	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,4-Dichlorobenzene	106-46-7	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Dichlorodifluoromethane	75-71-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2-Dichloroethane	107-06-2	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1-Dichloroethane	75-34-3	U	0.005	0.005	0.0010	0.001	mg/L	U	1
trans-1,2-dichloroethene	156-60-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
cis-1,2-Dichloroethene	156-59-2	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1-Dichloroethene	75-35-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
2,2-Dichloropropane	594-20-7	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,3-Dichloropropane	142-28-9	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2-Dichloropropane	78-87-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
trans-1,3-dichloropropene	10061-02-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1-Dichloropropene	563-58-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
cis-1,3-Dichloropropene	10061-01-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Ethylbenzene	100-41-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Hexachlorobutadiene	87-68-3	U	0.005	0.005	0.0010	0.001	mg/L	U	1
isopropylbenzene	98-82-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Naphthalene	91-20-3	U	0.010	0.010	0.0020	0.002	mg/L	U	1
n-Propylbenzene	103-65-1	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Styrene	100-42-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1,1,2-Tetrachloroethane	630-20-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1,2,2-Tetrachloroethane	79-34-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Toluene	108-88-3	U	0.005	0.005	0.0010	0.001	mg/L	U	1

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **RS091603** Matrix: WATER
Lab Sample Id: **236979-021** Date Collected: Sep-16-03 16:00 Date Received: Sep-17-03 13:20

Analytical Method: **VOAs by SW-846 8260B** % Moist: Prep Method: 5030B
Date Anal: Sep-23-03 21:08 Analyst: CYE Date Prep: Sep-23-03 16:27 Tech: CYE
Anal seq: 642892 Prep seq: 462860

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
1,2,4-Trichlorobenzene	120-82-1	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2,3-Trichlorobenzene	87-61-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1,2-Trichloroethane	79-00-5	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,1,1-Trichloroethane	71-55-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Trichloroethene	79-01-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Trichlorofluoromethane	75-69-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2,3-Trichloropropane	96-18-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,2,4-Trimethylbenzene	95-63-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
1,3,5-trimethylbenzene	108-67-8	U	0.005	0.005	0.0010	0.001	mg/L	U	1
o-Xylene	95-47-6	U	0.005	0.005	0.0010	0.001	mg/L	U	1
m,p-Xylenes		U	0.010	0.010	0.0020	0.002	mg/L	U	1
Methylene Chloride	75-09-2	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Tetrachloroethylene	127-18-4	U	0.005	0.005	0.0010	0.001	mg/L	U	1
Vinyl Chloride	75-01-4	U	0.002	0.002	0.0004	0.001	mg/L	U	1

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **RS091603** Matrix: WATER

Lab Sample Id: **236979-021** Date Collected: Sep-16-03 16:00 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: Prep Method: 3015

Date Anal: Sep-26-03 04:08 Analyst: IRF Date Prep: Sep-25-03 16:00 Tech: IRF

Anal seq: 642987 Prep seq: 462895

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	0.024	0.010	0.045	0.0045	0.020	mg/L	J	5
Antimony	7440-36-0	0.037	0.003	0.014	0.0032	0.014	mg/L		5
Arsenic	7440-38-2	U	0.002	0.009	0.0008	0.004	mg/L	U	5
Barium	7440-39-3	0.012	0.010	0.045	0.0022	0.010	mg/L	J	5
Beryllium	7440-41-7	U	0.001	0.005	0.0006	0.003	mg/L	U	5
Cadmium	7440-43-9	U	0.001	0.005	0.0006	0.003	mg/L	U	5
Calcium	7440-70-2	U	0.500	2.25	0.2500	1.13	mg/L	U	5
Chromium	7440-47-3	U	0.010	0.045	0.0010	0.005	mg/L	U	5
Cobalt	7440-48-4	U	0.010	0.045	0.0020	0.009	mg/L	U	5
Copper	7440-50-8	U	0.010	0.045	0.0020	0.009	mg/L	U	5
Iron	7439-89-6	U	0.250	1.13	0.2000	0.900	mg/L	U	5
Lead	7439-92-1	U	0.002	0.009	0.0017	0.008	mg/L	U	5
Magnesium	7439-95-4	U	0.500	2.25	0.1500	0.675	mg/L	U	5
Manganese	7439-96-5	U	0.010	0.045	0.0015	0.007	mg/L	U	5
Mercury	7439-97-6	U	0.0004	0.0018	0.0002	0.0009	mg/L	U	5
Nickel	7440-02-0	U	0.010	0.045	0.0013	0.006	mg/L	U	5
Potassium	2133-26-8	U	0.500	2.25	0.1700	0.765	mg/L	U	5
Selenium	7782-49-2	U	0.010	0.045	0.0040	0.018	mg/L	U	5
Silver	7440-22-4	U	0.010	0.045	0.0024	0.011	mg/L	U	5
Sodium	7440-23-5	U	0.500	2.25	0.2500	1.13	mg/L	U	5
Thallium	7440-28-0	U	0.001	0.004	0.0009	0.004	mg/L	U	5
Vanadium	7440-62-2	U	0.010	0.045	0.0020	0.009	mg/L	U	5
Zinc	7440-66-6	U	0.010	0.045	0.0050	0.023	mg/L	U	5

Version: 1.029

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id:	**RS091603**	Matrix: WATER			
Lab Sample Id:	**236979-021**	Date Collected: Sep-16-03 16:00		Date Received: Sep-17-03 13:20	

Analytical Method:	**SVOAs by EPA 8270C**		% Moist:		Prep Method: 3510C
Date Anal:	Sep-22-03 18:56	Analyst: MAD	Date Prep: Sep-18-03 10:45		Tech: MAD
Anal seq:	642956		Prep seq: 462891		

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Acenaphthene	83-32-9	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Acenaphthylene	208-96-8	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Aniline (Phenylamine, Aminobenzene)	62-53-3	U	0.020	0.022	0.0010	0.001	mg/L	U	1
Anthracene	120-12-7	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Benzo(a)anthracene	56-55-3	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Benzo(a)pyrene	50-32-8	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Benzo(b)fluoranthene	205-99-2	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Benzo(g,h,i)perylene	191-24-2	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Benzo(k)fluoranthene	207-08-9	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Benzoic Acid	65-85-0	U	0.030	0.033	0.0095	0.011	mg/L	U	1
Benzyl Butyl Phthalate	85-68-7	U	0.005	0.006	0.0010	0.001	mg/L	U	1
bis(2-chloroethoxy) methane	111-91-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
bis(2-chloroethyl) ether	111-44-4	U	0.010	0.011	0.0010	0.001	mg/L	U	1
bis(2-chloroisopropyl) ether	108-60-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
bis(2-ethylhexyl) phthalate	117-81-7	U	0.005	0.006	0.0010	0.001	mg/L	U	1
4-Bromophenyl-phenylether	101-55-3	U	0.010	0.011	0.0010	0.001	mg/L	U	1
di-n-Butyl Phthalate	84-74-2	U	0.005	0.006	0.0026	0.003	mg/L	U	1
4-chloro-3-methylphenol	59-50-7	U	0.010	0.011	0.0011	0.001	mg/L	U	1
4-Chloroaniline	106-47-8	U	0.020	0.022	0.0010	0.001	mg/L	U	1
2-Chloronaphthalene	91-58-7	U	0.010	0.011	0.0010	0.001	mg/L	U	1
2-Chlorophenol	95-57-8	U	0.010	0.011	0.0010	0.001	mg/L	U	1
4-Chlorophenyl Phenyl Ether	7005-72-3	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Chrysene	218-01-9	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Dibenz(a,h)Anthracene	53-70-3	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Dibenzofuran	132-64-9	U	0.010	0.011	0.0010	0.001	mg/L	U	1
1,2-Dichlorobenzene	95-50-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
1,3-Dichlorobenzene	541-73-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
1,4-Dichlorobenzene	106-46-7	U	0.010	0.011	0.0010	0.001	mg/L	U	1
3,3-Dichlorobenzidine	91-94-1	U	0.010	0.011	0.0020	0.002	mg/L	U	1
2,4-Dichlorophenol	120-83-2	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Diethyl Phthalate	84-66-2	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Dimethyl Phthalate	131-11-3	U	0.005	0.006	0.0010	0.001	mg/L	U	1
2,4-Dimethylphenol	105-67-9	U	0.010	0.011	0.0011	0.001	mg/L	U	1
4,6-dinitro-2-methyl phenol	534-52-1	U	0.010	0.011	0.0012	0.001	mg/L	U	1
2,4-Dinitrophenol	51-28-5	U	0.010	0.011	0.0010	0.001	mg/L	U	1
2,4-Dinitrotoluene	121-14-2	U	0.010	0.011	0.0010	0.001	mg/L	U	1
2,6-Dinitrotoluene	606-20-2	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Fluoranthene	206-44-0	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Fluorene	86-73-7	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Hexachlorobenzene	118-74-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Hexachlorobutadiene	87-68-3	U	0.010	0.006	0.0010	0.001	mg/L	U	1
Hexachlorocyclopentadiene	77-47-4	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Hexachloroethane	67-72-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Indeno(1,2,3-c,d)Pyrene	193-39-5	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Isophorone	78-59-1	U	0.010	0.011	0.0013	0.001	mg/L	U	1

Sample Id: **RS091603** Matrix: WATER
Lab Sample Id: **236979-021** Date Collected: Sep-16-03 16:00 Date Received: Sep-17-03 13:20

Analytical Method: **SVOAs by EPA 8270C** % Moist: Prep Method: 3510C
Date Anal: Sep-22-03 18:56 Analyst: MAD Date Prep: Sep-18-03 10:45 Tech: MAD
Anal seq: 642956 Prep seq: 462891

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
2-Methylnaphthalene	91-57-6	U	0.005	0.006	0.0011	0.001	mg/L	U	1
2-methylphenol	95-48-7	U	0.010	0.011	0.0013	0.001	mg/L	U	1
3&4-Methylphenol		U	0.010	0.011	0.0015	0.002	mg/L	U	1
Naphthalene	91-20-3	U	0.005	0.006	0.0010	0.001	mg/L	U	1
4-Nitroaniline	100-01-6	U	0.020	0.022	0.0011	0.001	mg/L	U	1
3-Nitroaniline	99-09-2	U	0.010	0.011	0.0021	0.002	mg/L	U	1
2-Nitroaniline	88-74-4	U	0.010	0.008	0.0010	0.001	mg/L	U	1
Nitrobenzene	98-95-3	U	0.010	0.011	0.0010	0.001	mg/L	U	1
2-Nitrophenol	88-75-5	U	0.010	0.011	0.0010	0.001	mg/L	U	1
4-Nitrophenol	100-02-7	U	0.010	0.011	0.0010	0.001	mg/L	U	1
N-Nitrosodi-n-Propylamine	621-64-7	U	0.010	0.011	0.0010	0.001	mg/L	U	1
N-Nitrosodiphenylamine	86-30-6	U	0.010	0.011	0.0017	0.002	mg/L	U	1
di-n-Octyl Phthalate	117-84-0	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Pentachlorophenol	87-86-5	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Phenanthrene	85-01-8	U	0.005	0.006	0.0012	0.001	mg/L	U	1
Phenol	108-95-2	U	0.010	0.011	0.0010	0.001	mg/L	U	1
Pyrene	129-00-0	U	0.005	0.006	0.0010	0.001	mg/L	U	1
Pyridine	110-86-1	U	0.010	0.011	0.0035	0.004	mg/L	U	1
1,2,4-Trichlorobenzene	120-82-1	U	0.010	0.011	0.0010	0.001	mg/L	U	1
2,4,6-Trichlorophenol	88-06-2	U	0.010	0.011	0.0010	0.001	mg/L	U	1
2,4,5-Trichlorophenol	95-95-4	U	0.010	0.011	0.0010	0.001	mg/L	U	1

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id:	**B-11**	Matrix:	SOIL		
Lab Sample Id:	**236979-022**	Date Collected:	Sep-16-03 13:18	Date Received:	Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 14.79 Prep Method: 3051

Date Anal: Sep-29-03 12:02 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF

Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	5450	0.500	1.17	0.2250	0.528	mg/kg		2
Antimony	7440-36-0	U	0.250	0.587	0.1600	0.376	mg/kg	U	2
Arsenic	7440-38-2	0.974	0.250	0.587	0.0450	0.106	mg/kg		2
Barium	7440-39-3	66.9	0.500	1.17	0.1100	0.258	mg/kg		2
Beryllium	7440-41-7	0.446	0.050	0.117	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.117	0.0350	0.082	mg/kg	U	2
Calcium	7440-70-2	12900	25.0	58.7	13.80	32.3	mg/kg		2
Chromium	7440-47-3	5.97	0.500	1.17	0.0450	0.106	mg/kg	B	2
Cobalt	7440-48-4	2.88	0.500	1.17	0.1000	0.235	mg/kg		2
Copper	7440-50-8	5.29	0.500	1.17	0.1050	0.246	mg/kg		2
Iron	7439-89-6	5310	10.0	23.5	2.600	6.10	mg/kg		2
Lead	7439-92-1	15.3	0.100	0.235	0.1000	0.235	mg/kg		2
Magnesium	7439-95-4	1540	10.0	23.5	7.500	17.6	mg/kg		2
Manganese	7439-96-5	145	0.500	1.17	0.0750	0.176	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0469	0.0100	0.0235	mg/kg	U	2
Nickel	7440-02-0	6.63	0.500	1.17	0.0550	0.129	mg/kg		2
Potassium	2133-26-8	949	10.0	23.5	8.500	20.0	mg/kg		2
Selenium	7782-49-2	U	0.250	0.587	0.2000	0.469	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.587	0.2000	0.469	mg/kg	U	2
Sodium	7440-23-5	695	25.0	58.7	12.50	29.3	mg/kg		2
Thallium	7440-28-0	U	0.500	1.17	0.1600	0.376	mg/kg	U	2
Vanadium	7440-62-2	5.03	0.500	1.17	0.1000	0.235	mg/kg		2
Zinc	7440-66-6	20.1	0.500	1.17	0.2000	0.469	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:46 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.8					%		

Analytical Method: **Soil pH by SW-846 9045C** % Moist: Prep Method:

Date Anal: Sep-19-03 18:20 Analyst: THAKO Date Prep: Tech: THAKO

Anal seq: 642773 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
pH		9.22					SU		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-12** Matrix: SOIL

Lab Sample Id: **236979-023** Date Collected: Sep-16-03 13:17 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 18.36 Prep Method: 3051

Date Anal: Sep-26-03 20:47 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF

Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	9090	0.500	1.22	0.2250	0.551	mg/kg		2
Antimony	7440-36-0	U	0.250	0.612	0.1600	0.392	mg/kg	U	2
Arsenic	7440-38-2	2.67	0.250	0.612	0.0450	0.110	mg/kg		2
Barium	7440-39-3	105	0.500	1.22	0.1100	0.269	mg/kg		2
Beryllium	7440-41-7	0.649	0.050	0.122	0.0250	0.061	mg/kg		2
Cadmium	7440-43-9	0.110	0.050	0.122	0.0350	0.086	mg/kg	J	2
Calcium	7440-70-2	15600	25.0	61.2	13.80	33.7	mg/kg		2
Chromium	7440-47-3	10.2	0.500	1.22	0.0450	0.110	mg/kg	B	2
Cobalt	7440-48-4	6.23	0.500	1.22	0.1000	0.245	mg/kg		2
Copper	7440-50-8	9.10	0.500	1.22	0.1050	0.257	mg/kg		2
Iron	7439-89-6	9780	10.0	24.5	2.600	6.37	mg/kg		2
Lead	7439-92-1	15.9	0.100	0.245	0.1000	0.245	mg/kg		2
Magnesium	7439-95-4	2400	10.0	24.5	7.500	18.4	mg/kg		2
Manganese	7439-96-5	313	0.500	1.22	0.0750	0.184	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0490	0.0100	0.0245	mg/kg	U	2
Nickel	7440-02-0	13.0	0.500	1.22	0.0550	0.135	mg/kg		2
Potassium	2133-26-8	1820	10.0	24.5	8.500	20.8	mg/kg		2
Selenium	7782-49-2	U	0.250	0.612	0.2000	0.490	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.612	0.2000	0.490	mg/kg	U	2
Sodium	7440-23-5	846	25.0	61.2	12.50	30.6	mg/kg		2
Thallium	7440-28-0	U	0.500	1.22	0.1600	0.392	mg/kg	U	2
Vanadium	7440-62-2	20.8	0.500	1.22	0.1000	0.245	mg/kg		2
Zinc	7440-66-6	18.6	0.500	1.22	0.2000	0.490	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:50 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		18.4					%		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-13**	Matrix: SOIL		
Lab Sample Id: **236979-024**	Date Collected: Sep-16-03 13:14	Date Received: Sep-17-03 13:20	

Analytical Method: **TAL Metals by EPA 6020** % Moist: 18.91 Prep Method: 3051

Date Anal: Sep-26-03 20:53 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF

Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	9080	0.500	1.23	0.2250	0.555	mg/kg		2
Antimony	7440-36-0	U	0.250	0.617	0.1600	0.395	mg/kg	U	2
Arsenic	7440-38-2	1.53	0.250	0.617	0.0450	0.111	mg/kg		2
Barium	7440-39-3	119	0.500	1.23	0.1100	0.271	mg/kg		2
Beryllium	7440-41-7	0.567	0.050	0.123	0.0250	0.062	mg/kg		2
Cadmium	7440-43-9	0.099	0.050	0.123	0.0350	0.086	mg/kg	J	2
Calcium	7440-70-2	16800	25.0	61.7	13.80	33.9	mg/kg		2
Chromium	7440-47-3	9.35	0.500	1.23	0.0450	0.111	mg/kg	B	2
Cobalt	7440-48-4	4.03	0.500	1.23	0.1000	0.247	mg/kg		2
Copper	7440-50-8	11.3	0.500	1.23	0.1050	0.259	mg/kg		2
Iron	7439-89-6	8040	10.0	24.7	2.600	6.41	mg/kg		2
Lead	7439-92-1	76.2	0.100	0.247	0.1000	0.247	mg/kg		2
Magnesium	7439-95-4	2080	10.0	24.7	7.500	18.5	mg/kg		2
Manganese	7439-96-5	227	0.500	1.23	0.0750	0.185	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0493	0.0100	0.0247	mg/kg	U	2
Nickel	7440-02-0	9.38	0.500	1.23	0.0550	0.136	mg/kg		2
Potassium	2133-26-8	1680	10.0	24.7	8.500	21.0	mg/kg		2
Selenium	7782-49-2	U	0.250	0.617	0.2000	0.493	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.617	0.2000	0.493	mg/kg	U	2
Sodium	7440-23-5	502	25.0	61.7	12.50	30.8	mg/kg		2
Thallium	7440-28-0	U	0.500	1.23	0.1600	0.395	mg/kg	U	2
Vanadium	7440-62-2	13.6	0.500	1.23	0.1000	0.247	mg/kg		2
Zinc	7440-66-6	18.8	0.500	1.23	0.2000	0.493	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:52 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		18.9					%		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-14** Matrix: SOIL
Lab Sample Id: **236979-025** Date Collected: Sep-16-03 13:11 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 16.84 Prep Method: 3051
Date Anal: Sep-26-03 20:59 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF
Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	5160	0.500	1.20	0.2250	0.541	mg/kg		2
Antimony	7440-36-0	U	0.250	0.601	0.1600	0.385	mg/kg	U	2
Arsenic	7440-38-2	1.30	0.250	0.601	0.0450	0.108	mg/kg		2
Barium	7440-39-3	105	0.500	1.20	0.1100	0.265	mg/kg		2
Beryllium	7440-41-7	0.493	0.050	0.120	0.0250	0.060	mg/kg		2
Cadmium	7440-43-9	0.108	0.050	0.120	0.0350	0.084	mg/kg	J	2
Calcium	7440-70-2	36200	25.0	601	13.80	331	mg/kg	D	20
Chromium	7440-47-3	5.59	0.500	1.20	0.0450	0.108	mg/kg	B	2
Cobalt	7440-48-4	4.00	0.500	1.20	0.1000	0.241	mg/kg		2
Copper	7440-50-8	6.46	0.500	1.20	0.1050	0.253	mg/kg		2
Iron	7439-89-6	4920	10.0	24.1	2.600	6.25	mg/kg		2
Lead	7439-92-1	20.4	0.100	0.241	0.1000	0.241	mg/kg		2
Magnesium	7439-95-4	1670	10.0	24.1	7.500	18.0	mg/kg		2
Manganese	7439-96-5	233	0.500	1.20	0.0750	0.180	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0481	0.0100	0.0241	mg/kg	U	2
Nickel	7440-02-0	7.98	0.500	1.20	0.0550	0.132	mg/kg		2
Potassium	2133-26-8	911	10.0	24.1	8.500	20.4	mg/kg		2
Selenium	7782-49-2	U	0.250	0.601	0.2000	0.481	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.601	0.2000	0.481	mg/kg	U	2
Sodium	7440-23-5	372	25.0	60.1	12.50	30.1	mg/kg		2
Thallium	7440-28-0	U	0.500	1.20	0.1600	0.385	mg/kg	U	2
Vanadium	7440-62-2	10.4	0.500	1.20	0.1000	0.241	mg/kg		2
Zinc	7440-66-6	12.5	0.500	1.20	0.2000	0.481	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 14:54 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		16.8					%		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-16** Matrix: SOIL

Lab Sample Id: **236979-026** Date Collected: Sep-16-03 12:47 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 18.67 Prep Method: 3051

Date Anal: Sep-26-03 21:05 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF

Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	9930	0.500	1.23	0.2250	0.553	mg/kg		2
Antimony	7440-36-0	U	0.250	0.615	0.1600	0.393	mg/kg	U	2
Arsenic	7440-38-2	1.89	0.250	0.615	0.0450	0.111	mg/kg		2
Barium	7440-39-3	90.5	0.500	1.23	0.1100	0.271	mg/kg		2
Beryllium	7440-41-7	0.553	0.050	0.123	0.0250	0.062	mg/kg		2
Cadmium	7440-43-9	0.086	0.050	0.123	0.0350	0.086	mg/kg	J	2
Calcium	7440-70-2	15900	25.0	61.5	13.80	33.8	mg/kg		2
Chromium	7440-47-3	10.2	0.500	1.23	0.0450	0.111	mg/kg	B	2
Cobalt	7440-48-4	4.06	0.500	1.23	0.1000	0.246	mg/kg		2
Copper	7440-50-8	12.9	0.500	1.23	0.1050	0.258	mg/kg		2
Iron	7439-89-6	8390	10.0	24.6	2.600	6.39	mg/kg		2
Lead	7439-92-1	103	0.100	0.246	0.1000	0.246	mg/kg		2
Magnesium	7439-95-4	2120	10.0	24.6	7.500	18.4	mg/kg		2
Manganese	7439-96-5	214	0.500	1.23	0.0750	0.184	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0492	0.0100	0.0246	mg/kg	U	2
Nickel	7440-02-0	8.77	0.500	1.23	0.0550	0.135	mg/kg		2
Potassium	2133-26-8	1790	10.0	24.6	8.500	20.9	mg/kg		2
Selenium	7782-49-2	U	0.250	0.615	0.2000	0.492	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.615	0.2000	0.492	mg/kg	U	2
Sodium	7440-23-5	427	25.0	61.5	12.50	30.7	mg/kg		2
Thallium	7440-28-0	U	0.500	1.23	0.1600	0.393	mg/kg	U	2
Vanadium	7440-62-2	17.0	0.500	1.23	0.1000	0.246	mg/kg		2
Zinc	7440-66-6	25.0	0.500	1.23	0.2000	0.492	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:56 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		18.7					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-17**	Matrix: SOIL		
Lab Sample Id: **236979-027**	Date Collected: Sep-16-03 12:40	Date Received: Sep-17-03 13:20	

Analytical Method: **TAL Metals by EPA 6020** % Moist: 15.5 Prep Method: 3051

Date Anal: Sep-26-03 21:11 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF

Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	8610	0.500	1.18	0.2250	0.533	mg/kg		2
Antimony	7440-36-0	0.686	0.250	0.592	0.1600	0.379	mg/kg		2
Arsenic	7440-38-2	2.00	0.250	0.592	0.0450	0.107	mg/kg		2
Barium	7440-39-3	105	0.500	1.18	0.1100	0.260	mg/kg		2
Beryllium	7440-41-7	0.462	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	0.107	0.050	0.118	0.0350	0.083	mg/kg	J	2
Calcium	7440-70-2	16400	25.0	59.2	13.80	32.5	mg/kg		2
Chromium	7440-47-3	9.31	0.500	1.18	0.0450	0.107	mg/kg	B	2
Cobalt	7440-48-4	5.67	0.500	1.18	0.1000	0.237	mg/kg		2
Copper	7440-50-8	21.2	0.500	1.18	0.1050	0.249	mg/kg		2
Iron	7439-89-6	7540	10.0	23.7	2.600	6.15	mg/kg		2
Lead	7439-92-1	128	0.100	0.237	0.1000	0.237	mg/kg		2
Magnesium	7439-95-4	1630	10.0	23.7	7.500	17.8	mg/kg		2
Manganese	7439-96-5	377	0.500	1.18	0.0750	0.178	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0473	0.0100	0.0237	mg/kg	U	2
Nickel	7440-02-0	9.89	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	1450	10.0	23.7	8.500	20.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.592	0.2000	0.473	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.592	0.2000	0.473	mg/kg	U	2
Sodium	7440-23-5	432	25.0	59.2	12.50	29.6	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.379	mg/kg	U	2
Vanadium	7440-62-2	17.3	0.500	1.18	0.1000	0.237	mg/kg		2
Zinc	7440-66-6	14.6	0.500	1.18	0.2000	0.473	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Sep-18-03 14:58 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.5					%		

Version: 1.029

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-18** Matrix: SOIL
Lab Sample Id: **236979-028** Date Collected: Sep-16-03 12:37 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 15.54 Prep Method: 3051
Date Anal: Sep-26-03 21:34 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF
Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4920	0.500	1.18	0.2250	0.533	mg/kg		2
Antimony	7440-36-0	0.746	0.250	0.592	0.1600	0.379	mg/kg		2
Arsenic	7440-38-2	1.67	0.250	0.592	0.0450	0.107	mg/kg		2
Barium	7440-39-3	85.0	0.500	1.18	0.1100	0.260	mg/kg		2
Beryllium	7440-41-7	0.450	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.118	0.0350	0.083	mg/kg	U	2
Calcium	7440-70-2	13400	25.0	59.2	13.80	32.6	mg/kg		2
Chromium	7440-47-3	5.64	0.500	1.18	0.0450	0.107	mg/kg	B	2
Cobalt	7440-48-4	3.47	0.500	1.18	0.1000	0.237	mg/kg		2
Copper	7440-50-8	12.0	0.500	1.18	0.1050	0.249	mg/kg		2
Iron	7439-89-6	5110	10.0	23.7	2.600	6.16	mg/kg		2
Lead	7439-92-1	80.5	0.100	0.237	0.1000	0.237	mg/kg		2
Magnesium	7439-95-4	1090	10.0	23.7	7.500	17.8	mg/kg		2
Manganese	7439-96-5	193	0.500	1.18	0.0750	0.178	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0474	0.0100	0.0237	mg/kg	U	2
Nickel	7440-02-0	6.18	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	875	10.0	23.7	8.500	20.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.592	0.2000	0.474	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.592	0.2000	0.474	mg/kg	U	2
Sodium	7440-23-5	405	25.0	59.2	12.50	29.6	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.379	mg/kg	U	2
Vanadium	7440-62-2	12.3	0.500	1.18	0.1000	0.237	mg/kg		2
Zinc	7440-66-6	12.3	0.500	1.18	0.2000	0.474	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 15:00 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.5					%		

Analytical Method: **Soil pH by SW-846 9045C** % Moist: Prep Method:
Date Anal: Sep-19-03 18:25 Analyst: THAKO Date Prep: Tech: THAKO
Anal seq: 642773 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
pH		8.31					SU		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-20** Matrix: SOIL
Lab Sample Id: **236979-029** Date Collected: Sep-16-03 12:31 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 19.15 Prep Method: 3051
Date Anal: Sep-26-03 21:40 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF
Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	6160	0.500	1.24	0.2250	0.557	mg/kg		2
Antimony	7440-36-0	U	0.250	0.618	0.1600	0.396	mg/kg	U	2
Arsenic	7440-38-2	1.99	0.250	0.618	0.0450	0.111	mg/kg		2
Barium	7440-39-3	68.6	0.500	1.24	0.1100	0.272	mg/kg		2
Beryllium	7440-41-7	0.532	0.050	0.124	0.0250	0.062	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.124	0.0350	0.087	mg/kg	U	2
Calcium	7440-70-2	3920	25.0	61.8	13.80	34.0	mg/kg		2
Chromium	7440-47-3	6.25	0.500	1.24	0.0450	0.111	mg/kg	B	2
Cobalt	7440-48-4	3.38	0.500	1.24	0.1000	0.247	mg/kg		2
Copper	7440-50-8	10.6	0.500	1.24	0.1050	0.260	mg/kg		2
Iron	7439-89-6	5510	10.0	24.7	2.600	6.43	mg/kg		2
Lead	7439-92-1	35.1	0.100	0.247	0.1000	0.247	mg/kg		2
Magnesium	7439-95-4	1010	10.0	24.7	7.500	18.6	mg/kg		2
Manganese	7439-96-5	162	0.500	1.24	0.0750	0.186	mg/kg		2
Mercury	7439-97-6	0.0247	0.0200	0.0495	0.0100	0.0247	mg/kg	J	2
Nickel	7440-02-0	5.96	0.500	1.24	0.0550	0.136	mg/kg		2
Potassium	2133-26-8	981	10.0	24.7	8.500	21.0	mg/kg		2
Selenium	7782-49-2	U	0.250	0.618	0.2000	0.495	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.618	0.2000	0.495	mg/kg	U	2
Sodium	7440-23-5	395	25.0	61.8	12.50	30.9	mg/kg		2
Thallium	7440-28-0	U	0.500	1.24	0.1600	0.396	mg/kg	U	2
Vanadium	7440-62-2	13.6	0.500	1.24	0.1000	0.247	mg/kg		2
Zinc	7440-66-6	15.3	0.500	1.24	0.2000	0.495	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 15:02 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		19.2					%		

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-21**　Matrix: SOIL

Lab Sample Id: **236979-030**　Date Collected: Sep-16-03 12:29　Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**　% Moist: 15.47　Prep Method: 3051

Date Anal: Sep-26-03 21:46　Analyst: IRF　Date Prep: Sep-25-03 14:30　Tech: IRF

Anal seq: 643010　Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3580	0.500	1.18	0.2250	0.532	mg/kg		2
Antimony	7440-36-0	U	0.250	0.592	0.1600	0.379	mg/kg	U	2
Arsenic	7440-38-2	1.47	0.250	0.592	0.0450	0.106	mg/kg		2
Barium	7440-39-3	47.8	0.500	1.18	0.1100	0.260	mg/kg		2
Beryllium	7440-41-7	0.390	0.050	0.118	0.0250	0.059	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.118	0.0350	0.083	mg/kg	U	2
Calcium	7440-70-2	2950	25.0	59.2	13.80	32.5	mg/kg		2
Chromium	7440-47-3	4.21	0.500	1.18	0.0450	0.106	mg/kg	B	2
Cobalt	7440-48-4	1.89	0.500	1.18	0.1000	0.237	mg/kg		2
Copper	7440-50-8	22.0	0.500	1.18	0.1050	0.248	mg/kg		2
Iron	7439-89-6	3490	10.0	23.7	2.600	6.15	mg/kg		2
Lead	7439-92-1	65.2	0.100	0.237	0.1000	0.237	mg/kg		2
Magnesium	7439-95-4	651	10.0	23.7	7.500	17.7	mg/kg		2
Manganese	7439-96-5	90.8	0.500	1.18	0.0750	0.177	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0473	0.0100	0.0237	mg/kg	U	2
Nickel	7440-02-0	3.71	0.500	1.18	0.0550	0.130	mg/kg		2
Potassium	2133-26-8	619	10.0	23.7	8.500	20.1	mg/kg		2
Selenium	7782-49-2	U	0.250	0.592	0.2000	0.473	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.592	0.2000	0.473	mg/kg	U	2
Sodium	7440-23-5	397	25.0	59.2	12.50	29.6	mg/kg		2
Thallium	7440-28-0	U	0.500	1.18	0.1600	0.379	mg/kg	U	2
Vanadium	7440-62-2	10.4	0.500	1.18	0.1000	0.237	mg/kg		2
Zinc	7440-66-6	12.9	0.500	1.18	0.2000	0.473	mg/kg		2

Analytical Method: **Percent Moisture**　% Moist:　Prep Method:

Date Anal: Sep-18-03 15:04　Analyst: MAP　Date Prep:　Tech: MAP

Anal seq: 642727　Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.5					%		

XENCO Laboratories

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-22**
Matrix: SOIL
Lab Sample Id: **236979-031**
Date Collected: Sep-16-03 12:25
Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 16.98
Prep Method: 3051
Date Anal: Sep-26-03 21:52
Analyst: IRF
Date Prep: Sep-25-03 14:30
Tech: IRF
Anal seq: 643010
Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	4740	0.500	1.20	0.2250	0.542	mg/kg		2
Antimony	7440-36-0	U	0.250	0.602	0.1600	0.385	mg/kg	U	2
Arsenic	7440-38-2	1.04	0.250	0.602	0.0450	0.108	mg/kg		2
Barium	7440-39-3	78.4	0.500	1.20	0.1100	0.265	mg/kg		2
Beryllium	7440-41-7	0.494	0.050	0.120	0.0250	0.060	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.120	0.0350	0.084	mg/kg	U	2
Calcium	7440-70-2	3420	25.0	60.2	13.80	33.1	mg/kg		2
Chromium	7440-47-3	4.70	0.500	1.20	0.0450	0.108	mg/kg	B	2
Cobalt	7440-48-4	3.10	0.500	1.20	0.1000	0.241	mg/kg		2
Copper	7440-50-8	6.61	0.500	1.20	0.1050	0.253	mg/kg		2
Iron	7439-89-6	3800	10.0	24.1	2.600	6.26	mg/kg		2
Lead	7439-92-1	7.94	0.100	0.241	0.1000	0.241	mg/kg		2
Magnesium	7439-95-4	1030	10.0	24.1	7.500	18.1	mg/kg		2
Manganese	7439-96-5	163	0.500	1.20	0.0750	0.181	mg/kg		2
Mercury	7439-97-6	U	0.0200	0.0482	0.0100	0.0241	mg/kg	U	2
Nickel	7440-02-0	6.17	0.500	1.20	0.0550	0.132	mg/kg		2
Potassium	2133-26-8	614	10.0	24.1	8.500	20.5	mg/kg		2
Selenium	7782-49-2	U	0.250	0.602	0.2000	0.482	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.602	0.2000	0.482	mg/kg	U	2
Sodium	7440-23-5	347	25.0	60.2	12.50	30.1	mg/kg		2
Thallium	7440-28-0	U	0.500	1.20	0.1600	0.385	mg/kg	U	2
Vanadium	7440-62-2	9.48	0.500	1.20	0.1000	0.241	mg/kg		2
Zinc	7440-66-6	9.74	0.500	1.20	0.2000	0.482	mg/kg		2

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Sep-18-03 15:06
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 642727
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		17.0					%		

Version: 1.029

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-23** Matrix: SOIL
Lab Sample Id: **236979-032** Date Collected: Sep-16-03 12:22 Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020** % Moist: 16.08 Prep Method: 3051
Date Anal: Sep-26-03 21:58 Analyst: IRF Date Prep: Sep-25-03 14:30 Tech: IRF
Anal seq: 643010 Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	5270	0.500	1.19	0.2250	0.536	mg/kg		2
Antimony	7440-36-0	U	0.250	0.596	0.1600	0.381	mg/kg	U	2
Arsenic	7440-38-2	1.57	0.250	0.596	0.0450	0.107	mg/kg		2
Barium	7440-39-3	95.7	0.500	1.19	0.1100	0.262	mg/kg		2
Beryllium	7440-41-7	0.548	0.050	0.119	0.0250	0.060	mg/kg		2
Cadmium	7440-43-9	U	0.050	0.119	0.0350	0.083	mg/kg	U	2
Calcium	7440-70-2	3710	25.0	59.6	13.80	32.8	mg/kg		2
Chromium	7440-47-3	5.62	0.500	1.19	0.0450	0.107	mg/kg	B	2
Cobalt	7440-48-4	2.88	0.500	1.19	0.1000	0.238	mg/kg		2
Copper	7440-50-8	7.45	0.500	1.19	0.1050	0.250	mg/kg		2
Iron	7439-89-6	4920	10.0	23.8	2.600	6.20	mg/kg		2
Lead	7439-92-1	12.4	0.100	0.238	0.1000	0.238	mg/kg		2
Magnesium	7439-95-4	988	10.0	23.8	7.500	17.9	mg/kg		2
Manganese	7439-96-5	209	0.500	1.19	0.0750	0.179	mg/kg		2
Mercury	7439-97-6	0.0238	0.0200	0.0477	0.0100	0.0238	mg/kg	J	2
Nickel	7440-02-0	6.24	0.500	1.19	0.0550	0.131	mg/kg		2
Potassium	2133-26-8	885	10.0	23.8	8.500	20.3	mg/kg		2
Selenium	7782-49-2	U	0.250	0.596	0.2000	0.477	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.596	0.2000	0.477	mg/kg	U	2
Sodium	7440-23-5	410	25.0	59.6	12.50	29.8	mg/kg		2
Thallium	7440-28-0	U	0.500	1.19	0.1600	0.381	mg/kg	U	2
Vanadium	7440-62-2	12.0	0.500	1.19	0.1000	0.238	mg/kg		2
Zinc	7440-66-6	11.6	0.500	1.19	0.2000	0.477	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Sep-18-03 15:08 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 642727 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		16.1					%		

Analytical Method: **Soil pH by SW-846 9045C** % Moist: Prep Method:
Date Anal: Sep-19-03 18:30 Analyst: THAKO Date Prep: Tech: THAKO
Anal seq: 642773 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
pH		7.83					SU		

Certificate of Analytical Results 236979

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-24**　Matrix: SOIL

Lab Sample Id: **236979-033**　Date Collected: Sep-16-03 12:18　Date Received: Sep-17-03 13:20

Analytical Method: **TAL Metals by EPA 6020**　% Moist: 28.9　Prep Method: 3051

Date Anal: Sep-26-03 22:04　Analyst: IRF　Date Prep: Sep-25-03 14:30　Tech: IRF

Anal seq: 643010　Prep seq: 462894

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3800	0.500	1.41	0.2250	0.633	mg/kg		2
Antimony	7440-36-0	2.67	0.250	0.703	0.1600	0.450	mg/kg		2
Arsenic	7440-38-2	1.38	0.250	0.703	0.0450	0.127	mg/kg		2
Barium	7440-39-3	53.6	0.500	1.41	0.1100	0.309	mg/kg		2
Beryllium	7440-41-7	0.450	0.050	0.141	0.0250	0.070	mg/kg		2
Cadmium	7440-43-9	0.155	0.050	0.141	0.0350	0.099	mg/kg		2
Calcium	7440-70-2	2280	25.0	70.3	13.80	38.7	mg/kg		2
Chromium	7440-47-3	5.99	0.500	1.41	0.0450	0.127	mg/kg	B	2
Cobalt	7440-48-4	2.03	0.500	1.41	0.1000	0.281	mg/kg		2
Copper	7440-50-8	103	0.500	1.41	0.1050	0.295	mg/kg		2
Iron	7439-89-6	4230	10.0	28.1	2.600	7.31	mg/kg		2
Lead	7439-92-1	79.4	0.100	0.281	0.1000	0.281	mg/kg		2
Magnesium	7439-95-4	620	10.0	28.1	7.500	21.1	mg/kg		2
Manganese	7439-96-5	80.8	0.500	1.41	0.0750	0.211	mg/kg		2
Mercury	7439-97-6	0.0281	0.0200	0.0563	0.0100	0.0281	mg/kg	J	2
Nickel	7440-02-0	4.96	0.500	1.41	0.0550	0.155	mg/kg		2
Potassium	2133-26-8	1020	10.0	28.1	8.500	23.9	mg/kg		2
Selenium	7782-49-2	U	0.250	0.703	0.2000	0.563	mg/kg	U	2
Silver	7440-22-4	U	0.240	0.703	0.2000	0.563	mg/kg	U	2
Sodium	7440-23-5	398	25.0	70.3	12.50	35.2	mg/kg		2
Thallium	7440-28-0	U	0.500	1.41	0.1600	0.450	mg/kg	U	2
Vanadium	7440-62-2	13.4	0.500	1.41	0.1000	0.281	mg/kg		2
Zinc	7440-66-6	61.4	0.500	1.41	0.2000	0.563	mg/kg		2

Analytical Method: **Percent Moisture**　% Moist:　Prep Method:

Date Anal: Sep-18-03 15:10　Analyst: MAP　Date Prep:　Tech: MAP

Anal seq: 642727　Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		28.9					%		

Analytical Report 238435

for

Corrigan Consulting, Inc.

Project Manager: Mark Holmes

El Campo SAFR
03-134

26-NOV-03

XENCO Laboratories

nelac accredited

11381 Meadowglen, Suite L Houston, TX 77082 Ph:(281) 589-0692 Fax:(281) 589-0695

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America

XENCO Laboratories

nelac accredited

26-NOV-03

Project Manager: **Mark Holmes**
Corrigan Consulting, Inc.
12000 Aerospace Ave. Suite 450
Houston , TX 77034

Reference: XENCO Report No: **238435**
El Campo SAFR
Project Address: 801 Armony Rd., El Campo, TX

Mark Holmes:

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 Chain of Custody Numbered 238435. All results being reported under this Chain of Custody apply to the samples analyzed and properly identified with a Laboratory ID number.

All the results for the quality control samples were reviewed. Also, all parameters for data reduction and validation were reviewed. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, completeness or properly flagged. Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards.

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 COC No. 238435 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,

Brent Barron
Laboratory 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 - San Antonio - Austin - Tampa - Miami - Latin America

Sample Cross Reference 238435

Corrigan Consulting, Inc., Houston , TX

Project: El Campo SAFR

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
P-8	S	Nov-11-03 11:05	0 - 0.5 ft	238435-001
P-6	S	Nov-11-03 11:15	0 - 0.5 ft	238435-002
P-7	S	Nov-11-03 11:25	0 - 0.5 ft	238435-003
P-5B	S	Nov-11-03 11:40	1.5 - 2 ft	238435-004
P2-1	S	Nov-11-03 11:55	0 - 0.5 ft	238435-005
P2-2	S	Nov-11-03 12:00	0 - 0.5 ft	238435-006
P2-3	S	Nov-11-03 12:05	0 - 0.5 ft	238435-007
B-25A	S	Nov-11-03 12:30	0 - 0.5 ft	238435-008
B-25B	S	Nov-11-03 12:40	1.5 - 2 ft	238435-009
B-25BD	S	Nov-11-03 12:40	1.5 - 2 ft	238435-010
B-25C	S	Nov-11-03 13:00	0 - 0.5 ft	238435-011
B-7A	S	Nov-11-03 13:15	0 - 0.5 ft	238435-012
B-7B	S	Nov-11-03 13:25	1.5 - 2 ft	238435-013
B-7C	S	Nov-11-03 13:40	0 - 0.5 ft	238435-014
B-1A	S	Nov-11-03 14:00	0 - 0.5 ft	238435-015
B-1B	S	Nov-11-03 14:15	0 - 0.5 ft	238435-016
B-1C	S	Nov-11-03 14:30	0 - 0.5 ft	238435-017
B-1D	S	Nov-11-03 14:40	1.5 - 2 ft	238435-018
B-24A	S	Nov-11-03 15:15	0 - 0.5 ft	238435-019
B-24B	S	Nov-11-03 15:30	0 - 0.5 ft	238435-020
B-24C	S	Nov-11-03 15:45	0 - 0.5 ft	238435-021
B-21A	S	Nov-11-03 16:15	1.5 - 2 ft	238435-022
B-16A	S	Nov-11-03 16:40	1.5 - 2 ft	238435-023
RS111103	W	Nov-11-03 16:50	ft	238435-024

Sample Id: **P-8** Matrix: SOIL

Lab Sample Id: **238435-001** Date Collected: Nov-11-03 11:05 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 9.28 Prep Method: 3051

Date Anal: Nov-18-03 19:20 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	12.5	0.100	0.220	0.1000	0.220	mg/kg		2
Silver	7440-22-4	U	0.200	0.441	0.2000	0.441	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 16:32 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		9.28					%		

Sample Id: **P-6** Matrix: SOIL

Lab Sample Id: **238435-002** Date Collected: Nov-11-03 11:15 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 8.96 Prep Method: 3051

Date Anal: Nov-18-03 19:26 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	13.7	0.100	0.220	0.1000	0.220	mg/kg		2
Silver	7440-22-4	U	0.200	0.439	0.2000	0.439	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 16:36 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		8.96					%		

Sample Id: **P-7**	Matrix: SOIL		
Lab Sample Id: **238435-003**	Date Collected: Nov-11-03 11:25	Date Received: Nov-12-03 10:58	

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 13.02 Prep Method: 3051

Date Anal: Nov-18-03 19:31 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	19.5	0.100	0.230	0.1000	0.230	mg/kg		2
Silver	7440-22-4	U	0.200	0.460	0.2000	0.460	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 16:38 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		13.0					%		

Sample Id: **P-5B**	Matrix: SOIL		
Lab Sample Id: **238435-004**	Date Collected: Nov-11-03 11:40	Date Received: Nov-12-03 10:58	

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 12.19 Prep Method: 3051

Date Anal: Nov-18-03 19:46 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	10.6	0.100	0.228	0.1000	0.228	mg/kg		2
Silver	7440-22-4	U	0.200	0.456	0.2000	0.456	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 16:40 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		12.2					%		

Certificate of Analytical Results 238435

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P2-1**　Matrix: SOIL

Lab Sample Id: **238435-005**　Date Collected: Nov-11-03 11:55　Date Received: Nov-12-03 10:58

Analytical Method: **TAL Metals by EPA 6020**　% Moist: 6.61　Prep Method: 3051

Date Anal: Nov-14-03 19:52　Analyst: IRF　Date Prep: Nov-14-03 10:30　Tech: IRF

Anal seq: 644888　Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	2720	0.500	1.07	0.2250	0.482	mg/kg		2
Antimony	7440-36-0	0.921	0.250	0.535	0.1600	0.343	mg/kg		2
Arsenic	7440-38-2	5.32	0.250	0.535	0.0450	0.096	mg/kg		2
Barium	7440-39-3	23.0	0.500	1.07	0.1100	0.236	mg/kg		2
Beryllium	7440-41-7	0.278	0.050	0.107	0.0250	0.054	mg/kg		2
Cadmium	7440-43-9	0.332	0.050	0.107	0.0350	0.075	mg/kg		2
Calcium	7440-70-2	1700	25.0	53.5	13.80	29.4	mg/kg		2
Chromium	7440-47-3	6.36	0.500	1.07	0.0450	0.096	mg/kg	B	2
Cobalt	7440-48-4	2.51	0.500	1.07	0.1000	0.214	mg/kg		2
Copper	7440-50-8	11.9	0.500	1.07	0.1050	0.225	mg/kg		2
Iron	7439-89-6	6080	10.0	21.4	2.600	5.57	mg/kg		2
Lead	7439-92-1	131	0.100	0.214	0.1000	0.214	mg/kg		2
Magnesium	7439-95-4	411	10.0	21.4	7.500	16.1	mg/kg		2
Manganese	7439-96-5	165	0.500	1.07	0.0750	0.161	mg/kg		2
Mercury	7439-97-6	0.0857	0.0200	0.0428	0.0100	0.0214	mg/kg		2
Nickel	7440-02-0	4.10	0.500	1.07	0.0550	0.118	mg/kg		2
Potassium	2133-26-8	767	10.0	21.4	8.500	18.2	mg/kg		2
Selenium	7782-49-2	U	0.500	1.07	0.2500	0.535	mg/kg	U	2
Silver	7440-22-4	U	0.200	0.428	0.2000	0.428	mg/kg	U	2
Sodium	7440-23-5	65.3	25.0	53.5	12.50	26.8	mg/kg		2
Thallium	7440-28-0	U	0.500	1.07	0.1600	0.343	mg/kg	U	2
Vanadium	7440-62-2	15.2	0.500	1.07	0.1000	0.214	mg/kg		2
Zinc	7440-66-6	299	0.500	1.07	0.2000	0.428	mg/kg		2

Analytical Method: **Percent Moisture**　% Moist:　Prep Method:

Date Anal: Nov-12-03 16:42　Analyst: MAP　Date Prep:　Tech: MAP

Anal seq: 644668　Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		6.61					%		

Sample Id:	**P2-2**	Matrix: SOIL		
Lab Sample Id:	**238435-006**	Date Collected: Nov-11-03 12:00	Date Received:	Nov-12-03 10:58

Analytical Method: **TAL Metals by EPA 6020** % Moist: 5.54 Prep Method: 3051

Date Anal: Nov-14-03 20:27 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	1840	0.500	1.06	0.2250	0.476	mg/kg		2
Antimony	7440-36-0	0.995	0.250	0.529	0.1600	0.339	mg/kg		2
Arsenic	7440-38-2	4.20	0.250	0.529	0.0450	0.095	mg/kg		2
Barium	7440-39-3	24.6	0.500	1.06	0.1100	0.233	mg/kg		2
Beryllium	7440-41-7	0.222	0.050	0.106	0.0250	0.053	mg/kg		2
Cadmium	7440-43-9	0.286	0.050	0.106	0.0350	0.074	mg/kg		2
Calcium	7440-70-2	599	25.0	52.9	13.80	29.1	mg/kg		2
Chromium	7440-47-3	6.49	0.500	1.06	0.0450	0.095	mg/kg	B	2
Cobalt	7440-48-4	2.72	0.500	1.06	0.1000	0.212	mg/kg		2
Copper	7440-50-8	16.2	0.500	1.06	0.1050	0.222	mg/kg		2
Iron	7439-89-6	4090	10.0	21.2	2.600	5.50	mg/kg		2
Lead	7439-92-1	79.1	0.100	0.212	0.1000	0.212	mg/kg		2
Magnesium	7439-95-4	237	10.0	21.2	7.500	15.9	mg/kg		2
Manganese	7439-96-5	192	0.500	1.06	0.0750	0.159	mg/kg		2
Mercury	7439-97-6	0.0212	0.0200	0.0424	0.0100	0.0212	mg/kg	J	2
Nickel	7440-02-0	3.84	0.500	1.06	0.0550	0.116	mg/kg		2
Potassium	2133-26-8	1040	10.0	21.2	8.500	18.0	mg/kg		2
Selenium	7782-49-2	U	0.500	1.06	0.2500	0.529	mg/kg	U	2
Silver	7440-22-4	U	0.200	0.423	0.2000	0.423	mg/kg	U	2
Sodium	7440-23-5	52.9	25.0	52.9	12.50	26.5	mg/kg		2
Thallium	7440-28-0	U	0.500	1.06	0.1600	0.339	mg/kg	U	2
Vanadium	7440-62-2	14.0	0.500	1.06	0.1000	0.212	mg/kg		2
Zinc	7440-66-6	131	0.500	1.06	0.2000	0.423	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 16:44 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		5.54					%		

XENCO Laboratories

Certificate of Analytical Results 238435

nelac accredited

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **P2-3**
Matrix: SOIL
Lab Sample Id: **238435-007**
Date Collected: Nov-11-03 12:05
Date Received: Nov-12-03 10:58

Analytical Method: **TAL Metals by EPA 6020**
% Moist: 7.9
Prep Method: 3051
Date Anal: Nov-14-03 20:33
Analyst: IRF
Date Prep: Nov-14-03 10:30
Tech: IRF
Anal seq: 644888
Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Aluminum	7429-90-5	3150	0.500	1.09	0.2250	0.489	mg/kg		2
Antimony	7440-36-0	0.434	0.250	0.543	0.1600	0.347	mg/kg	J	2
Arsenic	7440-38-2	2.96	0.250	0.543	0.0450	0.098	mg/kg		2
Barium	7440-39-3	46.7	0.500	1.09	0.1100	0.239	mg/kg		2
Beryllium	7440-41-7	0.358	0.050	0.109	0.0250	0.054	mg/kg		2
Cadmium	7440-43-9	0.586	0.050	0.109	0.0350	0.076	mg/kg		2
Calcium	7440-70-2	853	25.0	54.3	13.80	29.9	mg/kg		2
Chromium	7440-47-3	5.86	0.500	1.09	0.0450	0.098	mg/kg	B	2
Cobalt	7440-48-4	7.08	0.500	1.09	0.1000	0.217	mg/kg		2
Copper	7440-50-8	9.62	0.500	1.09	0.1050	0.228	mg/kg		2
Iron	7439-89-6	4520	10.0	21.7	2.600	5.65	mg/kg		2
Lead	7439-92-1	52.6	0.100	0.217	0.1000	0.217	mg/kg		2
Magnesium	7439-95-4	408	10.0	21.7	7.500	16.3	mg/kg		2
Manganese	7439-96-5	340	0.500	1.09	0.0750	0.163	mg/kg		2
Mercury	7439-97-6	0.0217	0.0200	0.0434	0.0100	0.0217	mg/kg	J	2
Nickel	7440-02-0	3.54	0.500	1.09	0.0550	0.119	mg/kg		2
Potassium	2133-26-8	1030	10.0	21.7	8.500	18.5	mg/kg		2
Selenium	7782-49-2	U	0.500	1.09	0.2500	0.543	mg/kg	U	2
Silver	7440-22-4	U	0.200	0.434	0.2000	0.434	mg/kg	U	2
Sodium	7440-23-5	77.1	25.0	54.3	12.50	27.1	mg/kg		2
Thallium	7440-28-0	U	0.500	1.09	0.1600	0.347	mg/kg	U	2
Vanadium	7440-62-2	15.2	0.500	1.09	0.1000	0.217	mg/kg		2
Zinc	7440-66-6	160	0.500	1.09	0.2000	0.434	mg/kg		2

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Nov-12-03 16:46
Analyst: MAP
Date Prep:
Tech: MAP
Anal seq: 644668
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		7.90					%		

Sample Id: **B-25A** Matrix: SOIL
Lab Sample Id: **238435-008** Date Collected: Nov-11-03 12:30 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 13.84 Prep Method: 3051
Date Anal: Nov-18-03 19:52 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Antimony	7440-36-0	1.43	0.250	0.580	0.1600	0.371	mg/kg		2
Lead	7439-92-1	275	0.100	0.232	0.1000	0.232	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 16:48 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		13.8					%		

Sample Id: **B-25B** Matrix: SOIL
Lab Sample Id: **238435-009** Date Collected: Nov-11-03 12:40 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 12.16 Prep Method: 3051
Date Anal: Nov-18-03 19:57 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Antimony	7440-36-0	4.33	0.250	0.569	0.1600	0.364	mg/kg		2
Lead	7439-92-1	670	0.100	0.228	0.1000	0.228	mg/kg		2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 16:50 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		12.2					%		

Sample Id: **B-25BD**	Matrix: SOIL		
Lab Sample Id: **238435-010**	Date Collected: Nov-11-03 12:40	Date Received: Nov-12-03 10:58	

Analytical Method: **ICP-MS Metals by EPA 6020**		% Moist: 12.74	Prep Method: 3051
Date Anal: Nov-18-03 20:02	Analyst: IRF	Date Prep: Nov-14-03 10:30	Tech: IRF
Anal seq: 644888		Prep seq: 463983	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	1.99	0.250	0.573	0.1600	0.367	mg/kg		2
Lead	7439-92-1	222	0.100	0.229	0.1000	0.229	mg/kg		2

Analytical Method: **Percent Moisture**		% Moist:	Prep Method:
Date Anal: Nov-12-03 16:52	Analyst: MAP	Date Prep:	Tech: MAP
Anal seq: 644668		Prep seq:	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		12.7					%		

Sample Id: **B-25C**	Matrix: SOIL		
Lab Sample Id: **238435-011**	Date Collected: Nov-11-03 13:00	Date Received: Nov-12-03 10:58	

Analytical Method: **ICP-MS Metals by EPA 6020**		% Moist: 14.52	Prep Method: 3051
Date Anal: Nov-18-03 20:07	Analyst: IRF	Date Prep: Nov-14-03 10:30	Tech: IRF
Anal seq: 644888		Prep seq: 463983	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	U	0.250	0.585	0.1600	0.374	mg/kg	U	2
Lead	7439-92-1	17.0	0.100	0.234	0.1000	0.234	mg/kg		2

Analytical Method: **Percent Moisture**		% Moist:	Prep Method:
Date Anal: Nov-12-03 16:54	Analyst: MAP	Date Prep:	Tech: MAP
Anal seq: 644668		Prep seq:	

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.5					%		

Sample Id: **B-7A** Matrix: SOIL
Lab Sample Id: **238435-012** Date Collected: Nov-11-03 13:15 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 8.74 Prep Method: 3051
Date Anal: Nov-18-03 20:13 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Silver	7440-22-4	U	0.200	0.438	0.2000	0.438	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 16:56 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		8.74					%		

Sample Id: **B-7B** Matrix: SOIL
Lab Sample Id: **238435-013** Date Collected: Nov-11-03 13:25 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 11.4 Prep Method: 3051
Date Anal: Nov-18-03 20:18 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Silver	7440-22-4	U	0.200	0.451	0.2000	0.451	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 16:58 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		11.4					%		

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id: **B-7C** Matrix: SOIL
Lab Sample Id: **238435-014** Date Collected: Nov-11-03 13:40 Date Received: Nov-12-03 10:58

Analytical Method: **ICP-MS Metals by EPA 6020** % Moist: 14.13 Prep Method: 3051
Date Anal: Nov-18-03 20:23 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Silver	7440-22-4	U	0.200	0.466	0.2000	0.466	mg/kg	U	2

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 17:00 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.1					%		

Sample Id: **B-1A** Matrix: SOIL
Lab Sample Id: **238435-015** Date Collected: Nov-11-03 14:00 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 18.46 Prep Method: 3051
Date Anal: Nov-18-03 20:28 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	30.5	0.100	1.23	0.1000	1.23	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 17:02 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		18.5					%		

Sample Id: **B-1B** Matrix: SOIL

Lab Sample Id: **238435-016** Date Collected: Nov-11-03 14:15 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 20.48 Prep Method: 3051

Date Anal: Nov-18-03 20:34 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	28.0	0.100	1.26	0.1000	1.26	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 17:04 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		20.5					%		

Sample Id: **B-1C** Matrix: SOIL

Lab Sample Id: **238435-017** Date Collected: Nov-11-03 14:30 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 15.22 Prep Method: 3051

Date Anal: Nov-18-03 20:49 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	60.8	0.100	1.18	0.1000	1.18	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 17:06 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		15.2					%		

Sample Id: **B-1D** Matrix: SOIL
Lab Sample Id: **238435-018** Date Collected: Nov-11-03 14:40 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 16.65 Prep Method: 3051
Date Anal: Nov-18-03 20:55 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	13.3	0.100	1.20	0.1000	1.20	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 17:08 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		16.7					%		

Sample Id: **B-24A** Matrix: SOIL
Lab Sample Id: **238435-019** Date Collected: Nov-11-03 15:15 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 12.73 Prep Method: 3051
Date Anal: Nov-18-03 21:00 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644888 Prep seq: 463983

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	67.0	0.100	1.15	0.1000	1.15	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 17:10 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644668 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		12.7					%		

Sample Id: **B-24B** Matrix: SOIL

Lab Sample Id: **238435-020** Date Collected: Nov-11-03 15:30 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 11.22 Prep Method: 3051

Date Anal: Nov-18-03 21:05 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644888 Prep seq: 463983

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	29.1	0.100	1.13	0.1000	1.13	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 17:12 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644668 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		11.2					%		

Sample Id: **B-24C** Matrix: SOIL

Lab Sample Id: **238435-021** Date Collected: Nov-11-03 15:45 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 12.34 Prep Method: 3051

Date Anal: Nov-15-03 00:14 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF

Anal seq: 644783 Prep seq: 463984

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	7.30	0.100	1.14	0.1000	1.14	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Nov-12-03 17:16 Analyst: MAP Date Prep: Tech: MAP

Anal seq: 644670 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		12.3					%		

Sample Id: **B-21A** Matrix: SOIL
Lab Sample Id: **238435-022** Date Collected: Nov-11-03 16:15 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 13.98 Prep Method: 3051
Date Anal: Nov-15-03 00:20 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644783 Prep seq: 463984

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	29.7	0.100	1.16	0.1000	1.16	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 17:20 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644670 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		14.0					%		

Sample Id: **B-16A** Matrix: SOIL
Lab Sample Id: **238435-023** Date Collected: Nov-11-03 16:40 Date Received: Nov-12-03 10:58

Analytical Method: **Total Pb by EPA 6020** % Moist: 16.91 Prep Method: 3051
Date Anal: Nov-15-03 00:26 Analyst: IRF Date Prep: Nov-14-03 10:30 Tech: IRF
Anal seq: 644783 Prep seq: 463984

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	6.50	0.100	1.20	0.1000	1.20	mg/kg		10

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Nov-12-03 17:22 Analyst: MAP Date Prep: Tech: MAP
Anal seq: 644670 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		16.9					%		

Certificate of Analytical Results 238435

Corrigan Consulting, Inc., Houston , TX

El Campo SAFR

Sample Id:	**RS111103**	Matrix: WATER	
Lab Sample Id:	**238435-024**	Date Collected: Nov-11-03 16:50	Date Received: Nov-12-03 10:58

Analytical Method:	**TAL Metals by EPA 6020**		% Moist:	Prep Method: 3015
Date Anal:	Nov-14-03 17:34	Analyst: IRF	Date Prep: Nov-14-03 09:00	Tech: IRF
Anal seq:	644759		Prep seq: 463981	

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Aluminum	7429-90-5	U	0.010	0.020	0.0045	0.009	mg/L	U	2
Antimony	7440-36-0	0.010	0.003	0.006	0.0032	0.006	mg/L		2
Arsenic	7440-38-2	U	0.002	0.004	0.0008	0.002	mg/L	U	2
Barium	7440-39-3	U	0.010	0.020	0.0022	0.004	mg/L	U	2
Beryllium	7440-41-7	U	0.001	0.002	0.0006	0.001	mg/L	U	2
Cadmium	7440-43-9	U	0.001	0.002	0.0006	0.001	mg/L	U	2
Calcium	7440-70-2	U	0.500	1.00	0.2500	0.500	mg/L	U	2
Chromium	7440-47-3	U	0.010	0.020	0.0010	0.002	mg/L	U	2
Cobalt	7440-48-4	U	0.010	0.020	0.0020	0.004	mg/L	U	2
Copper	7440-50-8	U	0.010	0.020	0.0020	0.004	mg/L	U	2
Iron	7439-89-6	U	0.250	0.500	0.2000	0.400	mg/L	U	2
Lead	7439-92-1	U	0.002	0.004	0.0017	0.003	mg/L	U	2
Magnesium	7439-95-4	U	0.500	1.00	0.1500	0.300	mg/L	U	2
Manganese	7439-96-5	U	0.010	0.020	0.0015	0.003	mg/L	U	2
Mercury	7439-97-6	U	0.0004	0.0008	0.0002	0.0004	mg/L	U	2
Nickel	7440-02-0	U	0.010	0.020	0.0013	0.003	mg/L	U	2
Potassium	2133-26-8	U	0.500	1.00	0.1700	0.340	mg/L	U	2
Selenium	7782-49-2	U	0.010	0.020	0.0040	0.008	mg/L	U	2
Silver	7440-22-4	U	0.010	0.020	0.0024	0.005	mg/L	U	2
Sodium	7440-23-5	U	0.500	1.00	0.2500	0.500	mg/L	U	2
Thallium	7440-28-0	U	0.001	0.002	0.0009	0.002	mg/L	U	2
Vanadium	7440-62-2	U	0.010	0.020	0.0020	0.004	mg/L	U	2
Zinc	7440-66-6	U	0.010	0.020	0.0050	0.010	mg/L	U	2

Analytical Report 243281

for

Corrigan Consulting, Inc.

Project Manager: Mark Holmes

AGD El Campo SAFR

03-134

16-JUN-04

XENCO Laboratories

nelac accredited

11381 Meadowglen, Suite L Houston, TX 77082 Ph:(281) 589-0692 Fax:(281) 589-0695

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America

Attachment A Laboratory Data Package Cover Page

Project Name: **AGD El Campo SAFR** Laboratory Number: **243281**

This Data package consists of :

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

☑ R1 Field chain-of-custody documentation;

☑ R2 Sample identification cross-reference;

☑ R3 Test reports (analytical data sheets) for each environmental sample that includes:
- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) cleanup methods, and
- e) if required for the project, tentatively identified compounds (TICs).

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

☑ R5 Test reports/summary forms for blank samples;

☑ 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.

☑ 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

☑ 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.

☑ R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

☑ R10 Other problems or anomalies.

☑ Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review check list.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Brent Barron		**Laboratory Manager**	**06/16/04**
Name (Printed)	Signature	Official Title (printed)	Date

A1

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

Laboratory Name:	XENCO Laboratories	Report Date :	06/16/04
Project Name:	AGD El Campo SAFR	Laboratory Job Number :	243281
Reviewer Name:	Brent Barron	Batch Number(s) :	651543, 651480, 651445, 651429, 651204, 651203

#[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 subject to appropriate checks?	X				
		Were all analyte identifications subject to appropriate checks?	X				
		Were sample quantitation 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				
		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 data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQL ?	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			2
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		Are all known problems/anomalies/special conditions noted in the LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL to minimize the matrix interference effects on the sample results?	X				

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

Laboratory Name:	XENCO Laboratories	Report Date :	06/16/04
Project Name:	AGD El Campo SAFR	Laboratory Job Number :	243281
Reviewer Name:	Brent Barron	Batch Number(s) :	651543, 651480, 651445, 651429, 651204, 651203

#[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**					
		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 section 1 Appendix A glossary, and section 5.12 or ISO/IEC 17025 section)**					
		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 concluded consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods (NELAC Chap 5 or ISO/IEC 17025 Section 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	Report Date: 06/16/04
Project Name: AGD El Campo SAFR	Laboratory Job Number: 243281
Reviewer Name: Brent Barron	Batch Number(s) : 651543, 651480, 651445, 651429, 651204, 651203

ER# [1]	DESCRIPTION
1	SW6020 Batch 651480, Antimony recovered below QC limits in the Matrix Spike and Duplicate. Lead recovered above QC limits in the Matrix Spike and Duplicate. Samples affected are: 243281-001, -002, -003, -004, -005, -006, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022. The Laboratory Control Sample for Antimony, Lead is within laboratory Control Limits Batch 651543, Lead recovered above QC limits in the Matrix Spike and Duplicate. Samples affected are: 243281-025, -026, -027, -028, -029. The Laboratory Control Sample for Lead is within laboratory Control Limits Batch 651429, Silver recovered below QC limits in the Matrix Spike and Duplicate. Samples affected are: 243281-007, -008. The Laboratory Control Sample for Silver is within laboratory Control Limits
2	Where the RL is lower than the lowest point of the calibration curve, a reporting limit standard is used.

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

XENCO Laboratories

nelac accredited

16-JUN-04

Project Manager: **Mark Holmes**
Corrigan Consulting, Inc.
12000 Aerospace Ave. Suite 450
Houston , TX 77034

Reference: XENCO Report No: **243281**
AGD El Campo SAFR
Project Address: 801 Armory Rd., El Campo, TX

Mark Holmes:

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 Chain of Custody Numbered 243281. All results being reported under this Chain of Custody apply to the samples analyzed and properly identified with a Laboratory ID number.

The results for the quality control samples were reviewed. All parameters for data reduction and validation were reviewed. Estimation of Data uncertainity for this report is found in the quality control section of this report unless otherwise noted. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, completeness or properly flagged. Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards.

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 COC No. 243281 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,

Brent Barron
Laboratory 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 - San Antonio - Austin - Tampa - Miami - Latin America

Sample Cross Reference 243281

Corrigan Consulting, Inc., Houston , TX

AGD El Campo SAFR

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
B-28	S	Jun-02-04 10:25	0 - 0.5 ft	243281-001
B-26	S	Jun-02-04 10:55	0 - 0.5 ft	243281-002
B-27	S	Jun-02-04 10:40	0 - 0.5 ft	243281-003
B-35	S	Jun-02-04 13:40	0 - 0.5 ft	243281-004
B-34	S	Jun-02-04 13:30	0 - 0.5 ft	243281-005
B-33	S	Jun-02-04 13:20	0 - 0.5 ft	243281-006
SW-1	W	Jun-02-04 11:30	ft	243281-007
SW-1D	W	Jun-02-04 11:30	ft	243281-008
SW-1S	S	Jun-02-04 11:30	0 - 0.5 ft	243281-009
SW1SD	S	Jun-02-04 11:30	0 - 0.5 ft	243281-010
B-29	S	Jun-02-04 11:55	0 - 0.5 ft	243281-011
P-8	S	Jun-02-04 09:10	0 - 0.5 ft	243281-012
P2-1B	S	Jun-02-04 10:00	1.5 - 2 ft	243281-013
B-32	S	Jun-02-04 12:40	0 - 0.5 ft	243281-014
B-31	S	Jun-02-04 12:30	0 - 0.5 ft	243281-015
B-30	S	Jun-02-04 12:15	0 - 0.5 ft	243281-016
B-24 A1	S	Jun-02-04 11:50	1.5 - 2 ft	243281-017
P-2-6	S	Jun-02-04 10:10	0 - 0.5 ft	243281-018
P-9	S	Jun-02-04 09:25	0 - 0.5 ft	243281-019
P2-4	S	Jun-02-04 09:45	0 - 0.5 ft	243281-020
B-25A-2	S	Jun-02-04 12:00	1.5 - 2 ft	243281-021
B-25D	S	Jun-02-04 12:30	3 - 3.5 ft	243281-022
B-25 D Dup	S	Jun-02-04 12:30	3 - 3.5 ft	243281-023
P2-5	S	Jun-02-04 10:00	0 - 0.5 ft	243281-024
P2-7	S	Jun-02-04 10:20	0 - 0.5 ft	243281-025
B-24-1	S	Jun-02-04 11:45	1.5 - 2 ft	243281-026
B-25C1	S	Jun-02-04 11:30	1.5 - 2 ft	243281-027
P-7B	S	Jun-02-04 09:40	1.5 - 2 ft	243281-028
B-24B1	S	Jun-02-04 11:55	1.5 - 2 ft	243281-029

Certificate of Analytical Results 243281

Corrigan Consulting, Inc., Houston , TX

AGD El Campo SAFR

Sample Id:	**B-28**	Matrix:	SOIL	Sample Depth:	0 - 0.5 ft
Lab Sample Id:	**243281-001**	Date Collected:	Jun-02-04 10:25	Date Received:	Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 13.53 Prep Method: 3050B

Date Anal: Jun-10-04 15:51 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT

Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	16.9	0.200	0.231	0.2000	0.231	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Jun-04-04 16:26 Analyst: JUJ Date Prep: Tech: JUJ

Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		13.5					%		

Sample Id:	**B-26**	Matrix:	SOIL	Sample Depth:	0 - 0.5 ft
Lab Sample Id:	**243281-002**	Date Collected:	Jun-02-04 10:55	Date Received:	Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 12.8 Prep Method: 3050B

Date Anal: Jun-10-04 15:55 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT

Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	22.4	0.200	0.229	0.2000	0.229	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Jun-04-04 16:30 Analyst: JUJ Date Prep: Tech: JUJ

Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		12.8					%		

Sample Id: **B-27** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-003** Date Collected: Jun-02-04 10:40 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 11.98 Prep Method: 3050B
Date Anal: Jun-10-04 15:59 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	11.9	0.200	0.227	0.2000	0.227	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:32 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		12					%		

Sample Id: **B-35** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-004** Date Collected: Jun-02-04 13:40 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 16.57 Prep Method: 3050B
Date Anal: Jun-10-04 16:03 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	11.4	0.200	0.240	0.2000	0.240	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:34 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		16.6					%		

XENCO Laboratories

Certificate of Analytical Results 243281

nelac accredited

Corrigan Consulting, Inc., Houston , TX

AGD El Campo SAFR

Sample Id: **B-34**
Lab Sample Id: **243281-005**
Matrix: SOIL
Date Collected: Jun-02-04 13:30
Sample Depth: 0 - 0.5 ft
Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**
% Moist: 18.09
Prep Method: 3050B
Date Anal: Jun-10-04 16:14
Analyst: HAT
Date Prep: Jun-10-04 10:30
Tech: HAT
Anal seq: 651480
Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	5.54	0.200	0.244	0.2000	0.244	mg/kg		1

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Jun-04-04 16:36
Analyst: JUJ
Date Prep:
Tech: JUJ
Anal seq: 651203
Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		18.1					%		

Sample Id: **B-33**
Lab Sample Id: **243281-006**
Matrix: SOIL
Date Collected: Jun-02-04 13:20
Sample Depth: 0 - 0.5 ft
Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**
% Moist: 12.01
Prep Method: 3050B
Date Anal: Jun-10-04 16:18
Analyst: HAT
Date Prep: Jun-10-04 10:30
Tech: HAT
Anal seq: 651480
Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	13.1	0.200	0.227	0.2000	0.227	mg/kg		1

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Jun-04-04 16:38
Analyst: JUJ
Date Prep:
Tech: JUJ
Anal seq: 651203
Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		12.0					%		

Sample Id: **SW-1** Matrix: WATER Sample Depth:
Lab Sample Id: **243281-007** Date Collected: Jun-02-04 11:30 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: Prep Method: 3010A
Date Anal: Jun-10-04 13:32 Analyst: HAT Date Prep: Jun-10-04 09:30 Tech: HAT
Anal seq: 651429 Prep seq: 468185

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	U	0.003	0.003	0.0010	0.001	mg/L	U	1
Lead	7439-92-1	0.013	0.002	0.002	0.0017	0.002	mg/L		1
Silver	7440-22-4	U	0.010	0.010	0.0024	0.002	mg/L	U	1

Sample Id: **SW-1D** Matrix: WATER Sample Depth:
Lab Sample Id: **243281-008** Date Collected: Jun-02-04 11:30 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: Prep Method: 3010A
Date Anal: Jun-10-04 13:36 Analyst: HAT Date Prep: Jun-10-04 09:30 Tech: HAT
Anal seq: 651429 Prep seq: 468185

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	U	0.003	0.003	0.0010	0.001	mg/L	U	1
Lead	7439-92-1	0.013	0.002	0.002	0.0017	0.002	mg/L		1
Silver	7440-22-4	U	0.010	0.010	0.0024	0.002	mg/L	U	1

Sample Id: **SW-1S** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-009** Date Collected: Jun-02-04 11:30 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 32.62 Prep Method: 3050B
Date Anal: Jun-10-04 15:16 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	U	0.500	0.742	0.3200	0.475	mg/kg	U	1
Lead	7439-92-1	69.8	0.200	0.297	0.2000	0.297	mg/kg		1
Silver	7440-22-4	U	0.480	0.712	0.4000	0.594	mg/kg	U	1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:40 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		32.6					%		

Certificate of Analytical Results 243281

Corrigan Consulting, Inc., Houston , TX

AGD El Campo SAFR

Sample Id: **SW1SD** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-010** Date Collected: Jun-02-04 11:30 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 42.97 Prep Method: 3050B
Date Anal: Jun-10-04 15:47 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Antimony	7440-36-0	U	0.500	0.877	0.3200	0.561	mg/kg	U	1
Lead	7439-92-1	67.2	0.200	0.351	0.2000	0.351	mg/kg		1
Silver	7440-22-4	U	0.480	0.842	0.4000	0.701	mg/kg	U	1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:42 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		43					%		

Sample Id: **B-29** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-011** Date Collected: Jun-02-04 11:55 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 9.23 Prep Method: 3050B
Date Anal: Jun-10-04 16:22 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	45.4	0.200	0.220	0.2000	0.220	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:44 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		9.23					%		

Sample Id: **P-8** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-012** Date Collected: Jun-02-04 09:10 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 8.46 Prep Method: 3050B
Date Anal: Jun-10-04 16:26 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	18.0	0.200	0.218	0.2000	0.218	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:48 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		8.46					%		

Sample Id: **P2-1B** Matrix: SOIL Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-013** Date Collected: Jun-02-04 10:00 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 15.52 Prep Method: 3050B
Date Anal: Jun-10-04 16:30 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	9.35	0.200	0.237	0.2000	0.237	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:50 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		15.5					%		

Sample Id:	**B-32**	Matrix:	SOIL	Sample Depth:	0 - 0.5 ft
Lab Sample Id:	**243281-014**	Date Collected:	Jun-02-04 12:40	Date Received:	Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 6.51 Prep Method: 3050B

Date Anal: Jun-10-04 16:34 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT

Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	9.71	0.200	0.214	0.2000	0.214	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Jun-04-04 16:52 Analyst: JUJ Date Prep: Tech: JUJ

Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		6.51					%		

Sample Id:	**B-31**	Matrix:	SOIL	Sample Depth:	0 - 0.5 ft
Lab Sample Id:	**243281-015**	Date Collected:	Jun-02-04 12:30	Date Received:	Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 15.74 Prep Method: 3050B

Date Anal: Jun-10-04 16:38 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT

Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	11.7	0.200	0.237	0.2000	0.237	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:

Date Anal: Jun-04-04 16:54 Analyst: JUJ Date Prep: Tech: JUJ

Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		15.7					%		

Sample Id: **B-30**
Matrix: SOIL
Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-016**
Date Collected: Jun-02-04 12:15
Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**
% Moist: 4.91
Prep Method: 3050B
Date Anal: Jun-10-04 16:42
Analyst: HAT
Date Prep: Jun-10-04 10:30
Tech: HAT
Anal seq: 651480
Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	14.7	0.200	0.210	0.2000	0.210	mg/kg		1

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Jun-04-04 16:58
Analyst: JUJ
Date Prep:
Tech: JUJ
Anal seq: 651203
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		4.91					%		

Sample Id: **B-24 A1**
Matrix: SOIL
Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-017**
Date Collected: Jun-02-04 11:50
Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**
% Moist: 14.75
Prep Method: 3050B
Date Anal: Jun-10-04 16:46
Analyst: HAT
Date Prep: Jun-10-04 10:30
Tech: HAT
Anal seq: 651480
Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	5.21	0.200	0.235	0.2000	0.235	mg/kg		1

Analytical Method: **Percent Moisture**
% Moist:
Prep Method:
Date Anal: Jun-04-04 17:00
Analyst: JUJ
Date Prep:
Tech: JUJ
Anal seq: 651203
Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.7					%		

Sample Id: **P-2-6** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-018** Date Collected: Jun-02-04 10:10 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 3.83 Prep Method: 3050B
Date Anal: Jun-10-04 16:50 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	14.9	0.200	0.208	0.2000	0.208	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 17:02 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		3.83					%		

Sample Id: **P-9** Matrix: SOIL Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-019** Date Collected: Jun-02-04 09:25 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 7.16 Prep Method: 3050B
Date Anal: Jun-10-04 17:02 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	5.05	0.200	0.215	0.2000	0.215	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 17:04 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		7.16					%		

Sample Id: **P2-4**   Matrix: SOIL   Sample Depth: 0 - 0.5 ft
Lab Sample Id: **243281-020**   Date Collected: Jun-02-04 09:45   Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**   % Moist: 4.66   Prep Method: 3050B
Date Anal: Jun-10-04 17:05   Analyst: HAT   Date Prep: Jun-10-04 10:30   Tech: HAT
Anal seq: 651480   Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	8.01	0.200	0.210	0.2000	0.210	mg/kg		1

Analytical Method: **Percent Moisture**   % Moist: Prep Method:
Date Anal: Jun-04-04 17:06   Analyst: JUJ   Date Prep: Tech: JUJ
Anal seq: 651203   Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		4.66					%		

Sample Id: **B-25A-2**   Matrix: SOIL   Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-021**   Date Collected: Jun-02-04 12:00   Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**   % Moist: 15.17   Prep Method: 3050B
Date Anal: Jun-10-04 17:09   Analyst: HAT   Date Prep: Jun-10-04 10:30   Tech: HAT
Anal seq: 651480   Prep seq: 468218

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	20.9	0.200	0.236	0.2000	0.236	mg/kg		1

Analytical Method: **Percent Moisture**   % Moist: Prep Method:
Date Anal: Jun-04-04 17:08   Analyst: JUJ   Date Prep: Tech: JUJ
Anal seq: 651203   Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		15.2					%		

Certificate of Analytical Results 243281

Corrigan Consulting, Inc., Houston , TX

AGD El Campo SAFR

Sample Id: **B-25D** Matrix: SOIL Sample Depth: 3 - 3.5 ft
Lab Sample Id: **243281-022** Date Collected: Jun-02-04 12:30 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 17.04 Prep Method: 3050B
Date Anal: Jun-10-04 17:13 Analyst: HAT Date Prep: Jun-10-04 10:30 Tech: HAT
Anal seq: 651480 Prep seq: 468218

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	11.6	0.200	0.241	0.2000	0.241	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 17:10 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651203 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		17					%		

Sample Id: **B-25 D Dup** Matrix: SOIL Sample Depth: 3 - 3.5 ft
Lab Sample Id: **243281-023** Date Collected: Jun-02-04 12:30 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 16.4 Prep Method: 3050B
Date Anal: Jun-10-04 18:13 Analyst: HAT Date Prep: Jun-10-04 11:30 Tech: HAT
Anal seq: 651445 Prep seq: 468192

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Lead	7439-92-1	9.25	0.200	0.239	0.2000	0.239	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:10 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651204 Prep seq:

Parameter	**CAS Number**	**Result**	**MQL UnAdj**	**MQL Adj**	**MDL UnAdj**	**SQL**	**Units**	**Flag**	**Dil**
Percent Moisture		16.4					%		

Sample Id:	**P2-5**	Matrix:	SOIL	Sample Depth:	0 - 0.5 ft
Lab Sample Id:	**243281-024**	Date Collected:	Jun-02-04 10:00	Date Received:	Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 5.36 Prep Method: 3050B
Date Anal: Jun-10-04 18:17 Analyst: HAT Date Prep: Jun-10-04 11:30 Tech: HAT
Anal seq: 651445 Prep seq: 468192

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	9.99	0.200	0.211	0.2000	0.211	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:14 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651204 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		5.36					%		

Sample Id:	**P2-7**	Matrix:	SOIL	Sample Depth:	0 - 0.5 ft
Lab Sample Id:	**243281-025**	Date Collected:	Jun-02-04 10:20	Date Received:	Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 4.82 Prep Method: 3050B
Date Anal: Jun-15-04 11:37 Analyst: HAT Date Prep: Jun-15-04 10:00 Tech: HAT
Anal seq: 651543 Prep seq: 468261

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	18.5	0.200	0.210	0.2000	0.210	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:16 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651204 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		4.82					%		

Sample Id: **B-24-1**   Matrix: SOIL   Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-026**   Date Collected: Jun-02-04 11:45   Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**   % Moist: 22.06   Prep Method: 3050B
Date Anal: Jun-15-04 12:17   Analyst: HAT   Date Prep: Jun-15-04 10:00   Tech: HAT
Anal seq: 651543   Prep seq: 468261

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	54.8	0.200	0.257	0.2000	0.257	mg/kg		1

Analytical Method: **Percent Moisture**   % Moist: Prep Method:
Date Anal: Jun-04-04 16:18   Analyst: JUJ   Date Prep: Tech: JUJ
Anal seq: 651204   Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		22.1					%		

Sample Id: **B-25C1**   Matrix: SOIL   Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-027**   Date Collected: Jun-02-04 11:30   Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A**   % Moist: 17.68   Prep Method: 3050B
Date Anal: Jun-15-04 12:21   Analyst: HAT   Date Prep: Jun-15-04 10:00   Tech: HAT
Anal seq: 651543   Prep seq: 468261

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	15.5	0.200	0.243	0.2000	0.243	mg/kg		1

Analytical Method: **Percent Moisture**   % Moist: Prep Method:
Date Anal: Jun-04-04 16:20   Analyst: JUJ   Date Prep: Tech: JUJ
Anal seq: 651204   Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		17.7					%		

Sample Id: **P-7B** Matrix: SOIL Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-028** Date Collected: Jun-02-04 09:40 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 14.08 Prep Method: 3050B
Date Anal: Jun-15-04 12:25 Analyst: HAT Date Prep: Jun-15-04 10:00 Tech: HAT
Anal seq: 651543 Prep seq: 468261

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	13.8	0.200	0.233	0.2000	0.233	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:22 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651204 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		14.1					%		

Sample Id: **B-24B1** Matrix: SOIL Sample Depth: 1.5 - 2 ft
Lab Sample Id: **243281-029** Date Collected: Jun-02-04 11:55 Date Received: Jun-03-04 15:00

Analytical Method: **Total Metals by SW6020A** % Moist: 21.46 Prep Method: 3050B
Date Anal: Jun-15-04 12:29 Analyst: HAT Date Prep: Jun-15-04 10:00 Tech: HAT
Anal seq: 651543 Prep seq: 468261

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Lead	7439-92-1	20.1	0.200	0.255	0.2000	0.255	mg/kg		1

Analytical Method: **Percent Moisture** % Moist: Prep Method:
Date Anal: Jun-04-04 16:24 Analyst: JUJ Date Prep: Tech: JUJ
Anal seq: 651204 Prep seq:

Parameter	CAS Number	Result	MQL UnAdj	MQL Adj	MDL UnAdj	SQL	Units	Flag	Dil
Percent Moisture		21.5					%		

APPENDIX 11

Miscellaneous Assessment

Not Applicable

APPENDIX 12

Waste Characterization and Disposition Documentation

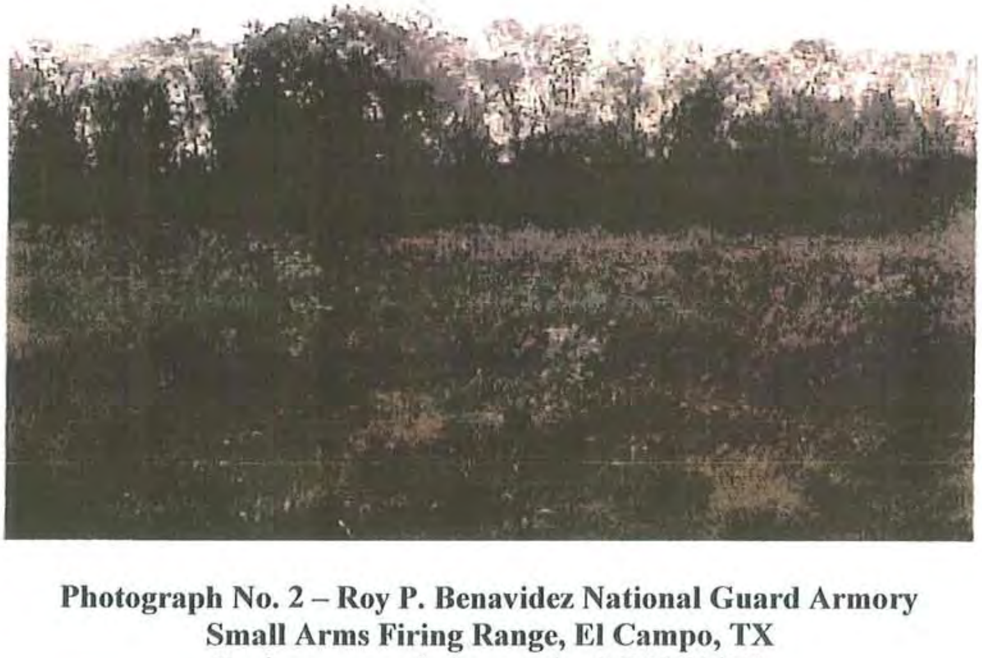
Not Applicable

Soil cuttings from deeper than six inches below ground surface were placed back into boring.

APPENDIX 13

Photographic Documentation

Photograph No. 1 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Backstop area, facing south. (NMS 09/03)



Photograph No. 2 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Backstop area, facing south. (NMS 09/03)

Photograph No. 3 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Backstop area, facing south. (NMS 09/03)

Photograph No. 4 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Backstop area, facing south. (NMS 09/03)

Photograph No. 5 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Former firing platform area, facing north. (NMS 09/03)

Photograph No. 6 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Collecting surface soil sample at former firing platform. (NMS 09/03)

Photograph No. 7 – Roy P. Benavidez National Guard Armory
Small Arms Firing Range, El Campo, TX
Collecting surface soil sample at former firing platform. (NMS 09/03)

APPENDIX 14

Standard Operating Procedures

CORRIGAN CONSULTING, INC.

STANDARD OPERATING PROCEDURE
Field Documentation

SOP Number: No. 2-01.1

Dated: June 29, 2004

Approved By:

Gary L. Kratochvil, PG
Senior Associate

Note: Refer to the electronic copy of SOP. This version is uncontrolled when printed.

TABLE OF CONTENTS

1.0 Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for field documentation to ensure that all field assessments and investigations are consistently documented in order to comply with applicable environmental regulatory requirements and industry standards and in order to produce legally defensible data for Corrigan Consulting, Inc.'s (CCI's) clients.

The primary objectives of a properly planned and implemented field documentation program include:

- Produce an accurate and comprehensive record of field activities; and
- Assure a uniform standard for field documentation.

2.0 Applicability

This SOP applies to all field assessments and investigations conducted by CCI.

3.0 Responsibilities

CCI's Senior Management is responsible for periodically reviewing and revising this SOP for compliance with current environmental regulatory requirements and industry standards. All technical professionals at CCI are responsible for implementing these procedures for all environmental assessments and investigations.

4.0 Procedures

All CCI technical staff will prepare and maintain field documentation that will, at a minimum, meet the criteria and contain the information listed below.

4.1 Field Notebook

The Field Notebook is required for all field projects and must be bound and pages must be sequentially numbered. All entries will be made in permanent (non-erasable) ink.

The user will print their name, business address, and business phone number on the outside cover of the Field Notebook and will affix a business card on the inside cover. If the notebook is dedicated to a single client or single project, that information will be included on page 1 of the notebook.

At a minimum, the following items will be included in the Field Notebook:

4.1.1	List the client, project, project no., date, and page number at the top of the first page for each field deployment. Include the project name, date, and number and the page number at the top of all subsequent pages.
4.1.2	List the names of all CCI team members and subcontractors who are present for that day's activities at the site.
4.1.3	Enter the time and place of departure (CCI Office, home, motel, etc.).
4.1.4	Enter the time and place of arrival at site location.
4.1.5	Describe the purpose of field work and state that "All work was conducted in accordance with Workplan (or QAPP) dated XXX and CCI Field SOPs except as noted for any variances below".
4.1.6	Describe weather conditions that may affect field tasks or the integrity of samples, including temperature, wind direction and approximate speed, and any rainfall.
4.1.7	List the names and organization of all non-CCI personnel who will work at or visit the site or with whom contact is made regarding the site and a summary of information requested and/or provided. Include phone numbers for key contacts.
4.1.8	Provide a chronological journal of all significant events stating the time, location, and description of activities. Significant events may include conducting tailgate safety meetings, site reconnaissance, receptor survey, drilling, sample collection, and interruptions in activities (e.g. lunch breaks).
4.1.9	Include the following specific information regarding field analytical/screening equipment: • Field analytical/screening equipment used; • Date and time of calibration; • (if calibration was done by a vendor prior to shipment to the field

	site, state "pre-calibrated by ______ and list the method and results; • Document instrument calibration using CCI Field Form 2-15 (Field Equipment Calibration Log) and state "Refer to Calibration Log". Alternatively, if a log is not used, record equivalent information into the Field Notebook.
4.1.10	Include the following specific information regarding individual field activities: • Station identification and description for sampling location or recognized environmental concern); • Sample identity number (if different); • Method of drilling, sample collection, well development, etc; • Start and End time of activity (sampling, well development, etc.) at each location; • Record additional information, as required using CCI Field Form 2-04 (Soil Boring Log), 2-06 (Groundwater Sampling Log), 2-13 (Well Development Log), 2-18 Wetlands Data Sheet, and/or Chain of Custody, as appropriate. State "Refer to XXX Log and COC." If a log is not used, record equivalent information into the Field Notebook.
4.1.11	Provide site sketches or maps in the Field Notebook, or prepare on a separate sheet of paper. Maps/sketches must include identification of key features , north arrow, approximate scale, and explanation of symbols. Label key features and record exact measurements to permanent structures or critical features so that these items can be relocated at a future date. Illustrate and label any CCI action points (photography, sampling, drilling, etc).
4.1.12	List all field forms that were completed for each day's field activities.
4.1.13	Document any change in scope or variance from the workplan, QAPP, or Field SOPs explaining the reason for the change or variance and the approval authority (name, position, phone number, and organization).
4.1.14	Correct any mistakes by placing a single line through the entry followed by initials and date.

4.1.15	Enter the time of departure from the site.
4.1.16	Enter the time and place of arrival at conclusion of work day (CCI Office, home, motel, etc.
4.1.17	Sign and date each page that is used and mark the "end" of the day's field work. Mark through any unused portion of the last page or unused pages left between used pages using a diagonal line. Annotate as "Not Used", sign and date along the diagonal line.

Make a copy of the Field Notebook and place the copy into the project file. Provide an additional copy to the Project Manager or others (as requested) each day at the conclusion of field activities, or as required.

If two or more field staff are working independently at a site, each should maintain their own Field Notebook. If multiple teams are working under the direct supervision of a site supervisor, only one Field Notebook is required and should be maintained by the site supervisor.

4.2 Field Photography

Field photography is another form of legal documentation of field conditions and activities. Field photography is required for Environmental Site Assessments and may be required by a contract or client-specific requirement on other projects.

4.2.1	Take photographs to document at a minimum the following: Phase I ESAs – general conditions of property, adjoining properties, any hazardous materials/petroleum products, and each recognized environmental condition or potential concern. Phase II ESAs – sampling locations, sampling methods, decon methods, IDW and waste management. EA's and Wetlands – general site conditions, areas of concern, and wetland test pit sites
4.2.2	Take photos using a digital camera or film camera.
4.2.3	Document photographs by completing a Field Photography Log (CCI Field

	Form 2-01). State "Refer to Photo Log"; OR, Document equivalent information in your Field Notebook., Use an arrow and photo number notation on a site map to record the photo number and "Facing Direction" for each photograph.
4.2.4	For photographs of small features, include a common object (pencil, ruler, coin, etc.) to illustrate scale. When taking a close-up photograph, also take a photograph from a distance to show context and proximity to mapped objects.
4.2.5	Take photographs with something in the background for reference. For example, if photographing a soil boring location or a pole-mounted transformer, try to take it from a standpoint where there is something in the background to show the location. Do not just take a photograph of a hole in the ground or a transformer showing just the sky.
4.2.6	For digital photographs, copy the diskette contents into the job folder and, preferably, rename each photograph with the photo number and description (ie: P15 Leaking Tank). For film developed photographs, obtain a hard copy and a CD of the photographs when requesting development. Load the CD contents into the job folder, and, preferably, rename each photograph with the photo number and description (ie: P15 Leaking Tank).
4.2.7	Maintain a printed color copy of all digital photographs (or extra set of developed prints) in the job file.
4.2.8	Turn in photographs for review with reports, including a copy of all photographs even though the report only includes selected photographs.

5.0 Forms

A record of field photography may be maintained using CCI Field Form 2-01 (Field Photography Log) in lieu of detailed records in the Field Notebook. Similarly, the documentation of field tasks (instrument calibration, well gauging, soil boring, well installation, well development, groundwater sampling, receptor survey, ESAs and wetlands delineation, etc) may be maintained using appropriate CCI Field Forms in lieu of detailed records in the Field Notebook.

6.0 Records

All Field Notebooks, field photographs, and supporting forms and checklists are records that must be maintained and produced upon request by a client, a regulatory agency or a court of law.

7.0 Training

All technical staff will receive initial training in Field Documentation as part of their New Employee Orientation program and will receive updated or additional training as determined necessary by their supervisor.

8.0 References

None

9.0 Background Documents

The preparation of this SOP is based on standard industry practice and specific requirements established in the following documents:

- EPA, Office of Solid Waste, RCRA Ground-Water Monitoring: Draft Technical Guidance, EPA/530-R-93-001, November 1992
- EPA, Region 4, Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, May 1996 w/ 1997 revisions
- 30 Texas Administrative Code (TAC) Chapter 350 – Texas Risk Reduction Program (TRRP), Subchapter C: Affected Property Assessments, September 1999, and all guidance documents
- 30 TAC Chapter 335 and Subchapter S – Risk Reduction Standards

- American Society for Testing and Materials (ASTM). Environmental Site Assessments: Phase I Environmental Site Assessment Process, Practice for, E 1527-00 (11.04).
- National Environmental Policy Act of 1969, as amended. Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970 as amended by Pub. L. 94-52, July 3, 1975, and Pub. L. 94-83, August 9, 1975 as amended and reprinted in 1992.
- 40 CFR 1500 – 1508. Council on Environmental Quality – Regulations for Implementing NEPA.
- 1987 Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1) as amended by the USACE memoranda dated August 23 and 27, 1991, and March 6, 1992, and Questions & Answers to the 1987 Manual dated September 16, 1991 and October 7, 1991
- U.S. EPA. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final. Edison, NJ: Environmental Response Team, Office of Emergency and Remedial Response.

CORRIGAN CONSULTING, INC.

STANDARD OPERATING PROCEDURES
Soil Sampling, Screening, and Logging

SOP Number: No. 2-04.0
Dated: November 6, 2003

Approved By:

Gary L. Kratochvil, PG
Senior Associate

Note: Refer to the electronic copy of SOP. This version is uncontrolled when printed.

TABLE OF CONTENTS

1.0 Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for soil investigations to ensure that all field assessments and investigations are consistently performed and documented in order to comply with applicable regulatory requirements and industry standards and in order to produce legally defensible data for Corrigan Consulting, Inc's. (CCI's) clients.

The main objectives of a properly planned and implemented soil sampling program include:

- The collection of representative soil samples,
- Field screening of soil samples for indications of the presence of contaminants, and
- Description of unconsolidated and consolidated subsurface materials.

Formatted: Bullets and Numbering

Deleted: ¶

2.0 Applicability

This SOP applies to all soil investigations conducted by CCI. Client-specific or contract requirements that are more stringent must also be met. Less stringent client-specific or contract requirements will be addressed on a case-by-case basis and will require a written variance.

3.0 Responsibilities

CCI's Senior Management is responsible for periodically reviewing and revising this SOP for compliance with current environmental regulatory requirements and industry standards. All technical professionals at CCI are responsible for implementing these procedures for all environmental investigations.

4.0 Procedures

4.1 Planning

Prior to beginning soil sampling activities, the following preparations must be completed:

4.1.1	Complete all pre-mobilization procedures outlined in CCI Field SOP 1-01.
4.1.2	Verify pre-mobilization utility clearance information. Conduct a site reconnaissance to identify any other indications of buried utilities (surface markers, manhole covers, conduits that emerge at ground surface on the walls of nearby structures, etc.) and check for adequate clearance from overhead utilities.

4.1.3	Review the soil sampling plan including any anticipated potential sampling problems. If a subcontractor (especially a driller or other heavy equipment operator) will be involved in sampling, include them in the review.
4.1.4	Inventory soil sampling equipment and supplies (including laboratory sample containers and preservatives and drilling equipment, if used) to ensure that adequate supplies are available and serviceable and that the equipment and materials meet the specifications established in the work plan.
4.1.5	Review the work plan and CCI Field SOP 2-10 for any QA/QC sampling requirements to be conducted concurrent with the soil sampling program.
4.1.6	If possible, it is recommended to segregate sample jars into "pre-packed sets" for each soil boring and pre-label the sample containers with as much information as possible to facilitate the collection and management of the samples.

4.2 Preparation for Sample Management

Prior to initiating the soil-sampling activities, the preparations detailed below should be completed.

4.2.1	Select a work area for sample management that is located "upwind" of potential or existing source(s) of airborne contaminates. Minimize the distance samples must be transported from the borehole to the sample management area in order to limit exposure to ambient air. Where possible, locate potential sources of contamination downwind from the sample collection and management areas (i.e., generators or other sources of exhaust gases; move decon operations – especially if solvents are used, etc.).
4.2.2	Document in the Field Notebook any potential source of contamination that cannot be eliminated in accordance with CCI Field SOP 2-01 (Field Documentation). Include possible contaminants present, distance from the sampling area, position with respect to wind direction, and any other conditions that may affect samples being collected (site traffic, fixed-site

	operating equipment, site drainage, site waste, etc).
4.2.3	Set up the work area designated for sample management. Line the surface of the sample collection table or work surface area with multiple layers of clean, unused plastic sheeting to avoid possible cross-contamination and facilitate change-out between samples.
4.2.4	Calibrate health and safety, and field screening monitoring equipment in accordance with CCI Field SOP 2-15.
4.2.5	Clear brush or minor obstacles that would interfere with drilling and/or sampling operations.
4.2.6	Decontaminate equipment (affected parts of the drill rig, non-contact drilling equipment, and contact soil sampling equipment) in accordance with CCI Field SOP 2-08.
4.2.7	Mobilize to the sampling location.
4.2.8	If a driller will be involved in the collection of soil samples, coordinate to establish a convention for delivery of soil cores to the sample management location (designation of "top" of core, confirmation of interval, etc.)

4.3 Manual Soil Sampling

Collection of disturbed samples from surface (0 – 6 inches) or near-surface (0.5 - 2 foot) soils can be conducted using stainless steel spoons, trowels, shovels/spades, or scoops. The collection of deeper soil samples (<2-5 feet below ground surface [bgs]) can be collected using a post-hole digger, manually-driven sampler such as the "Sharpshooter", or engineer equipment (backhoe, etc). Depending on the nature of the soil material, deeper samples (>5 feet bgs) can be obtained using a hand auger or engineer equipment (backhoe, etc).

Trenching and hand-operated power augers are also acceptable methods of collecting disturbed, shallow sub-surface soil samples. CCI rarely utilizes these techniques and they are not discussed in this SOP. Procedures for soil sampling from trenches and hand-operated power augers will be addressed in site-specific work plans, as required.

The procedures for the collection of surface soil samples using manual methods are described below.

4.3.1	Remove any matted organic zone (grass, etc.) from the immediate area of sampling using a clean stainless steel trowel or shovel.
4.3.2	Excavate to a level approximately 6-inches above the desired sampling interval.
4.3.3	Decontaminate the excavation tool (CCI Field SOP 2-08, Decontamination Procedures).
4.3.4	Collect and retrieve a sample of the desired sampling interval. Because the integrity of the sidewalls of the boring or hand excavation cannot be assured, discard the topmost 2-3 inches of soil as possible slough. If the sample is collected using engineer equipment, visually inspect the recovered material to exclude any non-representative material.
4.3.5	Don a clean pair of nitrile/latex gloves and place the recovered material into a clean, decontaminated glass or stainless steel bowl. Identify and discard any recovered slough.
4.3.6	Select approximately a 100 gram aliquot of the sampled material for headspace screening as described in Section 4.6, below.
4.3.7	For Method 5035 sampling, select and sample the target material using the Encore® sampler or similar device
4.3.8	Collect any remaining soil samples for analysis in order of constituent volatility: • VOCs (volatile organic compounds) • TPH (total petroleum hydrocarbons) • SVOCs (semi-volatile organic compounds) • Other organic parameters(TOC [total organic carbon], PCBs, etc.) • Metals • Other inorganic parameters

4.3.9	Pack sample jars as full as possible and smear off the upper surface to minimize headspace in the sample jar.
4.3.10	Identify and manage the collected samples as described in CCI Field SOP 2-16 (Sample Handling and Management)
4.3.11	Repeat the process, as needed, to the total depth of the planned sampling interval. If composite soil samples are collected, there is no need to decontaminate between sample intervals.
4.3.12	Place soil cuttings directly into open-top, 55-gallon drums or onto plastic sheeting spread on the ground near the borehole to avoid contaminating the surrounding surface area.
4.3.13	Log the soil boring as described in Section 4.7, below.
4.3.14	Document the sampling activity in the Field Notebook including the sampling location and identity of samples collected and obtain any required photographs in accordance with CCI Field SOP 2-01 (Field Documentation).

4.4 Driller-assisted Soil Sampling

The majority of soil investigations conducted by CCI involve the use of various kinds of drill rigs to advance conventional soil sampling tools (Shelby tubes, split spoons, split barrels, and Macro- or Large-bore samplers) to collect the requisite samples. Typically, the size and capability requirements of the rig needed will be determined by the depth of required sampling, soil types anticipated to be encountered, and site accessibility. Subsurface samples are most commonly collected using direct-push drill rigs, solid or hollow-stem auger drill rigs, and mud or air rotary drill rigs. Some sampling tools, such as Shelby tubes, typically cannot be advanced using direct-push drill rigs. Coordination with the driller during pre-mobilization preparation is critical to assure that sampling objectives can be met (CCI Field SOP 1-01 – Pre-Mobilization).

The procedures for soil sampling described below are similar whether using direct-push, hollow-stem auger, mud rotary, or air rotary techniques.

4.4.1	Prepare the drilling location by scraping away loose surficial material (gravel, sand, vegetation, etc) that may fall into the boring as the borehole is advanced. Recommendation: install a 4' x 8' sheet of ½-inch plywood with a cut-out over the location of the soil boring to facilitate management of cuttings and minimize impact to surficial soils from contaminated subsurface media.
4.4.2	If there is any potential for unknown subsurface utilities/structures, probe the soils to a minimum depth of eight (8) feet below ground surface (soils permitting), to assess for unmarked subsurface utilities or obstacles.
4.4.3	Measure the interval from the tip of the drill bit to known points (joints or chalk marks on the drill rod) to establish the exact depth of the boring. Pre-mark the drill rod with a "total depth mark" to ensure arrival at the top of the intended sample interval.
4.4.4	Remove the drill rod and install a clean, decontaminated sampling tool. Advance the tool to the bottom of the desired sample interval taking care to minimize slough (scrapings from the sidewall of the boring, partial collapse of the borehole, etc.). Use of a "closed-point" sampler can overcome the problem of slough partially loading the sample tool.
4.4.5	Pre-mark the drill rod above the "total depth mark" with the length of the sampling tool (split spoon, split barrel, Macro- or Large-bore sampler, or Shelby tube) to ensure that the sampling tool has been advanced through the desired sampling interval.
4.4.6	If a direct push Macro or Large-bore sampler is used, employ an expendable cellulose acetate butyrate (CAB) or Teflon® liner. CAB liners are typically used if metals or other inorganic COCs are anticipated; Teflon® liners are required for organic COCs.
4.4.7	Do not allow the driller to over-push the sampler. An over-pushed sampling tool results in displaced/missed sample interval and/or over-packing of the sample tool.

Comment [g1]: EPA Rgn 4 SOP Nov 2001, page 12-5

4.4.8	Retrieve the sampling tool and transport it to the sample management location. Establish a convention with the driller to consistently identify and orient the "top of sample".
4.4.9	Don a clean pair of nitrile/latex gloves and open the sample tool. If the sample is removed from a re-usable sampling tool, place the core into a clean, decontaminated sample tray (6-inch schedule 40 PVC pipe cut lengthwise). If the sample was collected using an expendable CAB or Teflon® liner, zip-cut the liner lengthwise to expose the soil core.
4.4.10	Using a clean, decontaminated stainless steel knife or spatula, scrape the wall of the soil core to expose a clean surface. Identify and discard any obvious slough from the top of the soil core. Note this interval as described in Section 4.7, below.
4.4.11	Using a clean, decontaminated stainless steel knife or spatula, split the soil core lengthwise and collect aliquots for headspace screening as discussed in Section 4.6, below.
4.4.12	Collect soil samples as described in Sections 4.4.13 and 4.4.14, below, or place the remaining soil core into zip-lock polyethylene baggies and temporarily store the soil core in an ice chest that has been pre-cooled to 4° C (+/- 2° C) pending the results of headspace screening to select samples to be sent to the laboratory.
4.4.13	For Method 5035 sampling, select and sample the target intervals using the Encore® sampler or similar device.
4.4.14	Collect the remaining soil samples for analysis in order of constituent volatility: • VOCs (volatile organic compounds – not using Method 5035) • TPH (total petroleum hydrocarbons) • SVOCs (semi-volatile organic compounds) • Other organic parameters (TOC [total organic carbon], PCBs, etc.)

	• Metals • Other inorganic parameters Note: Pack sample jars as full as possible and smear off the upper surface to minimize headspace in the sample jar.
4.4.15	Identify and manage the collected samples as described in CCI Field SOP 2-16 (Sample Handling and Management).
4.4.16	Decontaminate all equipment that comes into contact with sample material between sample intervals as described in CCI Field SOP 2-08 (Decontamination Procedures). If composite soil samples are collected, there is no need to decontaminate between sample intervals.
4.4.17	Repeat the process, as required by the project work plan, to the total depth of the planned sampling interval. If soil intervals are identified that may warrant sampling in addition to intervals or conditions specified in the work plan, contact the Project Manager for guidance.
4.4.18	Place soil cuttings directly into open-top, 55-gallon drums or onto plastic sheeting spread on the ground near the borehole to avoid contaminating the surrounding surface area. Manage the waste soil in accordance with CCI Field SOP 2-09 (IDW Management)
4.4.19	Log the soil core as described in Section 4.7, below.
4.4.20	Document the sampling activity in the Field Notebook including the sampling location and identity of samples collected and obtain any required photographs in accordance with CCI Field SOP 2-01 (Field Documentation).

4.5 Collecting Geotechnical Samples

Data from the analysis of geotechnical parameters for soil media may be used to develop Tier 2 Protective Concentration Levels under TRRP. These parameters include density, porosity, and intrinsic permeability and require that an undisturbed soil sample be submitted to the laboratory. Undisturbed soil samples are collected using a thin-walled sampler such as the Shelby Tube. The tubes are typically 3 to 4 inches in diameter and vary in length from 18 to 30 inches. Due to the size and volume of the sampler, it typically must be advanced using conventional drilling techniques (hollow-stem auger or mud rotary). Samples should be collected as summarized below.

4.5.1	Measure the interval from the tip of the drill bit to known points (joints or chalk marks on the drill rod) to establish the exact depth of the boring. Pre-mark the drill rod with a "total depth mark" to ensure arrival at the top of the intended sample interval.
4.5.2	Remove the drill rod and install a clean, decontaminated Shelby tube. Advance the tube down the borehole and to the bottom of the desired sample interval taking care to minimize slough (scrapings from the sidewall of the boring, partial collapse of the borehole, etc.).
4.5.3	Using the "total depth mark" (4.5.1), ensure that the Shelby tube (usually 18, 24, or 30 inch length) has been advanced through the desired sampling interval.
4.5.4	Recover the Shelby tube from the soil boring and seal the ends of the tube with aluminum foil or melted wax to minimize potential soil movement and gain or loss of moisture. Do NOT extrude the sample.
4.5.5	Label the intact sealed tube and manage the sample in accordance with CCI Field SOP 2-16 (Sample Handling and Management).
4.5.6	Transmit the sample to a laboratory capable of conducting or arranging for geotechnical analysis.
4.5.7	If chemical analysis is required of the same soil interval, it will be necessary to advance a second soil boring to allow logging and sampling of the interval from which the geotechnical sample was drawn.

4.6 Soil Screening Procedures

Analysis (screening) of soil samples involves the qualitative and quantitative field assessment of various indicators of potential contamination. Field screening procedures employed by CCI will, at a minimum, include scanning the soil core and measurement of sample headspace for total organic vapors (TOV) using either a photoionization detector (PID) of flame ionization detector (FID) and observation of visual/olfactory indicators.

Other soil field screening methods, such as the use of pH meters, chemical-specific detector tubes (Draeger tubes), soil-gas test kits, fiber optic chemical sensors, colormetric test kits, immunoassay test kits, portable infrared detectors (IR) and gas chromatography/mass spectrometry (GC/MS), are available. However, CCI does not routinely utilize these methods for field screening. If specific Work Plans require their use, procedures will be specified in the project Work Plans.

Select the appropriate screening equipment based on following:

PID: The PID uses an ultraviolet light source to ionize components of an incoming source. The ionization potential of the light source relative to the target compound governs the sensitivity of the instrument. Select a bulb having an ionization potential (commonly 8.4, 9.5, 10.2, and 11.7 electron volts [eV]) that is approximately equal to or greater than the target compounds. The PID will commonly detect compounds having ionization potentials up to 0.3 eV greater than the bulb value.

Use a PID when the presence of carbon-based volatile organic compounds is suspected to be present. Target compounds can include hydrocarbons (benzene, toluene, etc.), halocarbons (carbon tetrachloride, vinyl chloride, Freon, etc), solvents (tetrachloroethylene, trichloroethylene, etc.) and oxygenates (acetone, MTBE, etc.) which volatilize in air. Note: The PID is insensitive to methane (NH_4) and is approximately 10 times more sensitive than the FID.

FID: The FID uses a flame to burn hydrogen in the presence of oxygen. The FID responds to any compound having a carbon-hydrogen bond but is more sensitive to aliphatic hydrocarbons because these compounds burn more efficiently than aromatic (ringed) hydrocarbons.

Use an FID when hydrocarbon compounds are the primary target compounds (benzene, ethylbenzene, toleuene, xylenes, etc.) and are present above trace concentrations. The FID is typically insensitive to and unsuited for screening compounds that do not have a carbon-hydrogen bond such as carbon tetrachloride (CCl_4), hydrogen sulfide (H_2S), and ammonia (NH_3). Note: The FID is, however, sensitive to methane (NH_4).

The steps used to conduct field screening of soil media are as listed below.

4.6.1	Immediately after exposing the soil core, "skin" the upper surface of the core using a clean, decontaminated stainless steel knife or spatula to remove smeared material and expose a fresh surface. Scan the length of the core

	using PID) or FID. Note the interval and instrument reading of TOV in field notes (Field Soil Boring Log).
4.6.2	"Skin" the remainder of the soil core, remove any slough, and quickly collect an approximate 100-gram aliquot representing each interval of soil core (2-foot intervals are recommended). Focus on any discrete "hot spots" within each sample interval that are identified during the core scan or exhibit visual evidence of impact such as sheen or discoloration.
4.6.3	Place the sample aliquot into a clean one-pint, wide-mouth (Mason) glass jar. Break up large clumps of the sample to expose as much material as possible. Cover the mouth of the jar tightly with aluminum foil and screw on a ring lid to seal the jar. Note: Quart-sized zip-lock polyethylene baggies may be used in lieu of glass jars but the glass jars are preferred because chemical reaction with the polyethylene may bias headspace readings and because excessive moisture accumulation in baggies may be drawn into the PID and cause it to fail.
4.6.4	Vigorously shake the sample container for 15 seconds. Place the sealed container in a warm covered area (not in direct sunlight) for 15 minutes to allow organic constituents to volatilize to the headspace.
4.6.5	Vigorously shake the sample container for 15 seconds again. Puncture the aluminum foil or baggie with the PID or FID intake probe. Avoid contacting the soil or any fluids that may have collected in the sample container with the probe tip.
4.6.6	Allow the instrument to stabilize, usually within 5 seconds of exposure to the headspace gas and note the highest measured instrument reading. Record the reading into field notes (Field Soil Boring Log). If there are erratic readings (due to high TOV or moisture), obtain additional readings to obtain a representative headspace measurement.
4.6.7	Allow the instrument to "zero-out" prior to taking a measurement for subsequent samples or re-measuring a sample.

4.6.8	Note the presence of any visual indicators of contamination (staining or discoloration and/or sheen. Note the presence of any phase-separated liquids. Document your observations into field notes (Field Soil Boring Log).
4.6.9	Note and characterize the presence of any unusual odors in the working space over the sample. Do not inhale directly over the sample and do not try to be "over-specific" in characterizing any unusual odor. Describe odors in generic terms such as "gasoline-like", "musty", "sweet", "pungent", etc.

4.7 Soil Description and Logging Procedures

CCI utilizes the Unified Soil Classification System (USCS) for classifying and describing soils. Completion of accurate lithologic logs of unconsolidated and consolidated subsurface materials is, to some extent, a subjective process that relies on the experience of field personnel. Field personnel should review any existing lithologic logs from the area prior to starting field activities and should try to maintain consistency with previous lithologic descriptions..

CCI has developed a Field Soil Boring Log (CCI Field Form 2-04) to expedite the logging process and provide terminology consistent with the USCS. The Field Soil Boring Log (log) is tailored to unconsolidated soils of the type commonly found on the Texas Gulf Coast. Although the form can serve as a guide, modification of some of the description parameters may be required if applying the field log to different geologic provinces. The process employed for describing soil cores can also be applied to describe soils observed in excavations or trenches or for surface soil samples.

The procedures for logging and describing soil cores are listed below.

4.7.1	Complete all sample collection and screening activities prior to describing and logging the soil core.
4.7.2	Identify the interval of apparent homogeneous characteristics (typically two feet) that you will use to describe the soil core on the log. If there is a significant change in color, texture, lithology, or observed contamination, use a smaller interval for describing the core. Larger or varying intervals

	may be selected when homogeneous characteristics are observed.
4.7.3	Depth intervals are measured as feet below ground surface. Note the footage interval on the log. Note the percent recovery on the log.
4.7.4	If a particular interval will be selected for a laboratory sample, designate the sample identification number and the footage interval on the log. If a particular interval will be selected as part of a composite sample, indicate that fact and the sample identification number on the log.
4.7.5	Establish the major textural characteristic (and modifier "coarse, medium, or fine") and any minor textural characteristics (modifiers) and circle the appropriate entries on the log.
4.7.6	Note the major color (and modifier "light, medium, or dark"), any modifier color, and whether the interval displays mottling and circle the appropriate entries on the log.
4.7.7	Evaluate the plasticity, consistency, and moisture content and circle the appropriate entries on the log.
4.7.8	Describe any unusual odors that were noted during the field screening of the soil core.
4.7.9	Enter the headspace TOV on the log.
4.7.10	Describe any other notable observations. These may include: • Peak readings from the initial TOV scan of the soil core, • Visual evidence of contamination noted in the field screening process, • Presence of vegetation, • Percentage and size of nodules present, etc.
4.7.11	Repeat the process for the next interval of soil core. If there are no significant changes from the preceding interval, enter "Same" and only show changes to those parameters that ARE changed.

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

Formatted: Bullets and Numbering

4.7.12	Complete ALL information on the log before moving on to the next log.

5.0 Forms

Field Soil Boring Log (CCI Field Form 2-04).

All CCI forms are maintained in the forms directory.

6.0 Records

Soil investigation activities must be addressed in the Field Notebook by stating that soil sampling, screening, and logging was performed in accordance with this SOP and noting any variances or site observations that may affect investigation results. Include documentation of photographs and list all associated field forms.

All Field Notebooks are records that must be maintained and produced upon request by a client, a regulatory agency, or a court of law.

7.0 Training

All technical staff will receive initial "on the job" training in soil sampling, screening, and logging as part of their New Employee Orientation program and will receive updated or additional training as determined necessary by their supervisor.

8.0 References

- American Society for Testing and Materials (ASTM), "Standard Practice for Description and Identification of Soils (Visual –Manual Procedure)", ASTM D 2488-00 (2000);
- ASTM, "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)", ASTM D 2487-00 (2000);
- Corrigan Consulting, Inc. Field SOP 1-01 (Pre-Mobilization Planning)
- Corrigan Consulting, Inc. Field SOP 2-01 (Field Documentation)
- Corrigan Consulting, Inc. Field SOP 2-08 (Decontamination)
- Corrigan Consulting, Inc. Field SOP 2-09 (IDW Management)
- Corrigan Consulting, Inc. Field SOP 2-10 (Field QA/QC)
- Corrigan Consulting, Inc. Field SOP 2-16 (Sample Handling and Management)

9.0 Background Documents

The preparation of this SOP is based on standard industry practice and the following references:

- American Society for Testing and Materials (ASTM), “Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock”, ASTM Standard Test Method D 5434-93 (1993);
- ASTM, “Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling”, ASTM Standard Test Method D 6151-97 (1997);
- ASTM, “Standard Guide for Soil Sampling from the Vadose Zone”, ASTM Standard Test Method D 4700-91 (Re-approved 1998);
- ASTM, “Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations”, ASTM Standard Test Method D 6282-98 (1998);
- ASTM, “Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils”, ASTM Standard Test Method D 1586-99 (1999);
- ASTM, “Standard Practice for Soil Investigation and Sampling by Auger Borings”, ASTM Standard Test Method D 1452-80 (Re-approved 2000);
- ASTM, “Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes”, ASTM Standard Test Method D 1587-00 (2000);
- ASTM, “Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils”, ASTM Standard Test Method D 3550-01 (2001);
- U.S. EPA, “RCRA Groundwater Monitoring Technical Enforcement Guidance Document”, U.S. Government Printing Office, September 1986;
- EPA, Office of Solid Waste and Emergency Response (OSWER), RFI Guidance, OSWER Directive 9502.00-6D, EPA/530/SW89-031, May 1989;
- U.S. EPA – Region 4. 2001. Environmental Investigations - Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), November 2001;
- U.S. EPA, Preparation of Soil Sampling Protocols: Sampling Techniques and Strategies, EPA/600/-R-92/128, Environmental Monitoring and Support Laboratory. U.S. EPA, Las Vegas, NV, 1992.

- American Society for Testing and Materials (ASTM), "Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock", ASTM Standard Test Method D 5434-97;
- Driscoll, John N., *Handbook of Environmental Instruments*. McGraw Hill Publishing, 1999.

CORRIGAN CONSULTING, INC.

STANDARD OPERATING PROCEDURE

Sediment Sampling

SOP Number: No. 2-07.0

Dated: April 22, 2004

Approved By:

____

Gary L. Kratochvil, PG

Senior Associate

Note: Refer to the electronic copy of SOP. This version is uncontrolled when printed.

TABLE OF CONTENTS

1.0 Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for conducting a groundwater gauging and sampling event to ensure that all field investigations are consistently performed and documented in order to comply with applicable environmental regulatory requirements and industry standards and in order to produce representative and legally defensible data for Corrigan Consulting, Inc.'s (CCI's) clients.

The primary objective of a properly planned and implemented groundwater gauging and sampling program include the following:

is to obtain representative sediment samples that are characteristic of natural site conditions (chemistry of the sample is not be altered due to the sample handling, the method of sample collection, or the materials from which the sampling equipment is made).

2.0 Applicability

This SOP applies to all sediment sampling events (streams, rivers, ponds, lakes, seeps, and impoundments) conducted by CCI. Less stringent client-specific or contract requirements will be addressed on a case-by-case basis and will require a written variance.

3.0 Responsibilities

CCI's Senior Management is responsible for periodically reviewing and revising this SOP for compliance with current environmental regulatory requirements and industry standards. All technical professionals at CCI are responsible for implementing these procedures for all investigations or assessments involving the collection of sediment samples.

4.0 Procedures

4.1 Equipment/Materials-Equipment Selection

A number of devices are available for the collection of sediment samples. These include, but are not limited to, Coliwasa samplers, core samplers, augers, spoons, scoops, trowels, shovels, triers, and dredges. These devices are constructed of a number of materials including, but not limited to: stainless steel, brass, glass, Teflon, etc. The sampling and analytical requirements, as well as site characteristics, must be taken into account when determining the proper sediment sampling equipment to use. The specific work plan will specify the equipment to be used but, most commonly, sediment samples will be collected using either a stainless steel scoop (shallow samples) or a coring device (deeper samples).

4.2 Sediment Sample Collection

4.2.1	Collect sediment samples at the site only after completing any required surface water sampling.
	Survey and map the sampling points prior to sampling. Collect the required samples as close to the mapped location as possible. If the collection point must be moved, the new location must be approved.
4.2.2	Decontaminate the sampling equipment according to procedures outlined in FSOP 2-008 Decontamination prior to sampling and between sampling locations.
4.2.3	Don the appropriate personnel protective equipment as specified by the site specific Health and Safety Plan.
4.2.4	Approach the sampling area from downstream and start the sample collection event at the most downstream sample location. This is necessary to avoid disturbing each sampling location with sediment stirred-up by the sampling team. Note: If sediment samples are to be collected under shallow-water wading conditions, face and collect the sample upstream from the sampler's position to avoid the effects of suspended sediment during the sample collection. Note: If sediment samples are to be collected in an area of still water, collect the samples in the order of the least contaminated to the most contaminated areas.
4.2.5	Determine the sampling depth based on the objective for the sample. Collect samples to assess human exposure within the upper one-foot of sediment beneath the sediment/water interface (usually requires the use of a coring device sampler). Collect samples to assess ecological receptor exposure from the aerobic layer (typically the upper four inches).
Sampling with a Scoop or Spatula	
4.2.6a	Push the sampling device smoothly into the sediment interval at approximately a 45-dgree angle.
4.2.7a	Tip the handle of the sampler downward to free-up the desired sample volume and slowly lift the filled sample device until clear of the water surface.
4.2.8a	Place the collected sediment sample onto a stainless-steel, PVC, or Teflon™ pan.
Sampling with a Coring Device	
4.2.6b	Place a sleeve into the device and drive the assembly into the sediment with one smooth motion until the trailing end of the sleeve is at the sediment surface.
4.2.7b	Cap the top of the corer with a clean, decontaminated Teflon™ or rubber plug to achieve a partial vacuum to enhance sample recovery.

4.2.8b	Retrieve the sampler in one smooth motion but, before pulling the sampler out of the water, cap the bottom part of the core to prevent loss of sample material.
4.2.9b	Decant the clear supernatant above the sediment-water interface in the core tube by turning the core tube on its side and gently pouring the liquid out until fine sediment particles appear in the waste liquid.
4.2.10b	Cut open the sample tube or use a clean, decontaminated plunger to slide the sample out of the corer and into either a stainless-steel, PVC, or Teflon™ pan.
4.2.11	Using a clean, decontaminated stainless steel spatula or spoon, place the sediment sample into clean laboratory-supplied sample containers. Fill the sample containers to the top to minimize headspace and immediately seal the containers immediately. By convention and to minimize potential loss of volatile constituents, fill the sample containers in the following order according to volatilization potential: VOCs (volatile organic compounds); TPH (total petroleum hydrocarbon); SVOCs (semivolatile organic compounds); TOC (total organic carbon); Metals; Other inorganic parameters.
4.2.12	Cap the bottle and handle the sample according to procedures outlined in SOP 2-16 Sample Handling and Management.
	Collect a control sample from a station that is located upstream from the waste source in order to have a basis for comparison of sediment quality.
4.2.13	Document the sampling event according to the procedures outlined in SOP 2-01 Field Documentation.
4.2.14	Decontaminate sampling equipment before collecting the next sample. Follow procedures outlined in SOP 2-08 Decontamination Procedures.

5.0 Forms

There are no forms associated with this SOP.

6.0 Records

Sediment sampling must be addressed in the field notebook by stating that sediment sampling was performed in accordance with this SOP and noting any variances or site observations that may impact the representativeness of surface water samples. Also note the identity of sediment samples collected in the field notebook (CCI Field SOP 2-01).

All field notebooks are records that must be maintained and produced upon request by a client, a regulatory agency, or a court of law.

7.0 Training

All technical staff will receive initial training in sediment sampling as part of their New Employee Orientation program and will receive updated or additional training as determined necessary by their supervisor.

8.0 References

- Corrigan Consulting, Inc., Field SOP 2-01 (Field Documentation)
- Corrigan Consulting, Inc., Field SOP 2-08 (Decontamination)
- Corrigan Consulting, Inc., Field SOP 2-16 (Sample Handling and Management)

9.0 Background Documents

The preparation of this SOP is based on standard industry practice and specific requirements established in the following documents:

- EPA, Methods for the Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. Office of Water, EPA-823-B-01-002, October 2001
- EPA, Region 4, Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, November 2001
- TNRCC, Regulatory Guidance RG-366/TRRP-24, "Determining PCLs for Surface Water and Sediment", May 2002

CORRIGAN CONSULTING, INC.

STANDARD OPERATING PROCEDURE

Surface Water Sampling

SOP Number: No. 2-12.0

Dated: October 14, 2003

Approved By:

____

Gary L. Kratochvil, PG

Senior Associate

Note: Refer to the electronic copy of SOP. This version is uncontrolled when printed.

TABLE OF CONTENTS

1.0 Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for the collection of surface water samples to ensure that all field investigations are consistently performed and documented in order to comply with applicable environmental regulatory requirements and industry standards and in order to produce legally defensible data for Corrigan Consulting, Inc.'s (CCIs) clients.

The objectives of a properly planned and implemented surface water sampling program include:

- Ensure that collected surface water samples are representative of natural site surface conditions; that is, the chemistry of the sample is altered due to the sample handling, and
- Provide guidance regarding the method of sample collection, or the materials from which the sampling equipment is made.

2.0 Applicability

This SOP applies to the collection of surface water samples from streams, rivers, ponds, lakes, seeps, and impoundments that may be encountered in field assessments and investigations conducted by all technical staff at CCI. Client-specific or contract requirements will be addressed on a case-by-case basis and will, at the least, require a written variance.

3.0 Responsibilities

CCI's Senior Management is responsible for periodically reviewing and revising this SOP for compliance with current environmental regulatory requirements and industry standards.

The Project Manager is responsible for assuring the proper procedures are utilized for the collection of surface water samples. This will be accomplished through training of field personnel and by maintaining proper quality control procedures. Field personnel assigned to surface water sampling activities are responsible for completing their tasks according to the procedures discussed in this SOP and other project-specific procedures. All staff is responsible for reporting deviations from procedures to the Project Manager.

4.0 Procedures

4.1 Equipment/Materials-Equipment Selection

A number of devices are available for the collection of surface water samples. These devices are constructed of a number of materials including, but not limited to: stainless steel, glass, Teflon, Tygon, etc. The sampling and analytical requirements, as well as site characteristics, must be taken into account when determining the proper surface water sampling equipment to use. The specific work plan should identify the specific equipment to be used.

4.2 Planning Considerations

4.2.1	Samples should be collected at a location of hydraulic turbulence where the water is sufficiently-mixed.
4.2.2	Sampling points should be located near the center of the channel or pool, at the approximate middle depth of the water column.
4.2.3	Samples should be collected from the down-stream (down-current) location first and then work progressively up-stream (up-current) to minimize the potential for cross-contamination of the samples.
4.2.4	Care should be taken to avoid disturbing bottom sediment with the sampling device or disturbing the bank conditions that could result in the suspension of sediment into the water column. Sediments may contain constituents of concern (COCs) and the mobilization of sediments into the water sample may result in the introduction of chemical artifacts.
4.2.5	If sediment samples are to be collected at the site, complete all surface water sampling prior to the collection of sediment samples.

4.3 Composite Surface Water Sample Collection

At present, the device most commonly used because to collect composite surface water samples is a peristaltic pump. It is a convenient device, small, light weight and battery-operated versions of the pump are suitable for operation aboard small watercraft. Samples to be analyzed for volatile organic compounds cannot be composited.

4.3.1	The sampling points should be surveyed and clearly mapped prior to sampling. The sample should be collected as close to the mapped location as possible. If the collection point must be moved, the new location must be approved.
4.3.2	Attach the appropriate tubing to the peristaltic pump. Always use new tubing at each sample location. Do not try to decontaminate and reuse

	tubing.
4.3.3	If filtering is required, attach the filtering device to the discharge end of the tubing.
4.3.4	Lower the intake end of the tubing into the surface water and begin water removal. If the pump is computerized, program the pump to collect the sample at the desires time intervals and flow rate. If the pump is not programmable, record the discharge rate (compute discharge rate by collecting a known volume of water over time). Collect the sample at the desired time interval.
4.3.5	Fill the sample bottle, allowing the sample stream to flow gently down the side of the bottle with minimal turbulence.
4.3.6	Cap the bottle and handle the sample according to procedures outlined in SOP 2-16 Sample Handling and Management.
4.3.7	Document the sampling event according to the procedures outlined in SOP 2-01 Field Documentation.
4.3.8	Decontaminate sampling equipment before collecting the next sample. Follow procedures outlined in SOP 2-08 Decontamination Procedures.

4.4 Grab or Discrete Surface Water Sample Collection

At present, the device most commonly used because to collect grab surface water samples is a transfer container (breaker, flask, etc.) made of inert material such as glass, stainless steel or Teflon.

4.4.1	The sampling points should be surveyed and clearly mapped prior to sampling. The sample should be collected as close to the mapped location as possible. If the collection point must be moved, the new location must be approved.
4.4.2	Dip the transfer container into the surface water.
4.4.3	Filter the sample, if required.
4.4.4	Fill the sample bottle, allowing the sample stream to flow gently down the side of the bottle with minimal turbulence.
4.4.5	Cap the bottle and handle the sample according to procedures outlined in SOP 2-16 Sample Handling and Management.
4.4.6	Document the sampling event according to the procedures outlined in SOP 2-01 Field Documentation.
4.4.7	Decontaminate sampling equipment before collecting the next sample. Follow procedures outlined in SOP 2-08 Decontamination Procedures.

5.0 Forms

There are no forms associated with this SOP.

6.0 Records

Surface water sampling must be addressed in the field notebook by stating that surface water sampling was performed in accordance with this SOP and noting any variances or site observations that may impact the representativeness of surface water samples. Also note the identity of surface water samples collected in the field notebook (FSOP 2-001).

All field notebooks are records that must be maintained and produced upon request by a client, a regulatory agency, or a court of law.

7.0 Training

All technical staff will receive initial training in surface water sampling as part of their New Employee Orientation program and will receive updated or additional training as determined necessary by their supervisor.

8.0 References

- Corrigan Consulting, Inc., Field SOP 2-01 (Field Documentation)
- Corrigan Consulting, Inc., Field SOP 2-08 (Decontamination)
- Corrigan Consulting, Inc., Field SOP 2-16 (Sample Handling and Management)

9.0 Background Documents

The preparation of this SOP is based on standard industry practice and specific requirements established in the following documents:

- EPA, Region 4, Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, May 1996 (Includes 1997 revisions)
- TNRCC, Surface Water Quality Monitoring Procedures Manual, Water Quality Division, GI-252, June 1999
- TNRCC, Regulatory Guidance RG-366/TRRP-24, "Determining PCLs for Surface Water and Sediment", May 2002

CORRIGAN CONSULTING, INC.

STANDARD OPERATING PROCEDURES
Sample Handling and Management

SOP Number: No. 2-16 .0

Dated: November 6, 2003

Approved By:

Gary L. Kratochvil, PG
Senior Associate

Note: Refer to the electronic copy of SOP. This version is uncontrolled when printed.

TABLE OF CONTENTS

1.0 Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish procedures for handling and managing samples and maintaining Chain-of-Custody to ensure that all field investigations are consistently performed and documented in order to comply with applicable environmental regulatory requirements and industry standards and in order to produce legally defensible data for Corrigan Consulting, Inc.'s (CCI's) clients.

The main objectives of a properly planned and implemented sample handling and management program include:

- Providing and documenting a continuous, unbroken Chain-of-Custody;
- Providing a consistent protocol for identifying samples;
- Providing sample handling procedures that minimize the potential for altering the sample;
- Providing and maintaining effective sample preservation; and,
- Providing consistent documentation of sample management.

2.0 Applicability

Deleted: ¶

This SOP applies to all environmental investigations performed by CCI involving the collection of environmental samples for chemical and physical analyses. This procedure is not applicable to the management or transportation of hazardous materials, hazardous wastes, mixed wastes, radioactive wastes, or dangerous goods.

3.0 Responsibilities

CCI's Senior Management is responsible for periodically reviewing and revising this SOP for compliance with current environmental regulatory requirements and industry standards. All technical professionals at CCI are responsible for implementing these procedures for all our investigations.

4.0 Procedures

The procedures addressed in this SOP involve the handling, management, and Chain-of-Custody of samples from the time of collection to time at which samples are relinquished to the laboratory or a courier/overnight service for delivery to the laboratory.

4.1 Sample Labeling and Handling

4.1.1	Immediately mark all samples for identification using a permanent non-erasable ink. The marking should be applied to the sample container (jar, bottle etc.) and to the field screening jar, bottle, or plastic bag.

4.1.2	Sample labels will include: • Project Name and number • Unique Field Sample number specifying the monitoring well number, boring number and depth (or sampling interval), sample location (surface water or sediment samples), or sample type for QA samples (CCI Field SOP 2-10) • Sampling date and time • The initials of the individual(s) performing the sampling • Sample preservative, if used.
4.1.3	Prepare a separate label for each jar or bottle that comprises the sample.
4.1.4	Wrap clear tape over the sample label to secure the label to the sample container and to protect ink entries on the label.
4.1.5	Correct any errors by preparing a new label (preferred) or by drawing one line through the erroneous information and placing the correct information below. Initial and date the correction.
4.1.6	Place all sample bottles into sealed zip-loc baggies and squeeze as much of the air as possible from the bag before sealing.
4.1.7	Immediately place the samples in an upright position into a sturdy ice chest/cooler that has been pre-cooled to 4° C (+/- 2° C) with ice that has been double bagged in leak proof plastic bags.

4.2 Chain-of-Custody Procedures and Record

Documenting the Chain-of-Custody is required for all samples collected during an environmental investigation. The Chain-of-Custody record (C-o-C) is a serialized document used to demonstrate that physical evidence collected during an investigation accurately represents the investigation and has not be tampered with or altered by a third party. Procedures for documenting the C-o-C are as shown below.

4.2.1	The sampler (Team Leader or field sample custodian, if multiple persons are involved in collecting samples) must maintain Chain-of-Custody and the C-o-C record from the time of sample collection until the samples are delivered to the laboratory.
4.2.2	Simplify the C-o-C by having as few people as possible involved in the custody of the samples during the investigation.
4.2.3	Keep the samples in physical possession or under direct control (within view) at all times. If required, the samples may be temporarily secured (locked) in an area that is restricted to authorized personnel.
4.2.4	Prepare a C-o-C for all samples to be analyzed by a laboratory and maintain the C-o-C with the sample sets at all times.
4.2.5	Complete a separate C-o-C for each set of samples that will be analyzed by <u>each</u> laboratory.

4.2.6	Record the unique sample identification number from the sample label (Section 4.1.2), the type and amount of sample collected, the total number of containers, and the date and time of sample collection for each sample. This information establishes the start time for sample holding time requirements.
4.2.7	Record each sample on a separate line of the C-o-C. Do not split a sample among multiple lines.
4.2.8	Record the requested laboratory analytical parameters and methods for each sample.
4.2.9	Record all information on the C-o-C in permanent non-erasable ink. If any errors are made, correct the error by drawing a single line through the incorrect entry and enter the correct information below. Any such corrections must be dated and initialed – ideally, by the person who made the error.
4.2.10	Assign the samples to a particular cooler (identify which samples are in each cooler) in the "Remarks" section of the C-o-C. Include similar notation in the Field Notebook.

4.3 Sample Packaging

4.3.1	Fill the ice chest with sufficient packing material to prevent sample containers from making contact during shipment. Position VOA vials in the center of the cooler.
4.3.2	Place wet ice that has been double bagged in leak proof zip-loc bags on top of the samples and in the remaining spaces between the bottles to maintain the contents at 4°C (+/- 2° C) during sample storage and shipment. Sufficient ice should be used to maintain sample preservation until the samples are unpacked at the laboratory.
4.3.3	Seal any cooler drain plugs using duct tape.
4.3.4	Annotate your Field Notebook per CCI Field SOP 2-01 (Field Documentation).

4.4 Sample Transfer Directly to Laboratory Personnel

4.4.1	Ensure that samples arrive at the laboratory within two days of collection of the earliest sample included on the C-o-C (Note Section 4.6). Note: Failure to meet this requirement will results in <u>significant</u> additional sample management requirements as detailed in TCEQ Interoffice Memorandum dated 7/31/03.
4.4.2	Record the date and time of all custody transfers, the signature of the person relinquishing and accepting sample custody, and other pertinent information on the C-o-C.

4.4.3	The C-o-C may be kept in possession of the person delivering the samples (courier) until the lab representative signs the C-o-C.
4.4.4	Place the field (pink) copy of the C-o-C into the project file. When received from the Lab, maintain the completed original (white) copy of the C-o-C in the project file.

4.5 Sample Shipping by Commercial Carrier

4.5.1	Ensure that samples arrive at the laboratory within two days of collection of the earliest sample included on the C-o-C (Note Section 4.6). Note: Failure to meet this requirement will results in <u>significant</u> additional sample management requirements as detailed in TCEQ Interoffice Memorandum dated 7/31/03.
4.5.2	Record the Air Bill number (or certified or registered mail serial number) in the remarks section of the C-o-C for samples that are shipped to the laboratory by commercial carrier.
4.5.3	Seal the original C-o-C form in a watertight zip-loc baggie and tape it to the inside of the lid of the ice chest/cooler prior to release to the carrier.
4.5.4	Close and securely fasten the lid of the cooler with duct or strapping tape.
4.5.5	Place a signed and dated custody seal across the opening points of the shipping containers in such a way that the container cannot be opened without breaking the seal(s).
4.5.6	Mark the cooler "THIS END UP" and affix arrows labels indicating proper upward position.
4.5.7	Label the outside of the cooler with the name and address of the shipper and the receiving laboratory (or use the commercial shipper's label).
4.5.8	Ship samples to the laboratory within 24 hours using a courier or overnight service.
4.5.9	Use Department of Transportation (DOT) sample packaging requirements for hazardous materials requiring interstate transport, as defined in the 49 CFR Part 171.
4.5.10	When a sample cooler is relinquished to a courier or overnight service, the individual relinquishing custody of the sample cooler will retain a copy of the C-o-C and waybill. Place these documents in the project file.
4.5.11	Contact the appropriate laboratory personnel to advise them of the sample shipment.

4.6 Sample Holding Time

Samples must be shipped to the laboratory in sufficient time to allow the laboratory to meet allowed holding time requirements. Samples having an allowed holding time longer than 48 hours MUST be received in the laboratory within two days of sample collection unless prior written approval has been received from the TCEQ. The TCEQ does not consider inconvenience or lack of a nearby common carrier to be justification for late delivery of samples unless prior written authorization has been obtained. Significant additional sample handling and management requirements are described in Attachment 1 to the TCEQ Interoffice Memorandum, dated July 31, 2003.

5.0 Forms

The document generated from the performance of the procedure is the Chain-of-Custody Record. The document may vary slightly in format depending on the laboratory selected for the project, but will contain all the relevant information described above.

6.0 Records

All Chain-of-Custody forms and Field Notebooks are records that must be maintained and produced upon request by a client, a regulatory agency, or a court of law.

7.0 Training

All technical staff will receive initial training in proper C-o-C procedures, sample handling, packaging, and shipping as part of their New Employee Orientation and will receive updated or additional training as determined necessary by their supervisor.

8.0 References

- CCI Field SOP 2-01 (Field Documentation)
- CCI Field SOP 2-10 (Field QA/QC Sampling)

9.0 Background Documents

The preparation of this SOP is based on standard industry practice and the following references:

Formatted: Bullets and Numbering

- EPA, Office of Solid Waste and Emergency Response (OSWER), RFI Guidance, OSWER Directive 9502.00-6D, EPA/530/SW89-031, May 1989;
- EPA, Region 4, "Environmental Investigations – Standard Operating Procedures and Quality Assurance Manual", November 2001;
- RCRA Groundwater Monitoring Technical Enforcement Guidance Document, U.S. Environmental Protection Agency, U.S. Government Printing Office, September 1986; and,
- TCEQ Interoffice Memorandum, "Sample Handling and Preservation Procedures and the Collection Procedures for Groundwater Samples", July 31, 2003.

- TCEQ Regulatory Guidance, RG-366/TRRP-13, "Review and Reporting of COC Concentration Data", December 2002,
- TCEQ (Formerly TNRCC) Technical Guidance, "Guidelines for Preparing a Ground-Water Sampling and Analysis Plan (GWSAP), TNRCC, RG-074, May 1994.

APPENDIX 15

OSHA Health and Safety Plan

Not Applicable

APPENDIX 16

Reference List

APPENDIX 16

Roy P. Benavidez National Guard Armory
El Campo, Texas

Reference List

Section 1.1, Physical Location, Topography: ESRI / FEMA Hazard Information and Awareness Site http://www.esri.com/hazards. flood hazard map.

Section 1.1, Physical Location, Weather: Texas Parks and Wildlife webpage: http://www.tpwd.state.tx.us/edu/regions/coast.phtml

Section 1.2, History and Operations: http://www.census.gov/epcd/www/naics.html

Section 1.3, Geology/Hydrogeology: Carole L. Loskot, William M. Sandeen, and C.R. Follett, July 1982, Texas Water Development Board Report No. 270, Ground-Water Resources of Colorado, Lavaca and Wharton Counties, Texas
http://www.twdb.state.tx.us/publications/reports/GroundWaterReports/GWReports/GWreports.asp

Figure 1D, Regional Geologic Cross Sections: Carole L. Loskot, William M. Sandeen, and C.R. Follett, July 1982, Texas Water Development Board Report No. 270, Ground-Water Resources of Colorado, Lavaca and Wharton Counties, Texas
http://www.twdb.state.tx.us/publications/reports/GroundWaterReports/GWReports/GWreports.asp

Figure 2A, Potential Receptors Map: TerraServer USA (http://terraserver-usa.com)

REVISED SECTIONS
AFFECTED PROPERTY
ASSESSMENT REPORT

Small Arms Firing Range
Roy P. Benavidez National Guard Armory
801 Armory Road (CR406)
El Campo, Texas

prepared for:

ADJUTANT GENERAL'S DEPARTMENT
Attn: Mr. David Boucher
2200 West 35th Street, Building 1, AGTX-EV
Austin, Texas 78703

December 2006

prepared by:

CORRIGAN CONSULTING, INC.
an environmental consulting firm
12000 Aerospace Avenue, Suite 450
Houston, Texas 77034
(281) 922-4766

Report Certification Page

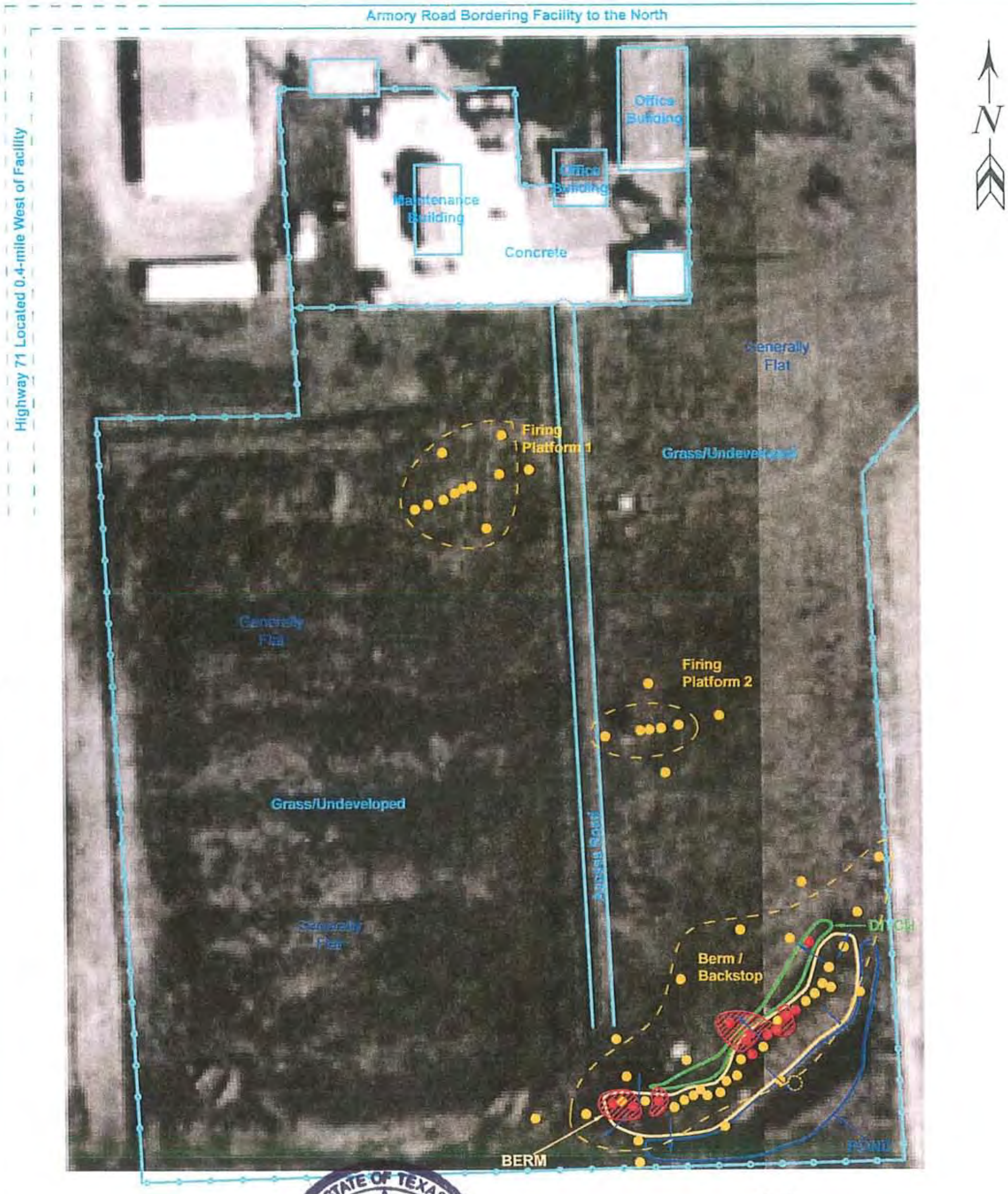
STATE OF TEXAS
12/19/06
Roxie L. Voran
Geology
1788
LICENSED
PROFESSIONAL GEOSCIENTIST

(Seal and Date Here)

Roxie L. Voran

Roxie L. Voran, Senior Associate, P.G., License No. 1788
Mr. Voran was responsible for quality control on the project and for reviewing the Revised Sections of the Affected Property Assessment Report.

Note: Individual specifications, estimates, calculations, and figures (maps and cross-sections) depicting geologic interpretation have been stamped by the professional geologist who prepared the document or directly managed its preparation.



Scale
1 inch = 100 feet
0 100 200

Roxie L. Voran

12/19/06
Roxie L. Voran
Geology
1788

Legend

● Sample location

▨ PCLE Zone

◌ Affected property boundary

╲ Approximate Direction of Surface Drainage

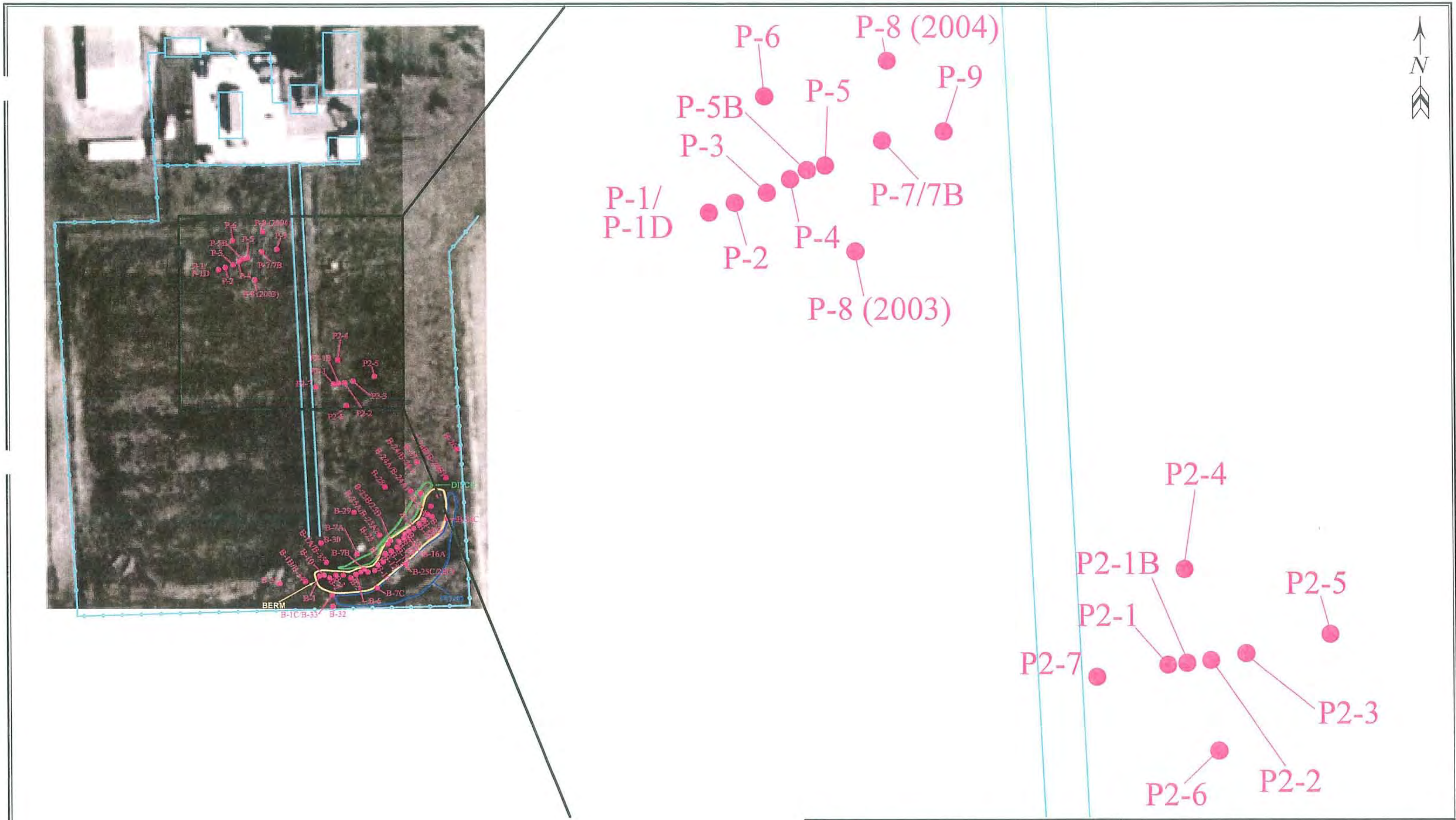
Affected Property Map

Date: 11/06

Figure 1B - 1

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

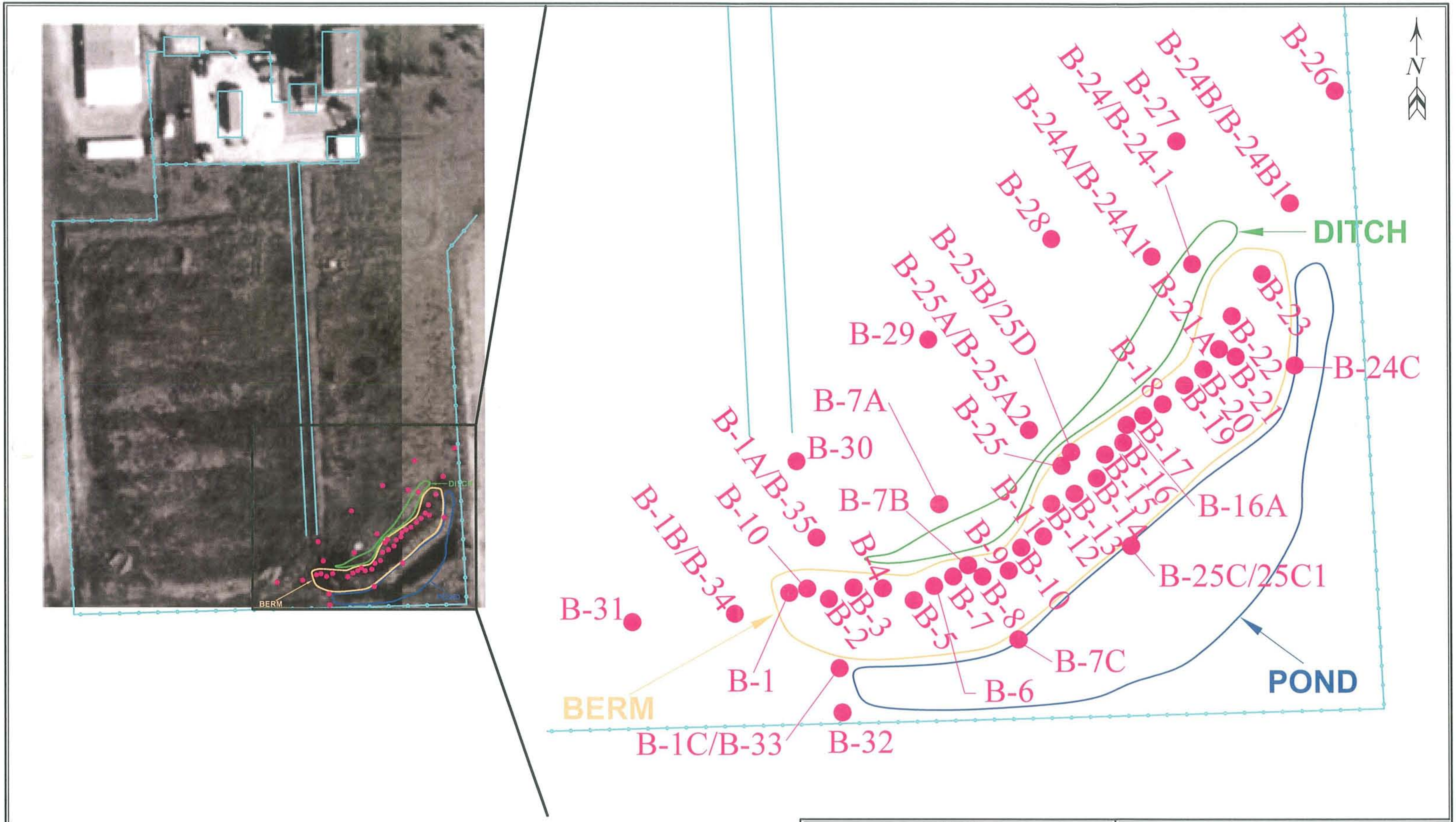
CORRIGAN CONSULTING, INC.



Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
Notes

Firing Platforms Sample Identifiers	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 1B-2A	*CORRIGAN CONSULTING, INC.*



Scale
1 inch = 30 feet
0 30 60

Legend
● Sample locations at Berm / Backstop
Notes

Berm Sample Identifiers

Date: 11/06

Figure 1B-2B

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

Table 2A - Water Well Summary

*The direction of groundwater flow is unknown, therefore all wells identified within a half-mile radius of the facility are included in the table below with no reference to gradient.

Well no. / designation	Well owner's name of record	Distance from affected property (ft.)	Screened interval/open interval (ft)	Cemented interval (ft)	Completion type	Total depth	Date drilled	Producing formation	Current water use[1]	Current status[2]	Data source[3]
606	American Legion	2,019	Unknown	Unknown	Steel	112	7/?/74	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
607	Paul Dornak	1,553	Unknown	Unknown	Steel	114	7/10/74	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
608	Edmund Mach	1,087	80 – 265	Unknown	Steel	265	7/?/74	Chicot/Evangeline	Irrigation	Unknown	TWDB/TCEQ
611	Paul Dornak	1,786	Unknown	Unknown	Steel	102	7/10/74	Chicot/Evangeline	Unused - Destroyed	Unused	TWDB/TCEQ
6H	G.W. Hicks	1,242	63 – 67	Unknown	PVC	67	8/3/65	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6H	Jerry Shelton	~1,242	96-106	Unknown	Plastic	106	5-18-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	Nora Mehrens	~1,242	74-80	Unknown	Plastic	80	8-26-72	Chicot/Evangeline	Domestic	Unknown	TWDB
6H	J.A Mount	~1,242	94-104	Unknown	Plastic	104	3-25-82	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	J.A Mount	~1,242	90-100	Unknown	Plastic	100	5-14-80	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	Pete Lara	~1,242	95-100	Unknown	Plastic	100	5-14-80	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	J. D. Langley	~1,242	78-83	Unknown	Plastic	83	10-6-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	Gert Conner	~1,242	95-105	Unknown	Plastic	105	4-7-82	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	Lawrence Kaines	~1,242	97-107	Unknown	Plastic	107	1-16-82	Chicot/Evangeline	Domestic	Unknown	TDWR
6H	Leslie Mitchell	~1,242	100-105	Unknown	Plastic	105	8-30-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6NN	Knights of Columbus	1,398	80 – 87	Unknown	PVC	87	9/26/73	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6NN	Bill Humphrey	~1,398	117-127	Unknown	Plastic	127	2-26-76	Chicot/Evangeline	Domestic	Unknown	TWDB
6NN	R.O. Cortez, Jr.	~1,398	99-109	Unknown	Plastic	109	4-17-81	Chicot/Evangeline	Domestic	Unknown	TDWR
6QQ	Jesse May Dornak	2,407	78 – 84	Unknown	PVC	84	7/28/75	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6QQ	Frank Veseley	~2,407	102-107	Unknown	Plastic	107	11-5-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6QQ	John Luco	~2,407	100-110	Unknown	Plastic	110	9-30-79	Chicot/Evangeline	Domestic	Unknown	TWDB
6RR	Hubert Graham	2,562	84 – 90	Unknown	PVC	90	12/9/74	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6RR	V.J. Mach, Jr.	~2,562	94-100	Unknown	Plastic	100	9-21-77	Chicot/Evangeline	Dom/Liv	Unknown	TWDB
6RR	Lloyd Winfield	~2,562	90-95	Unknown	Plastic	95	6-20-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6RR	David Juarez	~2,562	95-100	Unknown	Plastic	100	6-14-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6RR	Clarence Osina	~2,562	99-104	Unknown	Plastic	104	7-22-81	Chicot/Evangeline	Domestic	Unknown	TWWR

[1] Current water use: Dom - domestic; PS - public supply/municipal; Ind - industrial; Comm - commercial; Irr - irrigation; Liv - livestock

[2] Current status: Act - active; Ab - abandoned/not in use; SB - standby/backup; P&A - plugged and abandoned

[3] Indicate the specific primary source of well information.

6RR	Kenco Sales	~2,562	103-113	Unknown	Plastic	113	8-1-80	Chicot/Evangeline	Domestic	Unknown	TDWR
6RR	Riceland Builders	~2,562	90-95	Unknown	Plastic	95	5-16-79	Chicot/Evangeline	Domestic	Unknown	TDWR
6RR	Jim Vauter	~2,562	105-110	Unknown	Plastic	110	1-28-80	Chicot/Evangeline	Domestic	Unknown	TDWR
6RR	Blanche Stivora	~2,562	90-95	Unknown	Plastic	95	1-19-77	Chicot/Evangeline	Domestic	Unknown	TWDB
6SS	Charenee Yackeh	2,174	84 – 90	Unknown	PVC	90	9/26/77	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6SS	David Cormier	~2,174	100-105	Unknown	PVC	105	3-26-80	Chicot/Evangeline	Domestic	Unknown	TDWR
6SS	Gene Mathews	~2,174	97-107	Unknown	Plastic	107	8-9-77	Chicot/Evangeline	Domestic	Unknown	TWDB
6SS	Sesario Resendez	~2,174	99-104	Unknown	PVC	104	6-26-81	Chicot/Evangeline	Rent	Unknown	TDWR
6SS	El Campo Livestock Commission	~2,174	110-120	Unknown	Plastic	121	2-7-83	Chicot/Evangeline	Domestic	Unknown	TDWR
9AAA	Charles Borak	2,485	92 – 102	Unknown	PVC	102	6/8/83	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
9AAA	Buck Wengler	~2,485	100-110	Unknown	PVC	110	4-20-81	Chicot/Evangeline	Domestic	Unknown	TDWR
4H	Langdon	854	60 – 80	Unknown	PVC	80	4/19/83	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
4H	Harold Hermansen	~854	77-87	Unknown	PVC	112	12-20-78	Chicot/Evangeline	Domestic	Unknown	TDWR
4H	Oscar McClure	~854	83-88	Unknown	Plastic	88	12-1-68	Chicot/Evangeline	Domestic	Unknown	TWDB
6(1)	Kenny Cerny	2,252	90 – 100	3 - 10	PVC	100	2/16/04	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6(2)	Steve Korenek	2,718	109 – 119	3 - 10	PVC	119	2/18/04	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
6(3)	El Campo Little League	1,398	95 – 115	Unknown	PVC	115	7/19/90	Chicot/Evangeline	Irrigation	Unknown	TWDB/TCEQ
9(1)	J.A. Mount	2,562	90 – 100	0 - 15	PVC	100	5/13/87	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
4(1)	Wilbur Rod	2,096	90 – 100	0 - 70	PVC	100	9/7/89	Chicot/Evangeline	Domestic	Unknown	TWDB/TCEQ
4(2)	Mallard & Mallard	2,562	220 - 230	0 - 10	PVC	230	6/12/87	Chicot/Evangeline	Industrial	Unknown	TWDB/TCEQ
4(3)	N. Thompson	2,562	80 - 90	0 - 15	Plastic	90	5/15/86	Chicot/Evangeline	Domestic	Unknown	TWC

Section 4 Soil Assessment

Section 4.1 Derivation of Assessment Levels

For vertical assessment of soils during this investigation, the laboratory MQL was identified as the target assessment level or, when a State Specific Background Concentration was available for a COC, the background level was used. For horizontal assessment of soil, the TRRP-listed Tier 1 residential PCL for a 0.5-acre source area was used for soils collected at the firing platforms and the residential 30-acre Tier 1 PCL was used for soil samples collected at the berm/backstop. Site-specific Tier 2 PCLs were calculated using site-specific pH and soil information for lead, silver and mercury.

The previous and current threat of exposure for humans at the affected property includes dermal contact with affected soils. The affected areas are wholly contained within the fenced facility boundary and behind a locked gate, and the area is no longer used by facility personnel, therefore the potential for exposure is relatively low. No actual exposures are known to have occurred.

The undeveloped portion of the Armory facility where the affected properties are located is inhabited by cattle and other wildlife around and within the pond to the south of the backstop. The cattle and wildlife feed on grass and plants located and rooted in the impacted surface soil, therefore there is a possibility of exposure.

Class 1 groundwater is assumed for this facility, therefore the Class 3 groundwater pathways are considered incomplete. Although the subsurface soil pathways are considered complete, subsurface soil samples were not collected due to the planned response action.

Surrounding properties in the vicinity of the affected properties include an American Legion facility and baseball fields adjacent to the facility to the west, and several single-family residences to the north. The property to the south and east is undeveloped and used for agricultural purposes. Due to the location of the affected properties within the boundaries of the larger Armory facility, and due to the less mobile nature of the contaminants, it is not likely that contamination noted in shallow soils during this investigation will impact adjacent properties.

According to the water well records seach conducted in June 2005, there are 46 water wells located within a half-mile radius of the facility. The wells are installed to depths ranging from 67 feet bgs to 230 feet bgs and the shallowest screened interval is from 63 to 67 feet bgs. Due to the depth of the screened intervals, and the distance of the wells from the affected properties, it is not likely that contamination noted in shallow soils during this investigation will impact those wells.

Section 4.2 Nature and Extent of COCs and NAPL in Soil

Sampling activities were conducted during September 2003, November 2003, and June 2004 to determine whether activities at the firing range had resulted in an impact to surface soils at the firing platforms or backstop. Samples were analyzed for VOCs by Method 8260, SVOCs by Method 8270, and TAL Metals by Method 6020. No VOC concentrations were reported greater than the laboratory MQL or residential assessment level. One SVOC, bis (2-ethylhexyl) phthalate, was detected at one location at an estimated concentration greater than the laboratory MQL of 0.167 mg/kg but less than the Tier 1 assessment level of 43 mg/kg. Several metals were detected at concentrations greater than assessment levels. They include:

- **Bis(2-ethylhexyl) phthalate** – detected in one sample at a concentration slightly greater than the MQL of 0.167 mg/kg, the vertical assessment level, and less than the residential horizontal assessment level of 43 mg/kg

- **Antimony** – detected in eight samples greater than the Texas Specific Background Concentration of 1 milligram per kilogram (mg/kg), the vertical assessment level. Two of these samples also exceeded the horizontal residential assessment level and PCL.
- **Cadmium** – detected in several samples greater than the laboratory MQL of 0.050 mg/kg, the vertical assessment level
- **Cobalt** – detected in two samples greater than the Texas Specific Background Concentration of 7 mg/kg, the vertical assessment level
- **Copper** – detected in eight samples greater than the Texas Specific Background Concentration of 15 mg/kg, the vertical assessment level
- **Lead** – detected in 45 several samples greater than the Texas Specific Background Concentration of 15 mg/kg, the vertical assessment level. In addition, lead was detected in 10 samples greater than the horizontal assessment level and critical PCL of 89.56 mg/kg in the berm/backstop area.
- **Manganese** – detected in four samples greater than the Texas Specific Background Concentration of 300 mg/kg, the vertical assessment level. One of these samples also exceeded the horizontal residential assessment level of 580 mg/kg, but not the commercial/industrial critical PCL of 5,100 mg/kg.
- **Nickel** – detected in two samples greater than the Texas Specific Background Concentration of 10 mg/kg, the vertical assessment level
- **Selenium** – was only detected in one sample and it was detected at a concentration greater than the Texas Specific Background Concentration of 0.3 mg/kg, the vertical assessment level. For the other samples, the Sample Quantitation Limit (SQL) was greater than the MQL of 0.25 mg/kg and the background concentration
- **Silver** - was detected in five samples at concentrations greater than the MQL of 0.24 mg/kg, the vertical assessment level, but less than the horizontal assessment level and critical PCL. However, for the other samples, the SQL is greater than the MQL. . For the other samples, the SQL
- **Zinc** – detected in five samples greater than the Texas Specific Background Concentration of 30 mg/kg, the vertical assessment level

Sample locations were selected based on the known locations of shooting activities. The locations of the two former firing platforms were identified through aerial photographs and facility personnel. Horizontal and vertical delineation sample locations were selected based on analtycial data from the previous sampling event. In total, 10 locations were sampled in the area of the northern firing platform in order to identify the horizontal extent of contamination, and vertical delineation samples were collected at two locations. Seven locations were sampled in the area of the southern firing platform in order to identify the horizontal extent of contamination, and a vertical delineation sample was collected at one location. Forty-six locations were sampled in the area of the berm/backstop in order to identify the horizontal extent of contamination, and vertical delineation samples were collected at 12 locations. See Figures 1B-1 and 1B-2A and 2B for sampling locations and Table 4D for analytical results.

As illustrated in Figure 1B-1, the highest concentrations of COCs in soil occur in the area of the backstop both in the upper portion of the berm and in the low-lying area in front of the berm. It is believed that the metals impacts are a direct result of bullets being fired at the backstop area resulting in metals from spent munitions accumulating in the shallow soil. Because the firing range is no longer in use and because the area is completely fenced, the exposure potential for humans is relatively low, however the exposure potential for cattle and other wildlife feeding on the grass and plants rooted in the impacted soil is present.

Based on the analytical data, lead and antimony-impacted soil has not been delineated in all locations sufficient to demonstrate groundwater protectiveness. The Adjutant General's Department plans to conduct a Response Action at the site for the removal of impacted soil.

Upon completion of the Response Action, verification soil sampling will verify the extent of impacted soil.

NAPL was not observed in surface soils during this investigation.

The Armory property has three sources of contamination: Firing Platforms 1 and 2, and the Berm/Backstop. The Firing Platforms is a source area with a combined size of less than 0.5 acres and the analytical results for the Firing Platforms are, therefore, combined in the following Table 4A. The Berm/Backstop is a source area approximately 0.6 acres in size, and therefore, the TRRP 30-acre assessment levels were used to compare against analytical data. The Berm/Backstop analytical data are listed in a separate Table 4A.

Table 4A. Surface Soil Residential Assessment Levels with no Ecological Component

Firing Platforms 1 and 2

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	^{GW}Soil PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
TAL METALS BY 6020										
Aluminum	<0.5	6.5E+4	1.7E+5	1	0.5	30,000	P-3	0 – 0.5	09/16/03	4780
Antimony	<0.5	15	5.4	1	0.25	1	P2-2	0 – 0.5	11/11/03	0.995
Arsenic	<0.5	24	5.0	1	0.25	5.9	P2-1	0 – 0.5	11/11/03	5.32
Barium	<0.5	2800	440	1	0.5	300	P2-3	0 – 0.5	11/11/03	46.7
Beryllium	<0.5	38	1.8	1	0.05	1.5	P-3	0 – 0.5	09/16/03	0.444
Cadmium	<0.5	52	1.5	1	0.05	NE	P2-3	0 – 0.5	11/11/03	0.586
Calcium	<0.5	NE	NE	NE	25	NE	P2-1	0 – 0.5	11/11/03	1700
Chromium	<0.5	3E+4	2.4E+3	1	0.5	30	P2-2	0 – 0.5	11/11/03	6.49
Cobalt	<0.5	3400	1300	1	0.5	7	P2-3	0 – 0.5	11/11/03	7.08
Copper	<0.5	550	1.0E+3	1	0.5	15	P2-2	0 – 0.5	11/11/03	16.2
Iron	<0.5	NE	NE	NE	10	15,000	P2-1	0 – 0.5	11/11/03	6080
Lead	<0.5	500	179	2	0.1	15	P2-1	0 – 0.5	11/11/03	131
Magnesium	<0.5	NE	NE	NE	10	NE	P-3	0 – 0.5	09/16/03	705
Manganese	<0.5	3700	1200	1	0.5	300	P2-3	0 – 0.5	11/11/03	340
Mercury	<0.5	3.6	8.01	2	0.02	0.04	P2-1	0 – 0.5	11/11/03	0.0857
Nickel	<0.5	840	160	1	0.5	10	P2-1	0 – 0.5	11/11/03	4.1
Potassium	<0.5	NE	NE	NE	10	NE	P2-2	0 – 0.5	11/11/03	1,040
Selenium	<0.5	310	2.3	1	0.25	0.3	P2-3	0 – 0.5	11/11/03	U (<0.543)
Silver	<0.5	96	480	2	0.24	NE	P-5	0 – 0.5	09/16/03	0.714
Sodium	<0.5	NE	NE	NE	25	NE	P-2	0 – 0.5	09/16/03	486
Thallium	<0.5	6.3	1.7	1	0.5	9.3	P-3	0 – 0.5	9/16/03	U (<0.374)
Vanadium	<0.5	290	3400	1	0.5	50	P2-1 & P2-3	0 – 0.5	11/11/03	15.2
Zinc	<0.5	9900	2400	1	0.5	30	P2-1	0 – 0.5	11/11/03	299
VOCS BY 8260										
Benzene	<0.5	32	0.026	1	0.005	---	---	---	---	U (<0.001)
Bromobenzene	<0.5	150	5.8	1	0.005	---	---	---	---	U (<0.001)
Bromochloromethane	<0.5	620	3.0	1	0.005	---	---	---	---	U (<0.001)
Bromodichloromethane	<0.5	98	0.065	1	0.005	---	---	---	---	U (<0.001)
Bromoform	<0.5	400	0.63	1	0.005	---	---	---	---	U (<0.001)
Bromomethane	<0.5	46	0.13		0.005					U (<0.001)
MTBE	<0.5	800	0.62	1	0.005	---	---	---	---	U (<0.001)
Tert-Butylbenzene	<0.5	1900	100	1	0.005	---	---	---	---	U (<0.001)
Sec-Butylbenzene	<0.5	2100	85	1	0.005	---	---	---	---	U (<0.001)
n-Butylbenzene	<0.5	1900	120	1	0.005	---	---	---	---	U (<0.001)
Carbon Tetrachloride	<0.5	16	0.062	1	0.005	---	---	---	---	U (<0.001)

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Background				
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
Chlorobenzene	<0.5	590	1.1	1	0.005	---	---	---	---	U (<0.001)
Chloroethane	<0.5	2.7E+4	31	1	0.010	---	---	---	---	U (<0.002)
Chloroform	<0.5	16	1.0	1	0.005	---	---	---	---	U (<0.001)
Chloromethane	<0.5	140	0.41	1	0.010	---	---	---	---	U (<0.002)
2-Chlorotoluene	<0.5	1000	9.1	1	0.005	---	---	---	---	U (<0.001)
4-Chlorotoluene	<0.5	4.8	11	1	0.005	---	---	---	---	U (<0.001)
p-Cymene	<0.5	3700	230	1	0.005	---	---	---	---	U (<0.001)
1,2-Dibromo-3-Chloropropane	<0.5	3.3	1.7E-3	1	0.005	---	---	---	---	U (<0.001)
Dibromochloromethane	<0.5	72	0.049	1	0.005	---	---	---	---	U (<0.001)
Dibromomethane (Methylene bromide)	<0.5	810	1.1	1	0.005	---	---	---	---	U (<0.001)
1,2-Dichlorobenzene	<0.5	720	18	1	0.005	---	---	---	---	U (<0.001)
1,3-Dichlorobenzene	<0.5	120	6.7	1	0.005	---	---	---	---	U (<0.001)
1,4-Dichlorobenzene	<0.5	250	2.1	1	0.005	---	---	---	---	U (<0.001)
Dichlorodifluoromethane	<0.5	1.3E+4	240	1	0.005	---	---	---	---	U (<0.001)
1,2-Dichloroethane	<0.5	11	0.014	1	0.005	---	---	---	---	U (<0.001)
1,1-Dichloroethane	<0.5	3500	9.2	1	0.005	---	---	---	---	U (<0.001)
Trans-1,2-dichloroethene	<0.5	1400	0.49	1	0.005	---	---	---	---	U (<0.001)
Cis-1,2-Dichloroethene	<0.5	770	0.25	1	0.005	---	---	---	---	U (<0.001)
1,1-Dichloroethene	<0.5	1800	0.05	1	0.005	---	---	---	---	U (<0.001)
2,2-Dichloropropane	<0.5	61	0.12	1	0.005	---	---	---	---	U (<0.001)
1,3-Dichloropropane	<0.5	36	0.064	1	0.005	---	---	---	---	U (<0.001)
1,2-Dichloropropane	<0.5	61	0.023	1	0.005	---	---	---	---	U (<0.001)
Trans-1,3-dichloropropene	<0.5	36	0.036	1	0.005	---	---	---	---	U (<0.001)
1,1-Dichloropropene	<0.5	36	0.13	1	0.005	---	---	---	---	U (<0.001)
Cis-1,3-Dichloropropene	<0.5	7.6	0.0066	1	0.005	---	---	---	---	U (<0.001)
Ethylbenzene	<0.5	5300	7.6	1	0.005	---	---	---	---	U (<0.001)
Hexachlorobutadiene	<0.5	13	1.4	1	0.005	---	---	---	---	U (<0.001)
Isopropylbenzene (Cumene)	<0.5	4300	350	1	0.005	---	---	---	---	U (<0.001)
Methylene Chloride	<0.5	390	0.013	1	0.020	---	---	---	---	U (<0.004)
Naphthalene	<0.5	220	31	1	0.010	---	---	---	---	U (<0.002)
n-Propylbenzene	<0.5	2200	45	1	0.005	---	---	---	---	U (<0.001)
Styrene	<0.5	9700	3.3	1	0.005	---	---	---	---	U (<0.001)
1,1,1,2-Tetrachloroethane	<0.5	65	1.4	1	0.005	---	---	---	---	U (<0.001)
1,1,2,2-Tetrachloroethane	<0.5	6.9	0.023	1	0.005	---	---	---	---	U (<0.001)
Tetrachloroethylene	<0.5	98	0.05	1	0.005	---	---	---	---	U (<0.001)
Toluene	<0.5	6000	8.2	1	0.005	---	---	---	---	U (<0.001)
1,2,4-Trichlorobenzene	<0.5	640	4.8	1	0.005	---	---	---	---	U (<0.001)
1,2,3-Trichlorobenzene	<0.5	190	26	1	0.005	---	---	---	---	U (<0.001)
1,1,2-Trichloroethane	<0.5	18	0.02	1	0.005	---	---	---	---	U (<0.001)
1,1,1-Trichloroethane	<0.5	7900	1.6	1	0.005	---	---	---	---	U (<0.001)
Triichloroethene	<0.5	150	0.034	1	0.005	---	---	---	---	U (<0.001)
Trichlorofluoromethane	<0.5	1.6E+4	130	1	0.005	---	---	---	---	U (<0.001)
1,2,3-Trichloropropane	<0.5	0.87	0.0023	1	0.005	---	---	---	---	U (<0.001)
1,2,4-Trimethylbenzene	<0.5	130	49	1	0.005	---	---	---	---	U (<0.001)
1,3,5-Trimethylbenzene	<0.5	110	53	1	0.005	---	---	---	---	U (<0.001)

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
Vinyl Chloride	<0.5	3.7	0.022	1	0.002	---	---	---	---	U (<0.001)
o-Xylene	<0.5	3.7E+4	71	1	0.005	---	---	---	---	U (<0.001)
m,p-Xylenes	<0.5	6400	110	1	0.010	---	---	---	---	U (<0.002)
SVOCS BY 8270										
Acenaphthene	<0.5	3000	240	1	0.167	---	---	---	---	U (<0.039)
Acenaphthylene	<0.5	3800	410	1	0.167	---	---	---	---	U (<0.039)
Aniline	<0.5	100	0.37	1	0.667	---	---	---	---	U (<0.041)
Anthracene	<0.5	1.8E+4	6900	1	0.167	---	---	---	---	U (<0.052)
Benzo(a)anthracene	<0.5	5.7	18	1	0.167	---	---	---	---	U (<0.039)
Benzo(a)pyrene	<0.5	0.56	7.6	1	0.167	---	---	---	---	U (<0.039)
Benzo(b)fluoranthene	<0.5	5.7	60	1	0.167	---	---	---	---	U (<0.039)
Benzo(g,h,i)perylene	<0.5	1800	4.6E+4	1	0.167	---	---	---	---	U (<0.039)
Benzo(k)fluoranthene	<0.5	57	620	1	0.167	---	---	---	---	U (<0.039)
Benzoic Acid	<0.5	690	190	1	1.0	---	---	---	---	U (<0.345)
Benzyl Butyl Phthalate	<0.5	7300	2700	1	0.167	---	---	---	---	U (<0.044)
Bis(2-chloroethyoxy)methane	<0.5	3.1	0.012	1	0.333	---	---	---	---	U (<0.039)
Bis(2-chloroethyl)ether	<0.5	2.2	0.0021	1	0.333	---	---	---	---	U (<0.039)
Bis(2-chloroisopropyl)ether	<0.5	51	0.19	1	0.333	---	---	---	---	U (<0.053)
Bis(2-ethylhexyl)phthalate	<0.5	43	160	1	0.167	---	---	---	---	U(<0.039)
4-Bromophenyl-phenylether	<0.5	0.28	0.35	1	0.333	---	---	---	---	U (<0.052)
di-n-Butyl Phthalate	<0.5	5100	3300	1	0.167	---	P-4	0 – 0.5	09/16/03	0.041 J
4-chloro-3-methylphenol	<0.5	330	4.5	1	0.333	---	---	---	---	U (<0.047)
4-Chloroaniline (p)	<0.5	220	0.45	1	0.667	---	---	---	---	U (<0.039)
2-Chloronaphthalene	<0.5	5000	670	1	0.333	---	---	---	---	U (<0.039)
2-Chlorophenol	<0.5	380	1.6	1	0.333	---	---	---	---	U (<0.039)
4-Chlorophenyl Phenyl Ether	<0.5	0.16	0.032	1	0.333	---	---	---	---	U (<0.039)
Chrysene	<0.5	560	1500	1	0.167	---	---	---	---	U (<0.039)
Dibenz(a,h)Anthracene	<0.5	0.55	15	1	0.167	---	---	---	---	U (<0.047)
Dibenzofuran	<0.5	270	33	1	0.333	---	---	---	---	U (<0.043)
1,2-Dichlorobenzene	<0.5	720	18	1	0.333	---	---	---	---	U (<0.039)
1,3-Dichlorobenzene	<0.5	120	6.7	1	0.333	---	---	---	---	U (<0.039)
1,4-Dichlorobenzene	<0.5	250	2.1	1	0.333	---	---	---	---	U (<0.043)
3,3-Dichlorobenzidine	<0.5	10	0.063	1	0.333	---	---	---	---	U (<0.074)
2,4-Dichlorophenol	<0.5	200	0.35	1	0.333	---	---	---	---	U (<0.039)
Diethyl Phthalate	<0.5	2700	160	1	0.167	---	P-4	0 – 0.5	09/16/03	0.091 J
Dimethyl Phthalate	<0.5	1300	62	1	0.167	---	---	---	---	U (<0.044)
2,4-Dimethylphenol	<0.5	1100	3.2	1	0.333	---	---	---	---	U (<0.039)
4,6-dinitro-2-methyl phenol	<0.5	35	0.094	1	0.333	---	---	---	---	U (<0.044)
2,4-Dinitrophenol	<0.5	130	0.094	1	0.333	---	---	---	---	U (<0.039)
2,4-Dinitrotoluene	<0.5	6.9	0.0053	1	0.333	---	---	---	---	U (<0.050)
2,6-Dinitrotoluene	<0.5	6.9	0.0048	1	0.333	---	---	---	---	U (<0.039)
Fluoranthene	<0.5	2300	1900	1	0.167	---	---	---	---	U (<0.043)
Fluorene	<0.5	2300	300	1	0.167	---	---	---	---	U (<0.039)
Hexachlorobenzene	<0.5	1.1	1.1	1	0.333	---	---	---	---	U (<0.039)
Hexachlorobutadiene	<0.5	13	1.4	1	0.333	---	---	---	---	U (<0.039)
Hexachlorocyclopentadiene	<0.5	14	19	1	0.333	---	---	---	---	U (<0.039)
Hexachloroethane	<0.5	67	1.8	1	0.333	---	---	---	---	U (<0.041)
Indeno(1,2,3-c,d)Pyrene	<0.5	5.7	170	1	0.167	---	---	---	---	U (<0.056)

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	^{GW}Soil PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
SVOCS BY 8270 (continued)										
Isophorone	<0.5	2200	3.0	1	0.333	---	---	---	---	U (<0.062)
2-Methylnaphthalene	<0.5	250	17	1	0.167	---	---	---	---	U (<0.041)
2-methylphenol (o-Cresol)	<0.5	1500	7.1	1	0.333	---	---	---	---	U (<0.048)
3&4-Methylphenol (m,p-Cresol)	<0.5	300	0.63	1	0.333	---	---	---	---	U (<0.078)
Naphthalene	<0.5	220	31	1	0.167	---	---	---	---	U (<0.041)
4-Nitroaniline	<0.5	120	0.057	1	0.667	---	---	---	---	U (<0.065)
3-Nitroaniline	<0.5	20	0.026	1	0.333	---	---	---	---	U (<0.082)
2-Nitroaniline	<0.5	14	0.022	1	0.333	---	---	---	---	U (<0.040)
Nitrobenzene	<0.5	31	0.088	1	0.333	---	---	---	---	U (<0.039)
2-Nitrophenol	<0.5	110	0.13	1	0.333	---	---	---	---	U (<0.039)
4-Nitrophenol	<0.5	73	0.1	1	0.333	---	---	---	---	U (<0.067)
N-Nitrosodi-n-Propylamine	<0.5	0.4	3.5E-4	1	0.333	---	---	---	---	U (<0.039)
N-Nitrosodiphenylamine	<0.5	570	2.8	1	0.333	---	---	---	---	U (<0.047)
di-n-Octyl Phthalate	<0.5	1300	1.0E+6	1	0.167	---	---	---	---	U (<0.039)
Pentachlorophenol	<0.5	2.4	0.018	1	0.333	---	---	---	---	U (<0.055)
Phenanthrene	<0.5	1700	420	1	0.167	---	---	---	---	U (<0.039)
Phenol	<0.5	2900	19	1	0.333	---	---	---	---	U (<0.039)
Pyrene	<0.5	1700	1100	1	0.167	---	---	---	---	U (<0.044)
Pyridine	<0.5	60	0.069	1	0.333	---	---	---	---	U (<0.142)
1,2,4-Trichlorobenzene	<0.5	640	4.8	1	0.333	---	---	---	---	U (<0.039)
2,4,6-Trichlorophenol	<0.5	350	0.59	1	0.333	---	---	---	---	U (<0.043)
2,4,5-Trichlorophenol	<0.5	5100	34	1	0.333	---	---	---	---	U (<0.039)

Table 4A. Surface Soil Residential Assessment Levels with no Ecological Component

Berm

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	^{GW}Soil PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
TAL METALS BY 6020										
Aluminum	0.6	6.4E+4	8.6E+4	1	0.5	30,000	B-16	0 – 0.5	09/16/03	9,930
Antimony	0.6	15	2.7	1	0.25	1	B-25	0 – 0.5	09/16/03	14.5
Arsenic	0.6	24	2.5	1	0.25	5.9	B-12	0 – 0.5	9/16/03	2.67
Barium	0.6	7800	220	1	0.5	300	B-13	0 – 0.5	09/16/03	119
Beryllium	0.6	38	0.92	1	0.05	1.5	B-12	0 – 0.5	09/16/03	0.649
Cadmium	0.6	52	0.75	1	0.05	NE	B-1	0 – 0.5	9/16/03	0.371
Calcium	0.6	NE	NE	NE	25	NE	B-25D(dup)	0 – 0.5	09/16/03	143,000
Chromium	0.6	2.3E+4	1200	1	0.5	30	B-12 & B-16	0 – 0.5	09/16/03	10.2
Cobalt	0.6	3800	660	1	0.5	7	B-4	0 – 0.5	09/16/03	15.9
Copper	0.6	550	520	1	0.5	15	B-25D(dup)	0 – 0.5	09/16/03	133
Iron	0.6	NE	NE	NE	10	15,000	B-12	0 – 0.5	09/16/03	9,780
Lead	0.6	500	89.56	2	0.1	15	B-25	0 – 0.5	09/16/03	8,840
Magnesium	0.6	NE	NE	NE	10	NE	B-12	0 – 0.5	09/16/03	2,400
Manganese	0.6	3400	580	1	0.5	300	B-4	0 – 0.5	09/16/03	834
Mercury	0.6	2.1	4.00	2	0.02	0.04	B-1	0 – 0.5	9/16/03	0.0360 J
Nickel	0.6	830	79	1	0.5	10	B-4	0 – 0.5	09/16/03	14.7

Potassium	0.6	NE	NE	NE	10	NE	B-12	0 – 0.5	09/16/03	1,820
Selenium	0.6	310	1.1	1	0.25	0.3	B-25D(dup)	0 – 0.5	09/16/03	0.519 J
Silver	0.6	95	0.24	1	0.24	NE	B-8	0 – 0.5	09/16/03	0.666
Sodium	0.6	NE	NE	NE	25	NE	B-9	0 – 0.5	09/16/05	906
Thallium	0.6	6.3	0.87	1	0.5	9.3	---	---	---	U
Vanadium	0.6	290	1700	1	0.5	50	B-12	0 – 0.5	09/16/03	20.8
Zinc	0.6	9900	1200	1	0.5	30	B-1	0 – 0.5	9/16/03	135

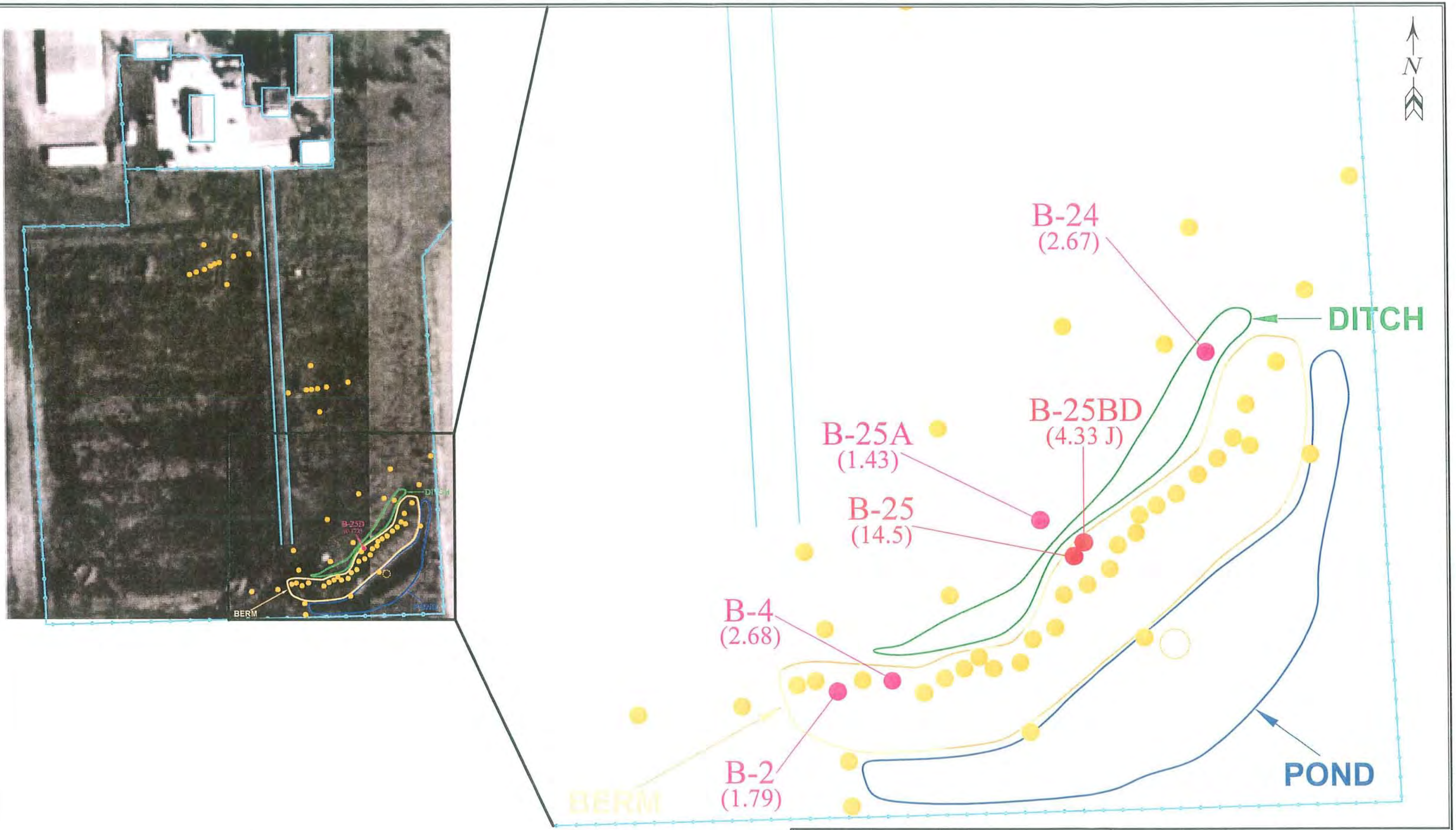
Berm

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	$^{GW}Soil$ PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
VOCS BY 8260										
Benzene	0.6	19	0.013	1	0.005	---	---	---	---	U (<0.001)
Bromobenzene	0.6	79	2.9	1	0.005	---	---	---	---	U (<0.001)
Bromochloromethane	0.6	350	1.5	1	0.005	---	---	---	---	U (<0.001)
Bromodichloromethane	0.6	98	0.033	1	0.005	---	---	---	---	U (<0.001)
Bromoform	0.6	280	0.32	1	0.005	---	---	---	---	U (<0.001)
Bromomethane	0.6	29	0.065	1	0.005	---	---	---	---	U (<0.001)
MTBE	0.6	590	0.31	1	0.005	---	---	---	---	U (<0.001)
Tert-Butylbenzene	0.6	1400	50	1	0.005	---	---	---	---	U (<0.001)
Sec-Butylbenzene	0.6	1600	42	1	0.005	---	---	---	---	U (<0.001)
n-Butylbenzene	0.6	1500	61	1	0.005	---	---	---	---	U (<0.001)
Carbon Tetrachloride	0.6	9.7	0.031	1	0.005	---	---	---	---	U (<0.001)
Chlorobenzene	0.6	370	0.55	1	0.005	---	---	---	---	U (<0.001)
Chloroethane	0.6	2.3E+4	15	1	0.010	---	---	---	---	U (<0.002)
Chloroform	0.6	8.0	0.51	1	0.005	---	---	---	---	U (<0.001)
Chloromethane	0.6	84	0.2	1	0.010	---	---	---	---	U (<0.002)
2-Chlorotoluene	0.6	830	4.5	1	0.005	---	---	---	---	U (<0.001)
4-Chlorotoluene	0.6	2.5	5.4	1	0.005	---	---	---	---	U (<0.001)
p-Cymene	0.6	2500	120	1	0.005	---	---	---	---	U (<0.001)
1,2-Dibromo-3-Chloropropane	0.6	3.3	8.7E-4	1	0.005	---	---	---	---	U (<0.001)
Dibromochloromethane	0.6	72	0.025	1	0.005	---	---	---	---	U (<0.001)
Dibromomethane (Methylene bromide)	0.6	810	0.56	1	0.005	---	---	---	---	U (<0.001)
1,2-Dichlorobenzene	0.6	390	8.9	1	0.005	---	---	---	---	U (<0.001)
1,3-Dichlorobenzene	0.6	62	3.4	1	0.005	---	---	---	---	U (<0.001)
1,4-Dichlorobenzene	0.6	250	1.1	1	0.005	---	---	---	---	U (<0.001)
Dichlorodifluoromethane	0.6	1.2E+4	120	1	0.005	---	---	---	---	U (<0.001)
1,2-Dichloroethane	0.6	6.4	0.0069	1	0.005	---	---	---	---	U (<0.001)
1,1-Dichloroethane	0.6	2300	4.6	1	0.005	---	---	---	---	U (<0.001)
Trans-1,2-dichloroethene	0.6	1300	0.25	1	0.005	---	---	---	---	U (<0.001)
Cis-1,2-Dichloroethene	0.6	720	0.12	1	0.005	---	---	---	---	U (<0.001)
1,1-Dichloroethene	0.6	1100	0.025	1	0.005	---	---	---	---	U (<0.001)
2,2-Dichloropropane	0.6	31	0.06	1	0.005	---	---	---	---	U (<0.001)
1,3-Dichloropropane	0.6	26	0.032	1	0.005	---	---	---	---	U (<0.001)
1,2-Dichloropropane	0.6	31	0.011	1	0.005	---	---	---	---	U (<0.001)
Trans-1,3-dichloropropene	0.6	26	0.018	1	0.005	---	---	---	---	U (<0.001)
1,1-Dichloropropene	0.6	26	0.067	1	0.005	---	---	---	---	U (<0.001)
Cis-1,3-Dichloropropene	0.6	7.1	0.0033	1	0.005	---	---	---	---	U (<0.001)
Ethylbenzene	0.6	4000	3.8	1	0.005	---	---	---	---	U (<0.001)
Hexachlorobutadiene	0.6	12	0.69	1	0.005	---	---	---	---	U (<0.001)

Isopropylbenzene (Cumene)	0.6	3000	170	1	0.005	---	---	---	---	U (<0.001)
Methylene Chloride	0.6	260	0.0065	1	0.020	---	---	---	---	U (<0.004)
Naphthalene	0.6	120	16	1	0.010	---	---	---	---	U (<0.002)
n-Propylbenzene	0.6	1600	22	1	0.005	---	---	---	---	U (<0.001)
Styrene	0.6	7000	1.6	1	0.005	---	---	---	---	U (<0.001)
1,1,1,2-Tetrachloroethane	0.6	39	0.71	1	0.005	---	---	---	---	U (<0.001)
1,1,2,2-Tetrachloroethane	0.6	4.0	0.0120.052	1	0.005	---	---	---	---	U (<0.001)
Tetrachloroethylene	0.6	85	0.025	1	0.005	---	---	---	---	U (<0.001)
Toluene	0.6	5600	4.1	1	0.005	---	---	---	---	U (<0.001)
1,2,4-Trichlorobenzene	0.6	610	2.4	1	0.005	---	---	---	---	U (<0.001)
1,2,3-Trichlorobenzene	0.6	190	13	1	0.005	---	---	---	---	U (<0.001)

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	^{GW}Soil PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
1,1,2-Trichloroethane	0.6	10	0.01	1	0.005	---	---	---	---	U (<0.001)
1,1,1-Trichloroethane	0.6	5300	0.81	1	0.005	---	---	---	---	U (<0.001)
Trichloroethene	0.6	91	0.017	1	0.005	---	---	---	---	U (<0.001)
Trichlorofluoromethane	0.6	1.2E+4	64	1	0.005	---	---	---	---	U (<0.001)
1,2,3-Trichloropropane	0.6	0.87	0.0011	1	0.005	---	---	---	---	U (<0.001)
1,2,4-Trimethylbenzene	0.6	68	24	1	0.005	---	---	---	---	U (<0.001)
1,3,5-Trimethylbenzene	0.6	59	27	1	0.005	---	---	---	---	U (<0.001)
Vinyl Chloride	0.6	3.4	0.011	1	0.002	---	---	---	---	U (<0.001)
o-Xylene	0.6	2.2E+4	35	1	0.005	---	---	---	---	U (<0.001)
m,p-Xylenes	0.6	3400	53	1	0.010	---	---	---	---	U (<0.002)
SVOCS BY 8270										
Acenaphthene	0.6	3000	120	1	0.167	---	---	---	---	U (<0.039)
Acenaphthylene	0.6	3800	200	1	0.167	---	---	---	---	U (<0.039)
Aniline	0.6	59	0.18	1	0.667	---	---	---	---	U (<0.042)
Anthracene	0.6	1.8E+4	3400	1	0.167	---	---	---	---	U (<0.053)
Benzo(a)anthracene	0.6	5.6	8.9	1	0.167	---	---	---	---	U (<0.039)
Benzo(a)pyrene	0.6	0.56	3.8	1	0.167	---	---	---	---	U (<0.039)
Benzo(b)fluoranthene	0.6	5.7	30	1	0.167	---	---	---	---	U (<0.039)
Benzo(g,h,i)perylene	0.6	1800	2.3E+4	1	0.167	---	---	---	---	U (<0.039)
Benzo(k)fluoranthene	0.6	57	310	1	0.167	---	---	---	---	U (<0.040)
Benzoic Acid	0.6	350	95	1	1.0	---	---	---	---	U (<0.352)
Benzyl Butyl Phthalate	0.6	5700	1300	1	0.167	---	---	---	---	U (<0.045)
Bis(2-chloroethyoxy)methane	0.6	2.5	0.0059	1	0.333	---	---	---	---	U (<0.039)
Bis(2-chloroethyl)ether	0.6	1.4	0.0011	1	0.333	---	---	---	---	U (<0.039)
Bis(2-chloroisopropyl)ether	0.6	41	950	1	0.333	---	---	---	---	U (<0.053)
Bis(2-ethylhexyl)phthalate	0.6	43	82	1	0.167	---	B-25D(dup)	0 – 0.5	09/16/03	0.172 J
4-Bromophenyl-phenylether	0.6	0.27	0.18	1	0.333	---	---	---	---	U (<0.053)
di-n-Butyl Phthalate	0.6	4400	1700	1	0.167	---	---	---	---	U (<0.039)
4-chloro-3-methylphenol	0.6	330	2.3	1	0.333	---	---	---	---	U (<0.048)
4-Chloroaniline (p)	0.6	200	0.22	1	0.667	---	---	---	---	U (<0.039)
2-Chloronaphthalene	0.6	5000	330	1	0.333	---	---	---	---	U (<0.039)
2-Chlorophenol	0.6	360	0.82	1	0.333	---	---	---	---	U (<0.039)
4-Chlorophenyl Phenyl Ether	0.6	0.15	0.016	1	0.333	---	---	---	---	U (<0.039)
Chrysene	0.6	560	770	1	0.167	---	---	---	---	U (<0.039)
Dibenz(a,h)Anthracene	0.6	0.55	7.6	1	0.167	---	---	---	---	U (<0.048)

Dibenzofuran	0.6	270	17	1	0.333	---	---	---	---	U (<0.044)
1,2-Dichlorobenzene	0.6	390	8.9	1	0.333	---	---	---	---	U (<0.039)
1,3-Dichlorobenzene	0.6	62	3.4	1	0.333	---	---	---	---	U (<0.039)
1,4-Dichlorobenzene	0.6	250	1.1	1	0.333	---	---	---	---	U (<0.044)
3,3-Dichlorobenzidine	0.6	10	0.031	1	0.333	---	---	---	---	U (<0.075)
2,4-Dichlorophenol	0.6	190	0.18	1	0.333	---	---	---	---	U (<0.039)
Diethyl Phthalate	0.6	1400	78	1	0.167	---	---	---	---	U (<0.039)
Dimethyl Phthalate	0.6	660	31	1	0.167	---	---	---	---	U (<0.045)
2,4-Dimethylphenol	0.6	880	1.6	1	0.333	---	---	---	---	U (<0.039)
4,6-dinitro-2-methyl phenol	0.6	21	0.047	1	0.333	---	---	---	---	U (<0.045)
2,4-Dinitrophenol	0.6	130	0.047	1	0.333	---	---	---	---	U (<0.039)
2,4-Dinitrotoluene	0.6	6.9	0.0027	1	0.333	---	---	---	---	U (<0.051)
COC	Source area size (acres)	^{Tot}Soil$_{Comb}$ PCL (mg/kg)	^{GW}Soil PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth	Sample date	Conc (mg/kg)
2,6-Dinitrotoluene	0.6	6.9	0.0024	1	0.333	---	---	---	---	U (<0.039)
Fluoranthene	0.6	2300	960	1	0.167	---	---	---	---	U (<0.043)
Fluorene	0.6	2300	150	1	0.167	---	---	---	---	U (<0.039)
Hexachlorobenzene	0.6	1.0	0.56	1	0.333	---	---	---	---	U (<0.040)
Hexachlorobutadiene	0.6	12	0.69	1	0.333	---	---	---	---	U (<0.039)
Hexachlorocyclopentadiene	0.6	7.2	9.6	1	0.333	---	---	---	---	U (<0.039)
Hexachloroethane	0.6	67	0.92	1	0.333	---	---	---	---	U (<0.042)
Indeno(1,2,3-c,d)Pyrene	0.6	5.7	87	1	0.167	---	---	---	---	U (<0.057)
Isophorone	0.6	1200	1.5	1	0.333	---	---	---	---	U (<0.064)
2-Methylnaphthalene	0.6	250	8.5	1	0.167	---	---	---	---	U (<0.041)
2-methylphenol (o-Cresol)	0.6	1000	3.6	1	0.333	---	---	---	---	U (<0.049)
3&4-Methylphenol (m,p-Cresol)	0.6	270	0.32	1	0.333	---	---	---	---	U (<0.080)
Naphthalene	0.6	120	16	1	0.167	---	---	---	---	U (<0.042)
4-Nitroaniline	0.6	120	0.028	1	0.667	---	---	---	---	U (<0.066)
3-Nitroaniline	0.6	19	0.013	1	0.333	---	---	---	---	U (<0.084)
2-Nitroaniline	0.6	11	0.011	1	0.333	---	---	---	---	U (<0.041)
Nitrobenzene	0.6	30	0.044	1	0.333	---	---	---	---	U (<0.039)
2-Nitrophenol	0.6	100	0.067	1	0.333	---	---	---	---	U (<0.039)
4-Nitrophenol	0.6	51	0.05	1	0.333	---	---	---	---	U (<0.068)
N-Nitrosodi-n-Propylamine	0.6	0.4	1.8E-4	1	0.333	---	---	---	---	U (<0.039)
N-Nitrosodiphenylamine	0.6	570	1.4	1	0.333	---	---	---	---	U (<0.047)
di-n-Octyl Phthalate	0.6	1300	8.1E+5	1	0.167	---	---	---	---	U (<0.039)
Pentachlorophenol	0.6	2.4	0.0092	1	0.333	---	---	---	---	U (<0.056)
Phenanthrene	0.6	1700	210	1	0.167	---	---	---	---	U (<0.039)
Phenol	0.6	1600	9.6	1	0.333	---	---	---	---	U (<0.039)
Pyrene	0.6	1700	560	1	0.167	---	---	---	---	U (<0.045)
Pyridine	0.6	48	0.035	1	0.333	---	---	---	---	U (<0.145)
1,2,4-Trichlorobenzene	0.6	610	2.4	1	0.333	---	---	---	---	U (<0.039)
2,4,6-Trichlorophenol	0.6	300	0.3	1	0.333	---	---	---	---	U (<0.043)
2,4,5-Trichlorophenol	0.6	4100	17	1	0.333	---	---	---	---	U (<0.039)

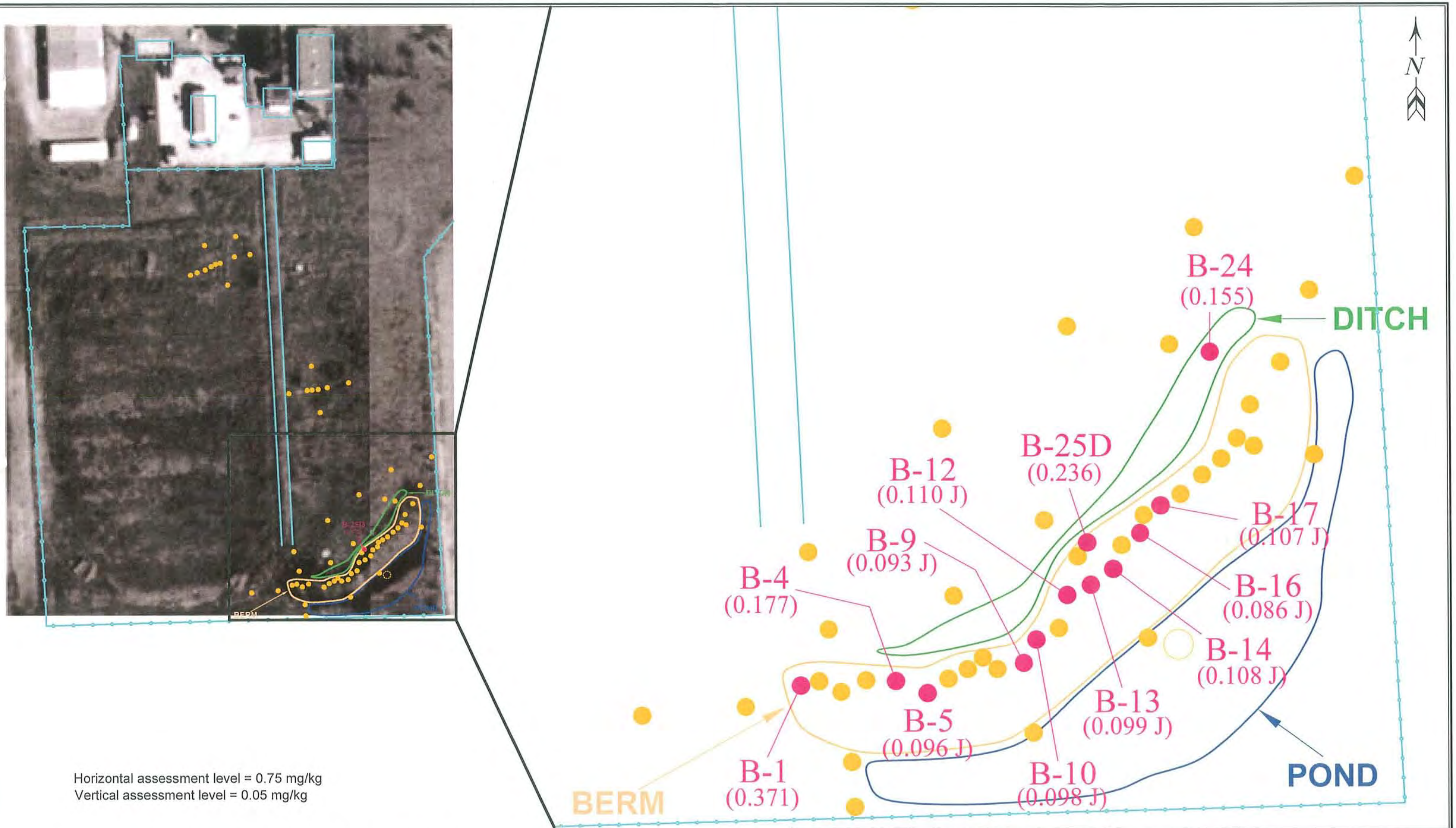


Horizontal assessment level = 2.7 mg/kg
Vertical assessment level = 1.0 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (antimony)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - Antimony	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 4A-1	*CORRIGAN CONSULTING, INC.*



Horizontal assessment level = 0.75 mg/kg
Vertical assessment level = 0.05 mg/kg

Note: The cadmium sample quantitation limit for all samples was greater than the vertical assessment level.

Scale
1 inch = 30 feet
0 30 60

Legend
- ● Sample location
- ● Sample location with COC exceedance (cadmium)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)

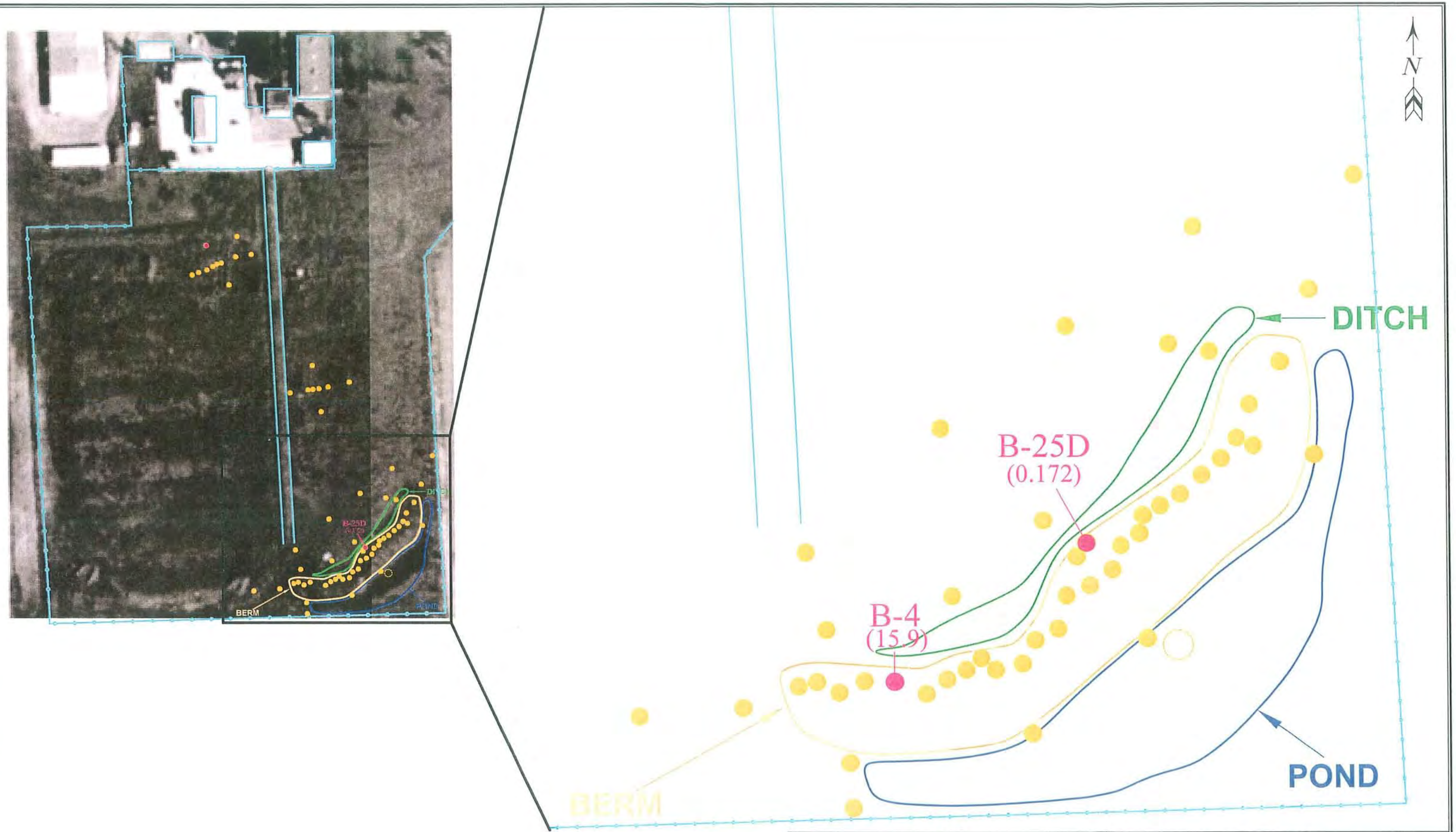
Surface Soil COC
Map - Cadmium
Backstop

Date: 11/06

Figure 4A-2(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal assessment level = 660 mg/kg
Vertical assessment level = 7.0 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location
● Sample location with COC exceedance (cobalt)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

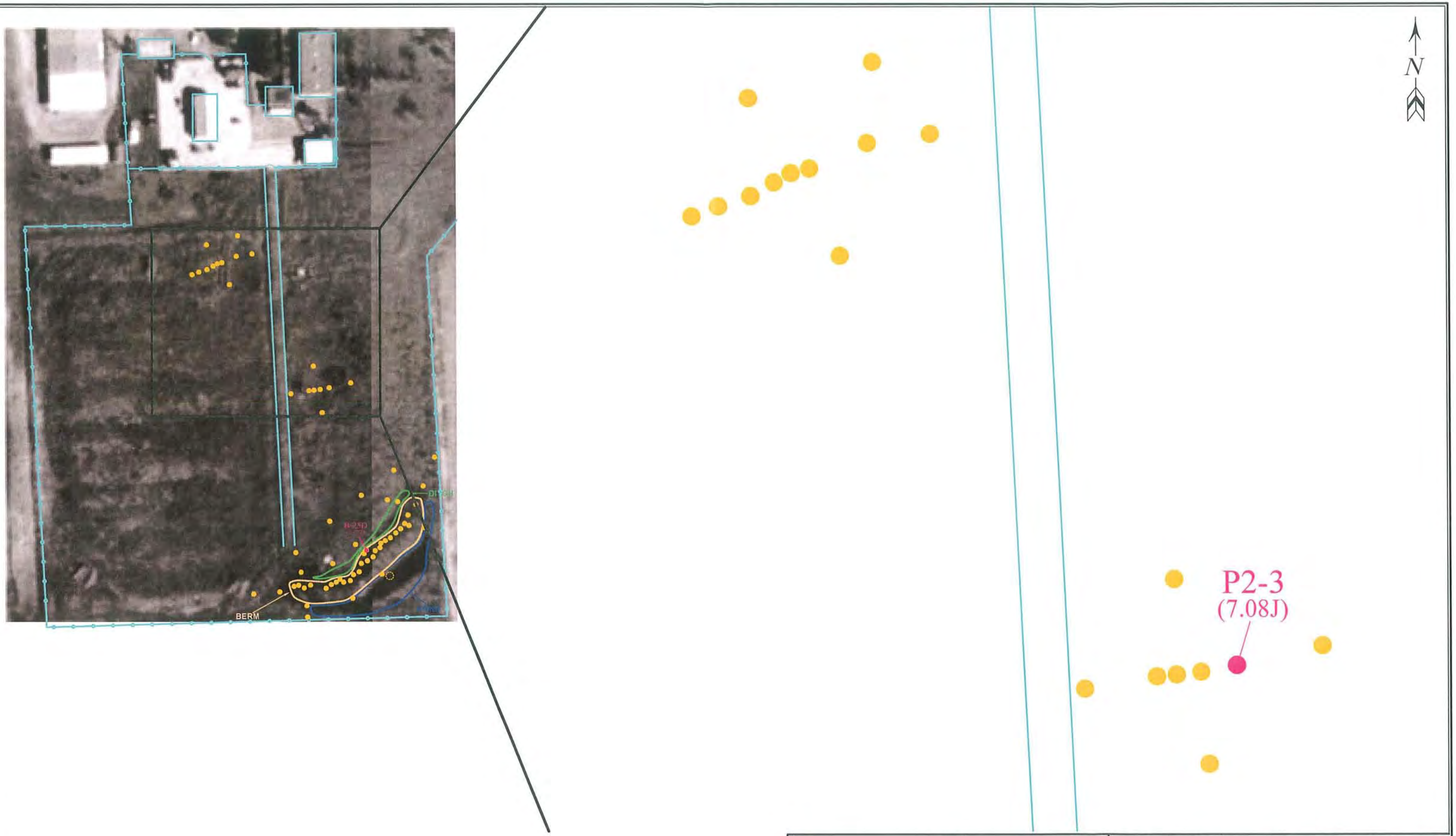
Surface Soil COC
Map - Cobalt
Backstop

Date: 11/06

Figure 4A-4(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

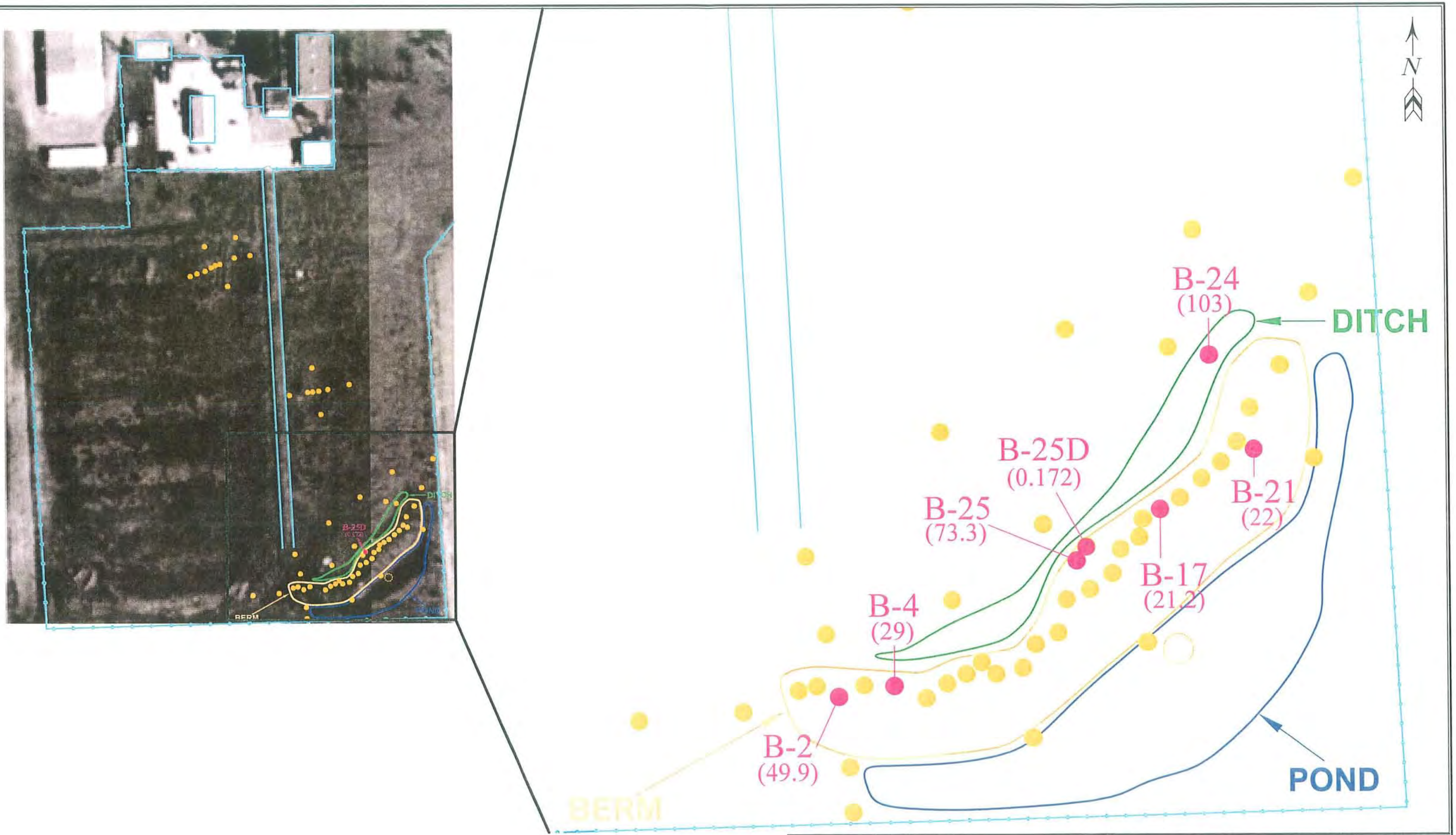


Horizontal assessment level = 1,300 mg/kg
Vertical assessment level = 7.0 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (cobalt)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - Cobalt Platforms	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 4A-4(2)	*CORRIGAN CONSULTING, INC.*



Horizontal assessment level = 520 mg/kg
Vertical assessment level = 15 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location
● Sample location with COC exceedance (copper)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

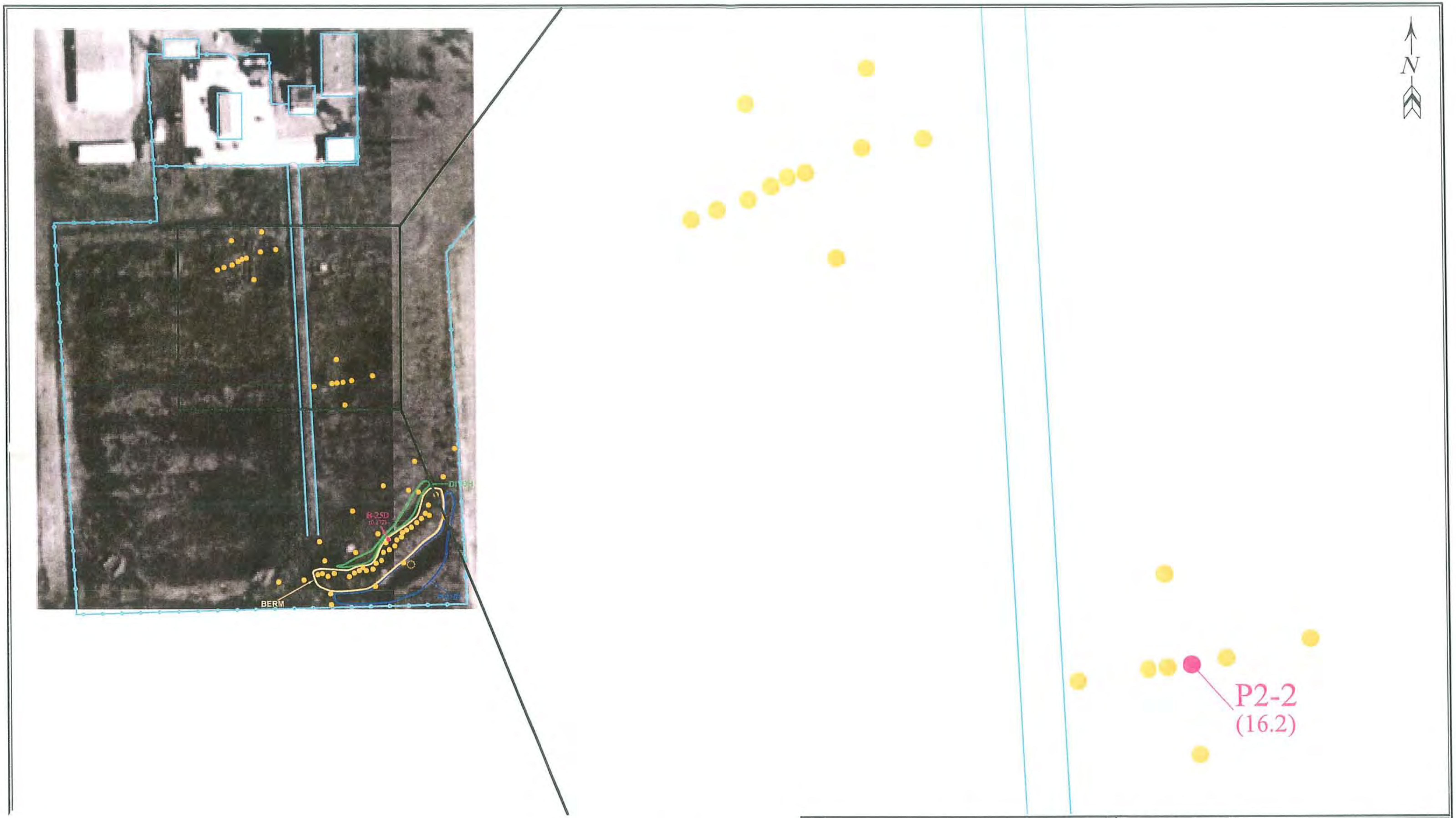
Surface Soil COC
Map - Copper
Backstop

Date: 11/06

Figure 4A-5(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

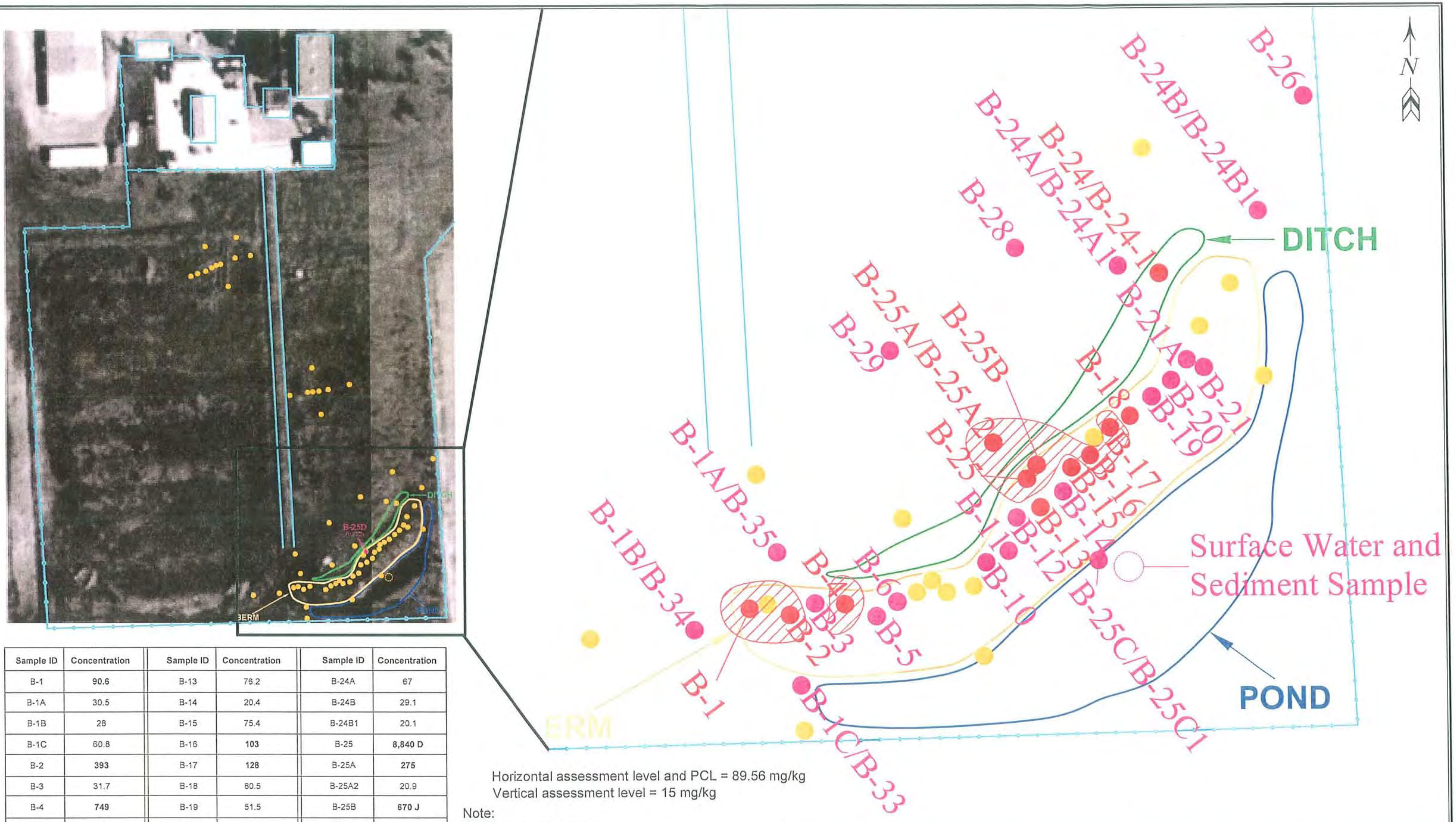


Horizontal assessment level = 550 mg/kg
Vertical assessment level = 15 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
🟡 Sample location
● Sample location with COC exceedance (copper)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - Copper Platforms	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 4A-5(2)	*CORRIGAN CONSULTING, INC.*



Horizontal assessment level and PCL = 89.56 mg/kg
Vertical assessment level = 15 mg/kg

Note:
Bolded concentrations exceed horizontal and vertical assessment levels.

Sample ID	Concentration	Sample ID	Concentration	Sample ID	Concentration
B-1	**90.6**	B-13	76.2	B-24A	67
B-1A	30.5	B-14	20.4	B-24B	29.1
B-1B	28	B-15	75.4	B-24B1	20.1
B-1C	60.8	B-16	**103**	B-25	**8,840 D**
B-2	**393**	B-17	**128**	B-25A	**275**
B-3	31.7	B-18	80.5	B-25A2	20.9
B-4	**749**	B-19	51.5	B-25B	**670 J**
B-5	21.2	B-20	35.1	B-25C	17
B-6	62.4	B-21	65.2	B-25C1	15.5
B-10	18.3	B-21A	29.7	B-26	22.4
B-11	15.3	B-24	79.4	B-28	16.9
B-12	15.9	B-24-1	54.8	B-29	45.4

Scale
1 inch = 30 feet
0 30 60

Legend

●	Sample location
●	Sample location with COC exceedance (lead)
▨	PCLE Zone (lead)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

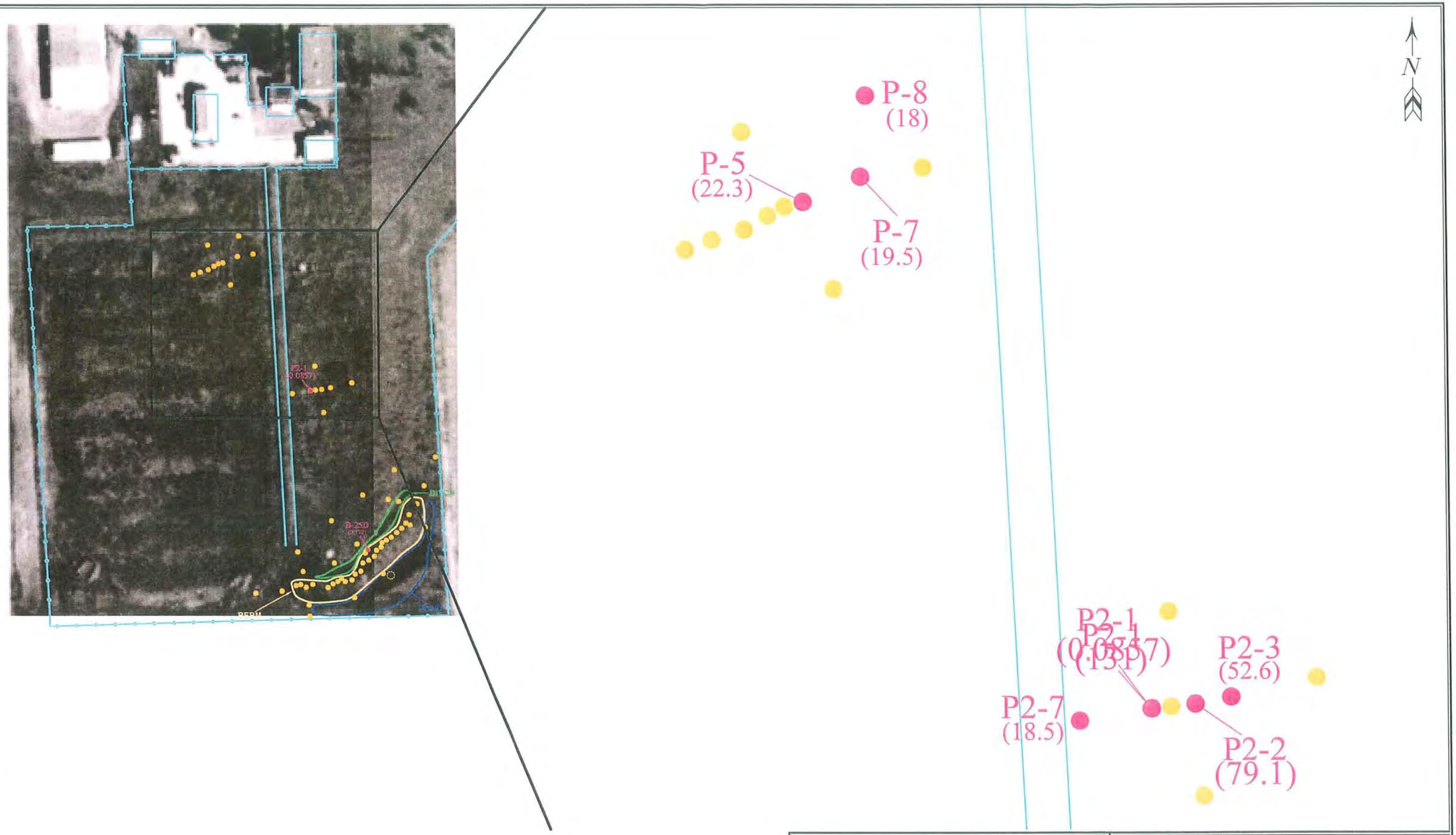
Surface Soil COC
Map - Lead
Backstop

Date: 11/06

Figure 4A-6(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal assessment level and PCL = 179.13 mg/kg
Vertical assessment level = 15 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (lead)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

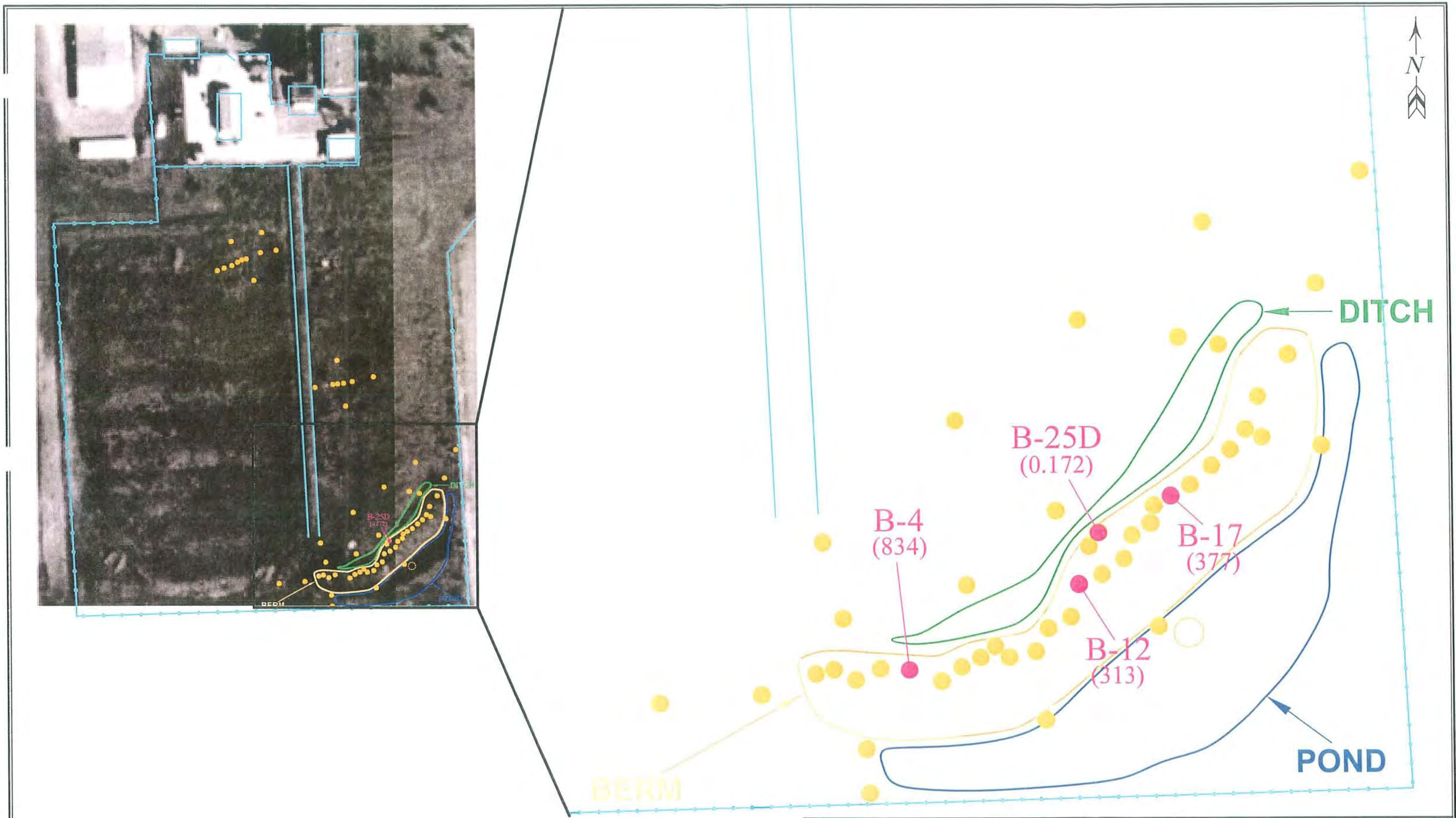
Surface Soil COC
Map - Lead
Platforms

Date: 11/06

Figure 4A-6(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal critical PCL level = 5100 mg/kg (commerical / industrial)
Horizontal assessment level = 580 mg/kg
Vertical assessment level = 300 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (manganese)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

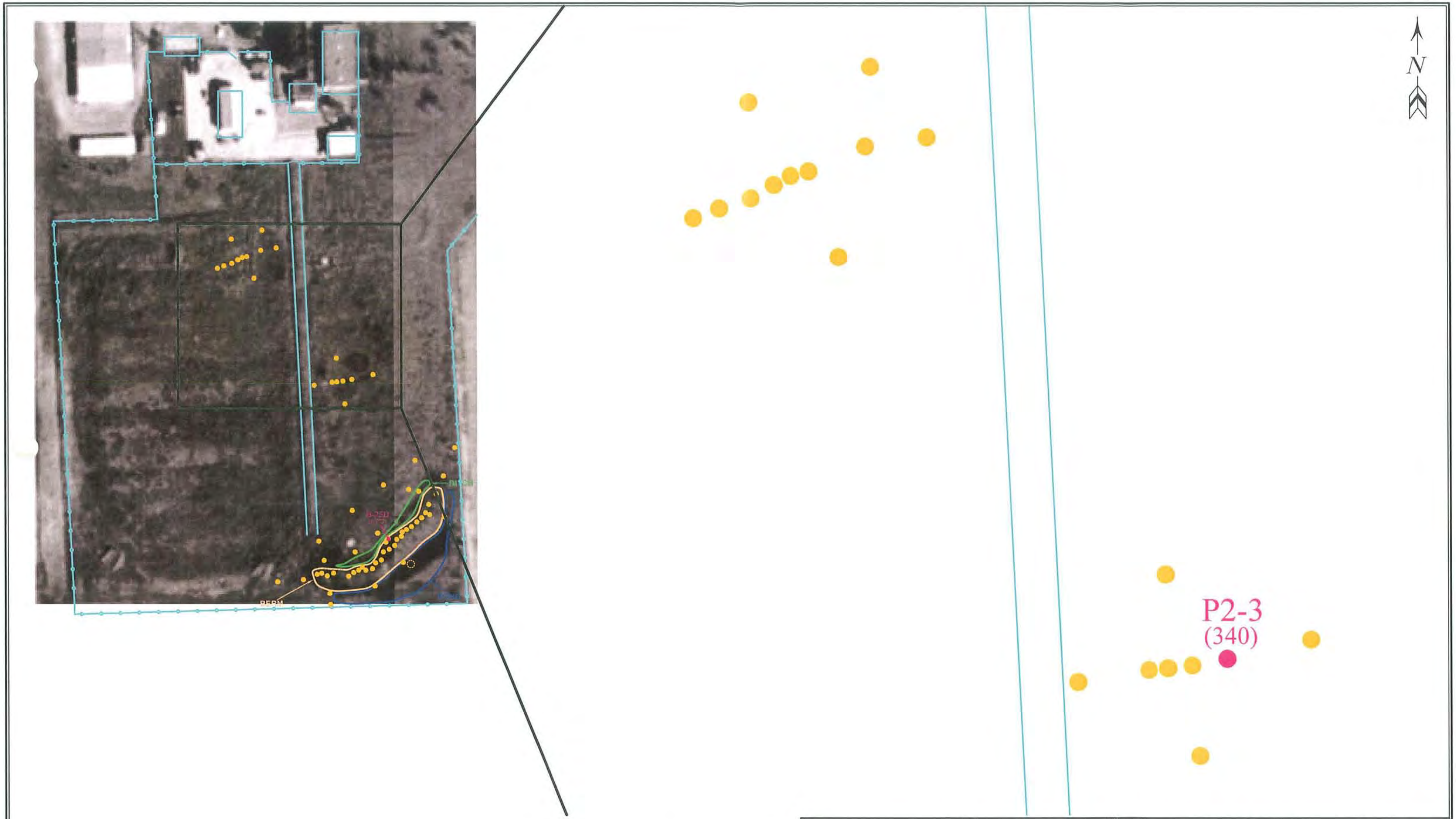
Surface Soil COC
Map - Manganese
Backstop

Date: 11/06

Figure 4A-8(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal assessment level = 1200 mg/kg
Vertical assessment level = 300 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend

●	Sample location
●	Sample location with COC exceedance (manganese)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

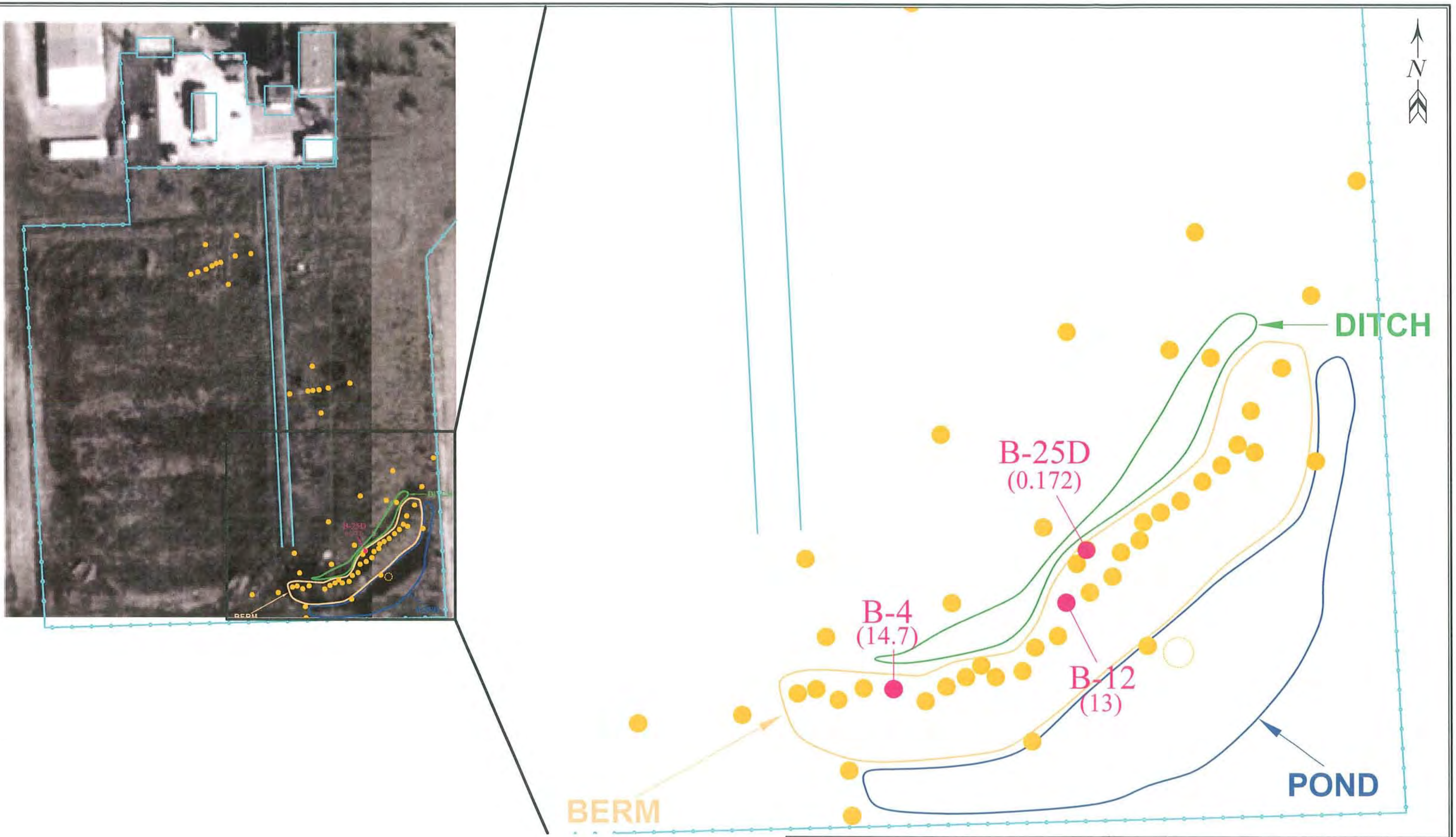
Surface Soil COC Map - Manganese Platforms

Date: 11/06

Figure 4A-8(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal assessment level = 79 mg/kg
Vertical assessment level = 10 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location
● Sample location with COC exceedance (nickel)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

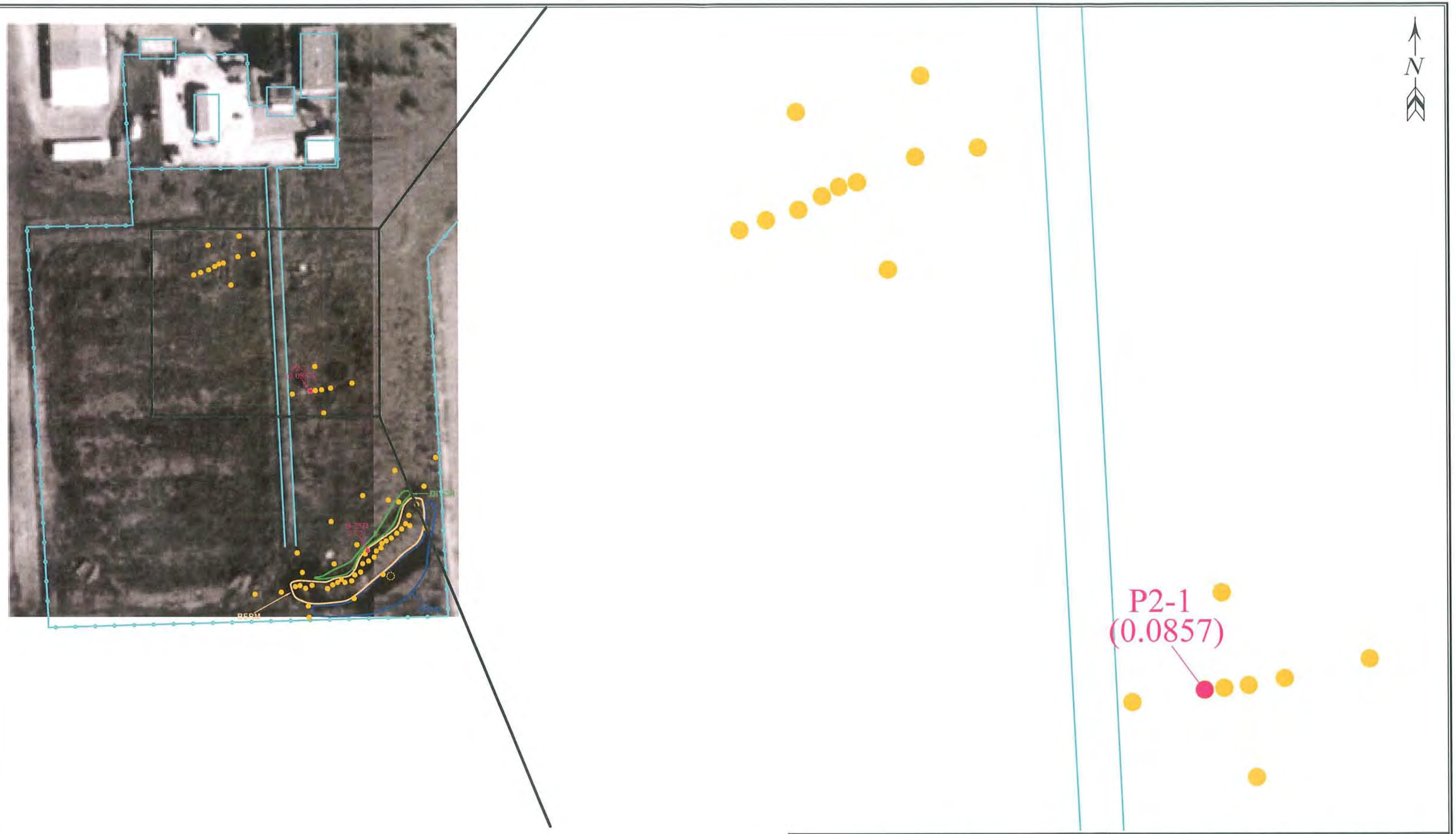
Surface Soil COC
Map - Nickel

Date: 11/06

Figure 4A-9

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal assessment level = 8.01 mg/kg
Vertical assessment level = 0.04 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend

- ● Sample location
- ● Sample location with COC exceedance (mercury)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

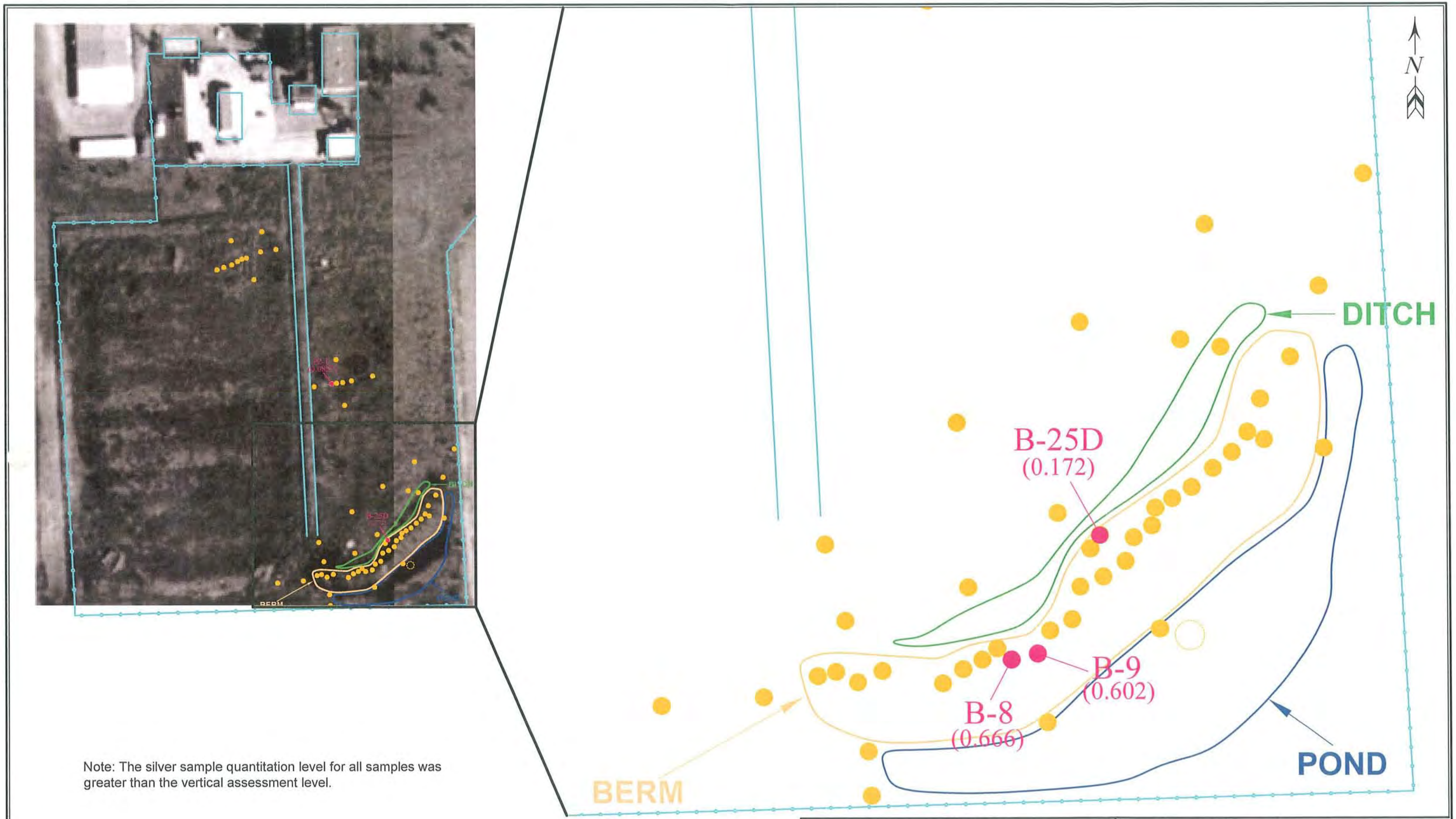
Surface Soil COC
Map - Mercury
Platforms

Date: 11/06

Figure 4A-10(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Note: The silver sample quantitation level for all samples was greater than the vertical assessment level.

Horizontal assessment level and PCL = 240.19 mg/kg
Vertical assessment level = 0.24 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (silver)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

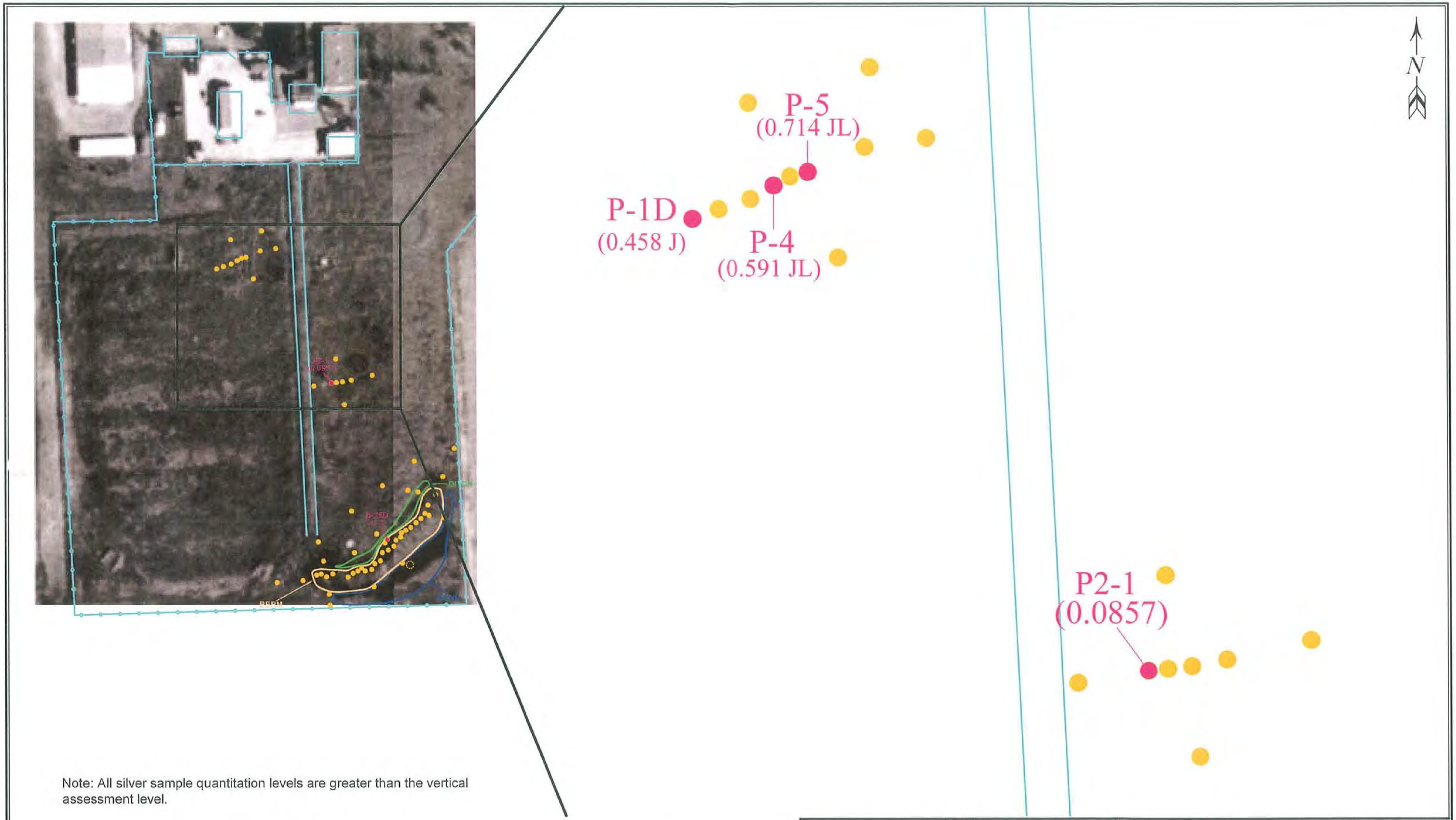
Surface Soil COC
Map - Silver
Backstop

Date: 11/06

Figure 4A-11(1)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Note: All silver sample quantitation levels are greater than the vertical assessment level.

Horizontal assessment level = 480.37 mg/kg
Vertical assessment level = 0.24 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend

● Sample location
● Sample location with COC exceedance (silver)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

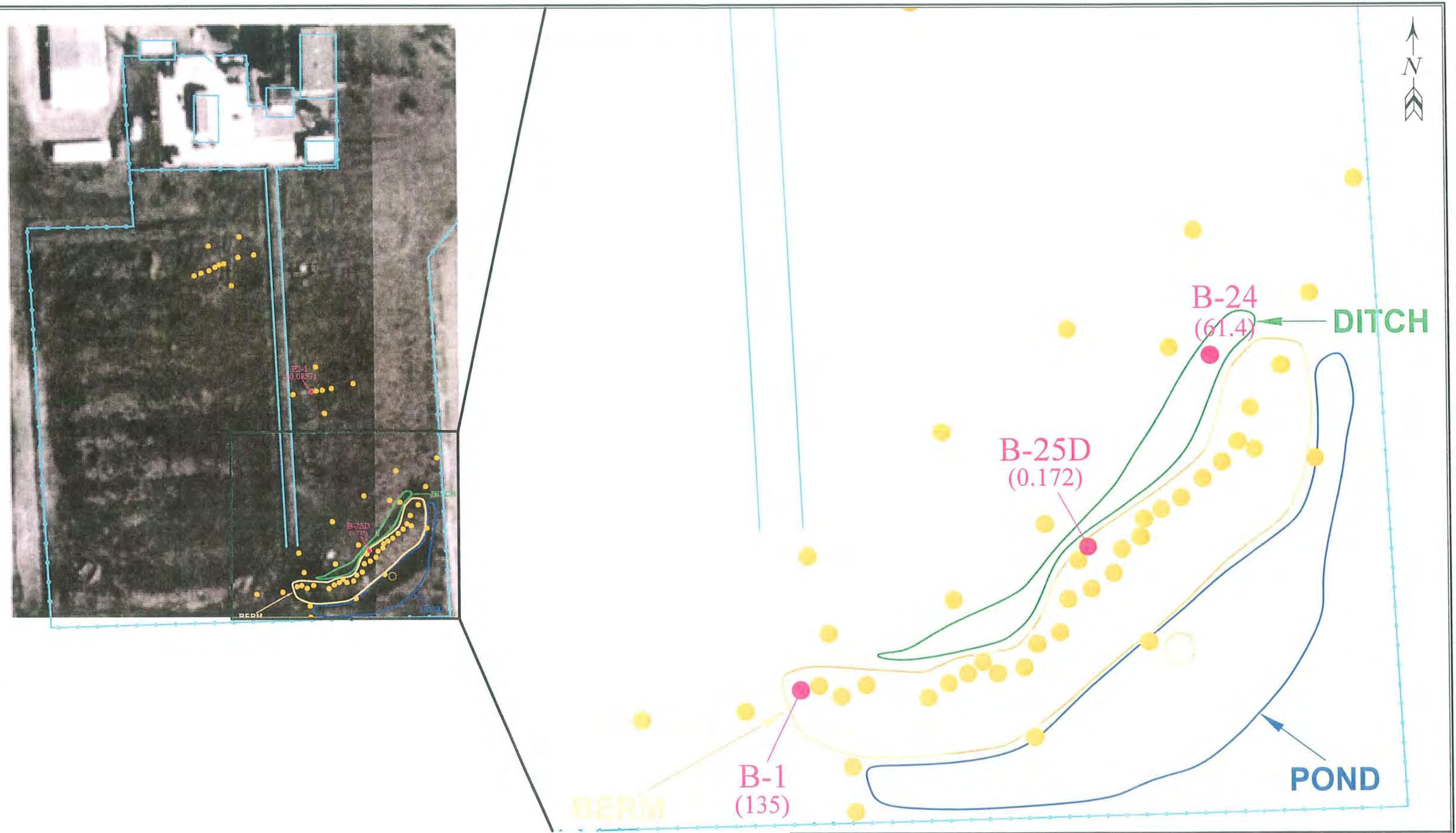
Surface Soil COC
Map - Silver
Platforms

Date: 11/06

Figure 4A-11(2)

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

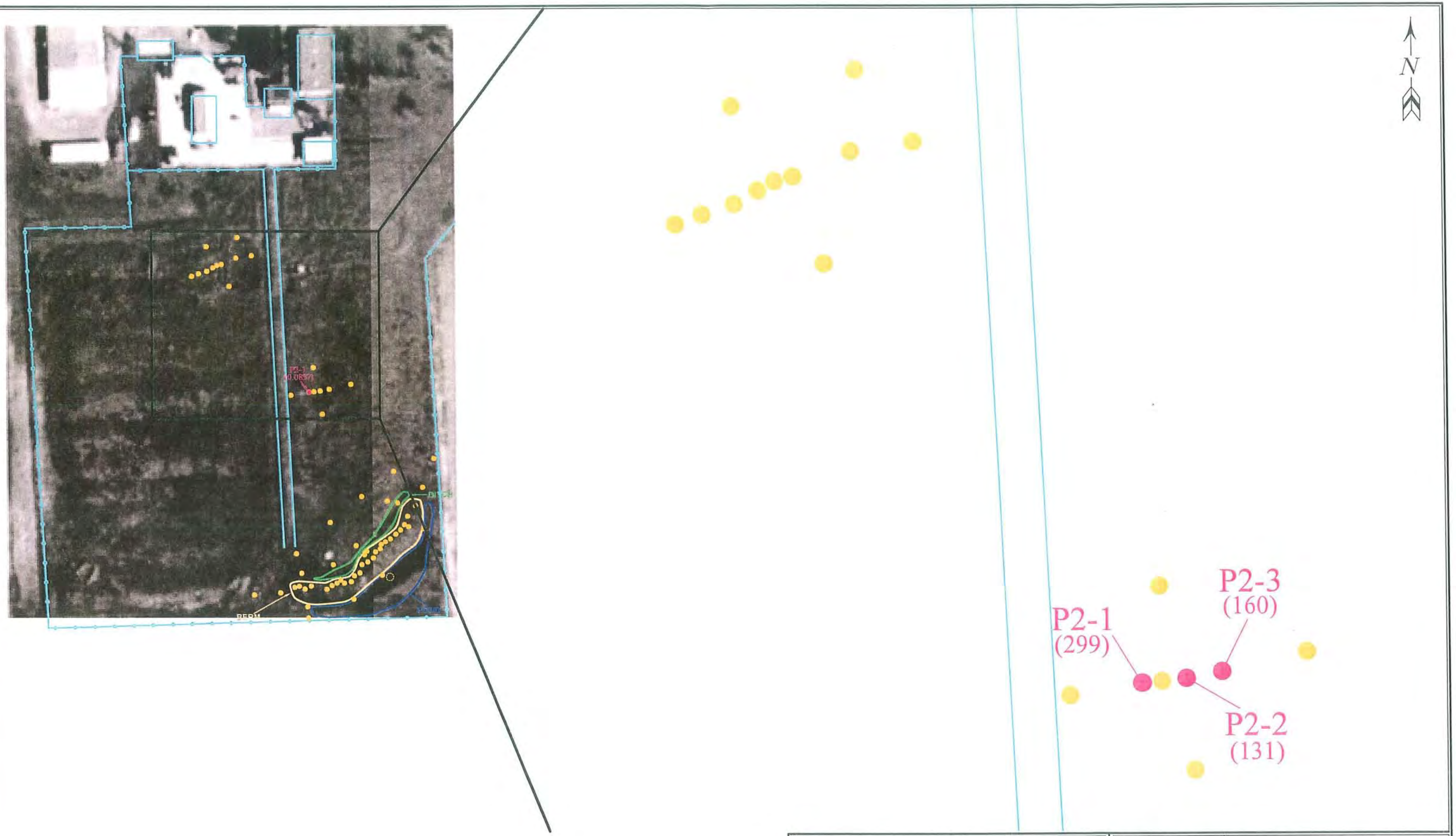


Horizontal assessment level = 1200 mg/kg
Vertical assessment level = 30 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
● Sample location
● Sample location with COC exceedance (zinc)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - Zinc Backstop	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 4A-13(1)	*CORRIGAN CONSULTING, INC.*



Horizontal assessment level = 2,400 mg/kg
Vertical assessment level = 30 mg/kg

Scale
1 inch = 30 feet
0 30 60

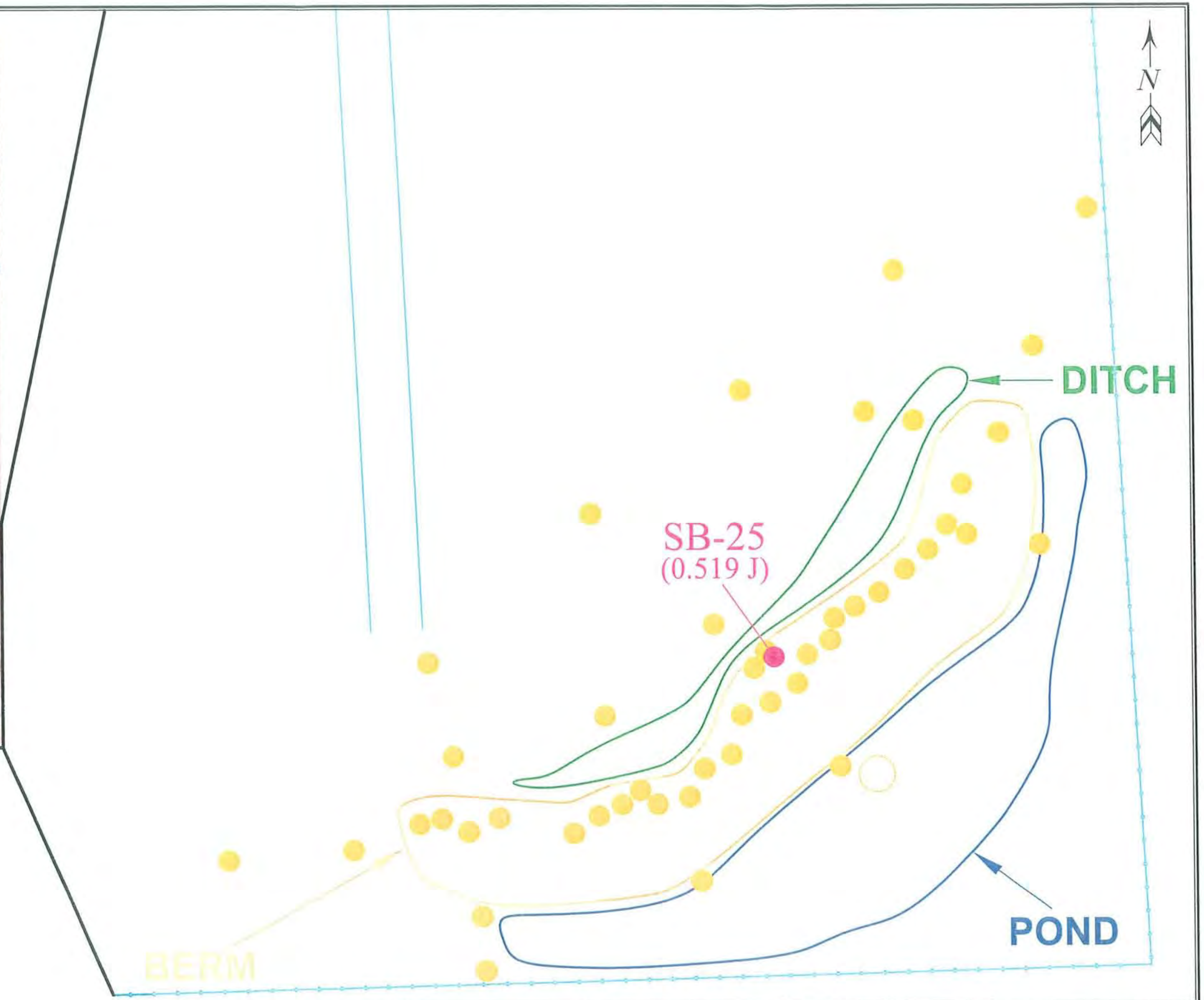
Legend

- ● Sample location
- ● Sample location with COC exceedance (zinc)

Notes

Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - Zinc Platforms	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 4A-13(2)	*CORRIGAN CONSULTING, INC.*



Note: The Selenium sample quantitation level for all samples was greater than the vertical assessment level.

Horizontal assessment level = 1.1 mg/kg
Vertical assessment level = 0.3 mg/kg

Scale
1 inch = 30 feet
0 30 60

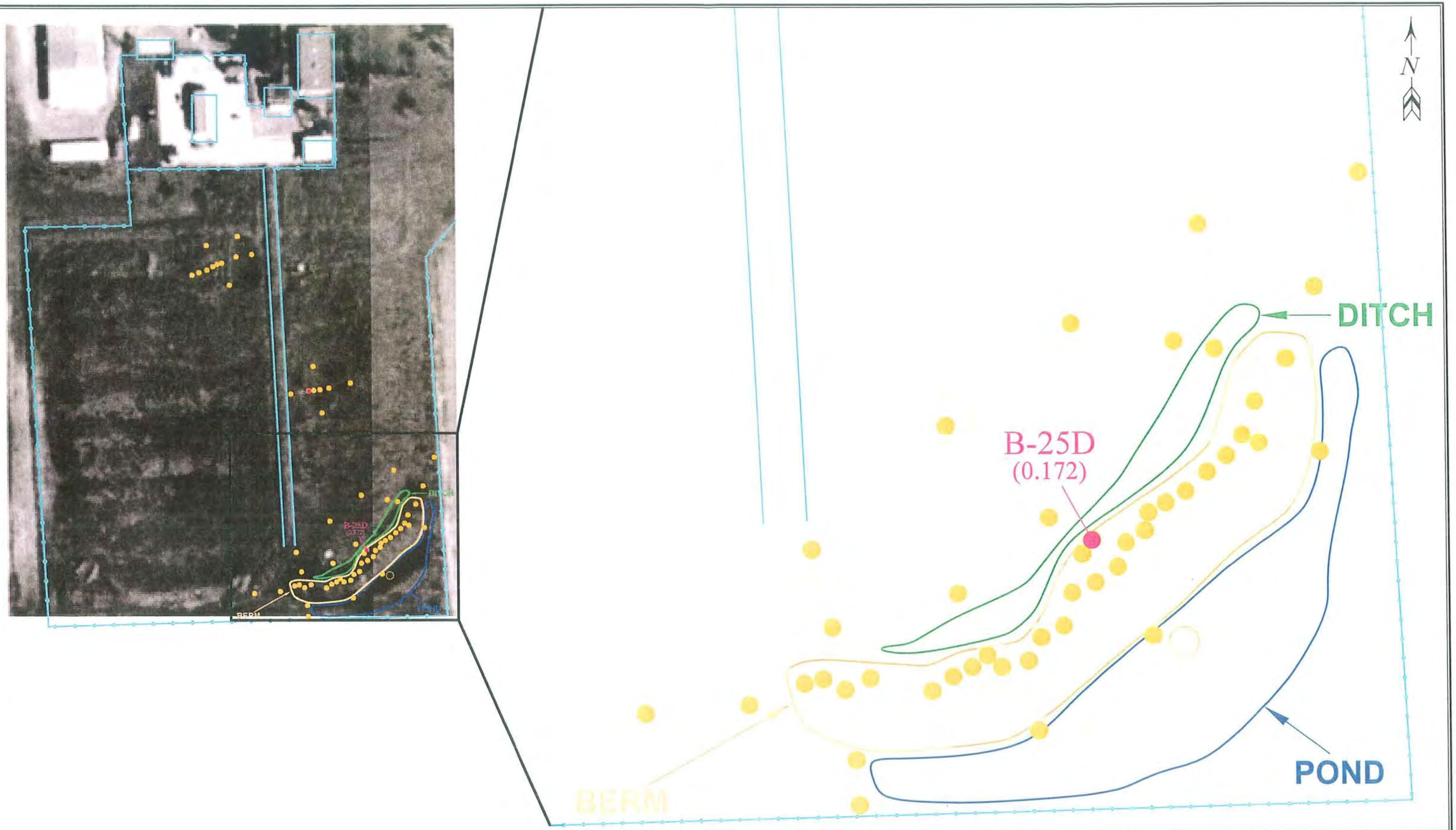
Legend
● Sample location
● Sample location with COC exceedance (Selenium)

Notes
Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - Selenium Backstop
Date: 11/06
Figure 4A-14

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.



Horizontal assessment level = 43 mg/kg
Vertical assessment level = 0.167 mg/kg

Scale
1 inch = 30 feet
0 30 60

Legend
🟡 Sample location
🔴 Sample location with COC exceedance (Selenium)
Notes
Concentrations reported in milligrams per kilogram (mg/kg)

Surface Soil COC Map - BEHP Backstop	Roy P. Benavidez National Guard Armory Small Arms Firing Range 801 Armory Rd (CR 406) El Campo, Texas
Date: 11/06	
Figure 4A-15	*CORRIGAN CONSULTING, INC.*

ATTACHMENT 4D-1
Soil Data Summary Table for VOCs by Method SW-846 8260 B

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date	All VOCs (mg/kg)
B-1	0 - 0.5	09/16/03	N/A
B-2	0 - 0.5	09/16/03	N/A
B-3	0 - 0.5	09/16/03	N/A
B-4	0 - 0.5	09/16/03	N/A
B-5	0 - 0.5	09/16/03	N/A
B-6	0 - 0.5	09/16/03	N/A
B-7	0 - 0.5	09/16/03	N/A
B-8	0 - 0.5	09/16/03	N/A
B-9	0 - 0.5	09/16/03	N/A
B-10	0 - 0.5	09/16/03	N/A
B-11	0 - 0.5	09/16/03	N/A
B-12	0 - 0.5	09/16/03	N/A
B-13	0 - 0.5	09/16/03	N/A
B-14	0 - 0.5	09/16/03	N/A
B-15	0 - 0.5	09/16/03	N/A
B-16	0 - 0.5	09/16/03	N/A
B-17	0 - 0.5	09/16/03	N/A
B-18	0 - 0.5	09/16/03	N/A
B-19	0 - 0.5	09/16/03	N/A
B-20	0 - 0.5	09/16/03	N/A
B-21	0 - 0.5	09/16/03	N/A
B-22	0 - 0.5	09/16/03	N/A
B-23	0 - 0.5	09/16/03	N/A
B-24	0 - 0.5	09/16/03	N/A
B-25	0 - 0.5	09/16/03	U
B-25D	0 - 0.5	09/16/03	U
P-1	0 - 0.5	09/16/03	N/A
P-1D	0 - 0.5	09/16/03	N/A
P-2	0 - 0.5	09/16/03	N/A
P-3	0 - 0.5	09/16/03	N/A
P-4	0 - 0.5	09/16/03	U
P-5	0 - 0.5	09/16/03	N/A
Data Quality Control Samples (mg/L)			
RS091603	NA	09/16/03	U

Notes:

SQLs and assessment levels for each VOC are included in the TCEQ's APAR Text Table 4A. All VOCs were screened from PCL development.

ft bgs - feet below ground surface

mg/kg - milligrams per kilogram or parts per million

U - the target analyte was not detected (< SQL, sample quantitation limit)

N/A - not analyzed

NA - not applicable

VOC analysis by Method SW-846 8260B

ATTACHMENT 4D-2
Soil Data Summary Table for SVOCs by Method SW-846 8270C (in mg/kg)

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date	CAS	bis (2-ethylhexyl) phthalate 117-81-7 (mg/kg)	di-n-Butyl Phthalate 84-74-2 (mg/kg)	Diethyl Phthalate 84-66-2 (mg/kg)	All Other SVOCs (mg/kg)
			MQL	0.167	0.167	0.167	--
B-1	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-2	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-3	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-4	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-5	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-6	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-7	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-8	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-9	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-10	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-11	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-12	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-13	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-14	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-15	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-16	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-17	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-18	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-19	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-20	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-21	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-22	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-23	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-24	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
B-25	0 - 0.5	09/16/03		0.060 J	U (<0.038)	U (<0.038)	U
B-25D	0 - 0.5	09/16/03		**0.172 J**	U (<0.039)	U (<0.039)	U
P-1	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-1D	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-2	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-3	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
P-4	0 - 0.5	09/16/03		U (<0.039)	0.041 J	0.091 J	U
P-5	0 - 0.5	09/16/03		N/A	N/A	N/A	N/A
Data Quality Control Samples (mg/L)							
RS091603	NA	09/16/03		U (<0.001)	U (<0.003)	U (<0.001)	U
Horizontal assessment levels (residential, 30-acre)				43	1,700	78	--
Vertical assessment levels (MQLs)				0.167	0.167	0.167	--
Vertical PCL (same as assessment level)				0.167	--	--	--

Notes:

SQLs and residential assessment levels for each SVOC are included in the TCEQ's APAR Text Table 4A. All SVOCs, except for bis(2-ethylhexyl) phthalate, were screened from PCL development.

ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/kg - milligrams per kilogram or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
J - the target analyte was positively identified below the MQL and above the SQL, or is an estimated value
N/A - not analyzed
NA - not applicable
SVOC analysis by Method EPA 8270C

ATTACHMENT 4D-3
Soil Data Summary Table for Metals by Method EPA 6020 (in mg/kg)

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
			CAS	7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7439-97-6	7440-02-0	2133-26-8	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
			MQL	0.5	0.25	0.25	0.5	0.05	0.050	25	0.5	0.5	0.5	10	0.1	10	0.5	0.02	0.5	10	0.25	0.24	25	0.5	0.5	0.5
Backstop/Berm Samples (mg/kg)																										
B-1	0 - 0.5	09/16/03		5,340	0.599	1.03	79.8	0.527	0.371	6,970	9.63	2.76	12.5	4,370	90.6	1,050	177	0.0360 J	6.73	723	U (<0.479)	UJL (<0.479	474	U (<0.383)	10.6	135
B-1A	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1B	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1C	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-1D	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-2	0 - 0.5	09/16/03		6,010	1.79	0.981	63.7	0.621	U (<0.087)	4,890	6.06	3.3	49.9	4,470	393	898	111	0.0248 J	4.71	733	U (<0.497)	UJL (<0.497	390	U (<0.397)	11.9	29.5
B-3	0 - 0.5	09/16/03		2,530	0.468 J	1.57	58.4	0.375	U (<0.082)	2,210	3.64	3.1	5.13	2,750	31.7	493	190	0.0234 J	3.45	326	U (<0.468)	UJL (<0.468	365	U (<0.375)	11	8.42
B-4	0 - 0.5	09/16/03		3,990	2.68	2.09	90.8	0.496	0.177	5,790	4.36	15.9	29	4,750	749	961	834	U (<0.0236)	14.7	757	U (<0.472)	UJL (<0.472	354	U (<0.378)	18	19.8
B-5	0 - 0.5	09/16/03		3,970	U (<0.383)	0.957	135	0.491	0.096 J	10,800	4.55	1.77	6.19	3,390	21.2	943	94.5	U (<0.0239)	3.96	556	U (<0.479)	UJL (<0.479	365	U (<0.383)	10.4	9.94
B-6	0 - 0.5	09/16/03		3,880	U (<0.374)	1.13	56.5	0.479	U (<0.082)	3,280	4.39	2.65	7.63	3,520	62.4	922	127	U (<0.0234)	4.31	607	U (<0.467)	UJL (<0.467	385	U (<0.374)	10.5	12.2
B-7	0 - 0.5	09/16/03		3,170	U (<0.378)	1.23	35.1	0.437	U (<0.083)	2,660	3.8	2.08	4.89	2,750	8.54	670	131	U (<0.0236)	3.21	356	U (<0.473)	UJL (<0.473	366	U (<0.378)	10.6	7.33
B-7A	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.438)	N/A	N/A	N/A	N/A
B-7B	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.451)	N/A	N/A	N/A	N/A
B-7C	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.466)	N/A	N/A	N/A	N/A
B-8	0 - 0.5	09/16/03		4,550	U (<0.387)	1.07	53.8	0.593	U (<0.085)	3,420	4.54	1.86	6.54	3,740	10.9	1,090	84.8	U (<0.0242)	4.56	501	U (<0.484)	0.666	447	U (<0.387)	12.3	8.91
B-9	0 - 0.5	09/16/03		4,790	U (<0.371)	1.84	66.7	0.521	0.093 J	31,100	6.09	3.54	6.29	5,470	10.6	1,910	186	U (<0.0232)	8.32	883	U (<0.463)	0.602	906	U (<0.371)	14.7	11.6
B-10	0 - 0.5	09/16/03		4,870	U (<0.391)	0.781	147	0.525	0.098 J	23,600	4.43	3.15	5.48	3,720	18.3	1,270	82.2	U (<0.0244)	4.79	472	U (<0.488)	UJL (<0.488	880	U (<0.391)	9.06	9.55
B-11	0 - 0.5	09/16/03		5,450	U (<0.376)	0.974	66.9	0.446	U (<0.082)	12,900	5.97 JH	2.88	5.29	5,310	15.3	1,540	145	U (<0.0235)	6.63	949	U (<0.469)	U (<0.469)	695	U (<0.376)	5.03 JH	20.1
B-12	0 - 0.5	09/16/03		9,090	U (<0.392)	2.67	105	0.649	0.110 J	15,600	10.2 JH	6.23	9.1	9,780	15.9	2,400	313	U (<0.0245)	13	1,820	U (<0.490)	U (<0.490)	846	U (<0.392)	20.8 JH	18.6
B-13	0 - 0.5	09/16/03		9,080	U (<0.395)	1.53	119	0.567	0.099 J	16,800	9.35 JH	4.03	11.3	8,040	76.2	2,080	227	U (<0.0247)	9.38	1,680	U (<0.493)	U (<0.493)	502	U (<0.395)	13.6 JH	18.8
B-14	0 - 0.5	09/16/03		5,160	U (<0.385)	1.3	105	0.493	0.108 J	36,200	5.59 JH	4	6.46	4,920	20.4	1,670	233	U (<0.0241)	7.98	911	U (<0.481)	U (<0.481)	372	U (<0.385)	10.4 JH	12.5
B-15	0 - 0.5	09/16/03		4,470	U (<0.379)	1.98	97.6	0.615	U (<0.083)	7,700	7.14	2.77	8.69	5,230	75.4	1,160	114	0.0237 J	5.41	621	U (<0.473)	UJL (<0.473	386	U (<0.379)	17.1	10.2
B-16	0 - 0.5	09/16/03		9,930	U (<0.393)	1.89	90.5	0.553	0.086 J	15,900	10.2 JH	4.06	12.9	8,390	103	2,120	214	U (<0.0246)	8.77	1,790	U (<0.492)	U (<0.492)	427	U (<0.393)	17 JH	25
B-16A	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-17	0 - 0.5	09/16/03		8,610	0.686	2	105	0.462	0.107 J	16,400	9.31 JH	5.67	21.2	7,540	128	1,630	377	U (<0.0237)	9.89	1450	U (<0.473)	U (<0.473)	432	U (<0.379)	17.3 JH	14.6
B-18	0 - 0.5	09/16/03		4,920	0.746	1.67	85	0.45	U (<0.083)	13,400	5.64 JH	3.47	12	5,110	80.5	1,090	193	U (<0.0237)	6.18	875	U (<0.476)	U (<0.474)	405	U (<0.379)	12.3 JH	12.3
B-19	0 - 0.5	09/16/03		4,480	U (<0.388)	1.77	51.6	0.472	U (<0.085)	4,370	5.29	2.86	10.5	4,420	51.5	850	147	0.0242 J	5.18	787	U (<0.484)	UJL (<0.484	381	U (<0.388)	12	13
B-20	0 - 0.5	09/16/03		6,160	U (<0.396)	1.99	68.6	0.532	U (<0.087)	3,920	6.25 JH	3.38	10.6	5,510	35.1	1,010	162	0.0247 JH	5.96	981	U (<0.495)	U (<0.495)	385	U (<0.396)	13.6 JH	15.3
B-21	0 - 0.5	09/16/03		3,580	U (<0.379)	1.47	47.8	0.39	U (<0.083)	2,950	4.21 JH	1.89	22	3,490	65.2	651	90.8	U (<0.0237)	3.71	619	U (<0.473)	U (<0.473)	397	U (<0.379)	10.4 JH	12.9
B-21A	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-22	0 - 0.5	09/16/03		4,740	U (<0.385)	1.04	78.4	0.494	U (<0.084)	3,420	4.70 JH	3.1	6.61	3,800	7.94	1,030	163	U (<0.0241)	6.17	614	U (<0.482)	U (<0.482)	347	U (<0.385)	9.48 JH	9.74
B-23	0 - 0.5	09/16/03		5,270	U (<0.381)	1.57	95.7	0.548	U (<0.083)	3,710	5.62 JH	2.88	7.45	4,920	12.40	988	209	0.0238 JH	6.24	885	U (<0.477)	U (<0.477)	410	U (<0.381)	12 JH	11.6
B-24	0 - 0.5	09/16/03		3,800	2.67	1.38	53.6	0.45	0.155	2,280	5.99 JH	2.03	103	4,230	79.4	620	80.8	0.0281 JH	4.96	1,020	U (<0.563)	U (<0.563)	398	U (<0.450)	13.4 JH	61.4
B-24-1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24A	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24A1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24B	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24B1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-24C	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25	0 - 0.5	09/16/03		3,640	14.5	2.32	90.1	0.423	U (<0.080)	70,600	4.73	3.17	73.3	5,730	8,840	1,250	242	U (<0.0229)	5.68	574	U (<0.457)	UJL (<0.457	477	U (<0.366)	16.9	22.8
B-25D(dup)	0 - 0.5	09/16/03		3,350	3.09	1.58	80.4	0.33	0.236	143,000	3.96	2.62	133	4,290	1,010	1,340	197	U (<0.0236)	5.13	658	0.519 J	UJL (<0.472	437	U (<0.377)	11.2	18.8
B-25A	0 - 0.5	11/11/03		N/A	1.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	275	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25A2	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25B	1.5 - 2	11/11/03		N/A	4.33 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	670 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25BD(dup)	1.5 - 2	11/11/03		N/A	1.99 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	222 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25C	0 - 0.5	11/11/03		N/A	U (<0.374)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25C1	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25D	3 - 3.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-25D DUP	3 - 3.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-26	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-27	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-28	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-29	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-30	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-31	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-32	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-33	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-34	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B-35	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Texas-Specific Background Concentration				30,000	1	5.9	300	1.5	NE	NE	30	7	15	15,000	15	NE	300	0.04	10	NE	0.3	NE	NE	9.3	50	30
Res. Assess. Level - Horizontal 30-acre				64,000	2.7	300	440	1.5	0.75	NE*	1,200	660	520	15,000	89.56	NE*	580	4.0	79	NE*	1.1	240.19	NE*	0.87	290	1,200
Res. Assess. Level - Vertical 30-acre				30,000	1	5.9	300	1.5	0.05	NE*	30	7	15	15,000	15	NE*	300	0.04	10	NE*	0.3	0.24	NE*	9.3	50	30
PCL (horizontal, only)				--	--	--	--	--	--	--	--	--	--	--	89.56	--	5100	4.0	--	--	--	240.19	--	--	--	--

ATTACHMENT 4D-3
Soil Data Summary Table for Metals by Method EPA 6020 (in mg/kg)

Adjutant General's Department
Roy P. Benavidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
			CAS	7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7439-97-6	7440-02-0	2133-26-8	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
			MQL	0.5	0.25	0.25	0.5	0.05	0.050	25	0.5	0.5	0.5	10	0.1	10	0.5	0.02	0.5	10	0.25	0.24	25	0.5	0.5	0.5
Firing Platform 1 Samples (Northern) (mg/kg) (<0.5-acre source)																										
P-1	0 - 0.5	09/16/03		1,670	0.408 J	3.5	21.1	0.204	U (<0.079)	767	3.97	3.58	3.75	3,410	12.3	215	294	0.0227 J	2.74	239	U (<0.453)	UJL (<0.453	410	U (<0.362)	13.1	6.49
P-1D	0 - 0.5	09/16/03		2,000	U (<0.367)	2.36	18.1	0.229	**0.092 J**	1,060	3.8	1.97	4.17	2,670	12.1	278	127	0.0229 J	2.22	300	U (<0.458)	**0.458 J**	364	U (<0.367)	9.75	9.56
P-2	0 - 0.5	09/16/03		2,640	U (<0.363)	1.59	21.1	0.307	U (<0.080)	1,420	4.34	1.59	4.82	2,730	12	450	96.3	0.0227 J	2.51	298	U (<0.454)	UJL (<0.454	486	U (<0.363)	9.45	8.76
P-3	0 - 0.5	09/16/03		4,780	U (<0.374)	1.43	30.6	0.444	**0.082 J**	1,550	5.84	2.06	5.71	4,210	10.2	705	113	0.0351 J	4.04	622	U (<0.468)	UJL (<0.468	409	U (<0.374)	10.6	11.9
P-4	0 - 0.5	09/16/03		2,600	U (<0.371)	2.49	20.7	0.301	**0.081 J**	997	4.37	2.28	4.36	3,370	12.3	412	153	0.0348 J	2.64	380	U (<0.464)	**0.591 JL**	371	U (<0.371)	11.2	7.9
P-5	0 - 0.5	09/16/03		2,180	0.374 J	2.87	25.2	0.261	**0.079 J**	1,050	6.14	3.13	4.38	3,900	**22.3**	407	195	0.0340 J	2.83	449	U (<0.453)	**0.714 JL**	338	U (<0.363)	13.2	8.09
P-5B	1.5 - 2	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.6	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.456)	N/A	N/A	N/A	N/A
P-6	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.7	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.439)	N/A	N/A	N/A	N/A
P-7	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**19.5**	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.460)	N/A	N/A	N/A	N/A
P-7B	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P-8	0 - 0.5	11/11/03		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12.5	N/A	N/A	N/A	N/A	N/A	N/A	U (<0.441)	N/A	N/A	N/A	N/A
P-8	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**18**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P-9	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Firing Platform 2 Samples (Southern) (mg/kg) (<0.5-acre source)																										
P2-1	0 - 0.5	11/11/03		2,720	0.921	5.32	23 J	0.278	**0.332**	1,700	6.36	2.51 J	11.9	6,080	**131**	411	165	**0.0857**	4.1	767	U (<0.535)	U (<0.428)	65.3	U (<0.343)	15.2	**299**
P2-1B	1.5 - 2	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-2	0 - 0.5	11/11/03		1,840	0.995	4.20	24.6 J	0.222	**0.286**	599	6.49	2.72 J	**16.2**	4,090	**79.1**	237	192	0.0212 J	3.84	1,040	U (<0.529)	U (<0.423)	52.9	U (<0.339)	14	**131**
P2-3	0 - 0.5	11/11/03		3,150	0.434 J	2.96	46.7 J	0.358	**0.586**	853	5.86	**7.08 J**	9.62	4,520	**52.6**	408	**340**	0.0217 J	3.54	1,030	U (<0.543)	U (<0.434)	77.1	U (<0.347)	15.2	**160**
P2-4	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-5	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-6	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P2-7	0 - 0.5	06/02/04		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**18.5**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Data Quality Control Samples (mg/L)																										
RS091603	NA	09/16/03		0.024 J	0.037	U (<0.004)	0.012	U (<0.003)	U (<0.003)	U (<1.13)	U (<0.005)	U (<0.009)	U (<0.009)	U (<0.900)	U (<0.008)	U (<0.675)	U (<0.007)	U (<0.0009)	U (<0.006)	U (<0.765)	U (<0.018)	U (<0.011)	U (<1.13)	U (<0.004)	U (<0.009)	U (<0.023)
S111103	NA	11/11/03		U (<0.009)	0.01	U (<0.002)	U (<0.004)	U (<0.001)	U (<0.001)	U (<0.500)	U (<0.002)	U (<0.004)	U (<0.004)	U (<0.400)	U (<0.003)	U (<0.300)	U (<0.003)	U (<0.0004)	U (<0.003)	U (<0.340)	U (<0.008)	U (<0.005)	U (<0.500)	U (<0.002)	U (<0.004)	U (<0.010)
Texas-Specific Background Concentration				30,000	1	5.9	300	1.5	NE	NE	30	7	15	15,000	15	NE	300	0.04	10	NE	0.3	NE	NE	9.3	50	30
Res. Assess. Level - Horizontal <0.5-acre				65,000	5.4	5.9	440	1.8	1.5	NE*	2,400	1,300	550	15,000	179.13	NE*	1,200	8.01	160	NE*	2.3	480.37	NE*	9.3	290	2,400
Res. Assess. Level - Vertical <0.5-acre				30,000	1	5.9	300	1.5	0.05	NE*	30	7	15	15,000	15	NE*	300	0.04	10	NE*	0.3	0.24	NE*	9.3	50	30
PCL (horizontal, only)				--	--	--	--	--	--	--	--	--	--	--	179.13	--	--	8.01	--	--	--	480.37	--	--	--	--

Notes:
ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/kg - milligrams per kilogram or parts per million
mg/L - milligrams per liter or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
J - the target analyte was positively identified below the MQL and above the SQL, or is an estimated value
B - a target analyte or common laboratory contaminant was identified in the method blank
D - the sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference
N/A - not analyzed
NE - not established
Metals analysis by Method EPA 6020
PCLs - Commercial/Industruial protective concentration levels
Highlighted concentrations indicate exceedance of Texas-Specific Background Concentration

14.5	Concentration exceeded the horizontal and vertical assessment levels.
1.79	Concentration exceeded the vertical assessment level.
U (<0.087)	Sample quantitation limit is greater than the assessment level.

*These compounds are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria apply.
See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tnrcc.state.tx.us/permitting/trrp.htm.

ATTACHMENT 4D-4
Soil Data Summary Table for SPLP Metals by Method EPA 6020 and Soil pH by Method SW-846 9045C

Adjutant General's Department
Roy P. Benzvidez National Guard Armory
El Campo, Texas

Sample ID	Sample Depth (ft bgs)	Sample Date	CAS	Antimony 7440-36-0 (mg/L)	Lead 7439-92-1 (mg/L)	Silver 7440-22-4 (mg/L)	Soil pH SU
			MQL	0.003	0.002	0.01	----
B-5	0 - 0.5	09/16/03		N/A	N/A	N/A	8.21
B-8	0 - 0.5	09/16/03		N/A	N/A	U (<0.012)	N/A
B-11	0 - 0.5	09/16/03		N/A	N/A	N/A	9.22
B-18	0 - 0.5	09/16/03		N/A	N/A	N/A	8.31
B-23	0 - 0.5	09/16/03		N/A	N/A	N/A	7.83
B-25	0 - 0.5	09/16/03		0.056	28.4	N/A	N/A
P-4	0 - 0.5	09/16/03		N/A	N/A	N/A	6.75
P-5	0 - 0.5	09/16/03		N/A	N/A	U (<0.012)	N/A
Assessment Levels - residential groundwater				0.006	0.015	0.120	---

Notes:

ft bgs - feet below ground surface
CAS - chemical identification number
MQL - method quantitation limit
mg/L - milligrams per liter or parts per million
U - the target analyte was not detected (< SQL, sample quantitation limit)
N/A - not analyzed
SPLP metals analysis by Method EPA 6020
Soil pH by Method SW-846-9045C

Section 10 COC Screening

All VOCs and SVOCs were screened from PCL development. No VOCs were detected in samples above laboratory detection limits. Three SVOCs, bis (2-ethylhexyl) phthalate, di-n-butyl phthalate, and diethyl phthalate, were detected above laboratory detection limits but screened from PCL development in accordance with §350.71(k)(1) as the detected concentrations were below the Tier 1 PCLs and MQLs.

Section 10.1 Frequency of Detection

Not applicable

Section 10.2 Lab Contaminant or Blank Contaminant

Not applicable

Section 10.3 COC Not Sourced On-Site

Not applicable

Section 10.4 Appropriate Sample Quantitation Limits

The sample quantitation limits (SQLs) for the VOC, 1,2-dibromo-3-chloropropane, was greater than its residential assessment level. The SQLs for SVOCs, bis(2-chloroethyoxy)methane, bis(2-chloroethyl)ether, 4-chlorophenyl phenyl ether, 2,4- and 2,6-dinitrotoluene, 2- and 3- and 4-nitroaniline, 4-nitrophenol, pentachlorophenol, pyridine, were also greater than their respective assessment levels. The VOCs and SVOCs were analyzed using standard EPA methods (8260 and 8270) and the samples were not diluted; therefore, the SQLs were appropriate.

Section 10.5 Screened COCs Expected to be Present Dropped from Future Sampling

Not applicable

Table 10A - COC Screening Summary Table

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the ≥20 samples in this medium^1 §350.71(k)(2)(A)(i) through (iii)	Common lab contaminant^2 §350.71(k)(2)(B)	Blank contaminant^2 §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site^3 §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified^4 §350.71(k)(3)(B)
Aluminum	Y (soil 0-15 ft)								
Barium	Y (soil 0-15 ft)								
Beryllium	Y (soil 0-15 ft)								
Calcium	Y (soil 0-15 ft)								
Chromium	Y (soil 0-15 ft)								
Iron	Y (soil 0-15 ft)								
Magnesium	Y (soil 0-15 ft)								
Potassium	Y (soil 0-15 ft)								
Sodium	Y (soil 0-15 ft)								
Thallium	Y (soil 0-15 ft)								
Vanadium	Y (soil 0-15 ft)								
Benzene	NA	Y						Y (soil 0-15 ft.)	
Bromobenzene	NA	Y						Y (soil 0-15 ft.)	
Bromochloromethane	NA	Y						Y (soil 0-15 ft.)	
Bromodichloromethane	NA	Y						Y (soil 0-15 ft.)	
Bromoform	NA	Y						Y (soil 0-15 ft.)	
Bromomethane	NA	Y						Y (soil 0-15 ft.)	
MTBE	NA	Y						Y (soil 0-15 ft.)	
Tert-Butylbenzene	NA	Y						Y (soil 0-15 ft.)	
Sec-Butylbenzene	NA	Y						Y (soil 0-15 ft.)	
n-Butylbenzene	NA	Y						Y (soil 0-15 ft.)	

---

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).

[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).

[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).

[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

Carbon Tetrachloride	NA	Y						Y (soil 0-15 ft.)	
Chlorobenzene	NA	Y						Y (soil 0-15 ft.)	
Chloroethane	NA	Y						Y (soil 0-15 ft.)	
Chloroform	NA	Y						Y (soil 0-15 ft.)	
Chloromethane	NA	Y						Y (soil 0-15 ft.)	
2-Chlorotoluene	NA	Y						Y (soil 0-15 ft.)	
4-Chlorotoluene	NA	Y						Y (soil 0-15 ft.)	
p-Cymene	NA	Y						Y (soil 0-15 ft.)	
1,2-Dibromo-3-Chloropropane	NA	Y							Y (soil 0-15 ft.)
Dibromochloromethane	NA	Y						Y (soil 0-15 ft.)	
Dibromomethane (Methylene bromide)	NA	Y						Y (soil 0-15 ft.)	
1,2-Dichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
1,3-Dichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
1,4-Dichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
Dichlorodifluoromethane	NA	Y						Y (soil 0-15 ft.)	
1,2-Dichloroethane	NA	Y						Y (soil 0-15 ft.)	
1,1-Dichloroethane	NA	Y						Y (soil 0-15 ft.)	
Trans-1,2-dichloroethene	NA	Y						Y (soil 0-15 ft.)	
Cis-1,2-Dichloroethene	NA	Y						Y (soil 0-15 ft.)	
1,1-Dichloroethene	NA	Y						Y (soil 0-15 ft.)	
2,2-Dichloropropane	NA	Y						Y (soil 0-15 ft.)	
1,3-Dichloropropane	NA	Y						Y (soil 0-15 ft.)	
1,2-Dichloropropane	NA	Y						Y (soil 0-15 ft.)	
Trans-1,3-dichloropropene	NA	Y						Y (soil 0-15 ft.)	
1,1-Dichloropropene	NA	Y						Y (soil 0-15 ft.)	
Cis-1,3-Dichloropropene	NA	Y						Y (soil 0-15 ft.)	
Ethylbenzene	NA	Y						Y (soil 0-15 ft.)	

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the ≥20 samples in this medium[1] §350.71(k)(2) (A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
Hexachlorobutadiene	NA	Y						Y (soil 0-15 ft.)	
Isopropylbenzene (Cumene)	NA	Y						Y (soil 0-15 ft.)	
Methylene Chloride	NA	Y						Y (soil 0-15 ft.)	
Naphthalene	NA	Y						Y (soil 0-15 ft.)	
n-Propylbenzene	NA	Y						Y (soil 0-15 ft.)	
Styrene	NA	Y						Y (soil 0-15 ft.)	
1,1,1,2-Tetrachloroethane	NA	Y						Y (soil 0-15 ft.)	
1,1,2,2-Tetrachloroethane	NA	Y						Y (soil 0-15 ft.)	
Tetrachloroethylene	NA	Y						Y (soil 0-15 ft.)	
Toluene	NA	Y						Y (soil 0-15 ft.)	
1,2,4-Trichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
1,2,3-Trichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
1,1,2-Trichloroethane	NA	Y						Y (soil 0-15 ft.)	
1,1,1-Trichloroethane	NA	Y						Y (soil 0-15 ft.)	
Trichloroethene	NA	Y						Y (soil 0-15 ft.)	
Trichlorofluoromethane	NA	Y						Y (soil 0-15 ft.)	

---

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).

[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).

[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).

[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the >20 samples in this medium[1] §350.71(k)(2) (A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
1,2,3-Trichloropropane	NA	Y						Y (soil 0-15 ft.)	
1,2,4-Trimethylbenzene	NA	Y						Y (soil 0-15 ft.)	
1,3,5-Trimethylbenzene	NA	Y						Y (soil 0-15 ft.)	
Vinyl Chloride	NA	Y						Y (soil 0-15 ft.)	
o-Xylene	NA	Y						Y (soil 0-15 ft.)	
m,p-Xylenes	NA	Y						Y (soil 0-15 ft.)	
	NA	Y						Y (soil 0-15 ft.)	
Acenaphthene	NA	Y							
Acenaphthylene	NA	Y						Y (soil 0-15 ft.)	
Aniline	NA	Y						Y (soil 0-15 ft.)	
Anthracene	NA	Y						Y (soil 0-15 ft.)	
Benzo(a)anthracene	NA	Y						Y (soil 0-15 ft.)	
Benzo(a)pyrene	NA	Y						Y (soil 0-15 ft.)	
Benzo(b)fluoranthene	NA	Y						Y (soil 0-15 ft.)	
Benzo(g,h,i)perylene	NA	Y						Y (soil 0-15 ft.)	
Benzo(k)fluoranthene	NA	Y						Y (soil 0-15 ft.)	
Benzoic Acid	NA	Y						Y (soil 0-15 ft.)	
Benzyl Butyl Phthalate	NA	Y						Y (soil 0-15 ft.)	

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).

[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).

[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).

[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the ≥20 samples in this medium[1] §350.71(k)(2) (A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
Bis(2-chloroethyoxy)methane	NA	Y							Y (soil 0-15 ft.)
Bis(2-chloroethyl)ether	NA	Y							Y (soil 0-15 ft.)
Bis(2-chloroisopropyl)ether	NA	Y						Y (soil 0-15 ft.)	
Bis(2-ethylhexyl)phthalate	Y (soil 0-15 ft.)								
4-Bromophenyl-phenylether	NA	Y						Y (soil 0-15 ft.)	
di-n-Butyl Phthalate	Y (soil 0-15 ft.)								
4-chloro-3-methylphenol	NA	Y						Y (soil 0-15 ft.)	
4-Chloroaniline (p)	NA	Y						Y (soil 0-15 ft.)	
2-Chloronaphthalene	NA	Y						Y (soil 0-15 ft.)	
2-Chlorophenol	NA	Y						Y (soil 0-15 ft.)	
4-Chlorophenyl Phenyl Ether	NA	Y							Y (soil 0-15 ft.)
Chrysene	NA	Y						Y (soil 0-15 ft.)	
Dibenz(a,h)Anthracene	NA	Y						Y (soil 0-15 ft.)	

---

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).

[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).

[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).

[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

1	2	3	4	5	6	7	8	SQL Justifications	
								9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the ≥20 samples in this medium[1] §350.71(k)(2) (A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
Dibenzofuran	NA	Y						Y (soil 0-15 ft.)	
1,2-Dichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
1,3-Dichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
1,4-Dichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
3,3-Dichlorobenzidine	NA	Y						Y (soil 0-15 ft.)	
2,4-Dichlorophenol	NA	Y						Y (soil 0-15 ft.)	
Diethyl Phthalate	Y (soil 0-15 ft.)								
Dimethyl Phthalate	NA	Y						Y (soil 0-15 ft.)	
2,4-Dimethylphenol	NA	Y						Y (soil 0-15 ft.)	
4,6-dinitro-2-methyl phenol	NA	Y						Y (soil 0-15 ft.)	
2,4-Dinitrophenol	NA	Y						Y (soil 0-15 ft.)	
2,4-Dinitrotoluene	NA	Y							Y (soil 0-15 ft.)
2,6-Dinitrotoluene	NA	Y							Y (soil 0-15 ft.)
Fluoranthene	NA	Y						Y (soil 0-15 ft.)	
Fluorene	NA	Y						Y (soil 0-15 ft.)	
Hexachlorobenzene	NA	Y						Y (soil 0-15 ft.)	

---

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).
[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).
[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).
[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

								SQL Justifications	
1	2	3	4	5	6	7	8	9	10
COC	All detected concentrations and SQLs < residential assessment level in all sampled media §350.71(k)(1)	COC not detected in any sample in the medium §350.71(k)(3)	Frequency of detects <5% of the >20 samples in this medium[1] §350.71(k)(2) (A)(i) through (iii)	Common lab contaminant[2] §350.71(k)(2)(B)	Blank contaminant[2] §350.71(k)(2)(C)	Max conc < background §350.71(k)(2)(D)	COC not sourced on-site[3] §350.71(k)(2)(E)	All SQLs < RAL §350.71(k)(3)(A)	SQL > RAL but justified[4] §350.71(k)(3)(B)
Hexachlorobutadiene	NA	Y						Y (soil 0-15 ft.)	
Hexachlorocyclopentadiene	NA	Y						Y (soil 0-15 ft.)	
Hexachloroethane	NA	Y						Y (soil 0-15 ft.)	
Indeno(1,2,3-c,d)Pyrene	NA	Y						Y (soil 0-15 ft.)	
Isophorone	NA	Y						Y (soil 0-15 ft.)	
2-Methylnaphthalene	NA	Y						Y (soil 0-15 ft.)	
2-methylphenol (o-Cresol)	NA	Y						Y (soil 0-15 ft.)	
3&4-Methylphenol (m,p-Cresol)	NA	Y						Y (soil 0-15 ft.)	
Naphthalene	NA	Y						Y (soil 0-15 ft.)	
4-Nitroaniline	NA	Y							Y (soil 0-15 ft.)
3-Nitroaniline	NA	Y							Y (soil 0-15 ft.)
2-Nitroaniline	NA	Y							Y (soil 0-15 ft.)
Nitrobenzene	NA	Y						Y (soil 0-15 ft.)	
2-Nitrophenol	NA	Y						Y (soil 0-15 ft.)	
4-Nitrophenol	NA	Y							Y (soil 0-15 ft.)
N-Nitrosodi-n-Propylamine	NA	Y						Y (soil 0-15 ft.)	
N-Nitrosodiphenylamine	NA	Y						Y (soil 0-15 ft.)	

[1] Provide in the text justification that a critical PCL is not warranted based on the criteria specified in §350.71(k)(2)(A)(iii).
[2] Provide in the text justification that the COC is not anticipated to be present at the site (see §350.71(k)(2)(B) or (C)).
[3] Provide in the text justification that the COC is not from an on-site source (see §350.71(k)(2)(E)).
[4] Provide in the text justification that all requirements of §350.71(k)(3)(B) are met.

di-n-Octyl Phthalate	NA	Y						Y (soil 0-15 ft.)	
Pentachlorophenol	NA	Y							Y (soil 0-15 ft.)
Phenanthrene	NA	Y						Y (soil 0-15 ft.)	
Phenol	NA	Y						Y (soil 0-15 ft.)	
Pyrene	NA	Y						Y (soil 0-15 ft.)	
Pyridine	NA	Y							Y (soil 0-15 ft.)
1,2,4-Trichlorobenzene	NA	Y						Y (soil 0-15 ft.)	
2,4,6-Trichlorophenol	NA	Y						Y (soil 0-15 ft.)	
2,4,5-Trichlorophenol	NA	Y						Y (soil 0-15 ft.)	

Section 11 Soil Critical PCL Development

Section 11.1 Tier 2 or 3 PCL Development and Non-Default Parameters

Tier 2 and 3 Development

Tier 2 PCLs were developed for lead, mercury and silver. The equation used to calculate the PCLs is as follows:

$$^{GW}Soil = \frac{(Groundwater\ PCL)\ LDF}{K_{sw}}$$

$$KSW = \frac{\rho_b}{\Theta_{ws} + K_d \rho_b + H' \Theta_{as}}$$

Where:

ρ_b = *Soil Bulk Density = 1.67 (Tier 1 Default)*
Θ_{ws} = *Volumetric Water Content of vadose zone soils = 0.16 (Tier 1 Default)*
Θ_{as} = *Volumetric air content of vadose zone soils = 0.21 (Tier 1 Default)*
K_d = *Soil-water partition coefficient varies with COC (pH dependent)*
H' = *Henry Law's Constant = 0 for each COC*

Non-Default Affected Property Parameters

With the exception of pH, Tier 1 default parameters were used to calculate the Tier 2 PCLs for lead, mercury and silver. pH values were reported for five soil borings scattered throughout the affected properties and used to establish site-specific Tier 2 PCLs for the above-noted COCs. The average of the pH values, 8.06 SU, was the value used in the PCL calculations. pH analysis was by Method SW-846-9045C.

Section 11.2 Soil PCL Adjustments

Not applicable

Section 11.3 Soil Critical PCLs

With the exception of lead, silver and mercury, Tier 1 residential assessment levels were considered the critical PCL for each COC assessed. Tier 2 PCLs were developed for lead, silver and mercury using site specific information, including the description of soils as clayey silt. The most probable exposure pathway for humans is through dermal contact with lead-impacted surface soils, although it is not anticipated due to the nature and use of the facility. The most probable exposure pathway for ecological receptors is through contact with surface soils and with plants rooted in the surface soils.

Table 11A - Surface Soil Critical PCLs (On-Site/Off-Site)

Date of the Tier 1 PCL tables used in the determination of PCLs: March 2006

On-Site Surface Soil Critical PCLs

Land use for purpose of critical PCL development: __ Residential X Commercial/industrial

Firing Platforms (<0.5 acre source area)

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^1$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^2$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep³	
TAL Metals by 6020															
Antimony	15	1	<0.5	5.4	1	<0.5	---	---	0.25	1	81.17	---	0.995		NFA
Cadmium	52	1	<0.5	1.5	1	<0.5	---	---	0.05	NE	---	---	0.586		Remedy
Cobalt	4000	1	<0.5	1300	1	<0.5	---	---	0.5	7	---	---	7.08		Remedy
Copper	550	1	<0.5	1000	1	<0.5	---	---	0.5	15	---	---	16.2		Remedy
Lead	500	1	<0.5	179.13	2	<0.5	---	---	0.1	15	70.23	---	131		Remedy
Manganese	3700	1	<0.5	1200	1	<0.5	---	---	0.5	300	---	---	340		Remedy
Mercury	3.6	1	<0.5	8.01	2	<0.5	---	---	0.02	0.04	1.6	---	0.0857		Remedy
Nickel	840	1	<0.5	160	1	<0.5	---	---	0.5	10	---	---	4.10		NFA
Selenium	310	1	<0.5	2.3	1	<0.5	---	---	0.25	0.3	---	---	U (<0.543)		Remedy
Silver	96	1	<0.5	480	2	<0.5	---	---	0.24	NE	---	---	0.714 JL		Remedy
Zinc	9900	1	<0.5	2400	1	<0.5	---	---	0.5	30	---	---	299		Remedy
Bis(2-ethylhexyl)phthalate	43	1	<0.5	160	1	<0.5	---	---	0.167	---	---	---	U (<0.039)		NFA

---

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

[3] Provide justifications and calculations for use of representative concentrations in Appendix 8.

Berm/Backstop Area (0.6 acre source area)

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil^1$ PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^2$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep[3]	
TAL Metals by 6020															
Antimony	310	1	0.6	2.7	1	0.6	---	---	0.25	1	81.17	---	14.5		Remedy
Cadmium	850	1	0.6	0.75	1	0.6	---	---	0.05	NE	---	---	0.371		Remedy
Cobalt	3.2E+4	1	0.6	2000	1	0.6	---	---	0.5	7	---	---	15.9		Remedy
Copper	3.7E+4	1	0.6	520	1	0.6	---	---	0.5	15	---	---	133		Remedy
Lead	1.6E+3	1	0.6	89.56	2	0.6	---	---	0.1	15	70.23	---	8,840		Remedy
Manganese	2.4E+4	1	0.6	5100	1	0.6	---	---	0.5	300	---	---	834		Remedy
Mercury	3.3	1	0.6	4.0	2	0.6	---	---	0.02	0.04	1.6	---	0.036J		NFA
Nickel	7900	1	0.6	230	1	0.6	---	---	0.5	10	---	---	14.7		Remedy
Selenium	4700	1	0.6	1.1	1	0.6	---	---	0.25	0.3	---	---	0.519J		Remedy
Silver	1700	1	0.6	240	2	0.6	---	---	0.24	NE	---	---	0.666		Remedy
Zinc	2.5E+5	1	0.6	3500	1	0.6	---	---	0.5	30	---	---	135		Remedy
Bis(2-ethylhexyl)phthalate	560	1	0.6	82	1	0.6	---	---	0.167	---	---	---	0.172J		Remedy

Off-Site Surface Soil Critical PCLs

Land use for purpose of critical PCL development:[4] __ Residential __ Commercial/industrial

COC	$^{Tot}Soil_{Comb}$ PCL			$^{GW}Soil$**Error! Bookmark not defined.** PCL			Ecological PCL		MQL (mg/kg)	Back-ground (mg/kg)	$^{SW}Soil^{29}$ (mg/kg)	$^{Sed}Soil^{29}$ (mg/kg)	Conc (mg/kg)		Remedy or NFA
	(mg/kg)	Tier	Source area size (acres)	(mg/kg)	Tier	Source area size (acres)	0-0.5 ft. (mg/kg)	0.5-5 ft. (mg/kg)					Max	Rep[30]	
Not applicable															

---

[1] $^{GW}Soil$ includes $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{Air}GW\text{-}Soil_{Inh\text{-}V}$, and $^{GW}Soil$ for secondary MCLs, as applicable.

[2] Refer to *Determining PCLs for Surface Water and Sediment* (RG-366/TRRP-24) to determine if a PCL is required to be developed for this pathway.

[3] Provide justifications and calculations for use of representative concentrations in Appendix 8.

[4] Repeat the table if needed for different off-site land uses.

Surface and Subsurface Soil - $^{GW}Soil$

Tier 2 Evaluation

Specify media to which tables apply X Surface soil ____ Subsurface soil

Specify if table is for on-site or off-site property X On-site ____ Off-site
Off-site land use(s) for purpose of PCL development[1]: ____ Residential ____ Commercial/industrial

	Soil bulk density ρ_b (g/cm^3)	Volumetric water content θ_{ws} (cm^3/cm^3)	Volumetric air content θ_{as} (cm^3/cm^3)	Fraction organic carbon foc (g/g)	Groundwater Darcy velocity U_{gw} (cm/year)	Aquifer thickness b_{gw} (m)	Ground-water gradient i (m/m)	Hydraulic conductivity K (m/day)	Average annual precipitation P (cm/yr)	Net infiltration rate I_f (cm/yr)	Saturated hydraulic conductivity of vadose zone soils K_{vs} (cm/s)
Tier 1 defaults	1.67	0.16	0.21	0.002	NA	NA	NA	NA	NA	NA	NA
Tier 2 values											

COC	Critical GW PCL (from Table 12A)		Affected soil thickness L_1 (cm)	Depth from top of affected soil to gw table L_2 (cm)	Source area width parallel to gw flow W_s (m)	GW mixing zone thickness δ_{gw} (m)	Soil-leachate partition factor K_{sw} (mg/L/mg/kg)	Lateral dilution factor LDF	$^{GW}Soil$ PCL (mg/kg)
	(mg/L)	pathway[2]							
Lead for firing platforms (<0.5 acre source area)	0.015	$^{GW}GW_{ING}$	1	1	---	---	0.0017	20	179.13
Lead for berm/backstop (0.6-acre source area)	0.015	$^{GW}GW_{ING}$	1	1	---	---	0.0017	10	89.56
Mercury for firing platforms (<0.5 acre source area)	0.002	$^{GW}GW_{ING}$	1	1	---	---	0.005	20	8.01
Mercury for berm/backstop (0.6 acre source area)	0.002	$^{GW}GW_{ING}$	1	1	---	---	0.005	10	4.00
Silver for firing platforms (<0.5 acre source area)	0.12	$^{GW}GW_{ING}$	1	1	---	---	0.005	20	480.37
Silver for berm/backstop (0.6 acre source area)	0.12	$^{GW}GW_{ING}$	1	1	---	---	0.005	10	240.19

---

[1] Repeat the table if needed for different off-site land uses.
[2] Specify the pathway for the critical groundwater PCL ($^{GW}GW_{Ing}$, $^{GW}GW_{Class3}$, $^{Air}GW_{Inh-V}$, ecological PCL (eco), ^{SW}GW, etc.)

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 1, 2010

Mr. David Boucher
Environmental Compliance Manager
2200 West 35th Street, Building 1, AGTX-EV
Austin, Texas 78703

Re: Approval of Addendum to Affected Property Assessment Report (APAR) and Response Action Completion Report (RACR)
Roy P. Benavidez National Guard Armory
801 Armory Road, El Campo, TX OMS12
Facility ID No. T1856
CN No. CN602866477/RN No. RN104676739

Dear Mr. Boucher:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above referenced submittal, dated November 3, 2009, which details the investigation and remediation of a small arms firing range located at the above mentioned address. After the extent of the contamination was determined, 640 cubic yards of lead contaminated soils were excavated and properly disposed. Afterwards, confirmation samples were gathered to determine it cleanup standards were achieved.

Based on the TCEQ review of the report, Texas Risk Reduction Program (TRRP) Remedy Standard A Residential Protective Concentration Levels (PCLs) have been achieved such that no institutional control or post-response action care is required. No further action is required under 30 Texas Administrative Code (TAC) §350 for the above-referenced areas.

In order to attain Remedy Standard A under TRRP, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated from affected media (i.e., soil, surface water, groundwater, air, etc.) to applicable human health and ecological based standards and criteria. In order to be released from the requirement to file an institutional control in accordance with 30 TAC §350 Subchapter F, contaminants that remain in place must not exceed Residential PCLs.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the activities described in the report fail to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of the site to determine compliance with the report.

Questions concerning this letter should be directed to me at (512) 239-2361. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Remediation Division at Mail Code MC-127 with an additional copy submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Gary Beyer, Project Manager
Corrective Action Team 2, VCP-CA Section
Remediation Division
Texas Commission on Environmental Quality

GB/jdm

cc: Ms. Nicole Bealle, Waste Program Manager, TCEQ Region 12 Office, Houston

HEALTH CONSULTATION

TEXAS VOLUNTARY CLEANUP PROGRAM No. 538

TRICHLOROETHYLENE GROUNDWATER PLUME

EL CAMPO, WHARTON COUNTY, TEXAS

Prepared By:

Texas Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY

Recently, elevated levels of trichloroethylene (TCE) have been found in residential drinking water wells in the West Hills subdivision of El Campo, Texas. The source of the TCE is suspected to be a 48-acre former aluminum extrusion plant. Ownership of the plant has changed several times since it was built in 1963. Alcoa currently owns the facility.

On April 26, 2002, Alcoa asked the Texas Department of Health (TDH) to provide information on liver and kidney cancer rates for the area as there have been some reports in the literature of associations between exposure to TCE and these types of cancer. The TDH Cancer Registry Division (CRD) evaluated cancer incidence and mortality data for the zip code 77437, which ecompasses the area of concern. CRD examined cancer incidence data for the years 1995-1998 and cancer mortality data for the years 1995-2000.

Both the incidence and mortality rates for kidney cancer in females living in this zip code were significantly higher than expected. The standardized incidence ratio (SIR) for kidney cancer was almost four times higher than the state rate while the standardized mortality ratio (SMR) for kidney cancer was over three times the state rate.

A plot of the individual cases shows no evidence of a spatial clustering of cases in the area of the groundwater contamination. While these data suggest that the kidney cancer cases do not appear to share a common exposure to TCE through contaminated residential drinking water wells, the addresses used only represent residence at the time of diagnosis; residential history is unknown.

TDH will explore the feasibility of obtaining a residential history for each of the cases and will continue to monitor kidney cancer rates for this area as more data become available.

Regardless of the cancer findings, TDH and ATSDR have concluded that the TCE in the residential well water poses a public health hazard.

BACKGROUND AND STATEMENT OF THE ISSUES

Recently, elevated levels of trichloroethylene (TCE) were found in residential drinking water wells in the West Hills subdivision in El Campo, Wharton County, Texas (Figure 1). One possible source of the TCE is thought to be a 48-acre aluminum extrusion plant initially built in 1963 by May Aluminum. The facility has changed ownership on several occasions. It was sold to Whittaker Metals in 1968 and in 1972 it was purchased by Reynolds Metals who entered the site into the Texas Voluntary Cleanup Program (VCP) in 1997. In 2000, Alcoa purchased Reynolds Metals.

A total of 209 drinking water wells (59 business and 150 residential wells) have been sampled. As of this writing, 68 residential wells (32%) were found to be impacted with TCE and other solvents above the detection limits. TCE concentrations in the residential wells ranged from non-detect to 111 micrograms per liter (Fg/L) or 111 parts per billion (ppb). Thirty-three of the impacted wells had levels above the drinking water standard of 5 parts per billion (ppb). Figure 2 shows the distribution of TCE found in the residential wells. Concentrations as high as 1,700 ppb were found in business wells.

On April 26, 2002, Alcoa asked the Texas Department of Health (TDH) to provide information on liver and kidney cancer rates for the area. Given the nature of the contaminant, TDH concluded that a review of the cancer statistics for these two types of cancer was warranted. According to the U.S. Department of Health and Human Services National Toxicology Programs 9th Report on Carcinogens, TCE is reasonably anticipated to be a human carcinogen. This classification is based on limited evidence of carcinogenicity from studies in humans, sufficient evidence of malignant tumor formation in experimental animals, and convincing relevant information that TCE acts through mechanisms indicating that it may cause cancer in humans. Although the epidemiologic data for evaluating the carcinogenicity of TCE in humans is limited, studies have suggested that occupational exposure to TCE may cause liver and kidney cancer. The target organs for TCE-induced tumors appears to be consistent between humans and rodents. In mice, TCE increases tumors of the liver. In rats, TCE induces cancer of the kidneys [1]. In general, the associations between exposure to TCE and cancer are suggestive, but inconclusive.

Based on available information, the Agency for Toxic Substances and Disease Registry (ATSDR) has concluded that cancer should be a concern for people exposed to TCE in the environment and at hazardous waste sites [2]. Qualitatively, based on the cancer potency factor currently under review by the U.S. Environmental Protection Agency (EPA), the excess lifetime cancer risk associated with the concentrations of TCE found in the residential wells could range from insignificant to high.

In response to Alcoa's request, the TDH Cancer Registry Division (CRD) evaluated cancer incidence data for the years 1995-1998 and cancer mortality data for 1995-2000 for the zip code 77437, which encompasses the area of concern. CRD only provided incidence data for the most current years that have undergone CRD's numerous data quality procedures and were deemed to be complete (at least 95% complete). The mortality data analysis was limited to encompass similar years while providing enough years for a stable comparison.

METHODS

To determine whether the number of cancer patients found in a community is unusual, CRD compares the number of observed cases (for incidence) and deaths (for mortality) to what would be expected based on the race-, sex-, and age-specific cancer incidence and mortality experience for the state of Texas for the same periods of time. Tables 1 and 2 list the number of observed cases and deaths for males and females, the number of expected cases and deaths, the standardized incidence ratio or standardized mortality ratio, and the corresponding 95% confidence interval.

The SIR or SMR is the number of observed cases or deaths divided by the number of expected cases or deaths. When the SIR or SMR of a selected cancer is equal to 1.00, then the number of observed cases or deaths is equal to the expected number of cases or deaths, based on the incidence or mortality experience of the rest of the state. When the SIR or SMR is less than 1.00, fewer people developed or died from the cancer than would have been expected. Conversely, an SIR or SMR greater than 1.00 indicates that more people developed cancer than we would have expected.

To determine if an SIR or SMR greater or less than 1 is due to chance, we calculate 95% confidence intervals. The 95% confidence interval indicates the range in which we would expect the SIR or SMR to fall 95% of the time. A confidence interval containing 1 indicates no statistically significant excess of cancer. The confidence intervals are important when trying to interpret small numbers of cases. If only one or two (or even less than one) cases are expected for a particular cancer, then the report of three or four observed cases will result in a large SIR or SMR. As long as the 95% confidence interval contains 1.00, the SIR or SMR is still within the range one might expect based on the experience of the rest of the state.

RESULTS

The analysis of incidence data for 1995&1998 shows that zip code 77437 had a statistically significant excess of kidney cancer in females (SIR=3.4; 95%CI=1.7&6.2). The analysis of mortality data for 1995&2000 also shows a statistically significant excess of kidney cancer in females (SMR=3.2; 95% CI=1.2&6.9). The incidence and mortality of liver cancer was not elevated for either gender (Appendix 1: Tables 1 & 2).

DISCUSSION

When evaluating whether an observed excess could be related to an environmental exposure we often expect to see excesses in both sexes; however, there may be patterns of exposure that could account for the differences. For instance, females who stay at home may have a greater exposure to contaminants in the home than males who work outside the home for much of the day. Residential exposure to TCE in the groundwater could result in exposure through ingestion, inhalation, and dermal absorption. We determined that further investigation of these findings was warranted based on the fact that kidney cancer usually is about twice as common in men as in women (Appendix 2), and that the investigation was initiated as a result of an environmental investigation into possible exposures to an agent reported to be associated with the disease.

To evaluate whether the people identified as having kidney cancer could have been exposed to the contaminated groundwater CRD provided addresses for all of the observed cases of kidney cancer (male and female) for 1995–1998. The TDH Spatial Approaches to Health Outcomes Program then geocoded and mapped the addresses to provide a picture illustrating the location of the cases with respect to the suspected groundwater plume. However, TDH was unable to geocode three of the 15 cases (11 female and 4 male). Addresses for these cases either were listed as a Route # or as a P.O. Box #. Of the twelve cases that were geocoded there was no evidence of a spatial clustering of cases within the area of concern.[1]

For the initial spatial analysis, we only used data from the years for which the incidence data were considered complete (1995–1998). Thus, cases diagnosed prior to 1995 or after 1998 were not included. While using complete incidence data is necessary for statistical analysis and interpretation, we decided to try to use all available incidence data to better approximate the geographic distribution of known cases in an area. CRD provided addresses for all known kidney cancer cases in the zip code 77437 (male and female) for 1990 to the present. A total of 29 cases were identified. Of the 23 cases that we were able to geocode, there still was no evidence of a spatial clustering of cases within the area of concern. These data suggest that the kidney cancer cases do not share a common exposure to TCE through contaminated residential drinking water wells; however, it is important to acknowledge that the addresses used in the spatial analysis only represent residence at the time of diagnosis; residential history is not known.

OTHER PERTINENT INFORMATION

According to the American Cancer Society the risk factors for kidney cancer (renal cell carcinoma) include lifestyle-related risk factors, occupational related risk factors, genetic and hereditary related risk factors, certain medications, a history of kidney disease, age, and gender. A brief review of these risk factors is included in Appendix 2.

CONCLUSIONS

1. Both the incidence and mortality rates for kidney cancer in females living in the zip code area 77437 located within El Campo were significantly elevated. Both the SIR and the SMR for kidney cancer were over three times the respective state rate.

2. Although a spatial analysis of the individual cases suggests no evidence of a spatial clustering of cases in the area of known or suspected groundwater contamination, the addresses available for the analysis only represent residence at the time of diagnosis.

3. Although the reported associations between exposure to TCE and cancer are inconclusive, ATSDR has determined that cancer should be a concern for people exposed to TCE. Qualitatively, we estimate the excess lifetime cancer risk associated with the TCE found in the residential wells to range from insignificant to high. Based on

---

[1] A copy of the map showing the location of the cases is not included in this report. TDH operates under strict rules of patient confidentiality and with the small number of cases such a map could result in the identification of individual cases which would be a violation of the State's confidentiality laws.

available information we have concluded that the TCE in the residential wells poses a public health hazard.

RECOMMENDATIONS

1. Determine the feasibility of obtaining a residential history for each of the cases (1990–present) to further delineate whether they may exposed to TCE in contaminated well water.

2. Continue to monitor kidney cancer rates for this area.

3. Provide clean potable water for residences in the affected area.

PUBLIC HEALTH ACTION PLAN

1. TDH will explore the feasibility of obtaining a residential history for each of the cases.

2. TDH will continue to monitor kidney cancer rates for this area as more data become available.

3. Alcoa has provided bottled water for each of the residences in the affected area and is installing activated charcoal filtering systems on the wells to ensure clean potable water for each household.

REFERENCES

1. National Toxicology Program (NTP). Trichloroethylene- 9th Report on Carcinogens. US Department of Health and Human Services; Revised January 2001.

2. Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological profile for trichloroethylene. Atlanta: US Department of Health and Human Services; September 1997.

PREPARERS OF THE REPORT

John F. Villanacci, Ph.D.
Acting Chief Bureau of Epidemiology

Melanie Williams, Ph.D.
Epidemiologist
Cancer Registry Division

Brenda J. Mokry
Epidemiologist
Cancer Registry Division

Richard A. Beauchamp, M.D.
Medical Toxicologist
Bureau of Epidemiology

Susan L. Prosperie, M.S., R.S.
Environmental Health Specialist
Epidemiology and Toxicology Division

ATSDR REGIONAL REPRESENTATIVE

Jennifer Lyke
Regional Representative
ATSDR - Region 6

ATSDR TECHNICAL PROJECT OFFICER

Robert B. Knowles, M.S., REHS
Division of Health Assessment and Consultation
Superfund Site Assessment Branch
State Programs Branch

CERTIFICATION

This health consultation was prepared by the Texas Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Technical Project Officer, SPS, SSAB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation and concurs with its findings.

Chief, State Programs Section, SSAB, DHAC, ATSDR

Appendix 1

Table 1

Number of Observed and Expected Cancer Cases and Race Adjusted Standardized Incidence Ratios, Selected Sites, El Campo, TX, Zip Code 77437, 1995–1998

Males				
Site	**Observed**	**Expected**	**SIR**	**95% CI**
Kidney and Renal Pelvis	4	4.9	0.8	0.2 – 2.1
Liver and Intrahepatic Bile Duct	0	2.3	0.0	0.0 – 1.6
Females				
Site	**Observed**	**Expected**	**SIR**	**95% CI**
Kidney and Renal Pelvis	11	3.2	3.4*	1.7 – 6.2
Liver and Intrahepatic Bile Duct	0	1.2	0.0	0.0 – 3.1

Note: The SIR (standardized incidence ratio) is defined as the number of observed cases divided by the number of expected cases. The latter is based on race-, sex-, and age-specific cancer incidence rates for Texas during 1995–1998. The SIR has been rounded to the first decimal place.

*Significantly higher than expected at the $p < 0.05$ level.

Prepared by:
Brenda J. Mokry, Epidemiologist
Texas Cancer Registry Division
Texas Department of Health
05/10/2002

Table 2

Number of Observed and Expected Cancer Deaths and Race Adjusted Standardized Mortality Ratios, Selected Sites, El Campo, TX, Zip Code 77437, 1995–2000

Males				
Site	**Observed**	**Expected**	**SMR**	**95% CI**
Kidney and Renal Pelvis	2	2.9	0.7	0.1 – 2.5
Liver and Intrahepatic Bile Duct	1	3.6	0.3	0.0 – 1.6
Females				
Site	**Observed**	**Expected**	**SMR**	**95% CI**
Kidney and Renal Pelvis	6	1.9	3.2*	1.2 – 6.9
Liver and Intrahepatic Bile Duct	0	2.3	0.0	0.0 – 1.6

Note: The SMR (standardized mortality ratio) is defined as the number of observed deaths divided by the number of expected deaths. The latter is based on race-, sex-, and age-specific cancer mortality rates for Texas during the period 1995–2000. The SMR has been rounded to the first decimal place.

*Significantly higher than expected at the $p < 0.05$ level.

Prepared by:
Brenda J. Mokry, Epidemiologist
Texas Cancer Registry Division
Texas Department of Health
04/29/2002

Appendix 2

What Are the Risk Factors for Kidney Cancer (Renal Cell Carcinoma)?

(Adapted from the American Cancer Society)

A risk factor is anything that increases a person's chance of getting a disease such as cancer. Different cancers have different risk factors. For example, unprotected exposure to strong sunlight is a risk factor for skin cancer. Scientists have found several risk factors that make you more likely to develop renal cell carcinoma.

Lifestyle-Related and Job-Related Risk Factors

Smoking

Cigarette smoking increases the risk of developing renal cell carcinoma by about 40%.

Obesity

If you are overweight, you have a much higher risk of developing renal cell cancer. Some doctors think obesity is a factor in 20% of people who get this cancer. Obesity may cause changes in certain hormones that can lead to renal cell carcinoma.

Diet

Well-cooked meat has been linked to renal cell carcinoma.

Occupational Exposures

Some studies suggest that workplace exposure to asbestos, cadmium (a type of metal), and organic solvents, particularly trichloroethylene, increases your risk of renal cell carcinoma.

Genetic and Hereditary Risk Factors

Some people inherit a tendency to develop certain types of cancer. The DNA that you inherit from your parents may have certain changes that account for this tendency. Sometimes, these DNA alterations also occur during fetal development inside the mother's womb. At least three different known inherited conditions can cause hereditary renal cell carcinoma:

von Hippel-Lindau Disease

People with this condition often develop several kinds of tumors. Between 25% and 45% of these people develop renal cell carcinoma, usually the clear cell type. They may also have benign blood vessel tumors called hemangioblastomas in their eyes, brain, and spinal cord; cystic (fluid filled) growths in their pancreas and other organs; and a type of adrenal gland tumor called pheochromocytoma.

Hereditary Papillary Renal Cell Carcinoma

People with this condition have an inherited tendency to develop one or more papillary renal cell carcinomas, but do not have the other medical problems that affect people with von Hippel-Lindau disease.

Hereditary Renal Oncocytoma
There are some people who inherit the tendency to develop a kidney tumor with very low potential for being malignant, which is called an oncocytoma.

Other Risk Factors

Medications
Phenacetin, once a popular non-prescription pain-reliever, has been linked to renal cell cancer in the past. Because this medication has not been available in the United States for over 20 years, this no longer appears to be a major risk factor. Diuretics (medications for treating high blood pressure and congestive heart failure that stimulate the kidneys to remove salt and fluid from the body) have also been linked to renal cell carcinoma, as has high blood pressure (which is often treated with diuretics). It is not clear whether the cause is the drugs or the disease. If you need diuretics, you should take them. You shouldn't avoid them in an attempt to reduce the risk of renal cell carcinoma.

Kidney disease
If you have advanced kidney disease and need to be on dialysis, you may have a higher risk of renal cell carcinoma. Dialysis is a treatment used to remove toxins from your body if your kidneys are not working properly.

Age
Most renal cell carcinomas occur in adults between the ages of 50-70 years. They rarely develop in children and young adults.

Gender
Renal cell carcinoma is about twice as common in men as in women. Men are more likely to be smokers and are more likely to be exposed to cancer-causing chemicals at work, which may account for the difference.

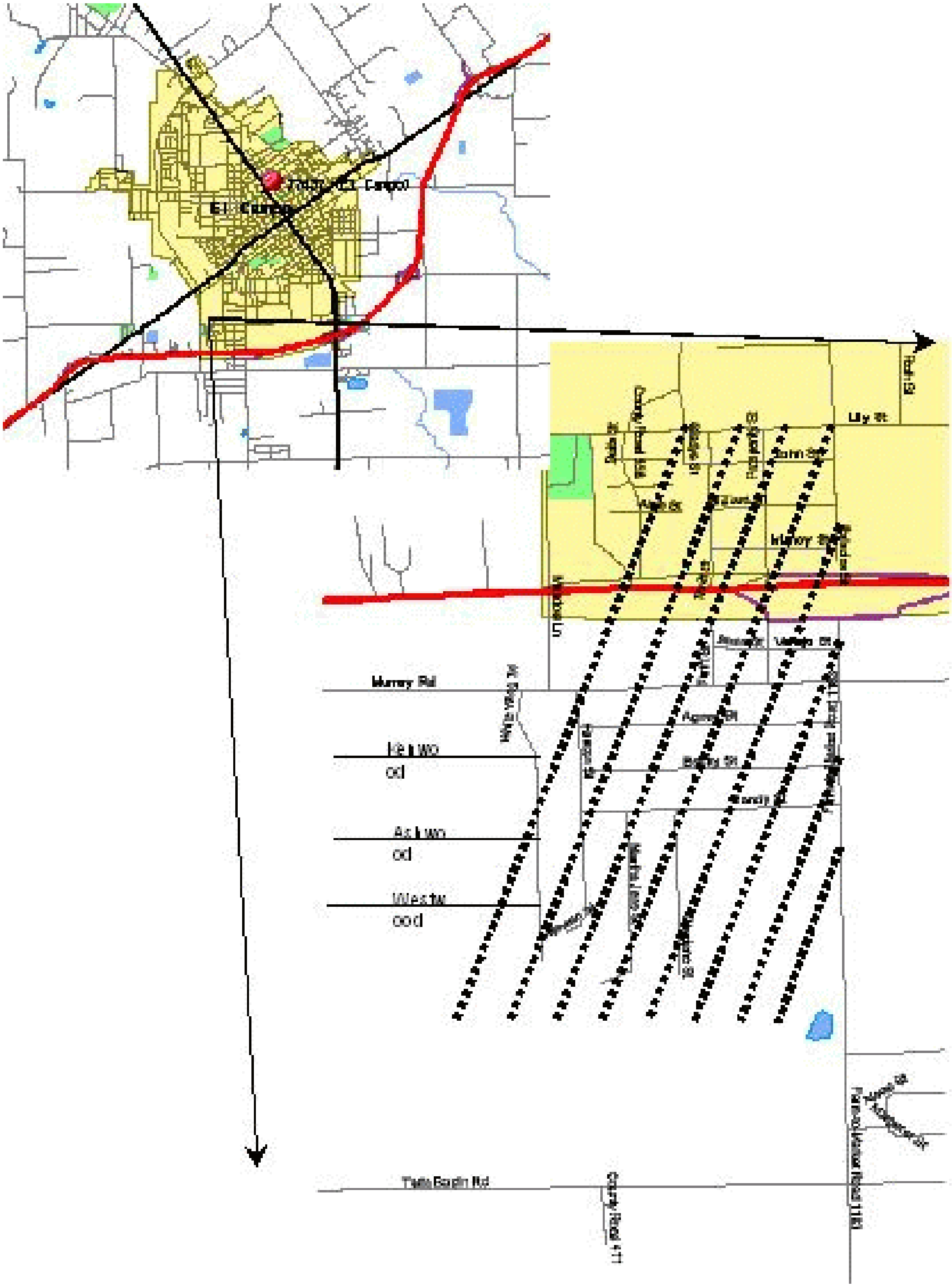
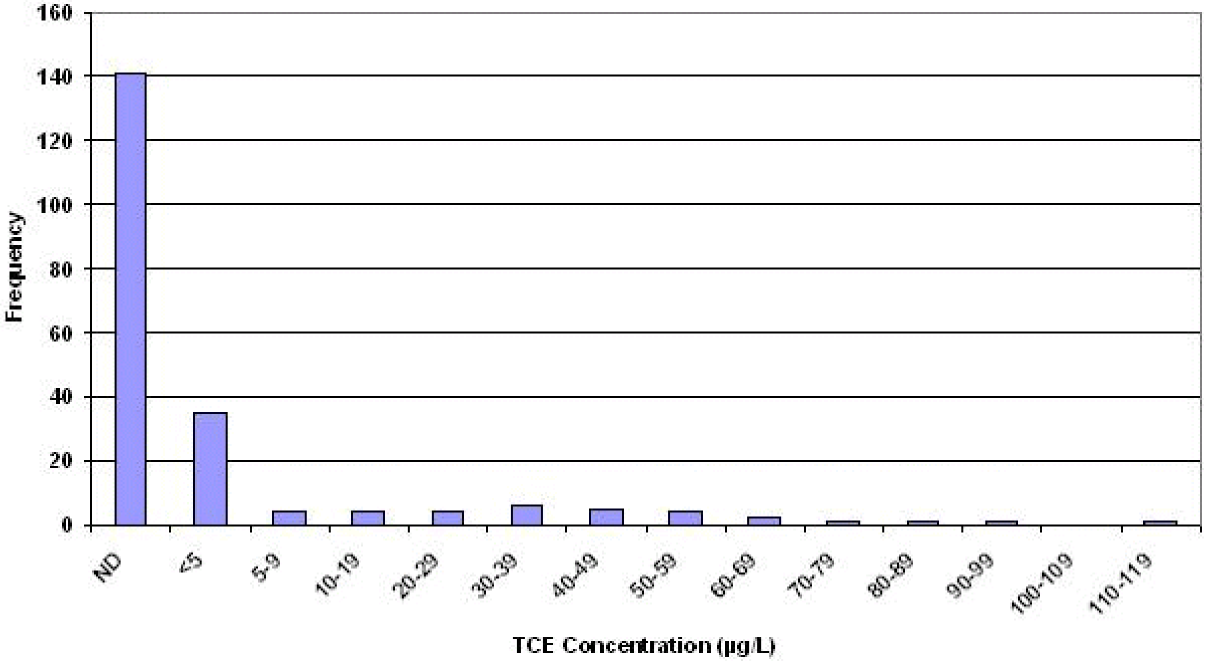
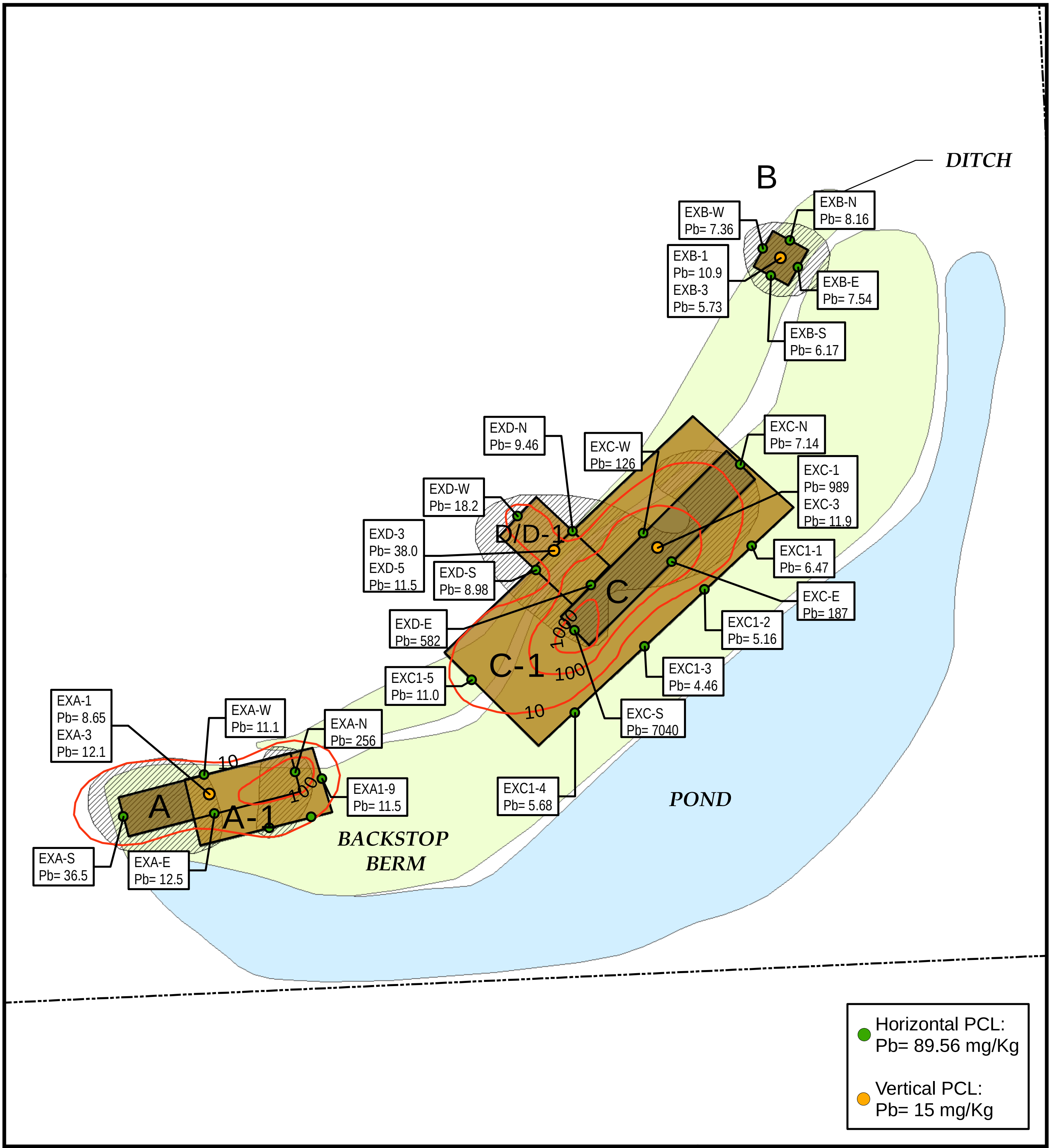

77437 (El Campo)
El Campo
Lily St
John St
Murray Rd
Vallejo St
Agnes St
He wo
od
As wo
od
Wes tw
ood
County Road 411

Figure 2
Distribution of TCE in Residential Wells in El Campo, Texas
(Preliminary Results as of April 30, 2002)





0 40 80

SCALE IN FEET

LEGEND

● HORIZONTAL DELINEATION

● VERTICAL DELINEATION

LEAD CONCENTRATION ISOCONTOUR

-·-·- FENCE LINE

▨ PCLE AREA (CORRIGAN 2005)

■ PHASE I EXCAVATION EXTENT

■ PHASE II EXCAVATION EXTENT

N

Results shown in mg/kg

Bold values indicate results are above the Critical PCL

NOTE: EXCAVATION AREAS AND BERM LOCATIONS ARE APPROXIMATE
SOURCE: GLOBEXPLORER, 2004

WESTON SOLUTIONS

ATTACHMENT 1A-2
LEAD SAMPLING RESULTS

SMALL ARMS FIRING RANGE
AGD EL CAMPO NATIONAL GUARD ARMORY
801 ARMORY RD (CR 406)
EL CAMPO, TEXAS

DATE	PROJECT NO	SCALE
SEP 2009	13903.004.001.0040	AS SHOWN

File: \\ASATX01\gis_cad\GIS Project Files\TXARNG (13903)\El Campo\GIS\Lead_Samples_Phase2.mxd, 08-Oct-09 10:53, thomasog

RESPONSE ACTION COMPLETION REPORT

FORMER SMALL ARMS FIRING RANGE
ROY P. BENAVIDEZ NATIONAL GUARD ARMORY
EL CAMPO, TEXAS

Prepared for:

TEXAS ARMY NATIONAL GUARD
Camp Mabry
Austin, Texas

Prepared by:

WESTON SOLUTIONS, INC.
2705 Bee Caves Road
Suite 100
Austin, Texas 78746

October 2009

W.O. No. 13903.004.001

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Response Action Completion Report

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) T-1856

check one: X Initial RACR submittal for this on-site property ___ Subsequent RACR submittal

Report date: 5 October 2009 TCEQ Region No.: 12

TCEQ Program (check one)

X Corrective Action (Mail Code 127)

___ Superfund PRP Lead (Mail Code 143)

___ Voluntary Cleanup Program (Mail Code 221)

___ Municipal Solid Waste Permits (Mail Code 124)

___ Petroleum Storage Tank Program (Mail Code 137)

On-Site Property Information

On-Site Property Name: Roy P. Benavidez National Guard Armory

Street no. 801 Pre dir: ___ Street name: Armory (CR 406) Street type: Road Post dir: ___

City: El Campo County: Wharton County Code: 241 Zip: 77437

Nearest street intersection or location description: Hwy 71 and Armory Road (County Road 406)

Latitude: Degrees, Minutes, Seconds OR [✓ Decimal Degrees] (circle one) North 29 10.263’

Longitude: Degrees, Minutes, Seconds OR [✓ Decimal Degrees] (circle one) West 95 15.176’

Off-Site Affected Property Information

Off-Site Affected Property Name: ___

Street no. ___ Pre dir: ___ Street name: ___ Street type: ___ Post dir: ___

City: ___ County: ___ County Code: ___ Zip: ___

X Check if there are no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Adjutant General’s Department

Contact Person: David N. Boucher Title: Environmental Compliance Manager

Mailing Address: PO Box 5218

City: Austin State: TX Zip: 78763 E-mail address david.n.boucher@us.army.mil

Phone: 512.782.5753 Fax: 512.465.5141

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person ___ Name, print: ___ Date: ___

Check the reports/forms submitted:

Remedy Standard A

X Self-Implementation Notice Submittal date: October 17, 2008

___ Response Action Plan - Approval date: NA

Remedy Standard B

___ Response Action Plan - Approval date: NA

List all media (surface soil, subsurface soil, groundwater, sediment, surface water, air) that contained or contains a PCLE zone and specify the response action taken for each media. Indicate the type of removal, decontamination, physical control, or institutional control action that was used in the response action. If a media with a PCLE zone was not addressed in the response action, provide an explanation below.

Media	COCs[1]	Removal	Decontamination	Physical Control	Institutional Control	Modified Response Objective[2]		
						PMZ	WCU	TI
Soil	Antimony	X						
Soil	Lead	X						
Soil	Manganese	X						

Is there a media that contains a PCLE zone that was not addressed in the response action? ___ yes X no

If yes, provide justification for not addressing the PCLE zone in the response action.

Current land use of the on-site affected property: ___ Residential X Commercial/industrial

Projected future land use of the on-site property (if known): ___ Residential X Commercial/industrial

Explain why you believe the response action to be complete.

Firing Range Berm Soil Removal (Remedy Standard A):

Based on the data reported herein, confirmation and vertical delineation sampling data obtained from the El Campo National Guard Armory small arms firing range (SAFR) indicates metals-affected soil at the site has been removed and disposed of off-site under Remedy Standard A.

Metals-affected soil above applicable critical PCLs were excavated, characterized, and disposed off-site in accordance with applicable regulations. Analytical results from confirmation and vertical delineation samples collected from the floors and sidewalls of the excavated areas to evaluate residual concentrations confirm that soils affected above the critical PCLs for the site have been removed. The excavated areas were backfilled to grade using clean native fill which was analyzed for the presence of, and reported free of, metals and VOCs.

---

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).

[2] If a modified groundwater response objective was used, check the type(s) of modifications.

Checklist for Report Completeness

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.

					Report Contents
			Required	**Cover Page**	☒
			Required	**Executive Summary**	☒
			Required	**Checklist for Report Completeness**	☒
			Required	**Worksheet 1.0** Confirmation of Response Action Objectives	☒
			Required	**Attachment 1A*** Maps and Cross Sections	☒
			Required	**Attachment 1B*** Graphs	☐
			Required	**Attachment 1C*** Response Action Diagrams	☐
No ☒	Was a plume management zone used as part of the response action?	☐ Yes →		**Worksheet 2.0** Plume Management Zone	☐
		→		**Attachment 2A*** Map of Plume Management Zone	☐
No ☒	Was an area of technical impracticability approved for use as part of the response action?	☐ Yes →		**Worksheet 3.0** Technical Impracticability	☐
		→		**Attachment 3A*** Map of Technical Impracticability Area	☐
No ☒	Were institutional controls used or required as part of the response action?	☐ Yes →		**Worksheet 4.0** Institutional Controls	☐
			Required	**Worksheet 5.0** Performance Measures and Problems	☒
No ☒	Did the response action require any operation and maintenance activities?	☐ Yes →		**Worksheet 6.0** Operation and Maintenance	☐
No ☒	Has there been any change to the plans for post-response action care from that submitted in the RAP?	☐ Yes →		**Worksheet 7.0** Post-Response Action Care	☐
No ☐	Was any information for this report obtained from outside sources?	☒ Yes →		**Appendix 1*** References	☒
No ☒	Was an ESA and/or Compensatory Restoration used as part of the response action?	☐ Yes →		**Appendix 2*** ESA and Compensatory Restoration	☐
No ☒	Were institutional controls or landowner concurrence required in the response action?	☐ Yes →		**Appendix 3*** Institutional Controls and Landowner Concurrence	☐

Checklist for Report Completeness

ID No.
T-1856

Report Date:
10/8/2009

				Report Contents
No ☐	Is there data or boring/monitor well information not previously submitted?	☒ Yes →	**Appendix 4*** Data Tables, Boring Logs, and Well Completions	☒
No ☒	Did sampling procedures differ from those described in the RAP?	☐ Yes →	**Appendix 5*** Sampling Procedures	☒
No ☐	Has any sampling been conducted for which the analytical results were not previously submitted?	☒ Yes →	**Appendix 6*** Laboratory Data Packages	☒
No ☒	Were statistics or geostatistics used in the response action?	☐ Yes →	**Appendix 7*** Statistical Methodology	☐
No ☐	Were any wastes generated that were not reported through STEERS?	☒ Yes →	**Appendix 8*** Waste Disposition	☒

Confirmation of Response Action Objectives	**RACR Worksheet 1.0**	**Page 5 of 16**
	ID No. **T-1856**	**Report Date:** **10/8/2009**

Use this worksheet to describe the attainment of the response action objectives in each media.

Response Action Objectives

What was the selected remedy standard for this affected property? X A ___ B

List the environmental media to which this applies Soil (small arms firing range backstop berm only)
Repeat this section for each medium that had a different response action objective.

Provide a detailed description of the response action. Describe the removal actions, decontamination actions, treatment system(s), physical or institutional control actions, and any actions for ecological considerations (ecological services analysis and compensatory restoration plans) that were conducted in each media and indicate if there were any differences between the actions taken and the actions proposed in the SIN or RAP.

Firing Range Berm Soil Removal (Remedy Standard A):

As described in the SIN (WESTON, 2008), during the week of 13 October 2008, WESTON excavated 180 cubic yards (ex-situ) of metals-affected soil from four areas on the backstop berm based on the PCLE zones identified in the APAR (CORRIGAN, 2005 and 2006) and the APAR Addendum (WESTON, 2009). Analytical results obtained from confirmation and vertical delineation soil sampling of excavated areas indicated that lead- and manganese-affected soil remained. As a result, an additional 460 cubic yards (ex-situ) of soil removal was planned and conducted during the week of 13 July 2009. An X-Ray Fluorescence (XRF) Analyzer was utilized to assist in real-time field decisions to ensure the response action objectives were met and no further mobilizations would be required. The excavated soil was temporarily stockpiled on-site while laboratory analyses were performed and disposal arrangements were made. Soil stockpiles were enveloped in 6-mil plastic sheeting and protected from wind and precipitation.

Once the confirmation, vertical delineation, and waste characterization analytical data were received verifying that the response action objectives had been met, WESTON backfilled the excavations to grade and disposed of the excavated affected soil at an off-site disposal facility. Waste profiles and shipping manifests were completed to document the disposal of all excavated soils. This documentation is provided in Appendix 8.

Describe how the response action achieved the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33, as applicable. Explain how the response action was appropriate based on the hydrogeologic and COC characteristics. Describe any unprotective conditions that continued or resulted from the remedial actions and the actions taken to mitigate unprotective conditions.

Firing Range Berm Soil Removal (Remedy Standard A):

Removal and off-site disposal of metals-affected surface soil resulted in the reduction of COC concentrations to below Critical PCLs. The analytical results from confirmation and vertical delineation samples collected from the floors and sidewalls of the excavated areas confirm that the response action objectives for the project have been met.

The response action was appropriate based on the hydrologic conditions and COC characteristics that existed at the site. Results of soil sampling conducted as part of the Affected Property Assessment and Response Action indicated that no ^{GW}Soil PCLs were exceeded and therefore remaining metals concentrations in soil are protective of groundwater. As a result of the removal of affected soils and placement of clean backfill to grade, no unprotective conditions remain at the site.

If different from the information provided in the RAP, explain how the COCs were handled, treated, disposed, or transferred to another media and document that the response action did not result in any additional exposure conditions due to response action activities.

NOT APPLICABLE

Explain how the response action achieved the objectives within the reasonable time frame.

A SIN was submitted to TCEQ on 17 October 2008. TCEQ issued a notice to proceed with the activities in the SIN in a letter dated 17 November 2008.

The self-implemented response action for the removal of metals- affected soils from the firing range berm was performed in two phases. Phase 1 occurred during the week of 13 Oct 2008 (180 cubic yards ex-situ), and Phase 2 (460 cubic yards ex-situ) occurred during the week of 13 July 2009.

Were physical controls used as part of the response action? ____ Yes _X_ No
If yes, describe the type and purpose of the physical control and discuss how the physical control has proved effective.

NOT APPLICABLE

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate that the physical control or combination of measures reliably contained COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

The objective for the soil response action was removal and off-site disposal under Remedy Standard A of metals-affected soils with concentrations of COCs above applicable critical PCLs. Results obtained from laboratory analyses of confirmation samples collected during the soil removal indicate that residual metals concentrations are below critical PCLs. Therefore the response action objectives have been achieved and no other controls were planned or are necessary.

Explain how the removal or decontamination action reduced the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevented COC concentrations above the critical soil PCLs from migrating beyond the original boundary of the soil PCLE zone.

The response action activities included the removal of metals-affected surface soil to reduce the concentration of COCs below critical PCLs throughout the backstop berm soil PCLE zones. The soil PCLE zones from the APAR are displayed on Attachment 1A-1. All affected soil identified in the APAR and confirmed during the response action, exist in the uppermost 5 to 7-feet therefore so no affected subsurface soil was present. During the response action activities, surface soil samples were collected from the sidewalls and floors of the soil removal excavations to assess the horizontal and vertical extent of COCs throughout the backstop berm.

- Horizontal and vertical delineation was necessary for metals that were being removed to below critical PCLs including antimony, lead, and manganese.
- Additional vertical delineation was necessary for metals present above Texas-specific background including copper and zinc. These COCs however were not present at concentrations above critical PCLs, therefore soil removal was not necessary for copper and zinc.

The analytical results reported from the sidewalls and floors of the excavated soil PCLE zones were compared to critical PCLs. A tabulation of the analytical results and comparison to critical PCLs is provided in Appendix 4. Two separate phases of soil removal and sampling were required to accomplish the objectives of the response action. As a result, the analytical data presented in Appendix 4 is separated according to the phase of work. Analytical results, isoconcentration contours, soil PCLE zones, and excavation boundaries are visually presented on COC concentration maps as follows:

- Attachment 1A-2 – Lead Sampling Results
- Attachment 1A-3 – Manganese Sampling Results
- Attachment 1A-4 – Antimony Sampling Results

Confirmation sampling was conducted on the sidewalls of all soil PCLE zone excavations to achieve horizontal delineation for antimony, lead, and manganese. Phase 1 sidewall soil sampling analytical results indicated that the response action objectives of the soil removal were met for antimony (i.e., antimony-affected soil above the critical PCL was removed). However, Phase 2 soil removal and sampling was required to remove residual lead- and manganese-affected soil horizontally in Excavation A and Excavation C to below critical PCLs. Photographs 1 through 4 of Attachment 1A-5 show the extent of Excavation C/C-1 while photographs 5 and 6 show the extent of Excavation A/A-1. The maximum reported lead concentration from Phase 2 sidewall sampling activities in Excavation C-1 was 11.0 mg/kg, below the horizontal critical PCL for lead of 89.56 mg/kg. The maximum reported lead concentration from Phase 2 sidewall sampling activities in Excavation A-1 was 11.5 mg/kg, below the horizontal soil critical PCL for lead of 89.56 mg/kg. The maximum reported manganese concentration from Phase 2 activities in Excavation A-1 was 341 mg/kg, below the horizontal critical PCL of 576 mg/kg for manganese. The results obtained from laboratory analyses from Phase 1 and Phase 2 remedial activities indicate that residual metals concentrations are below critical PCLs and lead, manganese, and antimony have been horizontally delineated at the backstop berm area. Therefore the response action objectives have been achieved.

Confirmation sampling was conducted on the floors and at depth in all of the excavations to achieve vertical delineation for lead, manganese, and antimony. Phase 1 soil sampling analytical results indicated that the response action objectives of the soil removal were met for antimony and lead (i.e., antimony- and lead-affected soil above critical PCL was removed). However, Phase 2 soil removal and sampling was required to remove manganese-affected soil vertically in Excavation D. As a result, Excavation D was deepened from 5-feet to 7-feet during Phase 2 activities. The reported manganese concentration collected from 7-feet below ground surface (bgs) was 282 mg/kg, below the vertical soil critical PCL of 300 mg/kg. The results obtained from laboratory analyses from Phase 1 and Phase 2 remedial activities indicate that residual metals concentrations are below critical PCLs and lead, manganese, and antimony have been vertically delineated at the backstop berm area. Therefore the response action objectives have been achieved.

Vertical delineation sampling was conducted on the floors and at depth of the soil PCLE zone excavations for copper and zinc. The analytical results were compared to their critical PCLs (Texas-specific background), 15 mg/kg and 30 mg/kg, respectively. Copper and zinc were not present at concentrations above critical PCLs therefore soil removal was not necessary. The maximum reported copper concentration was collected from 3-feet bgs in Excavation B (EXB-3) at 9.94 mg/kg. The maximum reported zinc concentration was collected from 3-feet bgs in Excavation B (EXB-3) at 27.1 mg/kg. The results obtained from laboratory analyses from Phase 1 remedial activities indicate that residual metals concentrations are below Texas-specific background and copper and zinc have been vertically delineated at the backstop berm area. Therefore the response action objectives have been achieved.

Other response action objectives included waste characterization, proper transportation and disposal of the metals-affected soil, and proper installation of clean backfill material in the excavations. A total of 460 cubic yards of soil was removed during Phase 1 and Phase 2 response action activities. The soil was stockpiled on-site on 6-mil plastic sheeting then covered as shown in photographs 7 and 8 of Attachment 1A-5. Waste characterization samples were collected from the stockpiles for laboratory analysis. Once the waste characterization analytical data were received, a waste profile was approved and shipping manifests were prepared for transportation and disposal to Fort Bend Regional Landfill, Needville, Texas. Stockpile loading and removal activities are shown in photographs 9 and 10 of Attachment 1A-5 and shipping manifests documentation is provided in Appendix 8. The excavations were then backfilled using clean, native backfill that was analyzed for, and reported free of, metals and VOCs. The backfill was compacted using the excavation equipment in lifts during placement and overfilled approximately 6-inches to allow for settling over time and prevent serious erosion. Photographs 11 and 12 in Attachment 1A-5 show the results of backfill in the excavations at the backstop berm.

Groundwater Response Action Objectives

****NOT APPLICABLE. Metals-affected soil have been removed. Analytical results obtained from confirmation sampling indicate that soil conditions at the site are protective of groundwater.****

Name of groundwater-bearing unit to which this information applies **NOT APPLICABLE**

Repeat this section for each groundwater-bearing unit for which a different response action was conducted.

Groundwater classification 1 ___ 2 ___ 3 ___

Was a modified groundwater response action used for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? ___ Yes ___ No

If yes, complete the appropriate portions of this report.

Explain how the removal or decontamination actions reduced the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevented COC concentrations above the critical groundwater PCL from migrating beyond the original boundary of the groundwater PCLE zone. If COC concentrations above the critical groundwater PCL ever migrated beyond the original boundary of the groundwater PCLE zone, explain the actions taken to address the increase in the PCLE zone.

NOT APPLICABLE

Explain how the response action prevented COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) were exceeded.

NOT APPLICABLE

Explain how the response action prevented COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water was a factor.

NOT APPLICABLE

Explain how the response action prevented human and ecological receptor exposure to the groundwater PCLE zone.

NOT APPLICABLE

Waste Management

Describe the volume and final disposition or reuse location of waste or environmental media that was removed from the affected property during the response action, if not previously reported under STEERS. Provide copies of all manifests, other documentation of disposition, and landowner consent for reuse of soil in Appendix 8.

Overall, 640 cubic yards (ex-situ) of all metals-affected soil was excavated from the small arms firing range berm. Gruene Environmental Corporation, Gruene, TX hauled the excavated soil using 24 cubic yard end dumps to the Fort Bend Regional Landfill, Needville, TX. Waste profiles and shipping manifest documenting the disposal of excavated soils are provided in Appendix 8.

Plume Management Zone	**RACR Worksheet 2.0**	**Page 10 of 16**
	ID No. **T-1856**	**Report Date:** **10/8/2009**

Complete this worksheet when a PMZ was used as part of the response action. Include in Attachment 2A a map of the PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone (if applicable). If a PMZ was not used, do not submit this worksheet.

Groundwater-bearing unit **NOT APPLICABLE**

Repeat this worksheet for each groundwater-bearing unit for which a PMZ was used.

Groundwater classification ____ 2 ____ 3

Is/was NAPL present? ____ Yes ____ No

If so, describe how the response action achieved the performance criteria in §350.33(f)(4)(E).

NOT APPLICABLE

If this is a Class 2 groundwater, explain how the response action ensured that leachate from the surface soil and subsurface soil PCLE zones did not increase concentration of COCs greater than the measured concentrations at time of RAP submittal. (§350.33(a)(2))

NOT APPLICABLE

Provide documentation that the COCs did not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachments 1A, 1B, and 2A.

NOT APPLICABLE

List the attenuation action level determined for each attenuation monitoring point. Illustrate the attenuation monitoring points, initial, maximum, and final groundwater PCLE zones (or groundwater concentrations if less than the critical PCL) on the map in Attachment 2A.

COC	Attenuation Monitoring Point (well number)	Attenuation Action Level (mg/L)	Maximum concentration measured at the attenuation monitoring point (mg/L)

NOT APPLICABLE

LEGEND

-·-·- FENCE LINE

▨ PCLE AREA (CORRIGAN 2005)

NOTE: EXCAVATION AREAS AND BERM LOCATIONS ARE APPROXIMATE
SOURCE: GLOBEXPLORER, 2004

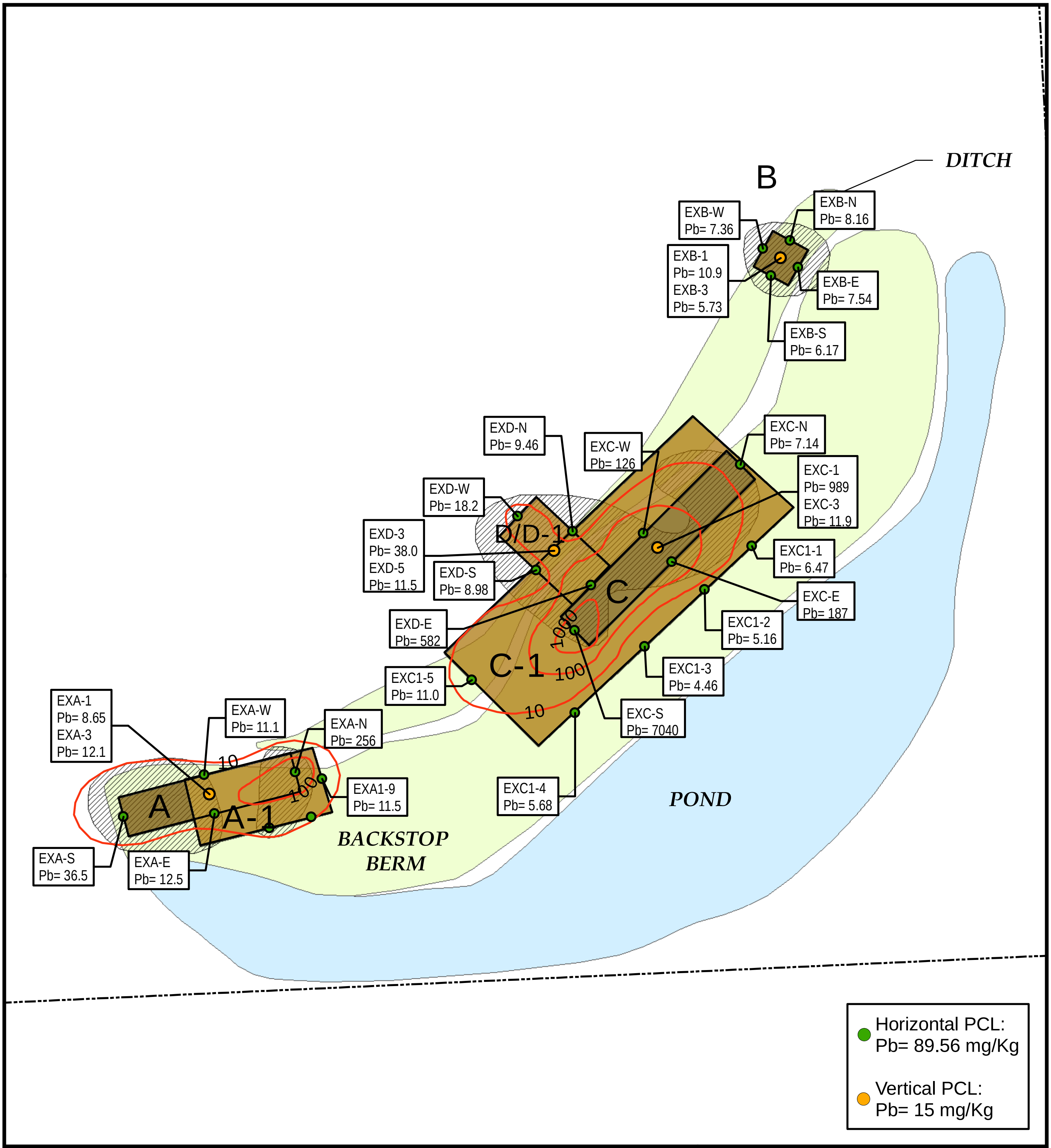
WESTON SOLUTIONS

ATTACHMENT 1A-1
AFFECTED PROPERTY

SMALL ARMS FIRING RANGE
AGD EL CAMPO NATIONAL GUARD ARMORY
801 ARMORY RD (CR 406)
EL CAMPO, TEXAS

DATE	PROJECT NO	SCALE
SEP 2009	13903.004.001.0040	AS SHOWN

File: \\ASATX01\gis_cad\GIS Project Files\TXARNG (13903)\El Campo\GIS\Affected Property.mxd, 08-Oct-09 10:10, thomasog



0 40 80
SCALE IN FEET

N

LEGEND

● HORIZONTAL DELINEATION

● VERTICAL DELINEATION

LEAD CONCENTRATION ISOCONTOUR

FENCE LINE

▨ PCLE AREA (CORRIGAN 2005)

■ PHASE I EXCAVATION EXTENT

■ PHASE II EXCAVATION EXTENT

Results shown in mg/kg

Bold values indicate results are above the Critical PCL

NOTE: EXCAVATION AREAS AND BERM LOCATIONS ARE APPROXIMATE
SOURCE: GLOBEXPLORER, 2004

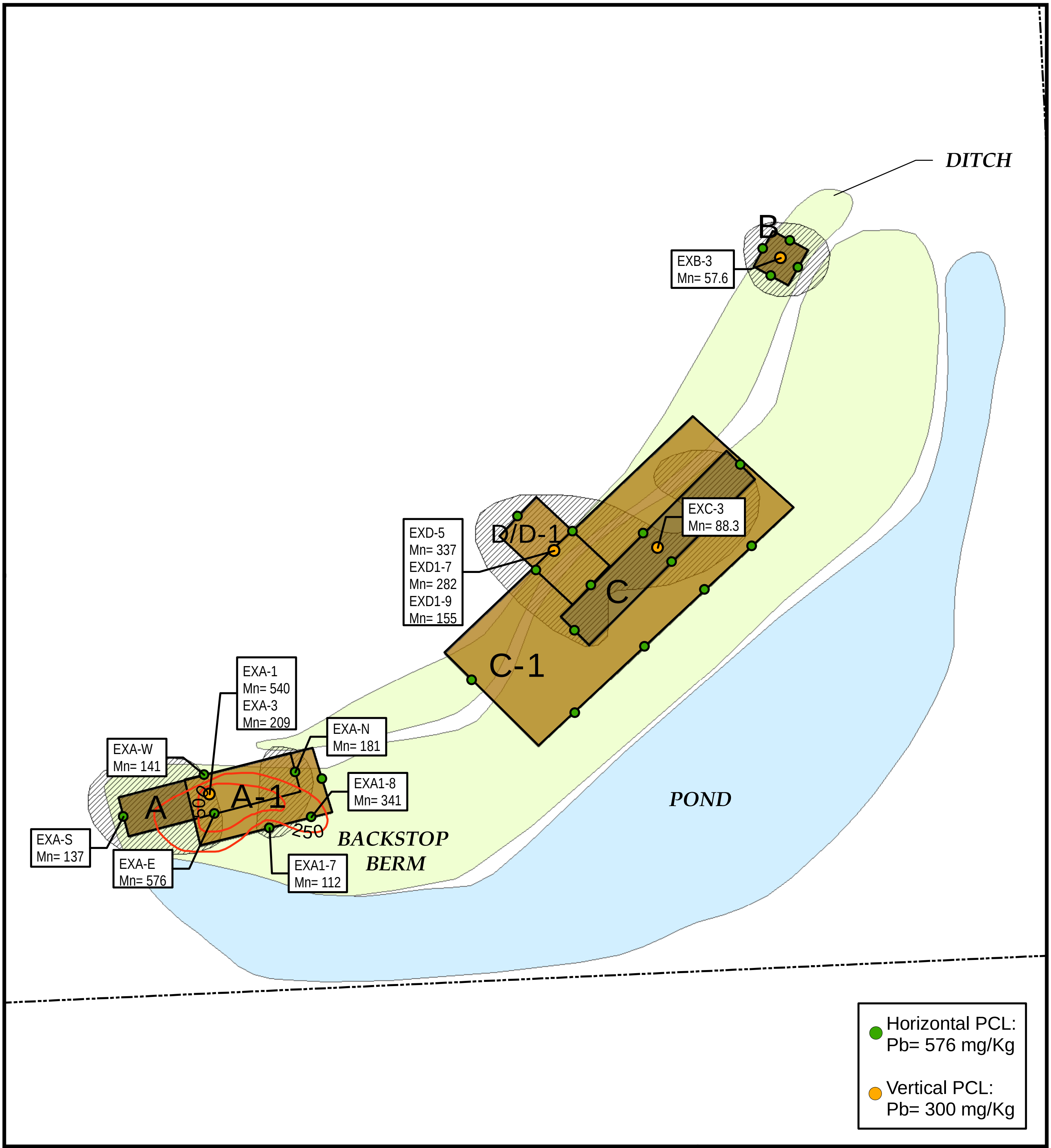
WESTON SOLUTIONS

ATTACHMENT 1A-2
LEAD SAMPLING RESULTS

SMALL ARMS FIRING RANGE
AGD EL CAMPO NATIONAL GUARD ARMORY
801 ARMORY RD (CR 406)
EL CAMPO, TEXAS

DATE	PROJECT NO	SCALE
SEP 2009	13903.004.001.0040	AS SHOWN

File: \\ASATX01\gis_cad\GIS Project Files\TXARNG (13903)\El Campo\GIS\Lead_Samples_Phase2.mxd, 08-Oct-09 10:53, thomasog



LEGEND

● HORIZONTAL DELINEATION

● VERTICAL DELINEATION

— MANGANESE CONCENTRATION ISOCONTOUR

-·-·- FENCE LINE

▨ PCLE AREA (CORRIGAN 2005)

■ PHASE I EXCAVATION EXTENT

■ PHASE II EXCAVATION EXTENT

0 40 80
SCALE IN FEET

N

Results shown in mg/kg

Bold values indicate results are above the Critical PCL

NOTE: EXCAVATION AREAS AND BERM LOCATIONS ARE APPROXIMATE
SOURCE: GLOBEXPLORER, 2004

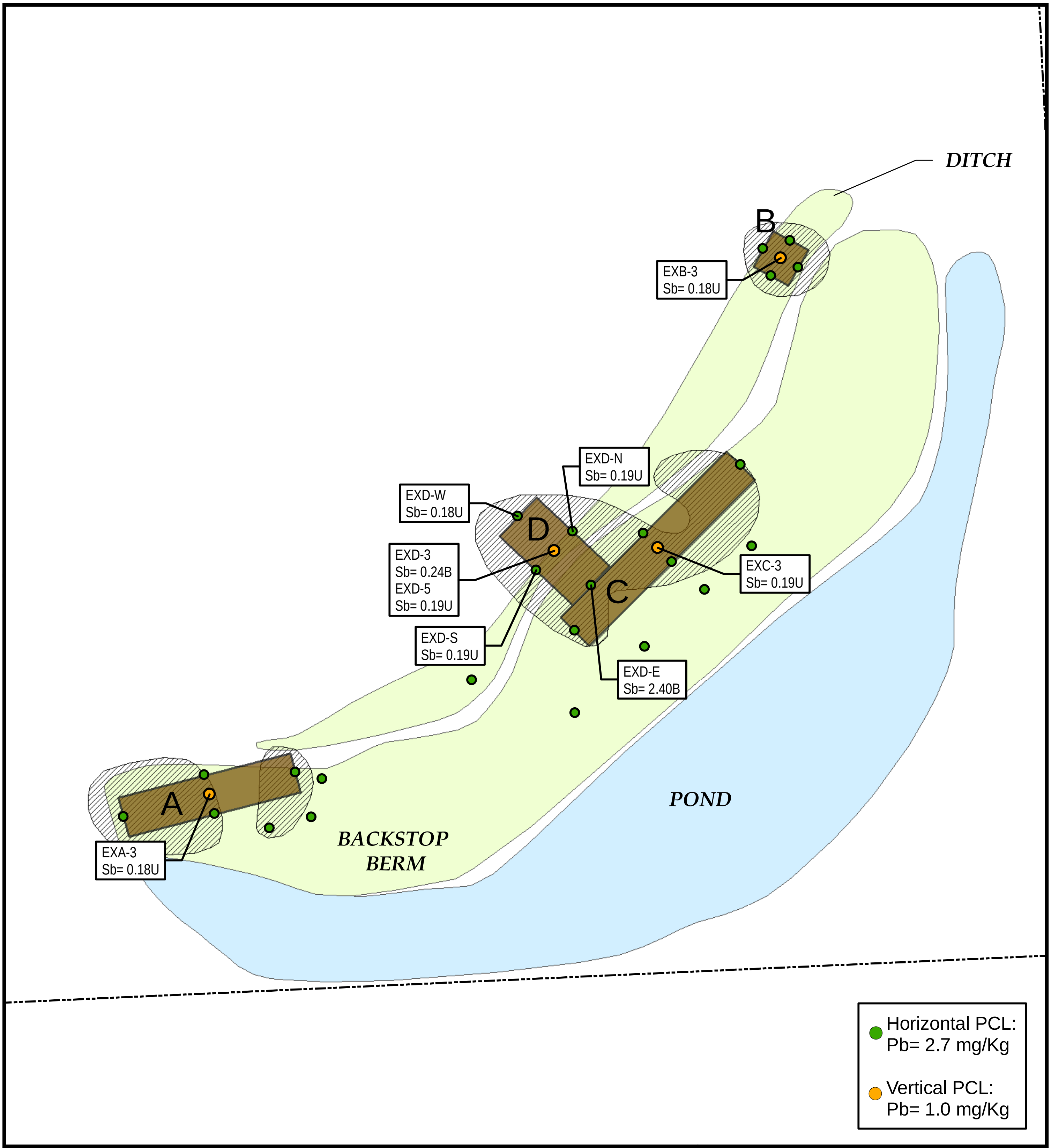
WESTON SOLUTIONS

ATTACHMENT 1A-3
MANGANESE SAMPLING RESULTS

SMALL ARMS FIRING RANGE
AGD EL CAMPO NATIONAL GUARD ARMORY
801 ARMORY RD (CR 406)
EL CAMPO, TEXAS

DATE	PROJECT NO	SCALE
SEP 2009	13903.004.001.0040	AS SHOWN

File: \\ASATX01\gis_cad\GIS Project Files\TXARNG (13903)\El Campo\GIS\Manganese_Samples_Phase2.mxd, 08-Oct-09 11:30, thomasog



0 40 80

SCALE IN FEET

LEGEND

● HORIZONTAL DELINEATION

● VERTICAL DELINEATION

-·-·- FENCE LINE

▨ PCLE AREA (CORRIGAN 2005)

■ PHASE I EXCAVATION EXTENT

N

Results shown in mg/kg

Bold values indicate results are above the Critical PCL

NOTE: EXCAVATION AREAS AND BERM LOCATIONS ARE APPROXIMATE
SOURCE: GLOBEXPLORER, 2004

WESTON SOLUTIONS

ATTACHMENT 1A-4
ANTIMONY SAMPLING RESULTS

SMALL ARMS FIRING RANGE
AGD EL CAMPO NATIONAL GUARD ARMORY
801 ARMORY RD (CR 406)
EL CAMPO, TEXAS

DATE	PROJECT NO	SCALE
SEP 2009	13903.004.001.0040	AS SHOWN

File: \\ASATX01\gis_cad\GIS Project Files\TXARNG (13903)\El Campo\GIS\Antimony_Samples.mxd, 08-Oct-09 11:30, thomasog

PHOTOGRAPH NO. 1

Date: 10/15/08

Description:

Small arms firing range (SAFR) backstop berm prior to response action activities at Excavation C/C-1. Facing south.

PHOTOGRAPH NO. 2

Date: 07/15/09

Description:

SAFR backstop berm during Phase 2 response action activities at Excavation C-1 and D-1. Facing south.

PHOTOGRAPH NO. 3

Date: 10/15/08

Description:

SAFR backstop berm during Phase 1 response action activities at Excavation C. Facing east.

PHOTOGRAPH NO. 4

Date: 07/15/09

Description:

SAFR backstop berm during Phase 2 response action activities at Excavation C-1. Facing east.

PHOTOGRAPH NO. 5

Date: 10/15/08

Description:

SAFR backstop berm prior to response action activities at Excavation A/A-1. Facing west.

PHOTOGRAPH NO. 6

Date: 07/15/09

Description:

SAFR backstop berm during Phase 2 response action activities at Excavation A-1. Facing east.

PHOTOGRAPH NO. 7

Date: 10/17/08

Description:

Stockpile of excavated soil located north of backstop berm. Stockpiled soil placed on top of 6-mil plastic sheeting.

PHOTOGRAPH NO. 8

Date: 10/17/08

Description:

Stockpiled soil was immediately covered using 6-mil plastic sheeting. The same lay down area and covering process was used during Phase 2.

PHOTOGRAPH NO. 9

Date: 12/04/08

Description:

Phase 1 Excavated soil being loaded into trucks for transportation and disposal to Fort Bend Regional Landfill, Needville, TX. All 6-mil plastic sheeting was loaded and removed with the soil.

PHOTOGRAPH NO. 10

Date: 12/04/08

Description:

Excavated soil lay down area after Phase 1 removal of plastic sheeting and soil. The same lay down area and removal process was used during Phase 2.

PHOTOGRAPH NO. 11

Date: 07/17/09

Description:

SAFR backstop berm at Excavation C/C-1 and D/D-1 after backfill material was placed.

PHOTOGRAPH NO. 12

Date: 07/17/09

Description:

SAFR backstop berm at Excavation A/A-1after backfill material was placed.

Technical Impracticability	**RACR Worksheet 3.0**	**Page 11 of 16**
	ID No. **T-1856**	**Report Date:** **10/8/2009**

Use this worksheet to document the use of technical impracticability to modify the groundwater response objectives. Also complete Worksheet 2.0 to document the plume management zone for the area of technical impracticability. Include a map of the groundwater PCLE zone and area of technical impracticability in Attachment 3A. If technical impracticability was not used as part of the response action, do not submit this worksheet.

If additional information beyond that provided in the RAP is available, describe how it was determined that it was technically impractical to reduce the COC concentrations in groundwater to the critical PCLs. Describe the response actions taken that did not prove effective. Provide graphs in Attachment 1B to illustrate COC concentrations over time and with distance from the source for each response action that did not prove effective. Describe in Worksheet 1.0 the removal/decontamination actions that were conducted for any PCLE zone outside the area of technical impracticability.

NOT APPLICABLE

Did COCs above the critical PCL migrate beyond the area of technical impracticability and/or beyond the initial boundary of the PCLE zone?

____ yes ____ no

If yes, explain the actions taken to mitigate the migration of COCs.

NOT APPLICABLE

Institutional Controls	**RACR Worksheet 4.0** **Page12 of 16**	
	ID No. **T-1856**	**Report Date:** **10/8/2009**

Complete this worksheet if an institutional control will be or has been used as part of the response action. Include in Appendix 3 copies of filed institutional controls and drafts of the proposed institutional controls, copies of landowner concurrences, and a list of landowners from whom landowner concurrence will be requested.

Specify the property for which this applies. **NOT APPLICABLE. NO INSTITUTIONAL CONTROLS ARE NECESSARY.**

Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control[3]				Property Ownership		Anticipated or actual filing date[4]
	Deed notice	Restrictive covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))							
Document use of physical or institutional control under Remedy Standard B §350.31(g))							
Document notice of on-going long term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))							
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							
Other (specify)							

NOT APPLICABLE

---

[3] Check the appropriate box(es) to indicate the type of institutional control required for the response action.

[4] Specify date or amount of time after RAP approval.

Performance Measures and Problems	**RACR Worksheet 5.0** **Page 13 of 16**	
	ID No. **T-1856**	**Report Date:** **10/8/2009**

Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that were used to determine if reasonable progress is being made by the response action in a timely manner. Provide documentation that these performance measures were met. Attach additional information if necessary.

Firing Range Berm Soil Removal (Remedy Standard A):

The performance of the response action backstop berm soil removal was evaluated by collecting confirmation and vertical delineation samples for laboratory analysis as described in the SIN. Multiple soil samples were collected from the floors and sidewalls of the four separate excavations and analyzed for various metals depending on results reported in the APAR Addendum. Sample results from the sidewalls and floors of the excavations were compared to applicable critical PCLs. As described in the SIN, soil removal was initiated on 16 October 2008. Confirmation and vertical delineation sampling results indicated that after the initial removal action (180 cubic yards) shown on Attachment 1A-1 as the darker color areas, affected soil above the critical PCLS for the site remained. The initial response action was evaluated and a second phase of work was proposed which encompassed a larger area of soil removal and utilized an XRF. The second phase was initiated the week of 13 July 2009, and confirmation and vertical delineation sampling results verifying that no affected soils remain at the berm and response action objectives had been met.

Problems

Complete the table for the response action. When the response action consisted of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: **NOT APPLICABLE**

List the problems that were encountered during the response action, describe the impact of each problem, and the response to the problem.

Description of the Problem	Impact	Did this cause a response action failure?		Corrective Response
		Yes	No	

NOT APPLICABLE. No problems were encountered during the response action.

Operation and Maintenance	**RACR Worksheet 6.0**	**Page 14 of 16**
	ID No.: **T-1856**	**Report Date:** **10/8/2009**

Use this worksheet to describe the operation and maintenance (O&M) activities conducted for each response action.

Response Action Name/Designation: ______________________________
List all portions of the response action to which this information applies. Repeat this worksheet for each major component or operation.

Describe the O&M and inspection activities that were conducted to operate and maintain response action components.

NOT APPLICABLE

Complete this worksheet only if the information has changed from that submitted in the RAP. If the information does not apply or if the RAP contains the most current information, do not submit this worksheet.

****NOT APPLICABLE. Metals-affected soil have been removed. Analytical results obtained from confirmation sampling indicate that soil conditions at the site are protective of groundwater.****

What is the proposed initial post-response action care period? (default 30 yr.) _____ years

If the proposed initial post-response action care period is less than 30 years, provide a technical justification in accordance with §350.33(h).

NOT APPLICABLE

What is the foreseeable land use during the post-response action care period? NA

Describe how the future use of the property will not compromise the integrity of the physical controls, will not interfere with the function of the monitoring systems, will not pose a threat to human health or the environment, and will be in accordance with any institutional controls.

NOT APPLICABLE

Describe the proposed post-response action care activities. Describe the type of monitoring and/or inspections to be performed. Discuss the rationale for not including any COC(s) analyzed during the response action, monitoring or sampling point location, frequency of monitoring and/or inspections, and the duration of the monitoring program.

NOT APPLICABLE

Will PRAC sampling procedures be the same as those as previously documented for monitoring and/ or confirmation sampling? ____ Yes ____ No
If no, provide in Appendix 6 a description of the monitoring or sampling collection procedures to be conducted during the post-response action care period.

Cost Estimate
Complete this portion of the form only if this information has changed from that submitted in the RAP.

Specify the physical control to which this information applies: **NOT APPLICABLE**
Complete this worksheet for each physical control that will be used as part of the response action.

What is the total estimated annual cost of O&M for the PRAC period? **NOT APPLICABLE**

What is the total estimated cost for a third party to perform PRAC activities? **NOT APPLICABLE**

Identify the type of financial assurance mechanism to be used, and the contact person managing fiduciary responsibility, if known.

NOT APPLICABLE

Does the person meet the criteria and definition of a small business? (see §350.33(n)) ____Yes ____No
If yes and the person desires to pursue the reduced amount of financial assurance, attach a legally binding affidavit. Include in the affidavit the information requested in 30 TAC §350.33(l), (m), and (n).

APPENDIX 1 – REFERENCES
Response Action Completion Report
Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, Texas

APPENDIX 1 - REFERENCES

CORRIGAN (Corrigan Consulting, Inc.). August 2005. *Affected Property Assessment Report, Small Arms Firing Range, Roy P. Benavidez National Guard Armory, El Campo, TX.* Houston TX.

CORRIGAN (Corrigan Consulting, Inc.). December 2006. *Revised Sections Affected Property Assessment Report, Small Arms Firing Range, Roy P. Benavidez National Guard Armory, El Campo, TX.* Houston TX.

WESTON (Weston Solutions, Inc.). October 2008. *Self-Implementation Notice, Small Arms Firing Range Roy P. Benavidez National Guard Armory, El Campo, TX.* Austin, TX.

WESTON (Weston Solutions, Inc.). September 2009. *Affected Property Assessment Report Addendum 1, Small Arms Firing Range Roy P. Benavidez National Guard Armory, El Campo, TX.* Austin, TX.

APPENDIX 4 – DATA TABLES
Response Action Completion Report
Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, Texas

APPENDIX 4
Laboratory Analytical Results Summary
Confirmation and Vertical Delineation Sampling
Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, TX

Phase I Confirmation Sampling		**Sample ID**	**EXA-N**	**EXA-S**	**EXA-E**	**EXA-W**	**EXB-N**	**EXB-S**	**EXB-E**	**EXB-W**
		Laboratory ID	**20810206019**	**20810206020**	**20810206021**	**20810206022**	**20810206001**	**20810206002**	**20810206003**	**20810206004**
		Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
		Sample Date	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**
METALS, EPA 7440\6010\6020	**CAS #**	**Critical PCL (mg/kg)**	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Antimony	7440-36-0	2.7	–	–	–	–	–	–	–	–
Lead	7439-92-1	89.56	**256**	**36.5**	**12.5**	**11.1**	**8.16**	**6.17**	**7.54**	**7.36**
Manganese	7439-96-5	576	**181**	**137**	**576**	**141**	–	–	–	–

Phase I Confirmation Sampling		**Sample ID**	**EXC-N**	**EXC-S**	**EXC-E**	**EXC-W**	**EXD-N**	**EXD-S**	**EXD-E**	**EXD-W**
		Laboratory ID	**20810206013**	**20810206014**	**20810206015**	**20810206016**	**20810206007**	**20810206008**	**20810206009**	**20810206010**
		Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
		Sample Date	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**
METALS, EPA 7440\6010\6020	**CAS #**	**Critical PCL (mg/kg)**	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Antimony	7440-36-0	2.7	–	–	–	–	0.19 U	0.19 U	**2.4** B	0.18 U
Lead	7439-92-1	89.56	**7.14**	**7040**	**187**	**126**	**9.46**	**8.98**	**582**	**18.2**
Manganese	7439-96-5	576	–	–	–	–	–	–	–	–

Phase I Vertical Delineation Sampling		**Sample ID**	**EXA-1**	**EXA-3**	**EXB-1**	**EXB-3**	**EXC-1**	**EXC-3**	**EXD-3**	**EXD-5**
		Laboratory ID	**20810206023**	**20810206024**	**20810206005**	**20810206006**	**20810206017**	**20810206018**	**20810206011**	**20810206012**
		Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
		Sample Date	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**
METALS, EPA 7440\6010\6020	**CAS #**	**Critical PCL (mg/kg)**	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Antimony	7440-36-0	1	–	0.18 U	–	0.18 U	–	0.19 U	0.24 B	0.19 U
Copper	7440-50-8	15	–	**5.11**	–	**9.94**	–	**9.42**	–	**7.73**
Lead	7439-92-1	15	**8.65**	**7.69**	**10.9**	**5.73**	**989**	**11.9**	**38.0**	**11.5**
Manganese	7439-96-5	300	**540**	**209**	–	**57.6**	–	**88.3**	–	**337**
Zinc	7440-66-6	30	–	**12.1**	–	**27.1**	–	–	–	–

Phase II Confirmation Sampling		**Sample ID**	**EX-A1-7**	**EX-A1-8**	**EX-A1-9**	**EX-C1-1**	**EX-C1-2**	**EX-C1-3**	**EX-C1-4**	**EX-C1-5**
		Laboratory ID	**20907172310**	**20907172304**	**20907172305**	**20907172309**	**20907172308**	**20907172307**	**20907172306**	**20907172303**
		Matrix	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
		Sample Date	**15-Jul-09**	**15-Jul-09**	**15-Jul-09**	**15-Jul-09**	**15-Jul-09**	**15-Jul-09**	**15-Jul-09**	**15-Jul-09**
METALS, EPA 7440\6010\6020	**CAS #**	**Critical PCL (mg/kg)**	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Lead	7439-92-1	89.56	–	–	**11.5**	**6.47**	**5.16**	**4.46**	**5.68**	**11.0**
Manganese	7439-96-5	576	**112**	**341**	–	–	–	–	–	–

Phase II Vertical Delineation Sampling		**Sample ID**	**EX-D1-7**	**EX-D1-9**
		Laboratory ID	**20907172302**	**20907172301**
		Matrix	**Soil**	**Soil**
		Sample Date	**15-Jul-09**	**15-Jul-09**
METALS, EPA 7440\6010\6020	**CAS #**	**Critical PCL (mg/kg)**	(mg/kg)	(mg/kg)
Manganese	7439-96-5	300	**282**	**155**

5.16	Bold Results Exceed Method Detection Limit (MDL)
540	Shaded Results Exceed the Critical PCL
U	Analyte not reported at or above SQL
–	Not Analyzed
B	Analyte detected in Method Blank

APPENDIX 5 – SAMPLING PROCEDURES
Response Action Completion Report
Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, Texas

APPENDIX 5 – SAMPLING PROCEDURES

Representative surface soil sample locations collected from the floor or sidewall of the excavations were recorded using a GPS receiver. The sampler wore a clean pair of disposable thin nitrile or latex gloves before collecting the sample. The soil was collected using a disposable plastic scoop. Soil removed from the sample location was homogenized in a disposable, re-sealable plastic bag prior to being placed in the sample jar. Each soil sample was transferred into the appropriate laboratory-provided, pre-cleaned container using the disposable plastic scoop. The sample jar was labeled, sealed in a re-sealable plastic bag, and placed on ice in a shipping container (e.g., cooler) while at the site. Information about each sample was recorded on sample labels, in the field logbook, and on chain-of-custody forms.

APPENDIX 6 – LABORATORY DATA PACKAGES AND DATA USABILITY SUMMARY

Response Action Completion Report
Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, Texas

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC

NELAP CERTIFICATE NUMBER 01955

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.

Report Date 11/21/2008

GCAL Report 208102060

Deliver To Weston Solutions
2705 Bee Cave Road
Suite 100
Austin, TX 78746
512-651-7115

Attn Russ Johnson

Customer Weston Solutions, Inc.

Project El Campo National Guard Armory

Appendix A Laboratory Data Package Cover Page

This data package consists of:

- ☑ This signature page, the laboratory review checklist, and the following reportable data:
- ☑ R1 Field chain-of-custody documentation;
- ☑ R2 Sample identification cross-reference;
- ☑ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  - b) dilution factors,
  - c) preparation methods,
  - d) cleanup methods, and
  - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
  - a) Calculated recovery (%R), and
  - b) The laboratory's surrogate QC limits.
- ☑ R5 Test reports/summary forms for blank samples;
- ☑ 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.
- ☑ 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
- ☑ R8 Laboratory analytical 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.
- ☑ R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- ☑ R10 Other problems or anomalies.
- ☑ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Robyn Migues		Technical Director	11/29/08
Name (Printed)	Signature	Official Title (printed)	Date

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

Laboratory Name: GCAL	LRC Date: 11/29/2008
Project Name: El Campo National Guard Armory	Laboratory Job Number:208102060
Reviewer Name: Robyn Migues	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	√				
		Were all departures from standard conditions described in an exception report?	√				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	√				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	√				
R3	OI	**Test Reports**					
		Were all samples prepared and analyzed within holding times?	√				
		Are results bracketed by calibration standards (except ICP)?	√				
		Were calculations checked by a peer or supervisor?	√				
		Were all analyte identifications checked by a peer or supervisor?	√				
		Were sample quantitation limits reported for all analytes not detected?	√				
		Were all results for soil and sediment samples reported on a dry weight basis?	√				
		Were %moisture (or solids) reported for all solid samples?	√				
		If required for the project, TIC's reported?			√		
R4	OI	**Surrogate recovery data**					
		Were surrogates added prior to extraction and or analysis?			√		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			√		
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	√				
		Were blanks analyzed at the appropriate frequency?	√				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	√				
		Were blank concentrations <MQL?	√				
R6	OI	**Laboratory control samples (LCS)**					
		Were all COC's included in the LCS?	√				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	√				
		Were LCSs analyzed at the required frequency?	√				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	√	√			1
		Does the detectablity data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	√				
		Was the LCSD RPD within QC limits?			√		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	√				
		Were MS/MSD analyzed at the appropriate frequency?	√				
		Were MS (and MSD, if applicable) %Rs wthin the laboratory control limits?	√	√			2
		Were MS/MSD RPDs within control limits?			√		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	√				
		Were analytical duplicates analyzed at the appropriate frequency?	√				
		Were RPDs or relative within control limits?	√	√			3
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	√				
		Does the MQLs correspond to the concentration of the lowest non-zero calibration standard (except ICP)?	√				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	√				
		Were all necessary corrective actions performed for the reported data?	√				
		Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	√				

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

Laboratory Name: GCAL	LRC Date: 11/29/2008
Project Name: El Campo National Guard Armory	Laboratory Job Number:208102060
Reviewer Name: Robyn Migues	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
SI	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?			√		
		Were percent RSDs or correlation coefficient criteria met?	√				
		Was the number of standards recommended in the method used for all analytes?	√				
		Were all points generated between the lowest and highest standard used to calculate the curve?	√				
		Are ICAL data available for all instruments used?	√				
		Has the initial calibration curve been verified using an appropriate second source standard?	√				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	√				
		Were % differences or recoveries for each analyte within the method-required QC limits?	√				
		Was the ICAL curve verifed for each analyte?	√				
		Was the absolute value of the analyte concentration in the inorganic CCB<MQL?	√	√			4
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			√		
		Were ion abundance data within the method-required QC limits?			√		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	√				
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	√				
		Were data associated with manual integrations flagged on the raw data?			√		
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			√		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			√		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	√				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were % differences, recoveries, and the linearity within the control limits?	√	√			5
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	√				
		Is the MDL either adjusted or supported by the analysis of DCSs?	√				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	√				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?					
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	√				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	√				
		Is documentation of the analyst's competency up-to-date and on file?	√				
S15	OI	**Verification/validation documentationf or methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	√				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method perfomed?	√				

[1] Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-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: 1= 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).

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

Laboratory Name: GCAL	LRC Date: 11/29/2008
Project Name: El Campo National Guard Armory	Laboratory Job Number:208102060
Reviewer Name: Robyn Migues	

ER#[1]	DESCRIPTION
2,3,5	In the SW-846 6010B analysis for prep batch 399477, the MS recovery was outside the control limits for Antimony. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference. A post-digestion spike was performed on the QC sample for this batch with a recovery of 101%. The MS and post-digestion spike recoveries are not applicable for Copper, Lead, and Manganese because the sample concentration is greater than four times the spike concentration. The sample/duplicate RPDs were above the control limits for Antimony, Copper, Lead, and Manganese. The heterogeneous nature of the QC sample is believed to be responsible for this. Antimony, Copper, Lead, Manganese, and Zinc are flagged E, estimated on the serial dilution form because the % difference between the original and serial dilution results for the batch QC sample is greater than 10.
2,3,5	In the SW-846 6010B analysis for prep batch 399477, the MS recovery was outside the control limits for Antimony. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference. A post-digestion spike was performed on the QC sample for this batch with a recovery of 101%. The MS and post-digestion spike recoveries are not applicable for Copper, Lead, and Manganese because the sample concentration is greater than four times the spike concentration. The sample/duplicate RPDs were above the control limits for Antimony, Copper, Lead, and Manganese. The heterogeneous nature of the QC sample is believed to be responsible for this. Antimony, Copper, Lead, Manganese, and Zinc are flagged E, estimated on the serial dilution form because the % difference between the original and serial dilution results for the batch QC sample is greater than 10
2	In the SW-846 6010B analysis for prep batch 400961, the MS recovery was outside the control limits for Manganese. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference or the element is non-homogeneous in the batch QC sample matrix. A post-digestion spike was performed on the QC sample for this batch with a recovery of 94%.
1,3	In the SW-846 1311/6010B analysis for prep batch 399325, the LCS recovery was above the upper control limit for Selenium. Selenium was not detected in the associated samples. The Sample/Duplicate RPD for Chromium is not applicable because the sample and/or duplicate concentration is less than five times the reporting limit.
4	In the SW-846 6010B analysis for the analytical batch analyzed on ICP 6 on 10/24/08-10/25/08, several elements were detected in the CCBs at concentrations above the reporting limits. Manganese was detected above the reporting limit in CCB (ICP6, 10/24/08, 2329; 0038; 0151). Copper was detected above the reporting limit in CCB (ICP6, 10/25/08, 0038). These first two CCBs bracketed method blank (660556). An estimated concentration of Manganese was detected and Copper was not detected in this method blank. The concentration of the elements detected for the in the first CCB did not affect any associated samples. The concentration of the elements detected in the second and third CCBs was insignificant as compared to the concentration of these elements detected in the associated samples.

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

CASE NARRATIVE

Client: Weston Solutions, Inc. **Report:** 208102060

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

METALS

In the SW-846 6010B analysis for prep batch 399216, the MS recovery was outside the control limits for Antimony. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference. A post-digestion spike was performed on the QC sample for this batch with a recovery of 97%. The MS and post-digestion spike recoveries are not applicable for Manganese because the sample concentration is greater than four times the spike concentration. Copper is flagged E, estimated on the serial dilution form because the % difference between the original and serial dilution results for the batch QC sample is greater than 10.

In the SW-846 6010B analysis for prep batch 399477, the MS recovery was outside the control limits for Antimony. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference. A post-digestion spike was performed on the QC sample for this batch with a recovery of 101%. The MS and post-digestion spike recoveries are not applicable for Copper, Lead, and Manganese because the sample concentration is greater than four times the spike concentration. The sample/duplicate RPDs were above the control limits for Antimony, Copper, Lead, and Manganese. The heterogeneous nature of the QC sample is believed to be responsible for this. Antimony, Copper, Lead, Manganese, and Zinc are flagged E, estimated on the serial dilution form because the % difference between the original and serial dilution results for the batch QC sample is greater than 10.

In the SW-846 6010B analysis for prep batch 400961, the MS recovery was outside the control limits for Manganese. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference or the element is non-homogeneous in the batch QC sample matrix. A post-digestion spike was performed on the QC sample for this batch with a recovery of 94%.

In the SW-846 1311/6010B analysis for prep batch 399325, the LCS recovery was above the upper control limit for Selenium. Selenium was not detected in the associated samples. The Sample/Duplicate RPD for Chromium is not applicable because the sample and/or duplicate concentration is less than five times the reporting limit.

In the SW-846 6010B analysis for the analytical batch analyzed on ICP 6 on 10/24/08-10/25/08, several elements were detected in the CCBs at concentrations above the reporting limits. Manganese was detected above the reporting limit in CCB (ICP6, 10/24/08, 2329; 0038; 0151). Copper was detected above the reporting limit in CCB (ICP6, 10/25/08, 0038). These first two CCBs bracketed method blank (660556). An estimated concentration of Manganese was detected and Copper was not detected in this method blank. The concentration of the elements detected for the in the first CCB did not affect any associated samples. The concentration of the elements detected in the second and third CCBs was insignificant as compared to the concentration of these elements detected in the associated samples.

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates an estimated value
U	Indicates the compound was analyzed for but not detected
B	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
B	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with ISO Guide 25 and NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

CURTIS EKKER
DATA VALIDATION MANAGER
GCAL REPORT 208102060

THIS REPORT CONTAINS 184 PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20810206001	EXB-N	Solid	10/17/2008 09:15	10/18/2008 09:25
20810206002	EXB-S	Solid	10/17/2008 09:15	10/18/2008 09:25
20810206003	EXB-E	Solid	10/17/2008 09:15	10/18/2008 09:25
20810206004	EXB-W	Solid	10/17/2008 09:15	10/18/2008 09:25
20810206005	EXB-1	Solid	10/17/2008 09:15	10/18/2008 09:25
20810206006	EXB-3	Solid	10/17/2008 09:15	10/18/2008 09:25
20810206007	EXD-N	Solid	10/17/2008 09:30	10/18/2008 09:25
20810206008	EXD-S	Solid	10/17/2008 09:30	10/18/2008 09:25
20810206009	EXD-E	Solid	10/17/2008 09:30	10/18/2008 09:25
20810206010	EXD-W	Solid	10/17/2008 09:30	10/18/2008 09:25
20810206011	EXD-3	Solid	10/17/2008 09:30	10/18/2008 09:25
20810206012	EXD-5	Solid	10/17/2008 09:30	10/18/2008 09:25
20810206013	EXC-N	Solid	10/17/2008 09:45	10/18/2008 09:25
20810206014	EXC-S	Solid	10/17/2008 09:45	10/18/2008 09:25
20810206015	EXC-E	Solid	10/17/2008 09:45	10/18/2008 09:25
20810206016	EXC-W	Solid	10/17/2008 09:45	10/18/2008 09:25
20810206017	EXC-1	Solid	10/17/2008 09:45	10/18/2008 09:25
20810206018	EXC-3	Solid	10/17/2008 09:45	10/18/2008 09:25
20810206019	EXA-N	Solid	10/17/2008 10:00	10/18/2008 09:25
20810206020	EXA-S	Solid	10/17/2008 10:00	10/18/2008 09:25
20810206021	EXA-E	Solid	10/17/2008 10:00	10/18/2008 09:25
20810206022	EXA-W	Solid	10/17/2008 10:00	10/18/2008 09:25
20810206023	EXA-1	Solid	10/17/2008 10:00	10/18/2008 09:25
20810206024	EXA-3	Solid	10/17/2008 10:00	10/18/2008 09:25
20810206025	SP-E1	Solid	10/17/2008 10:20	10/18/2008 09:25
20810206026	SP-A1	Solid	10/17/2008 10:45	10/18/2008 09:25
20810206027	SP-A2	Solid	10/17/2008 10:45	10/18/2008 09:25
20810206028	SP-B1	Solid	10/17/2008 10:45	10/18/2008 09:25
20810206029	SP-C1	Solid	10/17/2008 10:45	10/18/2008 09:25
20810206030	SP-C2	Solid	10/17/2008 10:45	10/18/2008 09:25
20810206031	SP-D1	Solid	10/17/2008 10:45	10/18/2008 09:25
20810206032	SP-D2	Solid	10/17/2008 00:00	10/18/2008 09:25
20810206033	SP-D3	Solid	10/17/2008 00:00	10/18/2008 09:25
20810206034	SP-D4	Solid	10/17/2008 00:00	10/18/2008 09:25
20810206035	EXD-7	Solid	10/17/2008 09:30	10/18/2008 09:25

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: GCAL   Contract:

Lab Code: LA024   Case No.:   SAS No.:   SDG No.: 208102060

SOW No.:

EPA Sample No.	***Lab Sample ID***
EXB-N	20810206001
EXB-S	20810206002
EXB-E	20810206003
EXB-W	20810206004
EXB-1	20810206005
EXB-3	20810206006
EXD-N	20810206007
EXD-S	20810206008
EXD-E	20810206009
EXD-W	20810206010
EXD-3	20810206011
EXD-5	20810206012
EXC-N	20810206013
EXC-S	20810206014
EXC-E	20810206015
EXC-W	20810206016
EXC-1	20810206017
EXC-3	20810206018
EXA-N	20810206019
EXA-S	20810206020
EXA-E	20810206021
EXA-W	20810206022
EXA-1	20810206023
EXA-3	20810206024
EXD-7	20810206035

Were ICP interelement corrections applied ?	Yes / No	YES
Were ICP background corrections applied ?	Yes / No	YES
If yes-were raw data generated before application of background corrections ?	Yes / No	NO

COVER PAGE - IN

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: GCAL   Contract:

Lab Code: LA024   Case No.:   SAS No.:   SDG No.: 208102060

SOW No.:

EPA Sample No.	Lab Sample ID
SP-E1	20810206025
SP-A1	20810206026
SP-A2	20810206027
SP-B1	20810206028
SP-C1	20810206029
SP-C2	20810206030
SP-D1	20810206031
SP-D2	20810206032
SP-D3	20810206033
SP-D4	20810206034

Were ICP interelement corrections applied ?	Yes / No	YES
Were ICP background corrections applied ?	Yes / No	YES
If yes-were raw data generated before application of background corrections ?	Yes / No	NO

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXB-N
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids: 90.23
Lab Sample ID: 20810206001
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 0915

Analyte	Concentration	Units	C	Q	MQL	SQL	MDL	Method	Type
Lead	8.16	mg/kg			0.66	0.079	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXB-S
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids: 90.97
Lab Sample ID: 20810206002
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 0915

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Lead	6.17	mg/kg			0.65	0.077	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name:	GCAL	Sample ID:	EXB-E
Lab Code:	LA024	Case No.:	
		Contract:	
Matrix: (soil / water)	Soil	SAS No.:	
		SDG No.:	208102060
Level: (low / med)		% Solids:	87.67
		Lab Sample ID:	20810206003
Date Received:	10/18/08	Time:	0925
Date Collected:	10/17/08	Time:	0915

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Lead	7.54	mg/kg			0.68	0.081	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXB-W

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 89.28

Lab Sample ID: 20810206004

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0915

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Lead	7.36	mg/kg			0.67	0.080	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL		Sample ID: EXB-1	
Lab Code: LA024	Case No.:	Contract:	
Matrix: (soil / water) Soil		SAS No.:	SDG No.: 208102060
Level: (low / med)	% Solids: 79.61	Lab Sample ID: 20810206005	
Date Received: 10/18/08	Time: 0925	Date Collected: 10/17/08	Time: 0915

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	10.9	mg/kg			0.75	0.088	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXB-3

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids: 87.90

Lab Sample ID: 20810206006

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 0915

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.18	mg/kg	U		2.71	0.18	.16	SW-846 6010B	P
Copper	9.94	mg/kg			0.45	0.080	.071	SW-846 6010B	P
Lead	5.73	mg/kg			0.68	0.080	.071	SW-846 6010B	P
Manganese	57.6	mg/kg			0.68	0.024	.021	SW-846 6010B	P
Zinc	27.1	mg/kg			0.90	0.16	.14	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXD-N

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 86.09

Lab Sample ID: 20810206007

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0930

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.19	mg/kg	U		2.79	0.19	.16	SW-846 6010B	P
Lead	9.46	mg/kg			0.70	0.082	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXD-S

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 86.44

Lab Sample ID: 20810206008

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0930

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.19	mg/kg	U		2.78	0.19	.16	SW-846 6010B	P
Lead	8.98	mg/kg			0.69	0.082	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXD-E
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids: 82.48
Lab Sample ID: 20810206009
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 0930

Analyte	**Concentration**	**Units**	**C**	**Q**	**MQL**	**SQL**	**MDL**	**Method**	**Type**
Antimony	2.40	mg/kg	B		2.91	0.20	.16	SW-846 6010B	P
Lead	582	mg/kg			0.73	0.086	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXD-W

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 92.18

Lab Sample ID: 20810206010

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0930

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.18	mg/kg	U		2.60	0.18	.16	SW-846 6010B	P
Lead	18.2	mg/kg			0.65	0.077	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name:	GCAL			Sample ID:	EXD-3		
Lab Code:	LA024	Case No.:		Contract:			
Matrix: (soil / water)	Soil			SAS No.:		SDG No.:	208102060
Level: (low / med)		% Solids:	91.71	Lab Sample ID:	20810206011		
Date Received:	10/18/08	Time:	0925	Date Collected:	10/17/08	Time:	0930

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.24	mg/kg	B		2.60	0.18	.16	SW-846 6010B	P
Lead	38.0	mg/kg			0.65	0.077	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXD-5

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 87.28

Lab Sample ID: 20810206012

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0930

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.19	mg/kg	U		2.73	0.19	.16	SW-846 6010B	P
Copper	7.73	mg/kg			0.45	0.081	.071	SW-846 6010B	P
Lead	11.5	mg/kg			0.68	0.081	.071	SW-846 6010B	P
Manganese	337	mg/kg			0.68	0.024	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXC-N

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 94.36

Lab Sample ID: 20810206013

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0945

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	7.14	mg/kg			0.63	0.075	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXC-S

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 87.03

Lab Sample ID: 20810206014

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0945

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Lead	7040	mg/kg			0.69	0.082	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXC-E

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 90.88

Lab Sample ID: 20810206015

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 0945

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	187	mg/kg			0.66	0.078	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXC-W

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids: 89.17

Lab Sample ID: 20810206016

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 0945

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	126	mg/kg			0.67	0.079	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXC-1

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids: 69.23

Lab Sample ID: 20810206017

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 0945

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	989	mg/kg			0.86	0.10	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXC-3
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids: 86.20
Lab Sample ID: 20810206018
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 0945

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.19	mg/kg	U		2.78	0.19	.16	SW-846 6010B	P
Copper	9.42	mg/kg			0.46	0.082	.071	SW-846 6010B	P
Lead	11.9	mg/kg			0.70	0.082	.071	SW-846 6010B	P
Manganese	88.3	mg/kg			0.70	0.024	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXA-N
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
% Solids: 88.93
Lab Sample ID: 20810206019
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 1000

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Lead	256	mg/kg			0.67	0.079	.071	SW-846 6010B	P
Manganese	181	mg/kg			0.67	0.023	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXA-S
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids: 77.01
Lab Sample ID: 20810206020
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 1000

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	36.5	mg/kg			0.78	0.092	.071	SW-846 6010B	P
Manganese	137	mg/kg			0.78	0.027	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXA-E

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 84.12

Lab Sample ID: 20810206021

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 1000

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	12.5	mg/kg			0.71	0.084	.071	SW-846 6010B	P
Manganese	576	mg/kg			0.71	0.025	.021	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL		Sample ID: EXA-W	
Lab Code: LA024	Case No.:	Contract:	
Matrix: (soil / water) Soil		SAS No.:	SDG No.: 208102060
Level: (low / med)	% Solids: 82.18	Lab Sample ID: 20810206022	
Date Received: 10/18/08	Time: 0925	Date Collected: 10/17/08	Time: 1000

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	11.1	mg/kg			0.72	0.086	.071	SW-846 6010B	P
Manganese	141	mg/kg			0.72	0.025	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EXA-1

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids: 91.24

Lab Sample ID: 20810206023

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 1000

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	8.65	mg/kg			0.66	0.078	.071	SW-846 6010B	P
Manganese	540	mg/kg			0.66	0.023	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXA-3
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
% Solids: 90.66
Lab Sample ID: 20810206024
Date Received: 10/18/08
Time: 0925
Date Collected: 10/17/08
Time: 1000

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Antimony	0.18	mg/kg	U		2.65	0.18	.16	SW-846 6010B	P
Copper	5.11	mg/kg			0.44	0.078	.071	SW-846 6010B	P
Lead	7.69	mg/kg			0.66	0.078	.071	SW-846 6010B	P
Manganese	209	mg/kg			0.66	0.023	.021	SW-846 6010B	P
Zinc	12.1	mg/kg			0.88	0.16	.14	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EXD-7
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
% Solids: 96.25
Lab Sample ID: 20810206035
Date Received: 10/18/08
Time: 0925
Date Collected: 10/17/08
Time: 0930

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Manganese	215	mg/kg			0.62	0.022	.021	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: SP-E1
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids:
Lab Sample ID: 20810206025
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 1020

Analyte	Concentration	Units	C	Q	MQL	SQL	MDL	Method	Type
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	V-846 1311/601	P
Barium	0.73	mg/L	B		1.00	0.00052	.00052	V-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	V-846 1311/601	P
Chromium	0.00030	mg/L	U		0.050	0.00030	.0003	V-846 1311/601	P
Lead	0.0027	mg/L	U		0.10	0.0027	.0027	V-846 1311/601	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	V-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	V-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	V-846 1311/601	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: SP-A1

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids:

Lab Sample ID: 20810206026

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 1045

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	W-846 1311/6010	P
Barium	1.21	mg/L			1.00	0.00052	.00052	W-846 1311/6010	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	W-846 1311/6010	P
Chromium	0.0062	mg/L	B		0.050	0.00030	.0003	W-846 1311/6010	P
Lead	0.036	mg/L	B		0.10	0.0027	.0027	W-846 1311/6010	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	W-846 1311/7470	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	W-846 1311/6010	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	W-846 1311/6010	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: SP-A2

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids:

Lab Sample ID: 20810206027

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 1045

Analyte	Concentration	Units	C	Q	MQL	SQL	MDL	Method	Type
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	V-846 1311/601	P
Barium	0.78	mg/L	B		1.00	0.00052	.00052	V-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	V-846 1311/601	P
Chromium	0.00032	mg/L	B		0.050	0.00030	.0003	V-846 1311/601	P
Lead	0.026	mg/L	B		0.10	0.0027	.0027	V-846 1311/601	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	V-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	V-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	V-846 1311/601	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: SP-B1

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids:

Lab Sample ID: 20810206028

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 1045

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	V-846 1311/601	P
Barium	1.04	mg/L			1.00	0.00052	.00052	V-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	V-846 1311/601	P
Chromium	0.012	mg/L	B		0.050	0.00030	.0003	V-846 1311/601	P
Lead	0.024	mg/L	B		0.10	0.0027	.0027	V-846 1311/601	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	V-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	V-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	V-846 1311/601	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: SP-C1
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 208102060
Level: (low / med) % Solids:
Lab Sample ID: 20810206029
Date Received: 10/18/08 Time: 0925
Date Collected: 10/17/08 Time: 1045

Analyte	**Concentration**	**Units**	**C**	**Q**	**MQL**	**SQL**	**MDL**	**Method**	**Type**
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	W-846 1311/6010	P
Barium	1.01	mg/L			1.00	0.00052	.00052	W-846 1311/6010	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	W-846 1311/6010	P
Chromium	0.0019	mg/L	B		0.050	0.00030	.0003	W-846 1311/6010	P
Lead	0.45	mg/L			0.10	0.0027	.0027	W-846 1311/6010	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	W-846 1311/7470	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	W-846 1311/6010	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	W-846 1311/6010	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: SP-C2

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

% Solids:

Lab Sample ID: 20810206030

Date Received: 10/18/08

Time: 0925

Date Collected: 10/17/08

Time: 1045

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	W-846 1311/601	P
Barium	1.08	mg/L			1.00	0.00052	.00052	W-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	W-846 1311/601	P
Chromium	0.00030	mg/L	U		0.050	0.00030	.0003	W-846 1311/601	P
Lead	0.14	mg/L			0.10	0.0027	.0027	W-846 1311/601	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	W-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	W-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	W-846 1311/601	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: SP-D1

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids:

Lab Sample ID: 20810206031

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 1045

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	V-846 1311/601	P
Barium	0.85	mg/L	B		1.00	0.00052	.00052	V-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	V-846 1311/601	P
Chromium	0.00030	mg/L	U		0.050	0.00030	.0003	V-846 1311/601	P
Lead	0.024	mg/L	B		0.10	0.0027	.0027	V-846 1311/601	P
Mercury	0.00011	mg/L	B		0.00200	0.00007	.00007	V-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	V-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	V-846 1311/601	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: SP-D2
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
% Solids:
Lab Sample ID: 20810206032
Date Received: 10/18/08
Time: 0925
Date Collected: 10/17/08
Time: 0000

Analyte	Concentration	Units	C	Q	MQL	SQL	MDL	Method	Type
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	W-846 1311/601	P
Barium	0.71	mg/L	B		1.00	0.00052	.00052	W-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	W-846 1311/601	P
Chromium	0.00053	mg/L	B		0.050	0.00030	.0003	W-846 1311/601	P
Lead	0.032	mg/L	B		0.10	0.0027	.0027	W-846 1311/601	P
Mercury	0.00011	mg/L	B		0.00200	0.00007	.00007	W-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	W-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	W-846 1311/601	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: SP-D3

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Level: (low / med) % Solids:

Lab Sample ID: 20810206033

Date Received: 10/18/08 Time: 0925

Date Collected: 10/17/08 Time: 0000

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	W-846 1311/6010	P
Barium	1.03	mg/L			1.00	0.00052	.00052	W-846 1311/6010	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	W-846 1311/6010	P
Chromium	0.00030	mg/L	U		0.050	0.00030	.0003	W-846 1311/6010	P
Lead	0.033	mg/L	B		0.10	0.0027	.0027	W-846 1311/6010	P
Mercury	0.00017	mg/L	B		0.00200	0.00007	.00007	W-846 1311/7470	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	W-846 1311/6010	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	W-846 1311/6010	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: SP-D4
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
% Solids:
Lab Sample ID: 20810206034
Date Received: 10/18/08
Time: 0925
Date Collected: 10/17/08
Time: 0000

Analyte	Concentration	Units	C	Q	MQL	SQL	MDL	Method	Type
Arsenic	0.0038	mg/L	U		0.20	0.0038	.0038	V-846 1311/601	P
Barium	0.79	mg/L	B		1.00	0.00052	.00052	V-846 1311/601	P
Cadmium	0.00017	mg/L	U		0.010	0.00017	.00017	V-846 1311/601	P
Chromium	0.00039	mg/L	B		0.050	0.00030	.0003	V-846 1311/601	P
Lead	0.0040	mg/L	B		0.10	0.0027	.0027	V-846 1311/601	P
Mercury	0.00007	mg/L	U		0.00200	0.00007	.00007	V-846 1311/747	AV
Selenium	0.0045	mg/L	U		0.10	0.0045	.0045	V-846 1311/601	P
Silver	0.00062	mg/L	U		0.050	0.00062	.00062	V-846 1311/601	P

FORM I - IN

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
Calibration Source: 176-38-1 CPI/EXAXOL
Instrument ID: ICP5
ICAL ID: 1
Date Analyzed: 10/22/08
Time: 0913

INITIAL CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	10.0	9.37	94	mg/L	SW-846 6010B	P
Antimony	1.00	0.930	93	mg/L	SW-846 6010B	P
Arsenic	1.00	0.880	88	mg/L	SW-846 6010B	P
Barium	1.00	0.990	99	mg/L	SW-846 6010B	P
Beryllium	1.00	0.960	96	mg/L	SW-846 6010B	P
Boron	5.00	4.95	99	mg/L	SW-846 6010B	P
Cadmium	1.00	0.950	95	mg/L	SW-846 6010B	P
Calcium	10.0	10.1	101	mg/L	SW-846 6010B	P
Chromium	1.00	0.980	98	mg/L	SW-846 6010B	P
Cobalt	1.00	0.950	95	mg/L	SW-846 6010B	P
Copper	1.00	0.960	96	mg/L	SW-846 6010B	P
Iron	10.0	9.84	98	mg/L	SW-846 6010B	P
Lead	1.00	0.980	98	mg/L	SW-846 6010B	P
Lithium	1.00	0.960	96	mg/L	SW-846 6010B	P
Magnesium	10.0	10.6	106	mg/L	SW-846 6010B	P
Manganese	1.00	0.960	96	mg/L	SW-846 6010B	P
Molybdenum	1.00	1.00	100	mg/L	SW-846 6010B	P
Nickel	1.00	0.960	96	mg/L	SW-846 6010B	P
Potassium	10.0	9.79	98	mg/L	SW-846 6010B	P
Selenium	1.00	0.970	97	mg/L	SW-846 6010B	P
Silver	1.00	1.05	105	mg/L	SW-846 6010B	P
Sodium	10.0	9.86	99	mg/L	SW-846 6010B	P
Strontium	1.00	0.900	90	mg/L	SW-846 6010B	P
Thallium	1.00	1.00	100	mg/L	SW-846 6010B	P
Tin	1.00	1.04	104	mg/L	SW-846 6010B	P
Titanium	1.00	0.970	97	mg/L	SW-846 6010B	P
Vanadium	1.00	0.970	97	mg/L	SW-846 6010B	P
Zinc	1.00	0.970	97	mg/L	SW-846 6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Calibration Source: 176-37-5 INORGANIC VENTURES

Instrument ID: ICP5 ICAL ID: 1

Date Analyzed: 10/22/08 Time: 0933

CRDL STANDARD

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	0.200	0.160	78	mg/L	SW-846 6010B	P
Antimony	0.0600	0.0590	98	mg/L	SW-846 6010B	P
Arsenic	0.0100	0.00790	79	mg/L	SW-846 6010B	P
Barium	0.0100	0.00890	89	mg/L	SW-846 6010B	P
Beryllium	0.00500	0.00490	98	mg/L	SW-846 6010B	P
Boron	0.500	0.470	93	mg/L	SW-846 6010B	P
Cadmium	0.00500	0.00420	84	mg/L	SW-846 6010B	P
Calcium	0.100	0.100	102	mg/L	SW-846 6010B	P
Chromium	0.0100	0.00690	69	mg/L	SW-846 6010B	P
Cobalt	0.0100	0.00900	90	mg/L	SW-846 6010B	P
Copper	0.0100	0.00750	75	mg/L	SW-846 6010B	P
Iron	0.100	0.0660	66	mg/L	SW-846 6010B	P
Lead	0.0150	0.0150	97	mg/L	SW-846 6010B	P
Lithium	0.0500	0.0480	96	mg/L	SW-846 6010B	P
Magnesium	0.100	0.0860	86	mg/L	SW-846 6010B	P
Manganese	0.0150	0.0130	88	mg/L	SW-846 6010B	P
Molybdenum	0.0500	0.0480	95	mg/L	SW-846 6010B	P
Nickel	0.0400	0.0350	89	mg/L	SW-846 6010B	P
Potassium	0.500	0.520	104	mg/L	SW-846 6010B	P
Selenium	0.0400	0.0380	95	mg/L	SW-846 6010B	P
Silver	0.0100	0.00900	90	mg/L	SW-846 6010B	P
Sodium	1.00	0.880	88	mg/L	SW-846 6010B	P
Strontium	0.0500	0.0440	88	mg/L	SW-846 6010B	P
Thallium	0.0100	0.00650	65	mg/L	SW-846 6010B	P
Tin	0.100	0.0950	95	mg/L	SW-846 6010B	P
Titanium	0.100	0.0940	94	mg/L	SW-846 6010B	P
Vanadium	0.0200	0.0150	73	mg/L	SW-846 6010B	P
Zinc	0.0200	0.0120	62	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-38-2 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 1

Date Analyzed: 10/22/08

Time: 1018

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	4.98	100	mg/L	SW-846 6010B	P
Antimony	0.500	0.500	100	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	100	mg/L	SW-846 6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	101	mg/L	SW-846 6010B	P
Boron	2.50	2.45	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	101	mg/L	SW-846 6010B	P
Calcium	5.00	5.01	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.500	100	mg/L	SW-846 6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 6010B	P
Iron	5.00	5.08	102	mg/L	SW-846 6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 6010B	P
Lithium	0.500	0.510	101	mg/L	SW-846 6010B	P
Magnesium	5.00	5.04	101	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	99	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	101	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	101	mg/L	SW-846 6010B	P
Potassium	10.0	10.1	101	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	5.22	104	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	20.1	101	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	103	mg/L	SW-846 6010B	P
Tin	0.500	0.500	99	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	100	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	102	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.490	99	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Calibration Source: 176-38-2 INORGANIC VENTURES

Instrument ID: ICP5 ICAL ID: 1

Date Analyzed: 10/22/08 Time: 1144

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	4.99	100	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	98	mg/L	SW-846 6010B	P
Arsenic	0.500	0.480	95	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	101	mg/L	SW-846 6010B	P
Boron	2.50	2.47	99	mg/L	SW-846 6010B	P
Cadmium	0.500	0.510	101	mg/L	SW-846 6010B	P
Calcium	5.00	5.00	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	101	mg/L	SW-846 6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 6010B	P
Iron	5.00	5.10	102	mg/L	SW-846 6010B	P
Lead	0.500	0.530	106	mg/L	SW-846 6010B	P
Lithium	0.500	0.510	103	mg/L	SW-846 6010B	P
Magnesium	5.00	5.04	101	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	102	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	102	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.1	101	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	101	mg/L	SW-846 6010B	P
Silicon	5.00	5.32	106	mg/L	SW-846 6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 6010B	P
Sodium	20.0	20.3	101	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	101	mg/L	SW-846 6010B	P
Thallium	0.500	0.500	100	mg/L	SW-846 6010B	P
Tin	0.500	0.490	97	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	100	mg/L	SW-846 6010B	P
Vanadium	0.500	0.520	103	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	100	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	100	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-38-2 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 1

Date Analyzed: 10/22/08

Time: 1300

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	4.84	97	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	97	mg/L	SW-846 6010B	P
Arsenic	0.500	0.470	94	mg/L	SW-846 6010B	P
Barium	0.500	0.500	99	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	100	mg/L	SW-846 6010B	P
Boron	2.50	2.38	95	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	99	mg/L	SW-846 6010B	P
Calcium	5.00	4.84	97	mg/L	SW-846 6010B	P
Chromium	0.500	0.500	100	mg/L	SW-846 6010B	P
Cobalt	0.500	0.490	99	mg/L	SW-846 6010B	P
Copper	0.500	0.500	101	mg/L	SW-846 6010B	P
Iron	5.00	4.99	100	mg/L	SW-846 6010B	P
Lead	0.500	0.520	104	mg/L	SW-846 6010B	P
Lithium	0.500	0.500	100	mg/L	SW-846 6010B	P
Magnesium	5.00	4.88	98	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	99	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.500	100	mg/L	SW-846 6010B	P
Nickel	0.500	0.500	100	mg/L	SW-846 6010B	P
Potassium	10.0	9.93	99	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	99	mg/L	SW-846 6010B	P
Silicon	5.00	5.16	103	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	19.7	98	mg/L	SW-846 6010B	P
Strontium	0.500	0.490	97	mg/L	SW-846 6010B	P
Thallium	0.500	0.500	99	mg/L	SW-846 6010B	P
Tin	0.500	0.480	96	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	100	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.490	98	mg/L	SW-846 6010B	P
Zirconium	0.500	0.490	98	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
Calibration Source: 176-38-1 CPI/EXAXOL
Instrument ID: ICP6
ICAL ID: 2
Date Analyzed: 10/24/08
Time: 0938

INITIAL CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	10.0	9.81	98	mg/L	SW-846 6010B	P
Antimony	1.00	0.970	97	mg/L	SW-846 6010B	P
Arsenic	1.00	0.960	96	mg/L	SW-846 6010B	P
Barium	1.00	1.02	102	mg/L	SW-846 6010B	P
Beryllium	1.00	0.990	99	mg/L	SW-846 6010B	P
Boron	5.00	5.07	101	mg/L	SW-846 6010B	P
Cadmium	1.00	1.01	101	mg/L	SW-846 6010B	P
Calcium	10.0	10.0	100	mg/L	SW-846 6010B	P
Chromium	1.00	0.990	99	mg/L	SW-846 6010B	P
Cobalt	1.00	0.990	99	mg/L	SW-846 6010B	P
Copper	1.00	0.960	96	mg/L	SW-846 6010B	P
Iron	10.0	10.1	101	mg/L	SW-846 6010B	P
Lead	1.00	1.00	100	mg/L	SW-846 6010B	P
Lithium	1.00	1.03	103	mg/L	SW-846 6010B	P
Magnesium	10.0	11.2	112	mg/L	SW-846 6010B	P
Manganese	1.00	0.980	98	mg/L	SW-846 6010B	P
Molybdenum	1.00	0.990	99	mg/L	SW-846 6010B	P
Nickel	1.00	1.00	100	mg/L	SW-846 6010B	P
Potassium	10.0	9.91	99	mg/L	SW-846 6010B	P
Selenium	1.00	1.03	103	mg/L	SW-846 6010B	P
Silver	1.00	1.05	105	mg/L	SW-846 6010B	P
Sodium	10.0	9.95	99	mg/L	SW-846 6010B	P
Strontium	1.00	0.920	92	mg/L	SW-846 6010B	P
Thallium	1.00	1.02	102	mg/L	SW-846 6010B	P
Tin	1.00	1.07	107	mg/L	SW-846 6010B	P
Titanium	1.00	0.980	98	mg/L	SW-846 6010B	P
Vanadium	1.00	0.980	98	mg/L	SW-846 6010B	P
Zinc	1.00	0.970	97	mg/L	SW-846 6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Calibration Source: 176-40-2 INORGANIC VENTURES

Instrument ID: ICP6 ICAL ID: 2

Date Analyzed: 10/24/08 Time: 1005

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	0.200	0.210	106	mg/L	SW-846 6010B	P
Antimony	0.0600	0.0610	101	mg/L	SW-846 6010B	P
Arsenic	0.0100	0.00880	88	mg/L	SW-846 6010B	P
Barium	0.0100	0.0100	100	mg/L	SW-846 6010B	P
Beryllium	0.00500	0.00500	99	mg/L	SW-846 6010B	P
Boron	0.500	0.490	97	mg/L	SW-846 6010B	P
Cadmium	0.00500	0.00490	98	mg/L	SW-846 6010B	P
Calcium	0.100	0.0860	86	mg/L	SW-846 6010B	P
Chromium	0.0100	0.0100	103	mg/L	SW-846 6010B	P
Cobalt	0.0100	0.0100	103	mg/L	SW-846 6010B	P
Copper	0.0100	0.00900	90	mg/L	SW-846 6010B	P
Iron	0.100	0.0910	91	mg/L	SW-846 6010B	P
Lead	0.0150	0.0170	115	mg/L	SW-846 6010B	P
Lithium	0.0500	0.0530	106	mg/L	SW-846 6010B	P
Magnesium	0.100	0.100	104	mg/L	SW-846 6010B	P
Manganese	0.0150	0.0150	101	mg/L	SW-846 6010B	P
Molybdenum	0.0500	0.0500	100	mg/L	SW-846 6010B	P
Nickel	0.0400	0.0420	104	mg/L	SW-846 6010B	P
Potassium	0.500	0.540	109	mg/L	SW-846 6010B	P
Selenium	0.0400	0.0360	91	mg/L	SW-846 6010B	P
Silver	0.0100	0.0100	102	mg/L	SW-846 6010B	P
Sodium	1.00	1.03	103	mg/L	SW-846 6010B	P
Strontium	0.0500	0.0490	98	mg/L	SW-846 6010B	P
Thallium	0.0100	0.00880	88	mg/L	SW-846 6010B	P
Tin	0.100	0.100	100	mg/L	SW-846 6010B	P
Titanium	0.100	0.100	100	mg/L	SW-846 6010B	P
Vanadium	0.0200	0.0200	99	mg/L	SW-846 6010B	P
Zinc	0.0200	0.0190	97	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Calibration Source: 176-39-2 INORGANIC VENTURES
Instrument ID: ICP6 ICAL ID: 2
Date Analyzed: 10/24/08 Time: 1050

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	4.86	97	mg/L	SW-846 6010B	P
Antimony	0.500	0.500	100	mg/L	SW-846 6010B	P
Arsenic	0.500	0.510	102	mg/L	SW-846 6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	101	mg/L	SW-846 6010B	P
Boron	2.50	2.48	99	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	100	mg/L	SW-846 6010B	P
Calcium	5.00	4.80	96	mg/L	SW-846 6010B	P
Chromium	0.500	0.500	100	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	103	mg/L	SW-846 6010B	P
Copper	0.500	0.500	100	mg/L	SW-846 6010B	P
Iron	5.00	4.80	96	mg/L	SW-846 6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 6010B	P
Lithium	0.500	0.490	97	mg/L	SW-846 6010B	P
Magnesium	5.00	4.85	97	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	102	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	101	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	9.75	97	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	102	mg/L	SW-846 6010B	P
Silicon	5.00	4.80	96	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	19.5	97	mg/L	SW-846 6010B	P
Strontium	0.500	0.480	96	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	102	mg/L	SW-846 6010B	P
Tin	0.500	0.510	102	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	100	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	100	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	100	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES

Instrument ID: ICP6 ICAL ID: 2

Date Analyzed: 10/24/08 Time: 2323

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	5.12	102	mg/L	SW-846 6010B	P
Antimony	0.500	0.510	102	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	100	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 6010B	P
Boron	2.50	2.46	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	101	mg/L	SW-846 6010B	P
Calcium	5.00	4.98	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	102	mg/L	SW-846 6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 6010B	P
Iron	5.00	4.94	99	mg/L	SW-846 6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 6010B	P
Lithium	0.500	0.530	106	mg/L	SW-846 6010B	P
Magnesium	5.00	4.99	100	mg/L	SW-846 6010B	P
Manganese	0.500	0.530	105	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	102	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.5	105	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	5.04	101	mg/L	SW-846 6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 6010B	P
Sodium	20.0	21.0	105	mg/L	SW-846 6010B	P
Strontium	0.500	0.510	101	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	103	mg/L	SW-846 6010B	P
Tin	0.500	0.510	103	mg/L	SW-846 6010B	P
Titanium	0.500	0.520	105	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	100	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	101	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	103	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES Instrument ID: ICP6 ICAL ID: 2

Date Analyzed: 10/25/08 Time: 0032

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	5.07	101	mg/L	SW-846 6010B	P
Antimony	0.500	0.510	102	mg/L	SW-846 6010B	P
Arsenic	0.500	0.510	102	mg/L	SW-846 6010B	P
Barium	0.500	0.510	103	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 6010B	P
Boron	2.50	2.47	99	mg/L	SW-846 6010B	P
Cadmium	0.500	0.510	101	mg/L	SW-846 6010B	P
Calcium	5.00	4.99	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	103	mg/L	SW-846 6010B	P
Copper	0.500	0.530	106	mg/L	SW-846 6010B	P
Iron	5.00	5.02	100	mg/L	SW-846 6010B	P
Lead	0.500	0.520	104	mg/L	SW-846 6010B	P
Lithium	0.500	0.530	105	mg/L	SW-846 6010B	P
Magnesium	5.00	5.03	101	mg/L	SW-846 6010B	P
Manganese	0.500	0.530	106	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	103	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.4	104	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	101	mg/L	SW-846 6010B	P
Silicon	5.00	5.07	101	mg/L	SW-846 6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 6010B	P
Sodium	20.0	20.5	102	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.520	103	mg/L	SW-846 6010B	P
Tin	0.500	0.510	102	mg/L	SW-846 6010B	P
Titanium	0.500	0.520	104	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	102	mg/L	SW-846 6010B	P
Zirconium	0.500	0.520	103	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 2

Date Analyzed: 10/25/08

Time: 0145

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Potassium	10.0	10.4	104	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	5.08	102	mg/L	SW-846 6010B	P
Silver	0.500	0.510	101	mg/L	SW-846 6010B	P
Sodium	20.0	20.3	101	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	102	mg/L	SW-846 6010B	P
Tin	0.500	0.500	100	mg/L	SW-846 6010B	P
Titanium	0.500	0.520	103	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	100	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	101	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	103	mg/L	SW-846 6010B	P
Aluminum	5.00	5.11	102	mg/L	SW-846 6010B	P
Antimony	0.500	0.500	101	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	100	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	101	mg/L	SW-846 6010B	P
Boron	2.50	2.44	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	100	mg/L	SW-846 6010B	P
Calcium	5.00	4.99	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	101	mg/L	SW-846 6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 6010B	P
Iron	5.00	5.04	101	mg/L	SW-846 6010B	P
Lead	0.500	0.500	101	mg/L	SW-846 6010B	P
Lithium	0.500	0.520	105	mg/L	SW-846 6010B	P
Magnesium	5.00	5.02	100	mg/L	SW-846 6010B	P
Manganese	0.500	0.520	105	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	101	mg/L	SW-846 6010B	P
Nickel	0.500	0.500	101	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-38-1 CPI/EXAXOL

Instrument ID: ICP6

ICAL ID: 3

Date Analyzed: 10/25/08

Time: 0841

INITIAL CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	10.0	9.93	99	mg/L	SW-846 6010B	P
Antimony	1.00	1.02	102	mg/L	SW-846 6010B	P
Arsenic	1.00	1.00	100	mg/L	SW-846 6010B	P
Barium	1.00	1.04	104	mg/L	SW-846 6010B	P
Beryllium	1.00	1.02	102	mg/L	SW-846 6010B	P
Boron	5.00	5.36	107	mg/L	SW-846 6010B	P
Cadmium	1.00	1.04	104	mg/L	SW-846 6010B	P
Calcium	10.0	10.3	103	mg/L	SW-846 6010B	P
Chromium	1.00	1.01	101	mg/L	SW-846 6010B	P
Cobalt	1.00	1.01	101	mg/L	SW-846 6010B	P
Copper	1.00	1.00	100	mg/L	SW-846 6010B	P
Iron	10.0	10.4	104	mg/L	SW-846 6010B	P
Lead	1.00	1.02	102	mg/L	SW-846 6010B	P
Lithium	1.00	1.01	101	mg/L	SW-846 6010B	P
Magnesium	10.0	10.5	105	mg/L	SW-846 6010B	P
Manganese	1.00	1.00	100	mg/L	SW-846 6010B	P
Molybdenum	1.00	1.02	102	mg/L	SW-846 6010B	P
Nickel	1.00	1.02	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.0	100	mg/L	SW-846 6010B	P
Selenium	1.00	1.05	105	mg/L	SW-846 6010B	P
Silver	1.00	1.04	104	mg/L	SW-846 6010B	P
Sodium	10.0	9.82	98	mg/L	SW-846 6010B	P
Strontium	1.00	0.960	96	mg/L	SW-846 6010B	P
Thallium	1.00	1.04	104	mg/L	SW-846 6010B	P
Tin	1.00	1.07	107	mg/L	SW-846 6010B	P
Titanium	1.00	1.00	100	mg/L	SW-846 6010B	P
Vanadium	1.00	1.00	100	mg/L	SW-846 6010B	P
Zinc	1.00	1.01	101	mg/L	SW-846 6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-40-2 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 3

Date Analyzed: 10/25/08

Time: 0910

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Titanium	0.100	0.130	129	mg/L	SW-846 6010B	P
Vanadium	0.0200	0.0210	105	mg/L	SW-846 6010B	P
Zinc	0.0200	0.0270	133	mg/L	SW-846 6010B	P
Aluminum	0.200	0.210	105	mg/L	SW-846 6010B	P
Antimony	0.0600	0.0670	112	mg/L	SW-846 6010B	P
Arsenic	0.0100	0.00730	73	mg/L	SW-846 6010B	P
Barium	0.0100	0.0110	110	mg/L	SW-846 6010B	P
Beryllium	0.00500	0.00540	108	mg/L	SW-846 6010B	P
Boron	0.500	0.540	107	mg/L	SW-846 6010B	P
Cadmium	0.00500	0.00560	112	mg/L	SW-846 6010B	P
Calcium	0.100	0.210	207	mg/L	SW-846 6010B	P
Chromium	0.0100	0.0100	103	mg/L	SW-846 6010B	P
Cobalt	0.0100	0.0100	104	mg/L	SW-846 6010B	P
Copper	0.0100	0.0130	129	mg/L	SW-846 6010B	P
Iron	0.100	0.100	104	mg/L	SW-846 6010B	P
Lead	0.0150	0.0120	82	mg/L	SW-846 6010B	P
Lithium	0.0500	0.0490	98	mg/L	SW-846 6010B	P
Magnesium	0.100	0.140	136	mg/L	SW-846 6010B	P
Manganese	0.0150	0.0160	105	mg/L	SW-846 6010B	P
Molybdenum	0.0500	0.0540	108	mg/L	SW-846 6010B	P
Nickel	0.0400	0.0440	111	mg/L	SW-846 6010B	P
Potassium	0.500	0.410	82	mg/L	SW-846 6010B	P
Selenium	0.0400	0.0440	109	mg/L	SW-846 6010B	P
Silver	0.0100	0.0110	108	mg/L	SW-846 6010B	P
Sodium	1.00	0.790	79	mg/L	SW-846 6010B	P
Strontium	0.0500	0.0500	100	mg/L	SW-846 6010B	P
Thallium	0.0100	0.0140	145	mg/L	SW-846 6010B	P
Tin	0.100	0.110	110	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Calibration Source: 176-40-3 INORGANIC VENTURES
Instrument ID: ICP6 ICAL ID: 3
Date Analyzed: 10/25/08 Time: 0922

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	0.0500	-0.0710	-142	mg/L	SW-846 6010B	P
Antimony	0.00500	0.00830	165	mg/L	SW-846 6010B	P
Arsenic	0.00500	0.00730	145	mg/L	SW-846 6010B	P
Barium	0.00500	0.00580	116	mg/L	SW-846 6010B	P
Beryllium	0.00080	0.000900	112	mg/L	SW-846 6010B	P
Boron	0.0300	0.0530	176	mg/L	SW-846 6010B	P
Cadmium	0.00020	0.000390	195	mg/L	SW-846 6010B	P
Calcium	0.0500	0.0510	102	mg/L	SW-846 6010B	P
Chromium	0.00200	0.00180	91	mg/L	SW-846 6010B	P
Cobalt	0.00100	0.00110	108	mg/L	SW-846 6010B	P
Copper	0.00500	0.000360	7	mg/L	SW-846 6010B	P
Iron	0.0400	0.0510	127	mg/L	SW-846 6010B	P
Lead	0.00300	0.00150	52	mg/L	SW-846 6010B	P
Magnesium	0.0500	0.0280	57	mg/L	SW-846 6010B	P
Manganese	0.0100	0.0110	109	mg/L	SW-846 6010B	P
Molybdenum	0.0200	0.0210	107	mg/L	SW-846 6010B	P
Nickel	0.00500	0.00600	119	mg/L	SW-846 6010B	P
Potassium	0.0500	0.00420	8	mg/L	SW-846 6010B	P
Selenium	0.00500	0.00920	184	mg/L	SW-846 6010B	P
Silver	0.00200	0.00150	75	mg/L	SW-846 6010B	P
Sodium	0.0500	0.0200	41	mg/L	SW-846 6010B	P
Strontium	0.0100	0.0120	117	mg/L	SW-846 6010B	P
Thallium	0.00200	0.00380	192	mg/L	SW-846 6010B	P
Tin	0.0250	0.0310	122	mg/L	SW-846 6010B	P
Vanadium	0.00500	0.00630	126	mg/L	SW-846 6010B	P
Zinc CRDL 2	0.0100	0.0110	112	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 3

Date Analyzed: 10/25/08

Time: 1025

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	5.29	106	mg/L	SW-846 6010B	P
Antimony	0.500	0.530	106	mg/L	SW-846 6010B	P
Arsenic	0.500	0.540	108	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.520	104	mg/L	SW-846 6010B	P
Boron	2.50	2.57	103	mg/L	SW-846 6010B	P
Cadmium	0.500	0.520	105	mg/L	SW-846 6010B	P
Calcium	5.00	5.20	104	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.520	104	mg/L	SW-846 6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 6010B	P
Iron	5.00	5.21	104	mg/L	SW-846 6010B	P
Lead	0.500	0.520	105	mg/L	SW-846 6010B	P
Lithium	0.500	0.380	76	mg/L	SW-846 6010B	P
Magnesium	5.00	5.15	103	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	102	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.520	105	mg/L	SW-846 6010B	P
Nickel	0.500	0.530	105	mg/L	SW-846 6010B	P
Potassium	10.0	9.35	94	mg/L	SW-846 6010B	P
Selenium	0.500	0.530	107	mg/L	SW-846 6010B	P
Silicon	5.00	5.19	104	mg/L	SW-846 6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 6010B	P
Sodium	20.0	18.3	92	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	101	mg/L	SW-846 6010B	P
Thallium	0.500	0.530	106	mg/L	SW-846 6010B	P
Tin	0.500	0.530	106	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	103	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	102	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES Instrument ID: ICP6 ICAL ID: 3

Date Analyzed: 10/25/08 Time: 1208

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Boron	2.50	2.56	102	mg/L	SW-846 6010B	P
Cadmium	0.500	0.530	106	mg/L	SW-846 6010B	P
Calcium	5.00	5.19	104	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.520	104	mg/L	SW-846 6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 6010B	P
Iron	5.00	5.21	104	mg/L	SW-846 6010B	P
Lead	0.500	0.530	105	mg/L	SW-846 6010B	P
Lithium	0.500	0.370	74	mg/L	SW-846 6010B	P
Magnesium	5.00	5.18	104	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	102	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.530	105	mg/L	SW-846 6010B	P
Nickel	0.500	0.520	105	mg/L	SW-846 6010B	P
Potassium	10.0	9.31	93	mg/L	SW-846 6010B	P
Selenium	0.500	0.540	109	mg/L	SW-846 6010B	P
Silicon	5.00	5.22	104	mg/L	SW-846 6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 6010B	P
Sodium	20.0	18.4	92	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.540	108	mg/L	SW-846 6010B	P
Tin	0.500	0.530	107	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	102	mg/L	SW-846 6010B	P
Zinc	0.500	0.520	104	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 6010B	P
Aluminum	5.00	5.19	104	mg/L	SW-846 6010B	P
Antimony	0.500	0.520	105	mg/L	SW-846 6010B	P
Arsenic	0.500	0.540	108	mg/L	SW-846 6010B	P
Barium	0.500	0.510	103	mg/L	SW-846 6010B	P
Beryllium	0.500	0.520	104	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES

Instrument ID: ICP6 ICAL ID: 3

Date Analyzed: 10/25/08 Time: 1322

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Chromium	0.500	0.490	99	mg/L	SW-846 6010B	P
Cobalt	0.500	0.500	99	mg/L	SW-846 6010B	P
Copper	0.500	0.520	103	mg/L	SW-846 6010B	P
Iron	5.00	4.87	97	mg/L	SW-846 6010B	P
Lead	0.500	0.500	101	mg/L	SW-846 6010B	P
Lithium	0.500	0.320	64	mg/L	SW-846 6010B	P
Magnesium	5.00	4.66	93	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	103	mg/L	SW-846 6010B	P
Nickel	0.500	0.500	101	mg/L	SW-846 6010B	P
Potassium	10.0	9.22	92	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	102	mg/L	SW-846 6010B	P
Silicon	5.00	4.95	99	mg/L	SW-846 6010B	P
Silver	0.500	0.520	103	mg/L	SW-846 6010B	P
Sodium	20.0	21.7	109	mg/L	SW-846 6010B	P
Strontium	0.500	0.490	97	mg/L	SW-846 6010B	P
Thallium	0.500	0.520	104	mg/L	SW-846 6010B	P
Tin	0.500	0.520	103	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	103	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	100	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 6010B	P
Aluminum	5.00	4.84	97	mg/L	SW-846 6010B	P
Antimony	0.500	0.510	103	mg/L	SW-846 6010B	P
Arsenic	0.500	0.510	101	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 6010B	P
Boron	2.50	2.51	100	mg/L	SW-846 6010B	P
Cadmium	0.500	0.510	102	mg/L	SW-846 6010B	P
Calcium	5.00	4.73	95	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Calibration Source: 176-39-2 INORGANIC VENTURES
Instrument ID: ICP6 ICAL ID: 3
Date Analyzed: 10/25/08 Time: 1515

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	5.00	4.97	99	mg/L	SW-846 6010B	P
Antimony	0.500	0.530	105	mg/L	SW-846 6010B	P
Arsenic	0.500	0.520	104	mg/L	SW-846 6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.490	99	mg/L	SW-846 6010B	P
Boron	2.50	2.46	99	mg/L	SW-846 6010B	P
Cadmium	0.500	0.510	101	mg/L	SW-846 6010B	P
Calcium	5.00	4.63	93	mg/L	SW-846 6010B	P
Chromium	0.500	0.500	100	mg/L	SW-846 6010B	P
Cobalt	0.500	0.500	100	mg/L	SW-846 6010B	P
Copper	0.500	0.520	104	mg/L	SW-846 6010B	P
Iron	5.00	4.82	96	mg/L	SW-846 6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 6010B	P
Lithium	0.500	0.330	66	mg/L	SW-846 6010B	P
Magnesium	5.00	4.55	91	mg/L	SW-846 6010B	P
Manganese	0.500	0.490	99	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.530	105	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	101	mg/L	SW-846 6010B	P
Potassium	10.0	9.24	92	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	101	mg/L	SW-846 6010B	P
Silicon	5.00	5.01	100	mg/L	SW-846 6010B	P
Silver	0.500	0.520	103	mg/L	SW-846 6010B	P
Sodium	20.0	24.2	121	mg/L	SW-846 6010B	P
Strontium	0.500	0.490	97	mg/L	SW-846 6010B	P
Thallium	0.500	0.520	104	mg/L	SW-846 6010B	P
Tin	0.500	0.520	104	mg/L	SW-846 6010B	P
Titanium	0.500	0.490	97	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	102	mg/L	SW-846 6010B	P
Zinc	0.500	0.520	103	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Calibration Source: 176-46-1 CPI/EXAXOL Instrument ID: ICP6 ICAL ID: 4

Date Analyzed: 11/17/08 Time: 1019

INITIAL CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	10.0	10.1	101	mg/L	SW-846 6010B	P
Antimony	1.00	0.980	98	mg/L	SW-846 6010B	P
Arsenic	1.00	1.00	100	mg/L	SW-846 6010B	P
Barium	1.00	1.01	101	mg/L	SW-846 6010B	P
Beryllium	1.00	1.00	100	mg/L	SW-846 6010B	P
Boron	5.00	5.11	102	mg/L	SW-846 6010B	P
Cadmium	1.00	0.970	97	mg/L	SW-846 6010B	P
Calcium	10.0	10.2	102	mg/L	SW-846 6010B	P
Chromium	1.00	0.990	99	mg/L	SW-846 6010B	P
Cobalt	1.00	0.980	98	mg/L	SW-846 6010B	P
Copper	1.00	0.960	96	mg/L	SW-846 6010B	P
Iron	10.0	10.2	102	mg/L	SW-846 6010B	P
Lead	1.00	0.980	98	mg/L	SW-846 6010B	P
Lithium	1.00	1.01	101	mg/L	SW-846 6010B	P
Magnesium	10.0	10.4	104	mg/L	SW-846 6010B	P
Manganese	1.00	1.00	100	mg/L	SW-846 6010B	P
Molybdenum	1.00	0.990	99	mg/L	SW-846 6010B	P
Nickel	1.00	0.990	99	mg/L	SW-846 6010B	P
Potassium	10.0	10.3	103	mg/L	SW-846 6010B	P
Selenium	1.00	0.990	99	mg/L	SW-846 6010B	P
Silver	1.00	1.03	103	mg/L	SW-846 6010B	P
Sodium	10.0	10.4	104	mg/L	SW-846 6010B	P
Strontium	1.00	0.930	93	mg/L	SW-846 6010B	P
Thallium	1.00	0.990	99	mg/L	SW-846 6010B	P
Tin	1.00	1.02	102	mg/L	SW-846 6010B	P
Titanium	1.00	0.970	97	mg/L	SW-846 6010B	P
Vanadium	1.00	0.970	97	mg/L	SW-846 6010B	P
Zinc	1.00	0.970	97	mg/L	SW-846 6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-46-4 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 4

Date Analyzed: 11/17/08

Time: 1040

CRDL STANDARD

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	0.200	0.220	109	mg/L	SW-846 6010B	P
Antimony	0.0600	0.0610	102	mg/L	SW-846 6010B	P
Arsenic	0.0100	0.00590	59	mg/L	SW-846 6010B	P
Barium	0.0100	0.0100	103	mg/L	SW-846 6010B	P
Beryllium	0.00500	0.00490	98	mg/L	SW-846 6010B	P
Boron	0.500	0.490	98	mg/L	SW-846 6010B	P
Cadmium	0.00500	0.00490	98	mg/L	SW-846 6010B	P
Calcium	0.100	0.0510	51	mg/L	SW-846 6010B	P
Chromium	0.0100	0.00940	94	mg/L	SW-846 6010B	P
Cobalt	0.0100	0.0100	101	mg/L	SW-846 6010B	P
Copper	0.0100	0.00650	65	mg/L	SW-846 6010B	P
Iron	0.100	0.0820	82	mg/L	SW-846 6010B	P
Lead	0.0150	0.0160	109	mg/L	SW-846 6010B	P
Lithium	0.0500	0.0560	112	mg/L	SW-846 6010B	P
Magnesium	0.100	0.0860	86	mg/L	SW-846 6010B	P
Manganese	0.0150	0.0150	102	mg/L	SW-846 6010B	P
Molybdenum	0.0500	0.0500	100	mg/L	SW-846 6010B	P
Nickel	0.0400	0.0420	106	mg/L	SW-846 6010B	P
Potassium	0.500	0.460	93	mg/L	SW-846 6010B	P
Selenium	0.0400	0.0340	85	mg/L	SW-846 6010B	P
Silver	0.0100	0.00950	95	mg/L	SW-846 6010B	P
Sodium	1.00	1.04	104	mg/L	SW-846 6010B	P
Strontium	0.0500	0.0510	102	mg/L	SW-846 6010B	P
Thallium	0.0100	0.00570	57	mg/L	SW-846 6010B	P
Tin	0.100	0.100	102	mg/L	SW-846 6010B	P
Titanium	0.100	0.0990	99	mg/L	SW-846 6010B	P
Vanadium	0.0200	0.0200	99	mg/L	SW-846 6010B	P
Zinc	0.0200	0.0170	85	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Calibration Source: 176-48-7 INORGANIC VENTURES

Instrument ID: ICP6 ICAL ID: 4

Date Analyzed: 11/17/08 Time: 1156

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	5.08	102	mg/L	SW-846 6010B	P
Antimony	0.500	0.500	100	mg/L	SW-846 6010B	P
Arsenic	0.500	0.510	103	mg/L	SW-846 6010B	P
Barium	0.500	0.500	100	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	100	mg/L	SW-846 6010B	P
Boron	2.50	2.45	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	100	mg/L	SW-846 6010B	P
Calcium	5.00	5.08	102	mg/L	SW-846 6010B	P
Chromium	0.500	0.480	96	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	101	mg/L	SW-846 6010B	P
Copper	0.500	0.500	99	mg/L	SW-846 6010B	P
Iron	5.00	5.04	101	mg/L	SW-846 6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 6010B	P
Lithium	0.500	0.540	107	mg/L	SW-846 6010B	P
Magnesium	5.00	5.16	103	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	100	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	101	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.1	101	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	5.04	101	mg/L	SW-846 6010B	P
Silver	0.500	0.500	99	mg/L	SW-846 6010B	P
Sodium	20.0	20.2	101	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	102	mg/L	SW-846 6010B	P
Tin	0.500	0.510	101	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	100	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.490	98	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	99	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-48-7 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 4

Date Analyzed: 11/17/08

Time: 1915

CONTINUING CALIBRATION VERIFICATION

Analyte	**True**	**Found**	**CAL %R**	**Units**	**Method**	**Type**
Aluminum	5.00	5.22	104	mg/L	SW-846 6010B	P
Antimony	0.500	0.510	102	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	100	mg/L	SW-846 6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	100	mg/L	SW-846 6010B	P
Boron	2.50	2.48	99	mg/L	SW-846 6010B	P
Cadmium	0.500	0.490	99	mg/L	SW-846 6010B	P
Calcium	5.00	5.11	102	mg/L	SW-846 6010B	P
Chromium	0.500	0.500	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	101	mg/L	SW-846 6010B	P
Copper	0.500	0.500	100	mg/L	SW-846 6010B	P
Iron	5.00	4.91	98	mg/L	SW-846 6010B	P
Lead	0.500	0.500	100	mg/L	SW-846 6010B	P
Lithium	0.500	0.560	112	mg/L	SW-846 6010B	P
Magnesium	5.00	5.19	104	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	103	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.7	107	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	101	mg/L	SW-846 6010B	P
Silicon	5.00	5.21	104	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	21.9	109	mg/L	SW-846 6010B	P
Strontium	0.500	0.520	104	mg/L	SW-846 6010B	P
Thallium	0.500	0.490	98	mg/L	SW-846 6010B	P
Tin	0.500	0.510	102	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.490	99	mg/L	SW-846 6010B	P
Zinc	0.500	0.490	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	100	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-48-7 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 4

Date Analyzed: 11/17/08

Time: 2028

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Zinc	0.500	0.500	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 6010B	P
Aluminum	5.00	5.30	106	mg/L	SW-846 6010B	P
Antimony	0.500	0.510	102	mg/L	SW-846 6010B	P
Arsenic	0.500	0.520	103	mg/L	SW-846 6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	100	mg/L	SW-846 6010B	P
Boron	2.50	2.42	97	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	100	mg/L	SW-846 6010B	P
Calcium	5.00	5.26	105	mg/L	SW-846 6010B	P
Chromium	0.500	0.490	99	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	102	mg/L	SW-846 6010B	P
Copper	0.500	0.500	100	mg/L	SW-846 6010B	P
Iron	5.00	5.05	101	mg/L	SW-846 6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 6010B	P
Lithium	0.500	0.570	114	mg/L	SW-846 6010B	P
Magnesium	5.00	5.31	106	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	103	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	10.7	107	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	5.32	106	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	21.5	107	mg/L	SW-846 6010B	P
Strontium	0.500	0.520	104	mg/L	SW-846 6010B	P
Thallium	0.500	0.500	99	mg/L	SW-846 6010B	P
Tin	0.500	0.510	101	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	99	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-38-1 CPI/EXAXOL

Instrument ID: ICP6

ICAL ID: 6

Date Analyzed: 10/25/08

Time: 0841

INITIAL CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	10.0	9.93	99	mg/L	SW-846 1311/6010B	P
Antimony	1.00	1.02	102	mg/L	SW-846 1311/6010B	P
Arsenic	1.00	1.00	100	mg/L	SW-846 1311/6010B	P
Barium	1.00	1.04	104	mg/L	SW-846 1311/6010B	P
Beryllium	1.00	1.02	102	mg/L	SW-846 1311/6010B	P
Boron	5.00	5.36	107	mg/L	SW-846 1311/6010B	P
Cadmium	1.00	1.04	104	mg/L	SW-846 1311/6010B	P
Calcium	10.0	10.3	103	mg/L	SW-846 1311/6010B	P
Chromium	1.00	1.01	101	mg/L	SW-846 1311/6010B	P
Cobalt	1.00	1.01	101	mg/L	SW-846 1311/6010B	P
Copper	1.00	1.00	100	mg/L	SW-846 1311/6010B	P
Iron	10.0	10.4	104	mg/L	SW-846 1311/6010B	P
Lead	1.00	1.02	102	mg/L	SW-846 1311/6010B	P
Lithium	1.00	1.01	101	mg/L	SW-846 1311/6010B	P
Magnesium	10.0	10.5	105	mg/L	SW-846 1311/6010B	P
Manganese	1.00	1.00	100	mg/L	SW-846 1311/6010B	P
Molybdenum	1.00	1.02	102	mg/L	SW-846 1311/6010B	P
Nickel	1.00	1.02	102	mg/L	SW-846 1311/6010B	P
Potassium	10.0	10.0	100	mg/L	SW-846 1311/6010B	P
Selenium	1.00	1.05	105	mg/L	SW-846 1311/6010B	P
Silver	1.00	1.04	104	mg/L	SW-846 1311/6010B	P
Sodium	10.0	9.82	98	mg/L	SW-846 1311/6010B	P
Strontium	1.00	0.960	96	mg/L	SW-846 1311/6010B	P
Thallium	1.00	1.04	104	mg/L	SW-846 1311/6010B	P
Tin	1.00	1.07	107	mg/L	SW-846 1311/6010B	P
Titanium	1.00	1.00	100	mg/L	SW-846 1311/6010B	P
Vanadium	1.00	1.00	100	mg/L	SW-846 1311/6010B	P
Zinc	1.00	1.01	101	mg/L	SW-846 1311/6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
Calibration Source: 176-40-2 INORGANIC VENTURES
Instrument ID: ICP6
ICAL ID: 6
Date Analyzed: 10/25/08
Time: 0910

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	0.200	0.210	105	mg/L	SW-846 1311/6010B	P
Antimony	0.0600	0.0670	112	mg/L	SW-846 1311/6010B	P
Arsenic	0.0100	0.00730	73	mg/L	SW-846 1311/6010B	P
Barium	0.0100	0.0110	110	mg/L	SW-846 1311/6010B	P
Beryllium	0.00500	0.00540	108	mg/L	SW-846 1311/6010B	P
Boron	0.500	0.540	107	mg/L	SW-846 1311/6010B	P
Cadmium	0.00500	0.00560	112	mg/L	SW-846 1311/6010B	P
Calcium	0.100	0.210	207	mg/L	SW-846 1311/6010B	P
Chromium	0.0100	0.0100	103	mg/L	SW-846 1311/6010B	P
Cobalt	0.0100	0.0100	104	mg/L	SW-846 1311/6010B	P
Copper	0.0100	0.0130	129	mg/L	SW-846 1311/6010B	P
Iron	0.100	0.100	104	mg/L	SW-846 1311/6010B	P
Lead	0.0150	0.0120	82	mg/L	SW-846 1311/6010B	P
Lithium	0.0500	0.0490	98	mg/L	SW-846 1311/6010B	P
Magnesium	0.100	0.140	136	mg/L	SW-846 1311/6010B	P
Manganese	0.0150	0.0160	105	mg/L	SW-846 1311/6010B	P
Molybdenum	0.0500	0.0540	108	mg/L	SW-846 1311/6010B	P
Nickel	0.0400	0.0440	111	mg/L	SW-846 1311/6010B	P
Potassium	0.500	0.410	82	mg/L	SW-846 1311/6010B	P
Selenium	0.0400	0.0440	109	mg/L	SW-846 1311/6010B	P
Silver	0.0100	0.0110	108	mg/L	SW-846 1311/6010B	P
Sodium	1.00	0.790	79	mg/L	SW-846 1311/6010B	P
Strontium	0.0500	0.0500	100	mg/L	SW-846 1311/6010B	P
Thallium	0.0100	0.0140	145	mg/L	SW-846 1311/6010B	P
Tin	0.100	0.110	110	mg/L	SW-846 1311/6010B	P
Titanium	0.100	0.130	129	mg/L	SW-846 1311/6010B	P
Vanadium	0.0200	0.0210	105	mg/L	SW-846 1311/6010B	P
Zinc	0.0200	0.0270	133	mg/L	SW-846 1311/6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Calibration Source: 176-39-2 INORGANIC VENTURES
Instrument ID: ICP6 ICAL ID: 6
Date Analyzed: 10/25/08 Time: 1025

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	5.00	5.29	106	mg/L	SW-846 1311/6010B	P
Antimony	0.500	0.530	106	mg/L	SW-846 1311/6010B	P
Arsenic	0.500	0.540	108	mg/L	SW-846 1311/6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Beryllium	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Boron	2.50	2.57	103	mg/L	SW-846 1311/6010B	P
Cadmium	0.500	0.520	105	mg/L	SW-846 1311/6010B	P
Calcium	5.00	5.20	104	mg/L	SW-846 1311/6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Cobalt	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Iron	5.00	5.21	104	mg/L	SW-846 1311/6010B	P
Lead	0.500	0.520	105	mg/L	SW-846 1311/6010B	P
Lithium	0.500	0.380	76	mg/L	SW-846 1311/6010B	P
Magnesium	5.00	5.15	103	mg/L	SW-846 1311/6010B	P
Manganese	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Molybdenum	0.500	0.520	105	mg/L	SW-846 1311/6010B	P
Nickel	0.500	0.530	105	mg/L	SW-846 1311/6010B	P
Potassium	10.0	9.35	94	mg/L	SW-846 1311/6010B	P
Selenium	0.500	0.530	107	mg/L	SW-846 1311/6010B	P
Silicon	5.00	5.19	104	mg/L	SW-846 1311/6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Sodium	20.0	18.3	92	mg/L	SW-846 1311/6010B	P
Strontium	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Thallium	0.500	0.530	106	mg/L	SW-846 1311/6010B	P
Tin	0.500	0.530	106	mg/L	SW-846 1311/6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Vanadium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Zinc	0.500	0.510	103	mg/L	SW-846 1311/6010B	P
Zirconium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 6

Date Analyzed: 10/25/08

Time: 1208

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	5.00	5.19	104	mg/L	SW-846 1311/6010B	P
Antimony	0.500	0.520	105	mg/L	SW-846 1311/6010B	P
Arsenic	0.500	0.540	108	mg/L	SW-846 1311/6010B	P
Barium	0.500	0.510	103	mg/L	SW-846 1311/6010B	P
Beryllium	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Boron	2.50	2.56	102	mg/L	SW-846 1311/6010B	P
Cadmium	0.500	0.530	106	mg/L	SW-846 1311/6010B	P
Calcium	5.00	5.19	104	mg/L	SW-846 1311/6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Cobalt	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Copper	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Iron	5.00	5.21	104	mg/L	SW-846 1311/6010B	P
Lead	0.500	0.530	105	mg/L	SW-846 1311/6010B	P
Lithium	0.500	0.370	74	mg/L	SW-846 1311/6010B	P
Magnesium	5.00	5.18	104	mg/L	SW-846 1311/6010B	P
Manganese	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Molybdenum	0.500	0.530	105	mg/L	SW-846 1311/6010B	P
Nickel	0.500	0.520	105	mg/L	SW-846 1311/6010B	P
Potassium	10.0	9.31	93	mg/L	SW-846 1311/6010B	P
Selenium	0.500	0.540	109	mg/L	SW-846 1311/6010B	P
Silicon	5.00	5.22	104	mg/L	SW-846 1311/6010B	P
Silver	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Sodium	20.0	18.4	92	mg/L	SW-846 1311/6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 1311/6010B	P
Thallium	0.500	0.540	108	mg/L	SW-846 1311/6010B	P
Tin	0.500	0.530	107	mg/L	SW-846 1311/6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Vanadium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Zinc	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 6

Date Analyzed: 10/25/08

Time: 1322

CONTINUING CALIBRATION VERIFICATION

Analyte	True	Found	CAL %R	Units	Method	Type
Aluminum	5.00	4.84	97	mg/L	SW-846 1311/6010B	P
Antimony	0.500	0.510	103	mg/L	SW-846 1311/6010B	P
Arsenic	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Boron	2.50	2.51	100	mg/L	SW-846 1311/6010B	P
Cadmium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Calcium	5.00	4.73	95	mg/L	SW-846 1311/6010B	P
Chromium	0.500	0.490	99	mg/L	SW-846 1311/6010B	P
Cobalt	0.500	0.500	99	mg/L	SW-846 1311/6010B	P
Copper	0.500	0.520	103	mg/L	SW-846 1311/6010B	P
Iron	5.00	4.87	97	mg/L	SW-846 1311/6010B	P
Lead	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Lithium	0.500	0.320	64	mg/L	SW-846 1311/6010B	P
Magnesium	5.00	4.66	93	mg/L	SW-846 1311/6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Molybdenum	0.500	0.510	103	mg/L	SW-846 1311/6010B	P
Nickel	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Potassium	10.0	9.22	92	mg/L	SW-846 1311/6010B	P
Selenium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Silicon	5.00	4.95	99	mg/L	SW-846 1311/6010B	P
Silver	0.500	0.520	103	mg/L	SW-846 1311/6010B	P
Sodium	20.0	21.7	109	mg/L	SW-846 1311/6010B	P
Strontium	0.500	0.490	97	mg/L	SW-846 1311/6010B	P
Thallium	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Tin	0.500	0.520	103	mg/L	SW-846 1311/6010B	P
Titanium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Vanadium	0.500	0.510	103	mg/L	SW-846 1311/6010B	P
Zinc	0.500	0.500	100	mg/L	SW-846 1311/6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Calibration Source: 176-39-2 INORGANIC VENTURES Instrument ID: ICP6 ICAL ID: 6

Date Analyzed: 10/25/08 Time: 1515

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Copper	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Iron	5.00	4.82	96	mg/L	SW-846 1311/6010B	P
Lead	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Lithium	0.500	0.330	66	mg/L	SW-846 1311/6010B	P
Magnesium	5.00	4.55	91	mg/L	SW-846 1311/6010B	P
Manganese	0.500	0.490	99	mg/L	SW-846 1311/6010B	P
Molybdenum	0.500	0.530	105	mg/L	SW-846 1311/6010B	P
Nickel	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Potassium	10.0	9.24	92	mg/L	SW-846 1311/6010B	P
Selenium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Silicon	5.00	5.01	100	mg/L	SW-846 1311/6010B	P
Silver	0.500	0.520	103	mg/L	SW-846 1311/6010B	P
Sodium	20.0	24.2	121	mg/L	SW-846 1311/6010B	P
Strontium	0.500	0.490	97	mg/L	SW-846 1311/6010B	P
Thallium	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Tin	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Titanium	0.500	0.490	97	mg/L	SW-846 1311/6010B	P
Vanadium	0.500	0.510	102	mg/L	SW-846 1311/6010B	P
Zinc	0.500	0.520	103	mg/L	SW-846 1311/6010B	P
Zirconium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Aluminum	5.00	4.97	99	mg/L	SW-846 1311/6010B	P
Antimony	0.500	0.530	105	mg/L	SW-846 1311/6010B	P
Arsenic	0.500	0.520	104	mg/L	SW-846 1311/6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 1311/6010B	P
Beryllium	0.500	0.490	99	mg/L	SW-846 1311/6010B	P
Boron	2.50	2.46	99	mg/L	SW-846 1311/6010B	P
Cadmium	0.500	0.510	101	mg/L	SW-846 1311/6010B	P
Calcium	5.00	4.63	93	mg/L	SW-846 1311/6010B	P
Chromium	0.500	0.500	100	mg/L	SW-846 1311/6010B	P
Cobalt	0.500	0.500	100	mg/L	SW-846 1311/6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Calibration Source: 176-37-2 CPI

Instrument ID: FIMS1

ICAL ID: 5

Date Analyzed: 10/26/08

Time: 1836

INITIAL CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00502	100	mg/L	SW-846 1311/7470A	AV

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Calibration Source: 176-37-1 EXAXOL
Instrument ID: FIMS1 ICAL ID: 5
Date Analyzed: 10/26/08 Time: 1840

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00507	101	mg/L	SW-846 1311/7470A	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
Calibration Source: 176-37-1 EXAXOL
Instrument ID: FIMS1
ICAL ID: 5
Date Analyzed: 10/26/08
Time: 1859

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00499	100	mg/L	SW-846 1311/7470A	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Calibration Source: 176-37-1 EXAXOL Instrument ID: FIMS1 ICAL ID: 5

Date Analyzed: 10/26/08 Time: 1919

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00503	101	mg/L	SW-846 1311/7470A	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: ICB
ICAL ID: 1
Lab Sample DESC: ICB FOR HBN 399310 [ICP/5299]
Preparation Blank Matrix: (soil / water)
Instrument ID: ICP5
Date Analyzed: 10/22/08 Time: 0926

INITIAL CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/kg	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/kg	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/kg	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/kg	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/kg	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 1	
Lab Sample DESC: CCB FOR HBN 399310 [ICP/5299]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP5		Date Analyzed: 10/22/08	Time: 1024

CONTINUING CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Antimony	0.060	U	mg/kg	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/kg	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/kg	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/kg	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/kg	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: 658921		ICAL ID: 1	
Lab Sample DESC: MB658921		Preparation Blank Matrix: (soil / water) Soil	
Instrument ID: ICP5		Date Analyzed: 10/22/08	Time: 1041

PREPARATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Antimony	0.16	U	mg/kg	0.16	2.40	SW-846 6010B	P
Copper	0.071	U	mg/kg	0.071	0.40	SW-846 6010B	P
Lead	0.071	U	mg/kg	0.071	0.60	SW-846 6010B	P
Manganese	0.021	U	mg/kg	0.021	0.60	SW-846 6010B	P
Zinc	0.14	U	mg/kg	0.14	0.80	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 1

Lab Sample DESC: CCB FOR HBN 399310 [ICP/5299]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 10/22/08 Time: 1151

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Antimony	0.060	U	mg/kg	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/kg	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/kg	0.0027	0.015	SW-846 6010B	P
Manganese	0.0025	B	mg/kg	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/kg	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 1

Lab Sample DESC: CCB FOR HBN 399310 [ICP/5299]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 10/22/08 Time: 1306

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Antimony	0.060	U	mg/kg	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/kg	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/kg	0.0027	0.015	SW-846 6010B	P
Manganese	0.0027	B	mg/kg	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/kg	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: ICB		ICAL ID: 2	
Lab Sample DESC: ICB FOR HBN 399481 [ICP/5304]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/24/08	Time: 0959

INITIAL CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: CCB
ICAL ID: 2
Lab Sample DESC: CCB FOR HBN 399481 [ICP/5304]
Preparation Blank Matrix: (soil / water)
Instrument ID: ICP6
Date Analyzed: 10/24/08 Time: 1056

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 2	
Lab Sample DESC: CCB FOR HBN 399481 [ICP/5304]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/24/08	Time: 2329

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.0046	B	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.0047	B	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.022		mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: 660556
ICAL ID: 2
Lab Sample DESC: MB660556
Preparation Blank Matrix: (soil / water) Soil
Instrument ID: ICP6
Date Analyzed: 10/24/08 Time: 2335

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.16	U	mg/kg	0.16	2.40	SW-846 6010B	P
Copper	0.071	U	mg/kg	0.071	0.40	SW-846 6010B	P
Lead	0.071	U	mg/kg	0.071	0.60	SW-846 6010B	P
Manganese	0.073	B	mg/kg	0.021	0.60	SW-846 6010B	P
Zinc	0.14	U	mg/kg	0.14	0.80	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 2

Lab Sample DESC: CCB FOR HBN 399481 [ICP/5304]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP6

Date Analyzed: 10/25/08 Time: 0038

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.013		mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.0066	B	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.021		mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name:	GCAL	Contract:	
Lab Code:	LA024	Case No.:	
SAS No.:		SDG No.:	208102060
Lab Sample ID:	CCB	ICAL ID:	2
Lab Sample DESC:	CCB FOR HBN 399481 [ICP/5304]	Preparation Blank Matrix: (soil / water)	
Instrument ID:	ICP6	Date Analyzed:	10/25/08
		Time:	0151

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.0064	B	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.0048	B	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.018		mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: ICB		ICAL ID: 3	
Lab Sample DESC: ICB FOR HBN 399534 [ICP/5305]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/25/08	Time: 0903

INITIAL CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Antimony	0.0057	B	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.0015	B	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 3

Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP6

Date Analyzed: 10/25/08 Time: 1045

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.0032	B	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.00025	B	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.0049	B	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 3	
Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/25/08	Time: 1213

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.0026	B	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.0052	B	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 3	
Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/25/08	Time: 1343

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.0038	B	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.0045	B	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 3	
Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/25/08	Time: 1520

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 6010B	P
Copper	0.010	U	mg/L	0.0014	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P
Zinc	0.0085	B	mg/L	0.0042	0.020	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: ICB		ICAL ID: 6	
Lab Sample DESC: ICB FOR HBN 399534 [ICP/5305]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/25/08	Time: 0903

INITIAL CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Antimony	0.0057	B	mg/L	0.0043	0.060	SW-846 1311/6010B	P
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 1311/6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 1311/6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 1311/6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 1311/6010B	P
Copper	0.0015	B	mg/L	0.0014	0.010	SW-846 1311/6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 1311/6010B	P
Selenium	0.0047	B	mg/L	0.0045	0.040	SW-846 1311/6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 1311/6010B	P
Zinc	0.020	U	mg/L	0.0042	0.020	SW-846 1311/6010B	P

BLANKS

Lab Name:	GCAL	Contract:	
Lab Code:	LA024 Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID:	CCB	ICAL ID:	6
Lab Sample DESC:	CCB FOR HBN 399534 [ICP/5305]	Preparation Blank Matrix: (soil / water)	
Instrument ID:	ICP6	Date Analyzed:	10/25/08 Time: 1045

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 1311/6010B	P
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 1311/6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 1311/6010B	P
Cadmium	0.00029	B	mg/L	0.00017	0.0050	SW-846 1311/6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 1311/6010B	P
Copper	0.0032	B	mg/L	0.0014	0.010	SW-846 1311/6010B	P
Manganese	0.00025	B	mg/L	0.00021	0.015	SW-846 1311/6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 1311/6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 1311/6010B	P
Zinc	0.0049	B	mg/L	0.0042	0.020	SW-846 1311/6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.: .

SAS No.:

SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 6

Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP6

Date Analyzed: 10/25/08

Time: 1213

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 1311/6010B	P
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 1311/6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 1311/6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 1311/6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 1311/6010B	P
Copper	0.0026	B	mg/L	0.0014	0.010	SW-846 1311/6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 1311/6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 1311/6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 1311/6010B	P
Zinc	0.0052	B	mg/L	0.0042	0.020	SW-846 1311/6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: 659502

ICAL ID: 6

Lab Sample DESC: MB659502

Preparation Blank Matrix: (soil / water) Water

Instrument ID: ICP6

Date Analyzed: 10/25/08 Time: 1227

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Arsenic	0.0038	U	mg/L	0.0038	0.20	SW-846 1311/6010B	P
Barium	0.0010	B	mg/L	0.00052	1.00	SW-846 1311/6010B	P
Cadmium	0.00026	B	mg/L	0.00017	0.010	SW-846 1311/6010B	P
Chromium	0.00030	U	mg/L	0.00030	0.050	SW-846 1311/6010B	P
Lead	0.0027	U	mg/L	0.0027	0.10	SW-846 1311/6010B	P
Selenium	0.0071	B	mg/L	0.0045	0.10	SW-846 1311/6010B	P
Silver	0.00062	U	mg/L	0.00062	0.050	SW-846 1311/6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: CCB
ICAL ID: 6
Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]
Preparation Blank Matrix: (soil / water)
Instrument ID: ICP6
Date Analyzed: 10/25/08 Time: 1343

CONTINUING CALIBRATION BLANK

Analyte	**Conc.**	**C**	**Units**	**MDL**	**PQL**	**Method**	**Type**
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 1311/6010B	P
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 1311/6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 1311/6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 1311/6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 1311/6010B	P
Copper	0.0038	B	mg/L	0.0014	0.010	SW-846 1311/6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 1311/6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 1311/6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 1311/6010B	P
Zinc	0.0045	B	mg/L	0.0042	0.020	SW-846 1311/6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 6	
Lab Sample DESC: CCB FOR HBN 399534 [ICP/5305]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 10/25/08	Time: 1520

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Antimony	0.060	U	mg/L	0.0043	0.060	SW-846 1311/6010B	P
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 1311/6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 1311/6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 1311/6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 1311/6010B	P
Copper	0.010	U	mg/L	0.0014	0.010	SW-846 1311/6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 1311/6010B	P
Selenium	0.0049	B	mg/L	0.0045	0.040	SW-846 1311/6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 1311/6010B	P
Zinc	0.0085	B	mg/L	0.0042	0.020	SW-846 1311/6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: ICB
ICAL ID: 4
Lab Sample DESC: ICB FOR HBN 400975 [ICP/5344]
Preparation Blank Matrix: (soil / water)
Instrument ID: ICP6
Date Analyzed: 11/17/08 Time: 1033

INITIAL CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 4

Lab Sample DESC: CCB FOR HBN 400975 [ICP/5344]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP6

Date Analyzed: 11/17/08 Time: 1215

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name:	GCAL	Contract:	
Lab Code:	LA024	Case No.:	
SAS No.:		SDG No.:	208102060
Lab Sample ID:	CCB	ICAL ID:	4
Lab Sample DESC:	CCB FOR HBN 400975 [ICP/5344]	Preparation Blank Matrix: (soil / water)	
Instrument ID:	ICP6	Date Analyzed:	11/17/08
Time:	1921		

CONTINUING CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Manganese	0.00068	B	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: 668069
ICAL ID: 4
Lab Sample DESC: MB668069
Preparation Blank Matrix: (soil / water) Soil
Instrument ID: ICP6
Date Analyzed: 11/17/08 Time: 1928

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Manganese	0.021	U	mg/kg	0.021	0.60	SW-846 6010B	P

FORM III - IN

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 4

Lab Sample DESC: CCB FOR HBN 400975 [ICP/5344]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP6

Date Analyzed: 11/17/08 Time: 2034

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: ICB
ICAL ID: 5
Lab Sample DESC: ICB FOR HBN 399476 [HG/4057]
Preparation Blank Matrix: (soil / water)
Instrument ID: FIMS1
Date Analyzed: 10/26/08 Time: 1838

INITIAL CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00020	U	mg/L	0.00007	0.00020	SW-846 1311/7470A	AV

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 5	
Lab Sample DESC: CCB FOR HBN 399476 [HG/4057]		Preparation Blank Matrix: (soil / water)	
Instrument ID: FIMS1		Date Analyzed: 10/26/08	Time: 1841

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Mercury	0.00020	U	mg/L	0.00007	0.00020	SW-846 1311/7470A	AV

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 208102060
Lab Sample ID: 659506
ICAL ID: 5
Lab Sample DESC: MB659506
Preparation Blank Matrix: (soil / water) Water
Instrument ID: FIMS1
Date Analyzed: 10/26/08 Time: 1843

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00037	B	mg/L	0.00007	0.00200	SW-846 1311/7470A	AV

FORM III - IN

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Lab Sample ID: CCB

ICAL ID: 5

Lab Sample DESC: CCB FOR HBN 399476 [HG/4057]

Preparation Blank Matrix: (soil / water)

Instrument ID: FIMS1

Date Analyzed: 10/26/08 Time: 1901

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00020	U	mg/L	0.00007	0.00020	SW-846 1311/7470A	AV

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 5	
Lab Sample DESC: CCB FOR HBN 399476 [HG/4057]		Preparation Blank Matrix: (soil / water)	
Instrument ID: FIMS1		Date Analyzed: 10/26/08	Time: 1921

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00020	U	mg/L	0.00007	0.00020	SW-846 1311/7470A	AV

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 208102060
Lab Sample ID: CCB		ICAL ID: 5	
Lab Sample DESC: CCB FOR HBN 399476 [HG/4057]		Preparation Blank Matrix: (soil / water)	
Instrument ID: FIMS1		Date Analyzed: 10/26/08	Time: 1940

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Mercury	0.00020	U	mg/L	0.00007	0.00020	SW-846 1311/7470A	AV

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL   Contract:

Lab Code: LA024   Case No.:   SAS No.:   SDG No.: 208102060

ICP ID Number: ICP5   ICS Source: 176-34-1 SPEX~176-34-2 SPEX

Concentration Units: mg/L

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A	Sol. AB	%R	Sol. A	Sol. AB	%R
Aluminum	200	200	197	195	98			
Antimony	0	1.00		0.94	94			
Arsenic	0	1.00		0.95	95			
Barium	0	0.50		0.46	92			
Beryllium	0	0.50		0.48	96			
Boron	0	1.00		1.10	110			
Cadmium	0	1.00		0.90	90			
Calcium	200	200	186	180	90			
Chromium	0	0.50		0.47	94			
Cobalt	0	0.50		0.43	86			
Copper	0	0.50		0.49	98			
Iron	80.0	80.0	75.6	73.9	92			
Lead	0	1.00		0.92	92			
Magnesium	200	200	188	182	91			
Manganese	0	0.50		0.46	92			
Molybdenum	0	1.00		0.95	95			
Nickel	0	1.00		0.87	87			
Selenium	0	1.00		0.93	93			
Silver	0	1.00		1.03	103			
Thallium	0	1.00		0.95	95			
Vanadium	0	0.50		0.43	86			
Zinc	0	1.00		0.95	95			

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

ICP ID Number: ICP6 ICS Source: 176-34-1 SPEX~176-40-1 SPEX

Concentration Units: mg/L

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A	Sol. AB	%R	Sol. A	Sol. AB	%R
Aluminum	200	200	209	215	108			
Antimony	0	1.00		1.00	100			
Arsenic	0	1.00		0.97	97			
Barium	0	0.50		0.51	102			
Beryllium	0	0.50		0.53	106			
Boron	0	1.00		1.08	108			
Cadmium	0	1.00		1.01	101			
Calcium	200	200	203	202	101			
Chromium	0	0.50		0.51	102			
Cobalt	0	0.50		0.47	94			
Copper	0	0.50		0.52	104			
Iron	80.0	80.0	79.9	81.7	102			
Lead	0	1.00		0.99	99			
Magnesium	200	200	199	203	102			
Manganese	0	0.50		0.49	98			
Molybdenum	0	1.00		1.02	102			
Nickel	0	1.00		0.95	95			
Selenium	0	1.00		1.06	106			
Silver	0	1.00		1.08	108			
Thallium	0	1.00		1.06	106			
Vanadium	0	0.50		0.51	102			
Zinc	0	1.00		1.01	101			

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

ICP ID Number: ICP6

ICS Source: 176-34-1 SPEX~176-40-1 SPEX

Concentration Units: mg/L

Analyte	***True***		***Initial Found***			***Final Found***		
	Sol. A	***Sol. AB***	***Sol. A***	***Sol. AB***	***%R***	***Sol. A***	***Sol. AB***	***%R***
Aluminum	200	200	224	220	110			
Antimony	0	1.00		1.04	104			
Arsenic	0	1.00		1.03	103			
Barium	0	0.50		0.52	104			
Beryllium	0	0.50		0.54	108			
Boron	0	1.00		1.09	109			
Cadmium	0	1.00		1.08	108			
Calcium	200	200	220	213	106			
Chromium	0	0.50		0.53	106			
Cobalt	0	0.50		0.52	104			
Copper	0	0.50		0.52	104			
Iron	80.0	80.0	87.7	84.9	106			
Lead	0	1.00		1.04	104			
Magnesium	200	200	231	223	112			
Manganese	0	0.50		0.51	102			
Molybdenum	0	1.00		1.05	105			
Nickel	0	1.00		1.05	105			
Selenium	0	1.00		1.11	111			
Silver	0	1.00		1.07	107			
Thallium	0	1.00		1.06	106			
Vanadium	0	0.50		0.51	102			
Zinc	0	1.00		1.07	107			

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

ICP ID Number: ICP6

ICS Source: 176-47-6 SPEX~176-45-2 SPEX

Concentration Units: mg/L

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A	Sol. AB	%R	Sol. A	Sol. AB	%R
Aluminum	200	200	210	211	106			
Antimony	0	1.00		0.97	97			
Arsenic	0	1.00		1.03	103			
Barium	0	0.50		0.52	104			
Beryllium	0	0.50		0.53	106			
Boron	0	1.00		0.99	99			
Cadmium	0	1.00		1.01	101			
Calcium	200	200	205	204	102			
Chromium	0	0.50		0.50	100			
Cobalt	0	0.50		0.48	96			
Copper	0	0.50		0.52	104			
Iron	80.0	80.0	81.7	81.5	102			
Lead	0	1.00		1.02	102			
Magnesium	200	200	202	201	100			
Manganese	0	0.50		0.51	102			
Molybdenum	0	1.00		0.98	98			
Nickel	0	1.00		0.98	98			
Selenium	0	1.00		0.99	99			
Silver	0	1.00		1.08	108			
Thallium	0	1.00		1.03	103			
Vanadium	0	0.50		0.52	104			
Zinc	0	1.00		1.04	104			

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

ICP ID Number: ICP6 ICS Source: 176-34-1 SPEX~176-40-1 SPEX

Concentration Units: mg/L

Analyte	True		Initial Found			Final Found		
	Sol. A	**Sol. AB**	**Sol. A**	**Sol. AB**	**%R**	**Sol. A**	**Sol. AB**	**%R**
Aluminum	200	200	224	220	110			
Antimony	0	1.00		1.04	104			
Arsenic	0	1.00		1.03	103			
Barium	0	0.50		0.52	104			
Beryllium	0	0.50		0.54	108			
Boron	0	1.00		1.09	109			
Cadmium	0	1.00		1.08	108			
Calcium	200	200	220	213	106			
Chromium	0	0.50		0.53	106			
Cobalt	0	0.50		0.52	104			
Copper	0	0.50		0.52	104			
Iron	80.0	80.0	87.7	84.9	106			
Lead	0	1.00		1.04	104			
Magnesium	200	200	231	223	112			
Manganese	0	0.50		0.51	102			
Molybdenum	0	1.00		1.05	105			
Nickel	0	1.00		1.05	105			
Selenium	0	1.00		1.11	111			
Silver	0	1.00		1.07	107			
Thallium	0	1.00		1.06	106			
Vanadium	0	0.50		0.51	102			
Zinc	0	1.00		1.07	107			

MS/MSD RECOVERY

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Matrix Spike - EPA Sample No: EXB-N Method SW-846 6010B

SAMPLE NO. : 658924

COMPOUND	***UNITS***	***SPIKE ADDED***	***SAMPLE CONCENTRATION***	***MS CONCENTRATION***	***MS % REC***	***#***	***QC. LIMITS***
Antimony	mg/kg	22.2	0	9.29	42	N	75 - 125
Copper	mg/kg	22.2	6.33	27	93		75 - 125
Lead	mg/kg	22.2	8.16	28	89		75 - 125
Manganese	mg/kg	22.2	162	194	144	N	75 - 125
Zinc	mg/kg	22.2	9.34	32.1	103		75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 2 out of 5 outside limits

MS/MSD RECOVERY

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Matrix Spike - EPA Sample No: EXC-S Method SW-846 6010B

SAMPLE NO. : 660559

COMPOUND	**UNITS**	**SPIKE ADDED**	**SAMPLE CONCENTRATION**	**MS CONCENTRATION**	**MS % REC**	**#**	**QC. LIMITS**
Antimony	mg/kg	23	45.2	23.5	-100	N	75 - 125
Copper	mg/kg	23	173	182	39	N	75 - 125
Lead	mg/kg	23	7040	2570	-2000	N	75 - 125
Manganese	mg/kg	23	310	335	111		75 - 125
Zinc	mg/kg	23	61.2	85.1	104		75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 3 out of 5 outside limits

MS/MSD RECOVERY

Lab Name: GCAL
Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Matrix Spike - EPA Sample No: VDR25003 Method SW-846 6010B

SAMPLE NO. : 668213

COMPOUND	***UNITS***	***SPIKE ADDED***	***SAMPLE CONCENTRATION***	***MS CONCENTRATION***	***MS % REC***	***#***	***QC. LIMITS***
Manganese	mg/kg	20	55.8	152	481	N	75 - 125

\# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 1 out of 1 outside limits

MS/MSD RECOVERY

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
Matrix Spike - EPA Sample No: SP-A2
Method SW-846 1311/6010B

SAMPLE NO. : 659505

COMPOUND	***UNITS***	***SPIKE ADDED***	***SAMPLE CONCENTRATION***	***MS CONCENTRATION***	***MS % REC***	***#***	***QC. LIMITS***
Arsenic	mg/L	.5	0	.42	85		75 - 125
Barium	mg/L	.5	.78	1.31	107		75 - 125
Cadmium	mg/L	.5	0	.54	107		75 - 125
Chromium	mg/L	.5	.00032	.53	105		75 - 125
Lead	mg/L	.5	.026	.54	104		75 - 125
Selenium	mg/L	.5	0	.6	120		75 - 125
Silver	mg/L	.5	0	.53	105		75 - 125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery: 0 out of 7 outside limits

FORM V (PART 1) - IN

MS/MSD RECOVERY

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060

Matrix Spike - EPA Sample No: SP-A2 Method SW-846 1311/7470A

SAMPLE NO. : 659509

COMPOUND	***UNITS***	***SPIKE ADDED***	***SAMPLE CONCENTRATION***	***MS CONCENTRATION***	***MS % REC***	***#***	***QC. LIMITS***
Mercury	mg/L	.005	0	.00528	106		75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 0 out of 1 outside limits

FORM V (PART 1) - IN

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name:	GCAL	Sample ID:	EXB-NPDS
Lab Code:	LA024 Case No.:	Contract:	
Matrix: (soil / water)	Soil	SAS No.:	SDG No.: 208102060
Level: (low / med)		Lab Sample ID:	659401
Orig Lab Sample ID:	20810206001		

Analyte	LL	UL	Spiked Sample Result	C	Sample Result	C	Spike Added	% R	Q	Units	Method	Type
Antimony	75	125	21.6		0	U	22.2	97		mg/kg	SW-846 6010B	P
Copper	75	125	28.5		6.33		22.2	100		mg/kg	SW-846 6010B	P
Lead	75	125	30.2		8.16		22.2	100		mg/kg	SW-846 6010B	P
Manganese	75	125	181		162		22.2	88		mg/kg	SW-846 6010B	P
Zinc	75	125	30.9		9.34		22.2	97		mg/kg	SW-846 6010B	P

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name: GCAL

Sample ID: EXC-SPDS

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

Lab Sample ID: 660708

Orig Lab Sample ID: 20810206014

Analyte	**LL**	**UL**	**Spiked Sample Result**	**C**	**Sample Result**	**C**	**Spike Added**	**% R**	**Q**	**Units**	**Method**	**Type**
Antimony	75	125	68.4		45.2		23	101		mg/kg	SW-846 6010B	P
Copper	75	125	194		173		23	92		mg/kg	SW-846 6010B	P
Lead	75	125	7020		7040		23	-60	N	mg/kg	SW-846 6010B	P
Manganese	75	125	329		310		23	85		mg/kg	SW-846 6010B	P
Zinc	75	125	83		61.2		23	95		mg/kg	SW-846 6010B	P

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name: GCAL

Sample ID: VDR25003PDS

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

Lab Sample ID: 668478

Orig Lab Sample ID: 20811143503

Analyte	LL	UL	Spiked Sample Result	C	Sample Result	C	Spike Added	% R	Q	Units	Method	Type
Manganese	75	125	74.7		55.8		20	94		mg/kg	SW-846 6010B	P

FORM V (PART 2) - IN

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name: GCAL
Sample ID: SP-A2PDS
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
Lab Sample ID: 660215
Orig Lab Sample ID: 20810206027

Analyte	LL	UL	Spiked Sample Result	C	Sample Result	C	Spike Added	% R	Q	Units	Method	Type
Arsenic	75	125	.45		0	U	.5	89		mg/L	SW-846 1311/6010	P
Barium	75	125	1.32		.78	B	.5	109		mg/L	SW-846 1311/6010	P
Cadmium	75	125	.55		0	U	.5	110		mg/L	SW-846 1311/6010	P
Chromium	75	125	.54		.00032	B	.5	108		mg/L	SW-846 1311/6010	P
Lead	75	125	.56		.026	B	.5	108		mg/L	SW-846 1311/6010	P
Selenium	75	125	.61		0	U	.5	123		mg/L	SW-846 1311/6010	P
Silver	75	125	.54		0	U	.5	109		mg/L	SW-846 1311/6010	P

DUPLICATES

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: (soil / water) Soil

% Solids for Sample:

% Solids for Duplicate:

Sample ID: EXB-NDUP

Contract:

SAS No.: SDG No.: 208102060

Level: (low / med)

Lab Sample ID: 658923

Analyte	***LL***	***UL***	***Sample***	***C***	***Duplicate***	***C***	***RPD***	***Q***	***Units***	***Method***	***Type***
Antimony	0	20	0	U	0	U	0		mg/kg	SW-846 6010B	P
Copper	0	20	6.33		6.09		4		mg/kg	SW-846 6010B	P
Lead	0	20	8.16		7.51		8		mg/kg	SW-846 6010B	P
Manganese	0	20	162		158		2		mg/kg	SW-846 6010B	P
Zinc	0	20	9.34		9.03		3		mg/kg	SW-846 6010B	P

DUPLICATES

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: (soil / water) Soil

% Solids for Sample:

% Solids for Duplicate:

Sample ID: EXC-SDUP

Contract:

SAS No.: SDG No.: 208102060

Level: (low / med)

Lab Sample ID: 660558

Analyte	***LL***	***UL***	***Sample***	***C***	***Duplicate***	***C***	***RPD***	***Q***	***Units***	***Method***	***Type***
Antimony	0	20	45.2		17.6		88	*	mg/kg	SW-846 6010B	P
Copper	0	20	173		131		27	*	mg/kg	SW-846 6010B	P
Lead	0	20	7040		4530		43	*	mg/kg	SW-846 6010B	P
Manganese	0	20	310		504		48	*	mg/kg	SW-846 6010B	P
Zinc	0	20	61.2		54.4		12		mg/kg	SW-846 6010B	P

DUPLICATES

Lab Name: GCAL

Sample ID: VDR25003DUP

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

% Solids for Sample:

Level: (low / med)

% Solids for Duplicate:

Lab Sample ID: 668212

Analyte	***LL***	***UL***	***Sample***	***C***	***Duplicate***	***C***	***RPD***	***Q***	***Units***	***Method***	***Type***
Manganese	0	20	55.8		55.9		.2		mg/kg	SW-846 6010B	P

DUPLICATES

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: (soil / water) Soil

% Solids for Sample:

% Solids for Duplicate:

Sample ID: SP-A2DUP

Contract:

SAS No.: SDG No.: 208102060

Level: (low / med)

Lab Sample ID: 659504

Analyte	**LL**	**UL**	**Sample**	**C**	**Duplicate**	**C**	**RPD**	**Q**	**Units**	**Method**	**Type**
Arsenic	0	20	0	U	0	U	0		mg/L	SW-846 1311/6010B	P
Barium	0	20	.78	B	.79	B	1		mg/L	SW-846 1311/6010B	P
Cadmium	0	20	0	U	0	U	0		mg/L	SW-846 1311/6010B	P
Chromium	0	20	.00032	B	0	U	200	*	mg/L	SW-846 1311/6010B	P
Lead	0	20	.026	B	.025	B	4		mg/L	SW-846 1311/6010B	P
Selenium	0	20	0	U	0	U	0		mg/L	SW-846 1311/6010B	P
Silver	0	20	0	U	0	U	0		mg/L	SW-846 1311/6010B	P

DUPLICATES

Lab Name: GCAL

Sample ID: SP-A2DUP

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

% Solids for Sample:

Level: (low / med)

% Solids for Duplicate:

Lab Sample ID: 659508

Analyte	LL	UL	Sample	C	Duplicate	C	RPD	Q	Units	Method	Type
Mercury	0	20	0	U	0	U	0		mg/L	SW-846 1311/7470A	AV

FORM VI - IN

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS658922

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Lab Sample ID: 658922

LCS Source: 334-92-10 INORGANIC VENTURES

Analyte	***True***	***Found***	***% R***	***LL***	***UL***	***Units***	***Method***	***Type***
Antimony	20.0	18.8	94	80	120	mg/kg	SW-846 6010B	P
Copper	20.0	18.7	94	80	120	mg/kg	SW-846 6010B	P
Lead	20.0	19.3	96	80	120	mg/kg	SW-846 6010B	P
Manganese	20.0	18.5	92	80	120	mg/kg	SW-846 6010B	P
Zinc	20.0	18.1	91	80	120	mg/kg	SW-846 6010B	P

FORM VII - IN

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS660557

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Lab Sample ID: 660557

LCS Source: 334-92-10 INORGANIC VENTURES

Analyte	***True***	***Found***	***% R***	***LL***	***UL***	***Units***	***Method***	***Type***
Antimony	20.0	18.9	94	80	120	mg/kg	SW-846 6010B	P
Copper	20.0	19.4	97	80	120	mg/kg	SW-846 6010B	P
Lead	20.0	19.1	95	80	120	mg/kg	SW-846 6010B	P
Manganese	20.0	19.3	97	80	120	mg/kg	SW-846 6010B	P
Zinc	20.0	18.8	94	80	120	mg/kg	SW-846 6010B	P

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS668070

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 208102060

Lab Sample ID: 668070

LCS Source: 334-92-10 INORGANIC VENTURES

Analyte	*True*	*Found*	*% R*	*LL*	*UL*	*Units*	*Method*	*Type*
Manganese	20.0	19.7	99	80	120	mg/kg	SW-846 6010B	P

FORM VII - IN

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS659503

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.:

SDG No.: 208102060

Lab Sample ID: 659503

LCS Source: 334-92-10 INORGANIC VENTURES

Analyte	True	Found	% R	LL	UL	Units	Method	Type
Arsenic	0.50	0.43	87	80	120	mg/L	SW-846 1311/6010B	P
Barium	0.50	0.53	105	80	120	mg/L	SW-846 1311/6010B	P
Cadmium	0.50	0.55	110	80	120	mg/L	SW-846 1311/6010B	P
Chromium	0.50	0.53	106	80	120	mg/L	SW-846 1311/6010B	P
Lead	0.50	0.53	105	80	120	mg/L	SW-846 1311/6010B	P
Selenium	0.50	0.62	123	80	120	mg/L	SW-846 1311/6010B	P
Silver	0.50	0.53	107	80	120	mg/L	SW-846 1311/6010B	P

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS659507

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Water

SAS No.:

SDG No.: 208102060

Lab Sample ID: 659507

LCS Source: 176-37-1 EXAXOL

Analyte	***True***	***Found***	***% R***	***LL***	***UL***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00534	107	80	120	mg/L	SW-846 1311/7470A	AV

FORM VII - IN

SERIAL DILUTIONS

Lab Name: GCAL

Lab Code: LA024 Case No.

Matrix: (soil / water) Soil

Level: (low / med)

Lab Sample ID: 659402

Sample ID: EXB-NSD

Contract:

SAS No.: SDG No.: 208102060

Org Lab Sample ID: 20810206001

Analyte	LL	UL	Initial Sample Result	C	Serial Dilution Result	C	% Diff.	Q	Units	Method	Type
Antimony			0	U	0	U			mg/kg	SW-846 6010B	P
Copper	0	10	6.33		8.12		28.3	E	mg/kg	SW-846 6010B	P
Lead	0	10	8.16		8.53		4.5		mg/kg	SW-846 6010B	P
Manganese	0	10	162		172		6.2		mg/kg	SW-846 6010B	P
Zinc	0	10	9.34		9.42		.9		mg/kg	SW-846 6010B	P

FORM IX - IN

SERIAL DILUTIONS

Lab Name: GCAL

Lab Code: LA024

Case No.

Matrix: (soil / water) Soil

Level: (low / med)

Lab Sample ID: 660709

Sample ID: EXC-SSD

Contract:

SAS No.:

SDG No.: 208102060

Org Lab Sample ID: 20810206014

Analyte	LL	UL	Initial Sample Result	C	Serial Dilution Result	C	% Diff.	Q	Units	Method	Type
Antimony	0	10	45.2		60.6		34.1	E	mg/kg	SW-846 6010B	P
Copper	0	10	173		224		29.5	E	mg/kg	SW-846 6010B	P
Lead	0	10	7040		9360		33	E	mg/kg	SW-846 6010B	P
Manganese	0	10	310		406		31	E	mg/kg	SW-846 6010B	P
Zinc	0	10	61.2		75.7		23.7	E	mg/kg	SW-846 6010B	P

SERIAL DILUTIONS

Lab Name: GCAL

Sample ID: VDR25003SD

Lab Code: LA024

Case No.

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

Org Lab Sample ID: 20811143503

Lab Sample ID: 668479

Analyte	**LL**	**UL**	**Initial Sample Result**	**C**	**Serial Dilution Result**	**C**	**% Diff.**	**Q**	**Units**	**Method**	**Type**
Manganese	0	10	55.8		57.0		2.2		mg/kg	SW-846 6010B	P

SERIAL DILUTIONS

Lab Name: GCAL

Sample ID: SP-A2SD

Lab Code: LA024

Case No.

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 208102060

Level: (low / med)

Org Lab Sample ID: 20810206027

Lab Sample ID: 660216

Analyte	LL	UL	Initial Sample Result	C	Serial Dilution Result	C	% Diff.	Q	Units	Method	Type
Arsenic			0	U	0	U			mg/L	SW-846 1311/6010B	P
Barium	0	10	0.78	B	0.79	B	1.3		mg/L	SW-846 1311/6010B	P
Cadmium			0	U	0	U			mg/L	SW-846 1311/6010B	P
Chromium			0.00032	B	0	U	100		mg/L	SW-846 1311/6010B	P
Lead			0.026	B	0	U	100		mg/L	SW-846 1311/6010B	P
Selenium			0	U	0	U			mg/L	SW-846 1311/6010B	P
Silver			0	U	0	U			mg/L	SW-846 1311/6010B	P

SERIAL DILUTIONS

Lab Name: GCAL
Sample ID: SP-A2SD
Lab Code: LA024
Case No.
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 208102060
Level: (low / med)
Org Lab Sample ID: 20810206027
Lab Sample ID: 660540

Analyte	**LL**	**UL**	**Initial Sample Result**	**C**	**Serial Dilution Result**	**C**	**% Diff.**	**Q**	**Units**	**Method**	**Type**
Mercury			0	U	0	U			mg/L	W-846 1311/7470A	AV

FORM IX - IN

METHOD DETECTION LIMITS

Lab Name: GCAL
Sample ID:

Lab Code: LA024
SDG No.: 208102060

Study Date: (P) 10/18/08 (AV)10/01/08
Instrument ID: (P) ICP5;ICP6 (AV) FIMS1

Analyte	*MDL*	*Units*	*Type*
Aluminium	0.019	mg/L	P
Antimony	0.0043	mg/L	P
Arsenic	0.0038	mg/L	P
Barium	0.00052	mg/L	P
Beryllium	0.00066	mg/L	P
Boron	0.011	mg/L	P
Cadmium	0.00017	mg/L	P
Calcium	0.051	mg/L	P
Chromium	0.00030	mg/L	P
Cobalt	0.00045	mg/L	P
Copper	0.0014	mg/L	P
Iron	0.022	mg/L	P
Lead	0.0027	mg/L	P
Lithium	0.0026	mg/L	P
Magnesium	0.010	mg/L	P
Manganese	0.00021	mg/L	P
Mercury	0.00007	mg/L	AV
Molybdenum	0.0038	mg/L	P
Nickel	0.0013	mg/L	P
Potassium	0.048	mg/L	P
Selenium	0.0045	mg/L	P
Silicon	0.0046	mg/L	P
Silver	0.00062	mg/L	P
Sodium	0.13	mg/L	P
Strontium	0.00056	mg/L	P
Thallium	0.0018	mg/L	P
Tin	0.0056	mg/L	P
Titanium	0.0012	mg/L	P
Vanadium	0.0012	mg/L	P
Zinc	0.0042	mg/L	P
Zirconium	0.00085	mg/L	P

FORM X - IN

METHOD DETECTION LIMITS

Lab Name: GCAL

Sample ID:

Lab Code: LA024

SDG No.: 208102060

Study Date: (P)10/17/08 (AV)10/01/08

Instrument ID: (P) ICP5 / ICP6 (AV) FIMS1

Analyte	***MDL***	***Units***	***Type***
Aluminium	0.8050	mg/kg	P
Antimony	0.16	mg/kg	P
Arsenic	0.25	mg/kg	P
Barium	0.022	mg/kg	P
Beryllium	0.0070	mg/kg	P
Boron	0.696	mg/kg	P
Cadmium	0.011	mg/kg	P
Calcium	2.18	mg/kg	P
Chromium	0.028	mg/kg	P
Cobalt	0.014	mg/kg	P
Copper	0.071	mg/kg	P
Iron	0.722	mg/kg	P
Lead	0.071	mg/kg	P
Lithium	0.13	mg/kg	P
Magnesium	0.422	mg/kg	P
Manganese	0.021	mg/kg	P
Mercury	0.0036	mg/kg	AV
Molybdenum	0.126	mg/kg	P
Nickel	0.073	mg/kg	P
Potassium	2.05	mg/kg	P
Selenium	0.39	mg/kg	P
Silicon	0.682	mg/kg	P
Silver	0.014	mg/kg	P
Sodium	2.23	mg/kg	P
Strontium	0.033	mg/kg	P
Thallium	0.135	mg/kg	P
Titanium	0.011	mg/kg	P
Tin	0.313	mg/kg	P
Vanadium	0.023	mg/kg	P
Zinc	0.14	mg/kg	P
Zirconium	0.083	mg/kg	P

IEC File Name: 2081024iec

IEC File Last Saved: 10/24/2008 5:32:05 PM
Printed On: 10/24/2008 5:34:06 PM

Results Data Set Name: 2081024 IE
Method Name: ICP5Combine
Results Library: C:\pe\met\Results\Results.md

Interfering Analytes

	Analytes	Aluminum,7429-90-5	Calcium,7440-70-2	Chromium,7440-47-3	Copper,7440-50-8
1	**Aluminum,7429-90-5**	n/a	0	0.0276013	0.0412069
2	**Antimony,7440-36-0**	0.0752567	0.00189051	30.2406	0.0974643
5	**Arsenic,7440-38-2**	0.144967	0.0373534	2.60429	0.0764105
6	**Barium,7440-39-3**	0.00113038	0.0153006	0.0861218	0.0394679
7	**Beryllium,7440-41-7**	0	0	0.48717	0.0258448
8	**Boron,7440-42-8**	0.00638303	0.00388911	0.115159	-0.15447
9	**Cadmium,7440-43-9**	-0.0101634	0	0.537379	0.0422464
10	**Calcium,7440-70-2**	0.0599564	n/a	-0.514761	1.04097
11	**Chromium,7440-47-3**	0.0518832	-0.00210435	n/a	0.14524
12	**Cobalt,7440-48-4**	0	0	-0.198416	0.529216
13	**Copper,7440-50-8**	0.00276803	0.0022606	-0.121382	n/a
14	**Iron,7439-89-6**	0.045237	-0.0245139	0.186692	0.183807
15	**Lead,7439-92-1**	-0.0258031	-0.00504517	0.0130188	0.244142
16	**Lithium,7439-93-2**	0.00113215	0	0.0212986	0.00808306
17	**Magnesium,7439-95-4**	0.00682604	-0.0346533	0	-0.0716939
18	**Manganese,7439-96-5**	0.00233564	-0.00163548	0.00744747	0
19	**Molybdenum,7439-98-7**	0	-0.00109637	0.0454701	0.0708583
20	**Nickel,7440-02-0**	-0.00437058	0.00277705	0.0422631	0.0170376
21	**Potassium,7440-09-7**	0.0220094	0.00514406	0.253922	0.43662
23	**Selenium,7782-49-2**	0.0189841	-0.0176209	-0.15423	-0.0367597
24	**Silicon,7440-21-3**	-0.00408055	0.00565221	-0.144444	-0.0658506
25	**Silver,7440-22-4**	0.0020883	0	0.0392065	0.0792295
26	**Sodium,7440-23-5**	0.0862448	0.0719551	0.80737	1.18925
27	**Strontium,7440-24-6**	0	0.0290527	0.00613612	0.00462984
28	**Thallium,7440-28-0**	-0.0336437	-0.00870466	0.302518	-0.00310952
29	**Tin,7440-31-5**	0	-0.0251982	-0.101842	-0.106979
30	**Titanium,7440-32-6**	-0.00106621	0	0.0235478	0.0080004
31	**Vanadium,7440-62-2**	0.00204875	0.00164418	-5.31569	-0.00031494
34	**Zinc,7440-66-6**	0.0111849	0	0.597086	2.02739
35	**Zirconium,7440-67-7**	0	0.00125812	0.133691	0.0453183

IEC File Last Saved: 10/24/2008 5:32:05 PM
Printed On: 10/24/2008 5:34:06 PM

Results Data Set Name: 2081024 IE
Method Name: ICP5Combine
Results Library: C:\pe\met\Results\Results.md

		Interfering Analytes			
	Analytes	Iron,7439-89-6	Magnesium,7439-95-4	Manganese,7439-96-5	Nickel,7440-02-0
1	**Aluminum,7429-90-5**	0.700753	0.0606518	2.57773	0.428728
2	**Antimony,7440-36-0**	-0.0245813	0.0155324	0.201378	0.297169
5	**Arsenic,7440-38-2**	-0.0580002	0.0134828	0.0893487	-0.296979
6	**Barium,7440-39-3**	0.0242328	0.00217317	0.0656205	0.129723
7	**Beryllium,7440-41-7**	0	0	0.049089	0.0487819
8	**Boron,7440-42-8**	7.37153	0.00590434	-0.258818	0.236192
9	**Cadmium,7440-43-9**	0.0518063	-0.00027413	0.0350732	0.178463
10	**Calcium,7440-70-2**	0.1021	0.193248	6.61955	3.12863
11	**Chromium,7440-47-3**	0.641547	0.0795462	1.7559	0.749608
12	**Cobalt,7440-48-4**	0.00478214	0.0048051	0.198184	0.463135
13	**Copper,7440-50-8**	0.158982	0.0322081	0.907334	0.79565
14	**Iron,7439-89-6**	**n/a**	0.33728	4.30359	2.06835
15	**Lead,7439-92-1**	0.0236538	0.0287418	0.662718	0.965749
16	**Lithium,7439-93-2**	-0.00269394	0.00164239	0.0621748	0.129981
17	**Magnesium,7439-95-4**	0.383633	**n/a**	0.898148	0.317089
18	**Manganese,7439-96-5**	-0.0184455	0.374413	**n/a**	4.57223
19	**Molybdenum,7439-98-7**	-0.0801776	0	-0.0026677	0.0619645
20	**Nickel,7440-02-0**	0.00494891	0.109625	1.46169	**n/a**
21	**Potassium,7440-09-7**	-0.378144	0.61255	15.9835	7.82039
23	**Selenium,7782-49-2**	-0.451544	-0.00534538	0.862126	0.0113687
24	**Silicon,7440-21-3**	-0.0936873	0.107027	0.036163	-0.0597759
25	**Silver,7440-22-4**	0	0.00256671	0.18967	0.103193
26	**Sodium,7440-23-5**	0.0291977	0.794425	17.6681	8.9585
27	**Strontium,7440-24-6**	0.00149112	0	0.020076	0.0128888
28	**Thallium,7440-28-0**	0.0433966	-0.0138485	-0.121115	-0.288266
29	**Tin,7440-31-5**	-0.0218287	-0.0078264	-0.350682	-0.119162
30	**Titanium,7440-32-6**	0	-0.00111084	-0.00697305	0.0719473
31	**Vanadium,7440-62-2**	0.0529303	0.0362469	0.0817756	0.00358273
34	**Zinc,7440-66-6**	0.109103	0.037255	0.923249	7.51165
35	**Zirconium,7440-67-7**	0.0375687	0	0.065811	0.0972035

Interfering Analytes

	Analytes	Titanium,7440-32-6	Vanadium,7440-62-2
1	**Aluminum,7429-90-5**	3.29871	11.4991
2	**Antimony,7440-36-0**	1.80616	0.180861
5	**Arsenic,7440-38-2**	0.259843	-8.80392
6	**Barium,7440-39-3**	0.0425085	-4.05172
7	**Beryllium,7440-41-7**	0.461648	0.0927111
8	**Boron,7440-42-8**	-0.435327	-0.239727
9	**Cadmium,7440-43-9**	0.00490613	0.00284168
10	**Calcium,7440-70-2**	4.41169	1.75016
11	**Chromium,7440-47-3**	0.91311	-0.435001
12	**Cobalt,7440-48-4**	2.12632	0.0533052
13	**Copper,7440-50-8**	0.370513	0.133395
14	**Iron,7439-89-6**	3.28252	1.23691
15	**Lead,7439-92-1**	-0.0857603	0.198242
16	**Lithium,7439-93-2**	0.0399869	0.0199808
17	**Magnesium,7439-95-4**	-4.62771	0.208439
18	**Manganese,7439-96-5**	6.85447	2.09282
19	**Molybdenum,7439-98-7**	0.0151556	-0.333549
20	**Nickel,7440-02-0**	1.05657	0.435798
21	**Potassium,7440-09-7**	12.7429	4.78866
23	**Selenium,7782-49-2**	-0.0466935	-0.220775
24	**Silicon,7440-21-3**	67.2512	0.333741
25	**Silver,7440-22-4**	0.0887252	0.0950309
26	**Sodium,7440-23-5**	13.1006	5.59443
27	**Strontium,7440-24-6**	0.0639375	0.0417066
28	**Thallium,7440-28-0**	-25.2831	-35.6079
29	**Tin,7440-31-5**	1.9415	0.0157335
30	**Titanium,7440-32-6**	**n/a**	0.356233
31	**Vanadium,7440-62-2**	0.0506665	**n/a**
34	**Zinc,7440-66-6**	0.614973	0.638257
35	**Zirconium,7440-67-7**	0.289147	0.0178127

IEC File Last Saved: 9/17/2008 8:47:34 AM
Printed On: 9/17/2008 8:47:34 AM

Results Data Set Name: 2080916 IE
Method Name: ICP
Results Library: C:\pe\met\results2\Results\Results.md

Interfering Analytes

	Analytes	Aluminum,7429-90-5	Calcium,7440-70-2	Chromium,7440-47-3	Copper,7440-50-8
1	**Aluminum,7429-90-5**	n/a	-0.0473819	-0.202433	-0.423235
2	**Antimony,7440-36-0**	-0.0274808	-0.00444876	13.3507	-0.0139269
5	**Arsenic,7440-38-2**	-0.158375	-0.000855318	-0.539051	-0.0666686
6	**Barium,7440-39-3**	0.00129797	0.012049	0.0495813	0.00717961
7	**Beryllium,7440-41-7**	0.000127851	-0.000319846	0.304207	0.0151036
8	**Boron,7440-42-8**	-0.00567748	-0.010941	0.134609	-0.26411
9	**Cadmium,7440-43-9**	-0.00163812	-0.000250789	0.816202	0.023818
10	**Calcium,7440-70-2**	-0.0124739	n/a	-1.80057	-0.244856
11	**Chromium,7440-47-3**	0.0514859	0.000209011	n/a	0.0729587
12	**Cobalt,7440-48-4**	-0.000912705	0.000337633	-0.0428989	0.225287
13	**Copper,7440-50-8**	0.00228431	0.00495306	-0.0700041	n/a
14	**Iron,7439-89-6**	0.0521677	0.000996066	0.334073	0.0460384
15	**Lead,7439-92-1**	-0.133836	-0.0027067	-1.20109	9.17588
16	**Lithium,7439-93-2**	-0.000556608	-0.000344824	0.0117429	-0.00241179
17	**Magnesium,7439-95-4**	-0.00422165	0.0326703	-0.127679	0.0205253
18	**Manganese, 7439-96-5**	0.00168203	0.00130197	0.027952	0.0137019
19	**Molybdenum,7439-98-7**	-0.0407321	-0.0268517	-0.153313	0.0105694
20	**Nickel,7440-02-0**	-0.00297094	0.00299717	0.0421409	-0.00700485
21	**Potassium,7440-09-7**	0.00480324	-0.0262045	0.0251026	0.00177437
22	**Scandium-IS**	63.6094	43.0788	878.623	1023.87
23	**Selenium,7782-49-2**	-0.0295112	-0.017275	-0.121737	-0.0587096
24	**Silicon,7440-21-3**	-0.00102788	0.00575731	-0.0501717	0.0627384
25	**Silver,7440-22-4**	0.000842093	-0.00145342	0.0414334	0.0958589
26	**Sodium,7440-23-5**	0.0606837	0.0329033	0.789047	0.0277604
27	**Strontium,7440-24-6**	-4.40592e-005	0.0275997	-0.000832455	-0.00104638
28	**Thallium,7440-28-0**	0.00868825	0.00221337	0.240058	0.0329552
29	**Tin,7440-31-5**	0.0198963	-0.0524594	-0.12575	-0.0174975
30	**Titanium,7440-32-6**	-0.000811862	-0.000559821	0.0246426	0.00451127
31	**Vanadium,7440-62-2**	0.00038558	0.00180841	0.128392	0.0131492
34	**Zinc,7440-66-6**	0.000329137	-0.00120867	0.505337	1.37393
35	**Zirconium,7440-67-7**	-0.000104438	0.0029358	0.090949	0.00687382

IEC File Name: Untitled

IEC File Last Saved: 9/17/2008 8:47:34 AM
Printed On: 9/17/2008 8:47:34 AM

Results Data Set Name: 2080916 IE
Method Name: ICP
Results Library: C:\pe\met\results2\Results\Results.md

Interfering Analytes

	Analytes	Iron,7439-89-6	Magnesium,7439-95-4	Manganese, 7439-96-5	Nickel,7440-02-0
1	**Aluminum,7429-90-5**	0.602879	-0.0500592	-1.88937	-0.358548
2	**Antimony,7440-36-0**	0.0624273	-0.00928891	0.0555939	-2.27868
5	**Arsenic,7440-38-2**	-0.033844	0.00540988	-0.395411	-0.815686
6	**Barium,7440-39-3**	0.00594029	0.000127341	0.0109419	0.121592
7	**Beryllium,7440-41-7**	0.00164772	-0.000426022	0.0357449	0.040061
8	**Boron,7440-42-8**	-0.822413	-0.0173212	-0.969992	-0.373127
9	**Cadmium,7440-43-9**	0.054895	-0.000541496	0.0411375	0.059736
10	**Calcium,7440-70-2**	0.0538783	-0.0463256	-1.67567	5.41348
11	**Chromium,7440-47-3**	0.699868	0.0163281	0.394602	0.128305
12	**Cobalt,7440-48-4**	0.00599163	-0.000345375	0.0912159	0.390776
13	**Copper,7440-50-8**	-0.0403107	0.0502811	3.91218	0.601846
14	**Iron,7439-89-6**	n/a	0.0560726	0.013896	0.0416453
15	**Lead,7439-92-1**	-0.0315844	0.00629638	0.277778	0.577083
16	**Lithium,7439-93-2**	-0.00112313	0.000787332	-0.00743527	0.0918396
17	**Magnesium,7439-95-4**	0.409996	n/a	-13.3201	0.0756079
18	**Manganese, 7439-96-5**	-0.000819769	0.0342952	n/a	0.458469
19	**Molybdenum,7439-98-7**	-0.687849	-0.00104432	-0.00217322	0.146095
20	**Nickel,7440-02-0**	0.0397418	0.00139516	0.178465	n/a
21	**Potassium,7440-09-7**	0.145407	0.0364704	-0.455367	0.097907
22	**Scandium-IS**	132.54	100.091	3482.24	1668.48
23	**Selenium,7782-49-2**	-1.14484	0.0292566	1.87432	-0.0549634
24	**Silicon,7440-21-3**	-0.0989712	0.155971	-0.00676324	-0.0412923
25	**Silver,7440-22-4**	-0.0167097	0.000625758	0.154419	0.0892173
26	**Sodium,7440-23-5**	0.00318941	0.00606561	-0.0812592	0.974043
27	**Strontium,7440-24-6**	0.00160895	-4.28335e-005	-0.00588872	0.000600536
28	**Thallium,7440-28-0**	-0.11177	0.0053497	-1.26229	0.0650903
29	**Tin,7440-31-5**	-0.738299	-0.000925512	-0.123472	0.00776502
30	**Titanium,7440-32-6**	-0.00015454	-0.000906066	0.0168055	0.00100369
31	**Vanadium,7440-62-2**	0.118128	-0.0481255	0.192755	0.0285944
34	**Zinc,7440-66-6**	0.130555	0.0123329	0.188198	6.14169
35	**Zirconium,7440-67-7**	0.0265093	-0.000119611	0.0286687	0.0826417

		Interfering Analytes	
	Analytes	Titanium,7440-32-6	Vanadium,7440-62-2
1	**Aluminum,7429-90-5**	-3.17311	15.3875
2	**Antimony,7440-36-0**	0.484877	-0.35849
5	**Arsenic,7440-38-2**	-0.0155275	-13.6091
6	**Barium,7440-39-3**	0.0142031	0.380131
7	**Beryllium,7440-41-7**	0.216469	0.0915307
8	**Boron,7440-42-8**	-0.949525	-0.843673
9	**Cadmium,7440-43-9**	0.00867709	-0.0392915
10	**Calcium,7440-70-2**	-1.92433	-0.0315263
11	**Chromium,7440-47-3**	0.114915	-0.816251
12	**Cobalt,7440-48-4**	1.79292	0.0322022
13	**Copper,7440-50-8**	0.502962	0.00329606
14	**Iron,7439-89-6**	-0.118729	0.253985
15	**Lead,7439-92-1**	0.372366	-0.000868145
16	**Lithium,7439-93-2**	0.00341574	0.00364589
17	**Magnesium,7439-95-4**	-0.0838636	0.0750651
18	**Manganese, 7439-96-5**	0.210036	-0.0270641
19	**Molybdenum,7439-98-7**	-0.0828123	0.0429983
20	**Nickel,7440-02-0**	0.0263527	0.142227
21	**Potassium,7440-09-7**	1.01433	0.459351
22	**Scandium-IS**	3516.95	1069.04
23	**Selenium,7782-49-2**	-0.190137	0.77409
24	**Silicon,7440-21-3**	0	0.189112
25	**Silver,7440-22-4**	0.0262218	-0.0883318
26	**Sodium,7440-23-5**	-0.757517	0.0830808
27	**Strontium,7440-24-6**	0.045268	0.0338828
28	**Thallium,7440-28-0**	-2.0829	-1.02039
29	**Tin,7440-31-5**	-4.4849	-0.0103087
30	**Titanium,7440-32-6**	**n/a**	0.300018
31	**Vanadium,7440-62-2**	0.00226065	**n/a**
34	**Zinc,7440-66-6**	-0.851553	0.0981434
35	**Zirconium,7440-67-7**	0.0627691	0.0299874

ICP LINEAR RANGES

Lab Name: GCAL

Lab Code: LA024

Study Date: 10/24/08

Sample ID:

SDG No.: 208102060

Instrument ID: ICP5

Analyte	**Concentration**	**% Recovery**	**Units**	**Type**
Aluminum	60000	90	mg/kg	P
Antimony	800	92	mg/kg	P
Arsenic	1000	100	mg/kg	P
Barium	1000	97	mg/kg	P
Beryllium	200	102	mg/kg	P
Boron	2000	94	mg/kg	P
Cadmium	600	99	mg/kg	P
Calcium	80000	99	mg/kg	P
Chromium	4000	95	mg/kg	P
Cobalt	6000	103	mg/kg	P
Copper	4000	93	mg/kg	P
Iron	32000	92	mg/kg	P
Lead	20000	90	mg/kg	P
Lithium	800	98	mg/kg	P
Magnesium	36000	95	mg/kg	P
Manganese	1200	91	mg/kg	P
Molybdenum	3000	90	mg/kg	P
Nickel	2400	93	mg/kg	P
Potassium	6000	98	mg/kg	P
Selenium	600	101	mg/kg	P
Silver	600	93	mg/kg	P
Sodium	24000	94	mg/kg	P
Strontium	200	103	mg/kg	P
Thallium	800	109	mg/kg	P
Tin	2000	90	mg/kg	P
Titanium	1600	90	mg/kg	P
Vanadium	4000	98	mg/kg	P
Zinc	600	92	mg/kg	P
Zirconium	1000	107	mg/kg	P

ICP LINEAR RANGES

Lab Name: GCAL
Lab Code: LA024
Study Date: 09/16/08

Sample ID:
SDG No.: 208102060
Instrument ID: ICP6

Analyte	*Concentration*	*% Recovery*	*Units*	*Type*
Aluminum	60000	96	mg/kg	P
Antimony	1600	100	mg/kg	P
Arsenic	1000	103	mg/kg	P
Barium	1000	99	mg/kg	P
Beryllium	200	98	mg/kg	P
Boron	2000	98	mg/kg	P
Cadmium	1000	101	mg/kg	P
Calcium	80000	103	mg/kg	P
Chromium	4800	96	mg/kg	P
Cobalt	6000	99	mg/kg	P
Copper	4000	95	mg/kg	P
Iron	2800	103	mg/kg	P
Lead	20000	98	mg/kg	P
Lithium	800	100	mg/kg	P
Magnesium	32000	105	mg/kg	P
Manganese	1200	95	mg/kg	P
Molybdenum	4000	90	mg/kg	P
Nickel	2200	100	mg/kg	P
Potassium	6000	98	mg/kg	P
Selenium	600	99	mg/kg	P
Silicon	2000	92	mg/kg	P
Silver	400	95	mg/kg	P
Sodium	24000	97	mg/kg	P
Strontium	200	100	mg/kg	P
Thallium	800	102	mg/kg	P
Tin	2000	90	mg/kg	P
Titanium	1200	95	mg/kg	P
Vanadium	4000	95	mg/kg	P
Zinc	600	93	mg/kg	P
Zirconium	1000	90	mg/kg	P

ICP LINEAR RANGES

Lab Name: GCAL	Sample ID:
Lab Code: LA024	SDG No.: 208102060
Study Date: 09/16/08	Instrument ID: ICP6

Analyte	*Concentration*	*% Recovery*	*Units*	*Type*
Aluminum	1500	96	mg/L	P
Antimony	40	100	mg/L	P
Arsenic	25	103	mg/L	P
Barium	25	99	mg/L	P
Beryllium	5	98	mg/L	P
Boron	50	98	mg/L	P
Cadmium	25	101	mg/L	P
Calcium	2000	103	mg/L	P
Chromium	120	96	mg/L	P
Cobalt	150	99	mg/L	P
Copper	100	95	mg/L	P
Iron	750	103	mg/L	P
Lead	500	98	mg/L	P
Lithium	20	100	mg/L	P
Magnesium	800	105	mg/L	P
Manganese	30	95	mg/L	P
Molybdenum	100	90	mg/L	P
Nickel	55	100	mg/L	P
Potassium	150	98	mg/L	P
Selenium	15	99	mg/L	P
Silicon	50	92	mg/L	P
Silver	10	95	mg/L	P
Sodium	600	97	mg/L	P
Strontium	5	100	mg/L	P
Thallium	20	102	mg/L	P
Tin	50	90	mg/L	P
Titanium	30	95	mg/L	P
Vanadium	100	95	mg/L	P
Zinc	15	93	mg/L	P
Zirconium	25	90	mg/L	P

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 208102060

Method: SW-846 6010B

Method Type: P

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
EXB-1	10/21/08	1.26	g	50	mL
EXB-3	10/21/08	1.26	g	50	mL
EXB-E	10/21/08	1.25	g	50	mL
EXB-N	10/21/08	1.25	g	50	mL
EXB-NDUP	10/21/08	1.25	g	50	mL
EXB-NMS	10/21/08	1.25	g	50	mL
EXB-S	10/21/08	1.26	g	50	mL
EXB-W	10/21/08	1.25	g	50	mL
EXD-3	10/21/08	1.26	g	50	mL
EXD-5	10/21/08	1.26	g	50	mL
EXD-E	10/21/08	1.25	g	50	mL
EXD-N	10/21/08	1.25	g	50	mL
EXD-S	10/21/08	1.25	g	50	mL
EXD-W	10/21/08	1.25	g	50	mL
LCS658922	10/21/08	1.25	g	50	mL
MB658921	10/21/08	1.25	g	50	mL

PREPARATION LOG

Lab Name: GCAL
Sample ID:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
Method: SW-846 6010B
Method Type: P

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
EXA-1	10/24/08	1.25	g	50	mL
EXA-3	10/24/08	1.25	g	50	mL
EXA-E	10/24/08	1.25	g	50	mL
EXA-N	10/24/08	1.26	g	50	mL
EXA-S	10/24/08	1.25	g	50	mL
EXA-W	10/24/08	1.26	g	50	mL
EXC-1	10/24/08	1.26	g	50	mL
EXC-3	10/24/08	1.25	g	50	mL
EXC-E	10/24/08	1.25	g	50	mL
EXC-N	10/24/08	1.26	g	50	mL
EXC-S	10/24/08	1.25	g	50	mL
EXC-SDUP	10/24/08	1.25	g	50	mL
EXC-SMS	10/24/08	1.25	g	50	mL
EXC-W	10/24/08	1.26	g	50	mL
LCS660557	10/24/08	1.25	g	50	mL
MB660556	10/24/08	1.25	g	50	mL

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Method: SW-846 6010B

Method Type: P

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
EXD-7	11/17/08	1.26	g	50	mL
LCS668070	11/17/08	1.25	g	50	mL
MB668069	11/17/08	1.25	g	50	mL

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Method: SW-846 1311/6010B

Method Type: P

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
LCS659503	10/22/08			50	mL
MB659502	10/22/08			50	mL
SP-A1	10/22/08			50	mL
SP-A2	10/22/08			50	mL
SP-A2DUP	10/22/08			50	mL
SP-A2MS	10/22/08			50	mL
SP-B1	10/22/08			50	mL
SP-C1	10/22/08			50	mL
SP-C2	10/22/08			50	mL
SP-D1	10/22/08			50	mL
SP-D2	10/22/08			50	mL
SP-D3	10/22/08			50	mL
SP-D4	10/22/08			50	mL
SP-E1	10/22/08			50	mL

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

Method: SW-846 1311/7470A

Method Type: AV

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
LCS659507	10/22/08			20	mL
MB659506	10/22/08			20	mL
SP-A1	10/22/08			20	mL
SP-A2	10/22/08			20	mL
SP-A2DUP	10/22/08			20	mL
SP-A2MS	10/22/08			20	mL
SP-B1	10/22/08			20	mL
SP-C1	10/22/08			20	mL
SP-C2	10/22/08			20	mL
SP-D1	10/22/08			20	mL
SP-D2	10/22/08			20	mL
SP-D3	10/22/08			20	mL
SP-D4	10/22/08			20	mL
SP-E1	10/22/08			20	mL

ANALYSIS RUN LOG

Lab Name: GCAL Contract: Start Date: 10/22/08

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060 End Date: 10/22/08

Instrument ID Number: ICP5 Method: SW-846 6010B Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	0913		X									X		X			X														X	
ICV2	*	1	0919		X									X																				
ICB	*	1	0926		X									X		X			X														X	
CRDL	*	1	0933		X									X		X			X														X	
CRDL2	*	1	0940		X									X		X			X														X	
ICSA	*	1	1004		X									X		X			X														X	
ICSAB	*	1	1011		X									X		X			X														X	
CCV	*	1	1018		X									X		X			X														X	
CCB	*	1	1024		X									X		X			X														X	
MB658921	*	1	1041		X									X		X			X														X	
LCS658922	*	1	1048		X									X		X			X														X	
EXB-N	*	1	1054													X																		
EXB-NDUP	*	1	1100		X									X		X			X														X	
EXB-NMS	*	1	1106		X									X		X			X														X	
EXB-NPDS	*	1	1113		X									X		X			X														X	
EXB-NSD	*	5	1119		X									X		X			X														X	
EXB-S	*	1	1125													X																		
EXB-E	*	1	1131													X																		
CCV	*	1	1144		X									X		X			X														X	
CCB	*	1	1151		X									X		X			X														X	
EXB-W	*	1	1157													X																		
EXB-1	*	1	1204													X																		
EXB-3	*	1	1210		X									X		X			X														X	
EXD-N	*	1	1216		X											X																		
EXD-S	*	1	1222		X											X																		
EXD-E	*	1	1228		X											X																		
EXD-W	*	1	1235		X											X																		

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 10/22/08
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 10/22/08
Instrument ID Number: ICP5
Method: SW-846 6010B
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
EXD-3	*	1	1241		X											X																		
EXD-5	*	1	1247		X									X		X			X															
CCV	*	1	1300		X									X		X			X														X	
CCB	*	1	1306		X									X		X			X														X	

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 10/24/08

Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 10/25/08

Instrument ID Number: ICP6
Method: SW-846 6010B
Method Type: P.

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	0938		X									X		X			X														X	
ICV2	*	1	0948																															
ICB	*	1	0959		X									X		X			X														X	
CRDL	*	1	1005		X									X		X			X														X	
CRDL2	*	1	1012		X									X		X			X														X	
ICSA	*	1	1037		X									X		X			X														X	
ICSAB	*	1	1044		X									X		X			X														X	
CCV	*	1	1050		X									X		X			X														X	
CCB	*	1	1056		X									X		X			X														X	
CCV	*	1	2323		X									X		X			X														X	
CCB	*	1	2329		X									X		X			X														X	
MB660556	*	1	2335		X									X		X			X														X	
LCS660557	*	1	2342		X									X		X			X														X	
EXC-S	*	1	2348													X																		
EXC-SDUP	*	1	2353		X									X		X			X														X	
EXC-SMS	*	1	2358		X									X		X			X														X	
EXC-SPDS	*	1	0004		X									X		X			X														X	
EXC-SSD	*	5	0009		X									X		X			X														X	
EXC-N	*	1	0015													X																		
EXC-E	*	1	0021													X																		
EXC-W	*	1	0026													X																		
CCV	*	1	0032		X									X		X			X														X	
CCB	*	1	0038		X									X		X			X														X	
EXC-1	*	1	0045													X																		
EXC-3	*	1	0051		X									X		X			X															
EXA-N	*	1	0057													X			X															
EXA-S	*	1	0102													X			X															

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 10/24/08
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 10/25/08
Instrument ID Number: ICP6.
Method: SW-846 6010B
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
EXA-E	*	1	0108													X			X															
EXA-W	*	1	0114													X			X															
EXA-1	*	1	0119													X			X															
CCV	*	1	0145		X									X		X			X														X	
CCB	*	1	0151		X									X		X			X														X	

ANALYSIS RUN LOG

Lab Name: GCAL Contract: Start Date: 10/25/08

Lab Code: LA024 Case No.: SAS No.: SDG No.: 208102060 End Date: 10/25/08

Instrument ID Number: ICP6 Method: SW-846 6010B Method Type: P

Analyte Symbols

Sample No.	PF	D/F	Time	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	0841		X									X		X			X														X	
ICV2	*	1	0857																															
ICB	*	1	0903		X									X		X			X														X	
CRDL	*	1	0910		X									X		X			X														X	
CRDL2	*	1	0922		X									X		X			X														X	
ICSA	*	1	0952		X									X		X			X														X	
ICSAB	*	1	1019		X									X		X			X														X	
CCV	*	1	1025		X									X		X			X														X	
CCB	*	1	1045		X									X		X			X														X	
CCV	*	1	1208		X									X		X			X														X	
CCB	*	1	1213		X									X		X			X														X	
EXA-3	*	1	1222		X									X		X			X														X	
MB659502	*	1	1227																															
LCS659503	*	1	1233																															
SP-A2	*	1	1239																															
SP-A2DUP	*	1	1245																															
SP-A2MS	*	1	1251																															
SP-A2PDS	*	1	1257																															
SP-A2SD	*	5	1302																															
SP-E1	*	1	1309																															
CCV	*	1	1322		X									X		X			X														X	
CCB	*	1	1343		X									X		X			X														X	
SP-A1	*	1	1415																															
SP-B1	*	1	1421																															
SP-C1	*	1	1426																															
SP-C2	*	1	1432																															
SP-D1	*	1	1438																															

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 10/25/08
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 10/25/08
Instrument ID Number: ICP6
Method: SW-846 6010B
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
SP-D2	*	1	1444																															
SP-D3	*	1	1451																															
SP-D4	*	1	1458																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1502																															
CCV	*	1	1515		X									X		X			X														X	
CCB	*	1	1520		X									X		X			X														X	

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 10/25/08
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 10/25/08
Instrument ID Number: ICP6
Method: SW-846 1311/60
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	0841		X	X	X			X		X		X					X					X		X							X	
ICV2	*	1	0857																															
ICB	*	1	0903		X	X	X			X		X		X					X					X		X							X	
CRDL	*	1	0910		X	X	X			X		X		X					X					X		X							X	
CRDL2	*	1	0922		X	X	X			X		X		X					X					X		X							X	
ICSA	*	1	0952		X	X	X			X		X		X					X					X		X							X	
ICSAB	*	1	1019		X	X	X			X		X		X					X					X		X							X	
CCV	*	1	1025		X	X	X			X		X		X					X					X		X							X	
CCB	*	1	1045		X	X	X			X		X		X					X					X		X							X	
CCV	*	1	1208		X	X	X			X		X		X					X					X		X							X	
CCB	*	1	1213		X	X	X			X		X		X					X					X		X							X	
EXA-3	*	1	1222																															
MB659502	*	1	1227			X	X			X		X				X								X		X								
LCS659503	*	1	1233			X	X			X		X				X								X		X								
SP-A2	*	1	1239			X	X			X		X				X								X		X								
SP-A2DUP	*	1	1245			X	X			X		X				X								X		X								
SP-A2MS	*	1	1251			X	X			X		X				X								X		X								
SP-A2PDS	*	1	1257			X	X			X		X				X								X		X								
SP-A2SD	*	5	1302			X	X			X		X				X								X		X								
SP-E1	*	1	1309			X	X			X		X				X								X		X								
CCV	*	1	1322		X	X	X			X		X		X					X					X		X							X	
CCB	*	1	1343		X	X	X			X		X		X					X					X		X							X	
SP-A1	*	1	1415			X	X			X		X				X								X		X								
SP-B1	*	1	1421			X	X			X		X				X								X		X								
SP-C1	*	1	1426			X	X			X		X				X								X		X								
SP-C2	*	1	1432			X	X			X		X				X								X		X								
SP-D1	*	1	1438			X	X			X		X				X								X		X								

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 10/25/08

Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 10/25/08

Instrument ID Number: ICP6
Method: SW-846 1311/60
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
SP-D2	*	1	1444			X	X			X		X				X								X		X								
SP-D3	*	1	1451			X	X			X		X				X								X		X								
SP-D4	*	1	1458			X	X			X		X				X								X		X								
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1502																															
CCV	*	1	1515		X	X	X			X		X		X					X					X		X							X	
CCB	*	1	1520		X	X	X			X		X		X					X					X		X							X	

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 11/17/08

Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 208102060
End Date: 11/18/08

Instrument ID Number: ICP6
Method: SW-846 6010B
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	1019																X															
ICV2	*	1	1026																															
ICB	*	1	1033																X															
CRDL	*	1	1040																X															
CRDL2	*	1	1113																X															
ICSA	*	1	1137																X															
ICSAB	*	1	1147																X															
CCV	*	1	1156																X															
CCB	*	1	1215																X															
CCV	*	1	1915																X															
CCB	*	1	1921																X															
MB668069	*	1	1928																X															
LCS668070	*	1	1935																X															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1941																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	1	1947																X															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	1	1953																X															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	1	1959																X															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	5	2005																X															
EXD-7	*	1	2011																X															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	2022																															
CCV	*	1	2028																X															
CCB	*	1	2034																X															

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL

Contract:

Start Date: 10/26/08

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 208102060

End Date: 10/26/08

Instrument ID Number: FIMS1

Method: SW-846 1311/74

Method Type: AV

				Analyte Symbols																													
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	1836																	X													
ICB	*	1	1838																	X													
CCV	*	1	1840																	X													
CCB	*	1	1841																	X													
MB659506	*	1	1843																	X													
LCS659507	*	1	1845																	X													
SP-A2	*	1	1846																	X													
SP-A2DUP	*	1	1848																	X													
SP-A2MS	*	1	1849																	X													
SP-A2SD	*	5	1851																	X													
CCV	*	1	1859																	X													
CCB	*	1	1901																	X													
SP-E1	*	1	1903																	X													
SP-A1	*	1	1904																	X													
SP-B1	*	1	1906																	X													
SP-C1	*	1	1908																	X													
SP-C2	*	1	1909																	X													
SP-D1	*	1	1911																	X													
SP-D2	*	1	1913																	X													
SP-D3	*	1	1914																	X													
SP-D4	*	1	1916																	X													
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1917																														
CCV	*	1	1919																	X													
CCB	*	1	1921																	X													

DATE: 10/21/08

TCLP EXTRACTIONS

BATCH # 399323

ANALYST: BDR

Sample Number:							
Sample Description	TBLK	20810206030	20810206026	20810206028	20810206029	20810206032	20810206033
1.VISUAL SAMPLE EVALUATION							
100% solid (Skip to 3)* (√)							
Sample is <100% (√)							
2. FILTRATION(Pressure Filtration is Required if Solids are ≥ 10%)							
Filter Weight (F)							
Filtrate Vessel Weight (V)							
Subsample Weight (100 g minimum) (S)							
Weight of Liquid Phase (V+liquid)-V (L)							
Weight of Solid Phase (S-L) (SP)							
% Solids (SP/S) x 100 * (%S)							
%Dry Solids = [(Dried SP-F)/S] x 100* (%DS)							
3.EXTRACTION FLUID DETERMINATION							
Particle Size Reduced (app. 1mm) (√)							
Actual Weight of subsample (5.0± 0.1g)							
Actual volume of water (96.5± 1mL)		5.0	5.0	5.0	5.0	5.0	5.0
Initial pH (After 5 min. mixing) "pH-1"		97	97	97	97	97	97
√ If pH >5, if 3.5 mL 1N HCl added		569	544	741	394	550	740
√ If heated and held at 50°C for 10 minutes		✓	✓	✓	✓	✓	✓
Second pH "pH-2"		✓	✓	✓	✓	✓	✓
If pH-1 or pH-2 <5.0 use Fluid 1 (√)		271	114	137	–	189	146
If pH-2 >5.0 use Fluid 11 (√)		✓		✓	✓	✓	✓
4. PREPARATION FOR EXTRACTION PROCEDURE*							
Particle Size Reduced (95. mm max) (√)							
Weight of Solids to be Extracted (X)							
Filtrate Vessel Weight (multiphasic) (EV)		100	100	100	100	100	100
Weight of Filtrate + Vessel (multiphasic) (EF)							
Amount of Fluid Needed = 20 x X							
5. TCLP ROTATION (Rotate for 18 ± 2 hours at 23 ± 2°C and 30 ± 2 rpm)		2000	2000	2000	2000	2000	2000
Start Time							
Stop Time	1500	1500	1500	1500	1500	1500	1500
6. FINAL TCLP EXTRACT	0700	0700	0700	0700	0700	0700	0700
If the phases will be analyzed separately, determine the volume of each phase:							
Volume Extract obtained in Step 5 (EF-EV)							
Volume filtrate from Step 4 (L)						/	
pH of TCLP Extract (If two phase,record pH for each phase)		527	564	504	517	509	510

*** If sample is <0.5 %S or <0.5 %DS; Filter sample , collect filtrate and skip to 6. If sample is 100% solid, use 100 grams sample and 2000mLs fluid.**
%DS is only performed if it is suspected that after drying, the %S will be <0.5%.

Temperature: Minimum °C: 23.4 **Maximum °C:** 25.1

Temperature controls: 23 +/-2 °C

EXTRACTION FLUID #1 pH and ID: 423-594

EXTRACTION FLUID #2 pH and ID:

Rotation Start Date: 10/21/08 **Rotation Stop Date:** 10/22/08

Secondary Review: KBn

Revision 2: 4/4/2007

DATE: 10/21/08

TCLP EXTRACTIONS

BATCH #: 399323

ANALYST:

Sample Number:	20810206031	20810206025	20810206027	20810206034	20810204501		
Sample Description							
1.VISUAL SAMPLE EVALUATION							
100% solid (Skip to 3)* (√)							
Sample is <100% (√)							
2. FILTRATION(Pressure Filtration is Required if Solids are ≥ 10%)							
Filter Weight (F)							
Filtrate Vessel Weight (V)							
Subsample Weight (100 g minimum) (S)							
Weight of Liquid Phase (V+liquid)-V (L)							
Weight of Solid Phase (S-L) (SP)							
% Solids (SP/S) x 100 * (%S)							
%Dry Solids = [(Dried SP-F)/S] x 100* (%DS)							
3.EXTRACTION FLUID DETERMINATION							
Particle Size Reduced (app. 1mm) (√)							
Actual Weight of subsample (5.0± 0.1g)	5.0	5.0	5.0	5.0	5.0		
Actual volume of water (96.5± 1mL)	97	97	97	92	97		
Initial pH (After 5 min. mixing) "pH-1"	522	622	644	647	809		
√ If pH >5, if 3.5 mL 1N HCl added	✓	✓	✓	✓	✓		
√ If heated and held at 50°C for 10 minutes	✓	✓	✓	✓	✓		
Second pH "pH-2"	146	130	113	140	135		
If pH-1 or pH-2 <5.0 use Fluid 1 (√)	✓	✓	✓	✓	✓		
If pH-2 >5.0 use Fluid 11 (√)							
4. PREPARATION FOR EXTRACTION PROCEDURE*							
Particle Size Reduced (95. mm max) (√)							
Weight of Solids to be Extracted (X)	100	100	100	100	100		
Filtrate Vessel Weight (multiphasic) (EV)							
Weight of Filtrate + Vessel (multiphasic) (EF)							
Amount of Fluid Needed = 20 x X	2000	2000	2000	2000	2000		
5. TCLP ROTATION (Rotate for 18 ± 2 hours at 23 ± 2°C and 30 ± 2 rpm)							
Start Time	1500	1500	1500	1500	1500		
Stop Time	0700	0700	0700	0700	0700		
6. FINAL TCLP EXTRACT							
If the phases will be analyzed separately, determine the volume of each phase:							
Volume Extract obtained in Step 5 (EF-EV)							
Volume filtrate from Step 4 (L)							
pH of TCLP Extract (If two phase,record pH for each phase)	511	504	514	506	503		

*** If sample is <0.5 %S or <0.5 %DS; Filter sample , collect filtrate and skip to 6. If sample is 100% solid, use 100 grams sample and 2000mLs fluid.**

%DS is only performed if it is suspected that after drying, the %S will be <0.5%.

Temperature: Minimum °C: 23.4 **Maximum °C:** 25.1

Temperature controls: 23 +/-2 °C

EXTRACTION FLUID #1 pH and ID: 423-594

EXTRACTION FLUID #2 pH and ID:

Rotation Start Date: 10/21/08 **Rotation Stop Date:** 10/22/08

Secondary Review:

Revision 2: 4/4/2007

ICP SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	10 21 08 10:15 | 1545	**BATCH NO:**	399216
MATRIX:	WATER ☐ SOIL ☑ TCLP EXT ☐ ORGANIC ☐	**METHOD:**	200.7 ☐ 3010A ☐ 3050B ☑ 3051 ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT mL [✓ g]	FINAL VOLUME (mL)	COMMENTS
1	QC ACCOUNT	MB for HBN 399216 [DIGM/19461]	658921	1.25	50	
2	QC ACCOUNT	LCS for HBN 399216 [DIGM/19461	658922	1.25		
3	3031	EXB-N	20810206001	1.25		
4	QC ACCOUNT	EXB-N(658824DUP)	658923	1.25		
5	QC ACCOUNT	EXB-N(658824MS)	658924	1.25		
6	3031	EXB-S	20810206002	1.26		
7	3031	EXB-E	20810206003	1.25		
8	3031	EXB-W	20810206004	1.25		
9	3031	EXB-1	20810206005	1.26		
10	3031	EXB-3	20810206006	1.26		
11	3031	EXD-N	20810206007	1.25		
12	3031	EXD-S	20810206008	1.25		
13	3031	EXD-E	20810206009	1.25		
14	3031	EXD-W	20810206010	1.25		
15	3031	EXD-3	20810206011	1.26		
16	3031	EXD-5	20810206012	1.26		
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

REAGENTS/ STANDARDS
HNO3 334-95-12
HCL 334-95-2
H2O2 334-93-10
SPIKING SOLUTIONS (LCS/MS)
GCALI-1 - 250uL 334-92-10
GCALI-2 - 250uL 334-92-11
ORGANOMETALLIC ICP SPIKE 0.025g

COMMENTS:

BLOCK ID	**TECHNICIAN**	**DATE**
AZ 33-11-3-08	JCL	10-21-08
REPIPET BOTTLES VERIFIED	**REVIEW**	**DATE**
JEL	cub	10/22/08

Repreq)

ICP SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	10-24-08 10:15/15:15	**BATCH NO:**	399477
MATRIX:	WATER ☐ SOIL ☑ TCLP EXT ☐ ORGANIC ☐	**METHOD:**	200.7 ☐ 3010A ☐ 3050B ☑ 3051 ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT mL [✓ g]	FINAL VOLUME (mL)	COMMENTS	REAGENTS/ STANDARDS
1	QC ACCOUNT	MB for HBN 399477 [DIGM/19509]	660556	1.25	50		HNO3
2	QC ACCOUNT	LCS for HBN 399477 [DIGM/19509	660557	1.25			334-95-18
3	3031	EXC-N	20810206013	1.26			HCL
4	3031	EXC-S	20810206014	1.25			334-95-15
5	QC ACCOUNT	EXC-S(658837DUP)	660558	1.25			H2O2
6	QC ACCOUNT	EXC-S(658837MS)	660559	1.25			334-93-10
7	3031	EXC-E	20810206015	1.25			
8	3031	EXC-W	20810206016	1.26			
9	3031	EXC-1	20810206017	1.26			
10	3031	EXC-3	20810206018	1.25			
11	3031	EXA-N	20810206019	1.26			
12	3031	EXA-S	20810206020	1.25			
13	3031	EXA-E	20810206021	1.25			
14	3031	EXA-W	20810206022	1.26			
15	3031	EXA-1	20810206023	1.25			
16	3031	EXA-3	20810206024	1.25			
17							SPIKING SOLUTIONS (LCS/MS)
18							
19							GCALI-1 - 250uL
20							334-92-10
21							GCALI-2 - 250uL
22							334-92-11
23							ORGANOMETALLIC ICP SPIKE 0.025g
24							
25							
26							
27							
28							

COMMENTS:

BLOCK ID	**TECHNICIAN**	**DATE**
B1 33-7-16-08	JEA	10-24-08
REPIPET BOTTLES VERIFIED	**REVIEW**	**DATE**
JEA	CUB	10/29/08

ICP SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	11-17-08 @8:00 | 13:00	BATCH NO:	400961
TRIX:	WATER ☐ SOIL ☑ TCLP EXT ☐ ORGANIC ☐	METHOD:	200.7 ☐ 3010A ☐ 3050B ☑ 3051 ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT mL [✓ g]	FINAL VOLUME (mL)	COMMENTS	REAGENTS/ STANDARDS
1	QC ACCOUNT	MB for HBN 400961 [DIGM/19696]	668069	1.25	50		HNO3
2	QC ACCOUNT	LCS for HBN 400961 [DIGM/19696	668070	1.25	↓		334-96-22
3	3031	EXD-7	20810206035	1.26			HCL
4	4206	278946	20811143501	1.25			334-96-14
5	4206	279089	20811143502	1.26			H2O2
6	4206	VDR25003	20811143503	1.25			334-93-10
7	QC ACCOUNT	VDR25003(668020DUP)	668212	1.25			
8	QC ACCOUNT	VDR25003(668020MS)	668213	1.25	✓		
9							
10							
11							
12							
13							
14							
15							
16							
							SPIKING SOLUTIONS (LCS/MS)
18							
19							GCALI-1 - 250uL
20							334-95-19
21							GCALI-2 - 250uL
22							334-95-20
23							ORGANOMETALLIC ICP SPIKE 0.025g
24							
25							
26							
27							
28							

COMMENTS:

BLOCK ID	TECHNICIAN	DATE
B1 338308	JCL	11-17-08
REPIPET BOTTLES VERIFIED	REVIEW	DATE
	CIB	11|24|08

ICP SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	10-22-08 12:40 | 14:40	**BATCH NO:**	399325
MATRIX:	WATER ☐ SOIL ☐ TCLP EXT ☑ ORGANIC ☐	**METHOD:**	200.7 ☐ 3010A ☑ 3050B ☐ 3051 ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT [✓ mL] g	FINAL VOLUME (mL)	COMMENTS	REAGENTS/ STANDARDS
1	QC ACCOUNT	MB for HBN 399325 [DIGM/19475] A	659502	50	50		HNO3
2	QC ACCOUNT	LCS for HBN 399325 [DIGM/19475	659503				334-95-12
3	3031	SP-E1	20810206025				HCL
4	3031	SP-A1	20810206026				334-95-15
5	3031	SP-A2	20810206027				H2O2
6	QC ACCOUNT	SP-A2(658851DUP)	659504				
7	QC ACCOUNT	SP-A2(658851MS)	659505				
8	3031	SP-B1	20810206028				
9	3031	SP-C1	20810206029				
10	3031	SP-C2	20810206030				
11	3031	SP-D1	20810206031				
12	3031	SP-D2	20810206032				
13	3031	SP-D3	20810206033				
14	3031	SP-D4	20810206034				
15	4547	SRU BLASTSAND	20810204501				
16							
17							SPIKING SOLUTIONS (LCS/MS)
18							
19							GCALI-1 - 250uL
20							334-97-10
21							GCALI-2 - 250uL
22							334-97-11
23							ORGANOMETALLIC ICP SPIKE 0.025g
24							
25							
26							
27							
28							

COMMENTS:

BLOCK ID	**TECHNICIAN**	**DATE**
A2 33-7-3-08	JCL	10-22-08
REPIPET BOTTLES VERIFIED	**REVIEW**	**DATE**
JCL	CUB	10/29/08

HG SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	10-22-08 12:40 | 14:40	BATCH NO:	399326
MATRIX:	WATER ☐ SOIL ☐ TCLP EXT ☑ ORGANIC ☐	METHOD:	245.2 ☐ 7470A ☑ 7471A ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT [✓ mL] g	FINAL VOLUME (mL)	COMMENTS
1	QC ACCOUNT	MB for HBN 399326 [DIGM/19476] F-1	659506	20	20	
2	QC ACCOUNT	LCS for HBN 399326 [DIGM/19476	659507			
3	3031	SP-E1	20810206025			
4	3031	SP-A1	20810206026			
5	3031	SP-A2	20810206027			
6	QC ACCOUNT	SP-A2(658851DUP)	659508			
7	QC ACCOUNT	SP-A2(658851MS)	659509			
8	3031	SP-B1	20810206028			
9	3031	SP-C1	20810206029			
10	3031	SP-C2	20810206030			
11	3031	SP-D1	20810206031			
12	3031	SP-D2	20810206032			
13	3031	SP-D3	20810206033			
14	3031	SP-D4	20810206034			
15	4547	SRU BLASTSAND	20810204501			
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						

REAGENTS/ STANDARDS
HNO3 334-9512
H2SO4 334-9413
Aqua Regia
KMN04 334-959
K2S2O6 334-9446
Hg Calib ID
0.1 ppm CCV Working Solution
0.1 ppm ICV Working Solution
Hg ICV
SPIKE SOLUTIONS (LCS/MS)
Hg Spike [✓ 100uL] / 150uL 176-374
ORGANOMETALLIC HG SPIKE 0.025g

Hg Solid Calibration

Calib Blk	Conc (ug/L)	0.1ppm Spk Added	Final Volume
Standard 1	0.20	60 uL	30mL
Standard 2	0.50	150 uL	30 mL
Standard 3	2.00	600 uL	30 mL
Standard 4	5.00	1500 ul	30 mL
Standard 5	10.0	3000 uL	30 mL
ICV	5.00	1500 uL	30 mL

Hg Water Calibration

Calib Blk	Conc (ug/L)	0.1ppm Spk Added	Final Volume
Standard 1	0.20	40 uL	20 mL
Standard 2	0.50	100 uL	20 mL
Standard 3	2.00	400 uL	20 mL
Standard 4	5.00	1000 ul	20 mL
Standard 5	10.0	2000 uL	20 mL
ICV	5.00	1000 uL	20 mL

BLOCK ID	TECHNICIAN	DATE
AZ 337308	JTY	10-22-08
REPIPET BOTTLES VERIFIED	REVIEW	DATE
JTY	OUB	10/29/08

TOTAL SOLIDS AND MOISTURE ANALYSIS FOR DRY WEIGHT CORRECTION

HBN	399396			ANALYST:	JEM		DATE:	10/24/2008
SOLI	11424			REVIEW:	kom	10-27-08	TIME:	6:45
Sample ID	Pan ID	Pan Mass (g)	Initial Mass (g) (Sample & Pan)	Final Mass (g) (Sample & Pan)	Initial Mass Less Pan (g)	Final Mass Less Pan (g)	% Moisture In Sample	% Solids In Sample
20810213501	1	1.0081	11.2400	10.6869	10.2319	9.6788	5.41	94.59
20810213502	2	1.0015	11.6656	11.1290	10.6641	10.1275	5.03	94.97
20810213503	3	1.0031	10.5936	10.3636	9.5905	9.3605	2.40	97.60
20810213504	4	0.9834	11.3571	10.7022	10.3737	9.7188	6.31	93.69
20810206001	5	1.0027	11.0525	10.0713	10.0498	9.0686	9.76	90.24
20810206002	6	1.0023	11.2098	10.2884	10.2075	9.2861	9.03	90.97
20810206003	7	0.9961	10.9247	9.7007	9.9286	8.7046	12.33	87.67
20810206004	8	0.9990	10.4358	9.4246	9.4368	8.4256	10.72	89.28
20810206005	9	1.0026	10.3636	8.4555	9.3610	7.4529	20.38	79.62
20810206006	10	1.0155	10.9931	9.7864	9.9776	8.7709	12.09	87.91
20810206007	11	0.9976	10.3478	9.0478	9.3502	8.0502	13.90	86.10
20810206008	12	0.9963	10.9294	9.5827	9.9331	8.5864	13.56	86.44
20810206009	13	0.9958	10.9224	9.1838	9.9266	8.1880	17.51	82.49
20810206010	14	1.0261	11.4101	10.5985	10.3840	9.5724	7.82	92.18
20810206011	15	1.0017	10.1202	9.3643	9.1185	8.3626	8.29	91.71
20810206012	16	0.9967	10.4419	9.2412	9.4452	8.2445	12.71	87.29
20810206013	17	1.0045	10.1999	9.6820	9.1954	8.6775	5.63	94.37
20810206014	18	1.0020	11.0920	9.7839	10.0900	8.7819	12.96	87.04
20810206015	19	0.9868	10.7761	9.8838	9.7893	8.8970	9.12	90.88
20810206016	20	0.9861	10.6768	9.6279	9.6907	8.6418	10.82	89.18

TS % = (Final Sample Mass x 100) / Initial Sample Mass

TM % = 100-TS%

OVEN ID: 2

Balance ID: Metler AX504

TOTAL SOLIDS AND MOISTURE ANALYSIS FOR DRY WEIGHT CORRECTION

HBN	399398			ANALYST:	JEM		DATE:	10/24/2008
SOLI	11425			REVIEW:	KBM	10-27-08	TIME:	7:20:00
Sample ID	Pan ID	Pan Mass (g)	Initial Mass (g) (Sample & Pan)	Final Mass (g) (Sample & Pan)	Initial Mass Less Pan (g)	Final Mass Less Pan (g)	% Moisture In Sample	% Solids In Sample
20810206017	21	1.0007	11.8838	8.5359	10.8831	7.5352	30.76	69.24
20810206018	22	0.9950	10.1417	8.8796	9.1467	7.8846	13.80	86.20
20810206019	23	0.9960	11.3977	10.2468	10.4017	9.2508	11.06	88.94
20810206020	24	1.0378	10.9783	8.6934	9.9405	7.6556	22.99	77.01
20810206021	25	1.0399	10.6020	9.0839	9.5621	8.0440	15.88	84.12
20810206022	26	1.0328	11.1836	9.3753	10.1508	8.3425	17.81	82.19
20810206023	27	1.0019	11.6677	10.7339	10.6658	9.7320	8.76	91.24
20810206024	28	1.0500	9.7507	8.9389	8.7007	7.8889	9.33	90.67
20810206025	29	1.0243	10.7151	9.0779	9.6908	8.0536	16.89	83.11
20810206026	30	0.9927	11.6219	10.1100	10.6292	9.1173	14.22	85.78
20810206027	31	0.9903	11.7674	10.0292	10.7771	9.0389	16.13	83.87
20810206028	32	1.0229	11.9674	10.4385	10.9445	9.4156	13.97	86.03
20810206029	33	1.0014	10.7859	9.3321	9.7845	8.3307	14.86	85.14
20810206030	34	1.0227	10.2427	8.6652	9.2200	7.6425	17.11	82.89
20810206031	35	1.0314	10.6426	9.6305	9.6112	8.5991	10.53	89.47
20810206032	36	0.9783	11.4996	10.0995	10.5213	9.1212	13.31	86.69
20810206033	37	1.0380	11.2390	10.1515	10.2010	9.1135	10.66	89.34
20810206034	38	1.0531	11.2290	9.8742	10.1759	8.8211	13.31	86.69

TS % = (Final Sample Mass x 100) / Initial Sample Mass

TM % = 100-TS%

OVEN ID: 2

Balance ID: Metler AX504

TOTAL SOLIDS AND MOISTURE ANALYSIS FOR DRY WEIGHT CORRECTION

HBN	401115			ANALYST:	MDT		DATE:	11/18/2008
SOLI	11536			REVIEW:	BCA 11/21/08		TIME:	15:00:00
Sample ID	Pan ID	Pan Mass (g)	Initial Mass (g) (Sample & Pan)	Final Mass (g) (Sample & Pan)	Initial Mass Less Pan (g)	Final Mass Less Pan (g)	% Moisture in Sample	% Solids in Sample
20810206035	16	1.0130	10.1874	9.8435	9.1744	8.8305	3.75	96.25
20811136701	17	1.0046	10.8873	8.8654	9.8827	7.8608	20.46	79.54
20811136702	18	1.0205	10.5943	10.5143	9.5738	9.4938	0.84	99.16
20811151501	19	1.0364	10.1626	9.1505	9.1262	8.1141	11.09	88.91
20811182201	20	1.0441	10.5643	9.9446	9.5202	8.9005	6.51	93.49
20811182202	21	1.0267	10.3807	10.3714	9.3540	9.3447	0.10	99.90
20811182203	22	1.0474	10.2032	9.8789	9.1558	8.8315	3.54	96.46
20811182204	23	1.0318	10.1957	9.8988	9.1639	8.8670	3.24	96.76

TS % = (Final Sample Mass x 100) / Initial Sample Mass

TM % = 100-TS%

OVEN ID: 2

Balance ID: Metler AX504

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

Lab use only

Client Name	Client #	Workorder #	Due Date
Weston	3031	208102060	10-27-8

Report to:
Client: Weston Solutions
Address: 2705 Bee Cave Rd
Austin TX 78746
Contact: Russ K Johnson
Phone: (512) 651 7115
Fax: (512) 651 7101

Bill to:
Client: SAME
Address:
Contact:
Phone:
Fax:

Lab use only:
Custody Seal
used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C 5.1°

P.O. Number

Project Name/Number: El Campo National Guard Armory

Sampled By: Brent C Ferry

Analytical Requests & Method

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	Lead	Antimony	Manganese	Copper	Zinc	Hold	Remarks	Lab ID
															/
S	10/17/08	0915		X	EXB-N	–	1	X							-1
		0915			EXB-S			X							-2
		0915			EXB-E			X							-3
		0915			EXB-W			X							-4
		0915			EXB-1			X							-5
		0915			EXB-3			X	X	X	X	X			-6
		0915			EXB-5			X	X	X	X	X	X	Hold	
		0930			EXD-N			X	X						-7
		0930			EXD-S			X	X						-8
		0930			EXD-E			X	X						-9
		0930			EXD-W			X	X						-10
		0930			EXD-3			X	X						-11
		0930			EXD-5			X	X	X	X				-12
S	10/17/08	0930		X	EXD-7	–	1	X	X	X	X		X	Hold*	-35

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☒ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
		10-18-8	0925
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: TRM3 * Client released sample from hold – analyze for Manganese only per Russ Johnson. EPM 11/14/08

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11/98

Matrix[1]: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

Lab use only

Client Name	Client #	Workorder #	Due Date
Weston	3031	208102060	10-27-8

Report to:
Client: Westen Solutions
Address: 2705 Bee Cave Rd
Austin TX 78746
Contact: Russ K Johnson
Phone: (512) 651-7115
Fax: (512) 651-7101

Bill to:
Client: SAME
Address:
Contact:
Phone:
Fax:

Lab use only:
Custody Seal
used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C 5.1

P.O. Number
Project Name/Number: El Campo National Guard Armory

Sampled By: Brent C Ferry

Analytical Requests & Method

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	Lead	Antimony	Manganese	Copper	Zinc			Hold	Remarks:	Lab ID
S	10/17/08	0945		X	EXC-N	—	1	X									-13
		0945			EXC-S			X									-14
		0945			EXC-E			X									-15
		0945			EXC-W			X									-16
		0945			EXC-1			X									-17
		0945			EXC-3			X	X	X	X						-18
		0945			EXC-5			X	X	X	X				X	Hold	
		1000			EXA-N			X		X							-19
		1000			EXA-S			X		X							-20
		1000			EXA-E			X		X							-21
		1000			EXA-W			X		X							-22
		1000			EXA-1			X		X							-23
		1000			EXA-3			X	X	X	X	X					-24
S	10/17/08	1000		X	EXA-5	—	1	X	X	X	X	X			X	Hold	

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☒ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
		10-18-8	0925
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: TRRP 13

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix[1]: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL

GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

Lab use only

Client Name	Client #	Workorder #	Due Date
Weston	3031	208102060	10-27-8

Report to:
Client: Weston Solutions
Address: 2205 Bee Cave Rd
Austin TX 78746
Contact: Russ K Johnson
Phone: (512) 651-7115
Fax: (512) 651-7101

Bill to:
Client: SAME
Address:
Contact:
Phone:
Fax:

Lab use only:
Custody Seal
used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C 5.1°

P.O. Number

Project Name/Number El Campo National Guard Armory

Sampled By: Brent C Ferry

Analytical Requests & Method

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	Lead	Antimony	Manganese	Copper	Zinc	TCLP Metals	Hold	Remarks:	Lab ID
																/
S	10/17/08	1015		X	EXE-N	—	1	X						X	Hold	
		1015			EXE-S			X						X	Hold	
		1015			EXE-E			X						X	Hold	
		1015			EXE-W			X						X	Hold	
		1015			EXE-1			X						X	Hold	
		1015			EXE-3			X	X	X	X			X	Hold	
		1015		X	EXE-5			X	X	X	X			X	Hold	
		1020	X		SP-E1								X			-25
		1045	X		SP-A1								X			-26
		1045	X		SP-A2								X			-27
		1045	X		SP-B1								X			-28
		1045	X		SP-C1								X			-29
		1045	X		SP-C2								X			-30
S	10/17/08	1045	X	X	SP-D1	—	1						X			-31

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☑ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
		10-18-8	0925
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: TRRP 13

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix[1]: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11/98

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

Lab use only

Weston	3031	208102060	10-27-8
Client Name	Client #	Workorder #	Due Date

Report to:
Client: Weston Solutions
Address: 2705 Bee Cave Rd
Austin TX 78746
Contact: Russ K Johnson
Phone: (512) 651-7115
Fax: (512) 651-7101

Bill to:
Client:
Address:
Contact: SAME
Phone:
Fax:

Lab use only:
Custody Seal
used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C 5.1°

P.O. Number

Project Name/Number El Campo National Guard Armory

Sampled By: Brent C Ferry

Analytical Requests & Method

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	TCLP Metals	Remarks:	Lab ID
										/
S	10/17/08		X	~~X~~ BF	SP-D2	—	1	X		-32
S	10/17/08		X		SP-D3	—	1	X		-33
S	10/17/08		X		SP-D4	—	1	X		-34

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☑ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date: 10-18-8	Time: 0925
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: TRRP 13

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

Matrix[1]: W = water, S = soil, SD = solid, L = liquid, SL = sludge, o = oil, CT = charcoal tube, A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11/98

PRESERVATION CHECKLIST / COOLER RECEIPT

Gulf Coast Analytical Laboratories, Inc.

WO:	208102060	**Type:**	M
Desc:		**Report:**	REVIEW_RPT
Work ID:	El Campo National Guard Armory	**Status:**	WP
Project Seq:	80152	**Created:**	10/20/2008 17:01
Client:	3031 - Weston Solutions, Inc.	**QA:**	
Profile:	113215 - El Campo - El Campo	**PO:**	

WORKORDER SAMPLES

			pH PRESERVATIVE			VOA HEADSPACE			
Container ID	**Type**	**Preservative**	A	U	N\A	A	U	N\A	CONTAINER CONDITION
20810206001-1	2	NONE			X			X	OK
20810206002-1	2	NONE			X			X	OK
20810206003-1	2	NONE			X			X	OK
20810206004-1	2	NONE			X			X	OK
20810206005-1	2	NONE			X			X	OK
20810206006-1	2	NONE			X			X	OK
20810206007-1	2	NONE			X			X	OK
20810206008-1	2	NONE			X			X	OK
20810206009-1	2	NONE			X			X	OK
20810206010-1	2	NONE			X			X	OK
20810206011-1	2	NONE			X			X	OK

			pH PRESERVATIVE			VOA HEADSPACE			
Container ID	**Type**	**Preservative**	A	U	N\A	A	U	N\A	CONTAINER CONDITION
20810206012-1	2	NONE			X			X	OK
20810206013-1	2	NONE			X			X	OK
20810206014-1	2	NONE			X			X	OK
20810206015-1	2	NONE			X			X	OK
20810206016-1	2	NONE			X			X	OK
20810206017-1	2	NONE			X			X	OK
20810206018-1	2	NONE			X			X	OK
20810206019-1	2	NONE			X			X	OK
20810206020-1	2	NONE			X			X	OK
20810206021-1	2	NONE			X			X	OK
20810206022-1	2	NONE			X			X	OK
20810206023-1	2	NONE			X			X	OK
20810206024-1	2	NONE			X			X	OK
20810206025-1	8	NONE			X			X	OK
20810206026-1	8	NONE			X			X	OK

			pH PRESERVATIVE			VOA HEADSPACE			
Container ID	**Type**	**Preservative**	A	U	N\A	A	U	N\A	CONTAINER CONDITION
20810206027-1	8	NONE			X			X	OK
20810206028-1	8	NONE			X			X	OK
20810206029-1	8	NONE			X			X	OK
20810206030-1	8	NONE			X			X	OK
20810206031-1	8	NONE			X			X	OK
20810206032-1	8	NONE			X			X	OK
20810206033-1	8	NONE			X			X	OK
20810206034-1	8	NONE			X			X	OK
20810206035-1	2	NONE			X			X	OK

A = ACCEPTABLE
U = UNACCEPTABLE
N\A = NOT APPLICABLE

COOLER (S) TEMPERATURE [✓ A] U LIMIT = 4C + \ - 2C
MAXIMUM VOLATILE HEADSPACE BUBBLE 6MM

Custody Seal
used [ ] Yes [ ] No
in tact [ ] Yes [ ] No

LABEL(S) VERIFIED________________ CUSTODIAN Am

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC

NELAP CERTIFICATE NUMBER 01955

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.

Report Date 07/30/2009

GCAL Report 209071723

Deliver To	Weston Solutions 2705 Bee Cave Road Suite 100 Austin, TX 78746 512-651-7115
Attn	Russ Johnson

Customer Weston Solutions, Inc.

Project El Campo Armory-TXARNG

Appendix A Laboratory Data Package Cover Page

This data package consists of:

- ☑ This signature page, the laboratory review checklist, and the following reportable data:
- ☑ R1 Field chain-of-custody documentation;
- ☑ R2 Sample identification cross-reference;
- ☑ R3 Test reports (analytical data sheets) for each environmental sample that includes:
    - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
    - b) dilution factors,
    - c) preparation methods,
    - d) cleanup methods, and
    - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
    - a) Calculated recovery (%R), and
    - b) The laboratory's surrogate QC limits.
- ☑ R5 Test reports/summary forms for blank samples;
- ☑ 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.
- ☑ 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
- ☑ R8 Laboratory analytical 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.
- ☑ R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- ☑ R10 Other problems or anomalies.
- ☑ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Robyn Migues	Robyn Migues	Technical Director	07/31/09
Name (Printed)	Signature	Official Title (printed)	Date

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

Laboratory Name: GCAL	LRC Date: 07/31/09
Project Name: EL Campo TXARNG	Laboratory Job Number:209071723
Reviewer Name: Robyn Migues	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	√				
		Were all departures from standard conditions described in an exception report?	√				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	√				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	√				
R3	OI	**Test Reports**					
		Were all samples prepared and analyzed within holding times?	√				
		Are results bracketed by calibration standards (except ICP)?	√				
		Were calculations checked by a peer or supervisor?	√				
		Were all analyte identifications checked by a peer or supervisor?	√				
		Were sample quantitation limits reported for all analytes not detected?	√				
		Were all results for soil and sediment samples reported on a dry weight basis?	√				
		Were %moisture (or solids) reported for all solid samples?	√				
		If required for the project, TIC's reported?			√		
R4	OI	**Surrogate recovery data**					
		Were surrogates added prior to extraction and or analysis?			√		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?			√		
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	√				
		Were blanks analyzed at the appropriate frequency?	√				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	√				
		Were blank concentrations <MQL?	√				
R6	OI	**Laboratory control samples (LCS)**					
		Were all COC's included in the LCS?	√				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	√				
		Were LCSs analyzed at the required frequency?	√				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			√		
		Does the detectablity data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	√				
		Was the LCSD RPD within QC limits?			√		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	√				
		Were MS/MSD analyzed at the appropriate frequency?	√		√		
		Were MS (and MSD, if applicable) %Rs wthin the laboratory control limits?	√	√			1
		Were MS/MSD RPDs within control limits?			√		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	√				
		Were analytical duplicates analyzed at the appropriate frequency?	√				
		Were RPDs or relative within control limits?		√	√		2
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	√				
		Does the MQLs correspond to the concentration of the lowest non-zero calibration standard (except ICP)?	√				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	√				
		Were all necessary corrective actions performed for the reported data?	√				
		Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	√				

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

Laboratory Name: GCAL	LRC Date: 07/31/09
Project Name: EL Campo TXARNG	Laboratory Job Number:209071723
Reviewer Name: Robyn Migues	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
SI	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	√				
		Were percent RSDs or correlation coefficient criteria met?	√				
		Was the number of standards recommended in the method used for all analytes?	√				
		Were all points generated between the lowest and highest standard used to calculate the curve?	√				
		Are ICAL data available for all instruments used?	√				
		Has the initial calibration curve been verified using an appropriate second source standard?	√				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	√				
		Were % differences or recoveries for each analyte within the method-required QC limits?	√				
		Was the ICAL curve verifed for each analyte?	√				
		Was the absolute value of the analyte concentration in the inorganic CCB<MQL?	√				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	√				
		Were ion abundance data within the method-required QC limits?	√				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	√				
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	√				
		Were data associated with manual integrations flagged on the raw data?	√				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			√		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			√		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	√				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were precent differences, recoveries, and the linearity within the control limits?	√				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	√				
		Is the MDL either adjusted or supported by the analysis of DCSs?	√				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	√				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	√				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	√				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	√				
		Is documentation of the analyst's competency up-to-date and on file?	√				
S15	OI	**Verification/validation documentationf or methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	√				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method perfomed?	√				

[1] Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-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: 1= 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).

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

Laboratory Name: GCAL	LRC Date: 07/31/09
Project Name: EL Campo TXARNG	Laboratory Job Number:209071723
Reviewer Name: Robyn Migues	

ER#[1]	DESCRIPTION
1,2	In the SW-846 6010B analysis for prep batch 415156, the MS recovery is not applicable for Manganese because the sample concentration is greater than four times the spike concentration. The Sample/Duplicate RPD for Manganese for is outside the control limits. The heterogeneous nature of the QC sample is believed to be responsible for this. The Sample/Duplicate RPD for Lead is not applicable because the sample and/or duplicate concentration is less than five times the reporting limit.

---

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

CASE NARRATIVE

Client: Weston Solutions, Inc. **Report:** 209071723

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

METALS

In the SW-846 6010B analysis for prep batch 415156, the MS recovery is not applicable for Manganese because the sample concentration is greater than four times the spike concentration. The Sample/Duplicate RPD for Manganese for was outside the control limits. The heterogeneous nature of the QC sample is believed to be responsible for this. The Sample/Duplicate RPD for Lead is not applicable because the sample and/or duplicate concentration is less than five times the reporting limit.

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates an estimated value
U	Indicates the compound was analyzed for but not detected
B	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
B	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with ISO Guide 25 and NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Robyn Migues
Technical Director
GCAL REPORT 209071723

THIS REPORT CONTAINS 49 PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20907172301	EX-D1-9	Solid	07/15/2009 13:50	07/17/2009 09:45
20907172302	EX-D1-7	Solid	07/15/2009 13:55	07/17/2009 09:45
20907172303	EX-C1-5	Solid	07/15/2009 14:00	07/17/2009 09:45
20907172304	EX-A1-8	Solid	07/15/2009 14:05	07/17/2009 09:45
20907172305	EX-A1-9	Solid	07/15/2009 14:10	07/17/2009 09:45
20907172306	EX-C1-4	Solid	07/15/2009 14:15	07/17/2009 09:45
20907172307	EX-C1-3	Solid	07/15/2009 14:25	07/17/2009 09:45
20907172308	EX-C1-2	Solid	07/15/2009 14:35	07/17/2009 09:45
20907172309	EX-C1-1	Solid	07/15/2009 14:45	07/17/2009 09:45
20907172310	EX-A1-7	Solid	07/15/2009 14:55	07/17/2009 09:45

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 209071723
SOW No.:

EPA Sample No.	***Lab Sample ID.***
EX-D1-9	20907172301
EX-D1-7	20907172302
EX-C1-5	20907172303
EX-A1-8	20907172304
EX-A1-9	20907172305
EX-C1-4	20907172306
EX-C1-3	20907172307
EX-C1-2	20907172308
EX-C1-1	20907172309
EX-A1-7	20907172310

Were ICP interelement corrections applied ?	Yes / No	YES
Were ICP background corrections applied ?	Yes / No	YES
If yes-were raw data generated before application of background corrections ?	Yes / No	NO

COVER PAGE - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-D1-9

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Level: (low / med)

% Solids: 84.50

Lab Sample ID: 20907172301

Date Received: 07/17/09

Time: 0945

Date Collected: 07/15/09

Time: 1350

Analyte	Concentration	Units	C	Q	MQL	SQL	MDL	Method	Type
Manganese	155	mg/kg			0.71	0.025	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EX-D1-7
Lab Code: LA024 Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 209071723
Level: (low / med) % Solids: 86.13
Lab Sample ID: 20907172302
Date Received: 07/17/09 Time: 0945
Date Collected: 07/15/09 Time: 1355

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Manganese	282	mg/kg			0.70	0.024	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EX-C1-5
Lab Code: LA024 . Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 209071723
Level: (low / med) % Solids: 72.81
Lab Sample ID: 20907172303
Date Received: 07/17/09 Time: 0945
Date Collected: 07/15/09 Time: 1400

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	11.0	mg/kg			0.82	0.098	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL
Sample ID: EX-A1-8
Lab Code: LA024
Case No.:
Contract:
Matrix: (soil / water) Soil
SAS No.:
SDG No.: 209071723
Level: (low / med)
% Solids: 89.32
Lab Sample ID: 20907172304
Date Received: 07/17/09
Time: 0945
Date Collected: 07/15/09
Time: 1405

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Manganese	341	mg/kg			0.67	0.024	.021	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-A1-9

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 209071723

Level: (low / med) % Solids: 75.06

Lab Sample ID: 20907172305

Date Received: 07/17/09 Time: 0945

Date Collected: 07/15/09 Time: 1410

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	11.5	mg/kg			0.80	0.095	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-C1-4

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Level: (low / med)

% Solids: 90.62

Lab Sample ID: 20907172306

Date Received: 07/17/09

Time: 0945

Date Collected: 07/15/09

Time: 1415

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	5.68	mg/kg			0.66	0.078	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-C1-3

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 209071723

Level: (low / med) % Solids: 78.35

Lab Sample ID: 20907172307

Date Received: 07/17/09 Time: 0945

Date Collected: 07/15/09 Time: 1425

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	4.46	mg/kg			0.76	0.090	.071	SW-846 6010B	P

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-C1-2

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Level: (low / med)

% Solids: 84.79

Lab Sample ID: 20907172308

Date Received: 07/17/09

Time: 0945

Date Collected: 07/15/09

Time: 1435

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Lead	5.16	mg/kg			0.71	0.084	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-C1-1

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Level: (low / med)

% Solids: 91.35

Lab Sample ID: 20907172309

Date Received: 07/17/09

Time: 0945

Date Collected: 07/15/09

Time: 1445

Analyte	*Concentration*	*Units*	*C*	*Q*	*MQL*	*SQL*	*MDL*	*Method*	*Type*
Lead	6.47	mg/kg			0.65	0.077	.071	SW-846 6010B	P

FORM I - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: EX-A1-7

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Level: (low / med)

% Solids: 91.22

Lab Sample ID: 20907172310

Date Received: 07/17/09

Time: 0945

Date Collected: 07/15/09

Time: 1455

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Manganese	112	mg/kg			0.66	0.023	.021	SW-846 6010B	P

FORM I - IN

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209071723
Calibration Source: 183-34-1 CPI/EXAXOL
Instrument ID: ICP6 ICAL ID: 1
Date Analyzed: 07/19/09 Time: 1554

INITIAL CALIBRATION VERIFICATION

Analyte	**True**	**Found**	**CAL %R**	**Units**	**Method**	**Type**
Aluminum	10.0	10.8	108	mg/L	SW-846 6010B	P
Antimony	1.00	0.980	98	mg/L	SW-846 6010B	P
Arsenic	1.00	0.980	98	mg/L	SW-846 6010B	P
Barium	1.00	1.12	112	mg/L	SW-846 6010B	P
Beryllium	1.00	1.04	104	mg/L	SW-846 6010B	P
Boron	5.00	5.19	104	mg/L	SW-846 6010B	P
Cadmium	1.00	1.06	106	mg/L	SW-846 6010B	P
Calcium	10.0	10.7	107	mg/L	SW-846 6010B	P
Chromium	1.00	1.06	106	mg/L	SW-846 6010B	P
Cobalt	1.00	1.04	104	mg/L	SW-846 6010B	P
Copper	1.00	1.04	104	mg/L	SW-846 6010B	P
Iron	10.0	10.6	106	mg/L	SW-846 6010B	P
Lead	1.00	1.04	104	mg/L	SW-846 6010B	P
Lithium	1.00	0.950	95	mg/L	SW-846 6010B	P
Magnesium	10.0	10.9	109	mg/L	SW-846 6010B	P
Manganese	1.00	1.05	105	mg/L	SW-846 6010B	P
Molybdenum	1.00	0.980	98	mg/L	SW-846 6010B	P
Nickel	1.00	1.04	104	mg/L	SW-846 6010B	P
Potassium	10.0	10.5	105	mg/L	SW-846 6010B	P
Selenium	1.00	1.05	105	mg/L	SW-846 6010B	P
Silver	1.00	1.09	109	mg/L	SW-846 6010B	P
Sodium	10.0	10.5	105	mg/L	SW-846 6010B	P
Strontium	1.00	1.00	100	mg/L	SW-846 6010B	P
Thallium	1.00	1.08	108	mg/L	SW-846 6010B	P
Tin	1.00	1.01	101	mg/L	SW-846 6010B	P
Titanium	1.00	1.01	101	mg/L	SW-846 6010B	P
Vanadium	1.00	1.04	104	mg/L	SW-846 6010B	P
Zinc	1.00	1.04	104	mg/L	SW-846 6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209071723

Calibration Source: 183-37-10 INORGANIC VENTURES

Instrument ID: ICP6 ICAL ID: 1

Date Analyzed: 07/19/09 Time: 1614

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	0.200	0.240	119	mg/L	SW-846 6010B	P
Antimony	0.0600	0.0580	97	mg/L	SW-846 6010B	P
Arsenic	0.0100	0.0140	141	mg/L	SW-846 6010B	P
Barium	0.0100	0.0110	110	mg/L	SW-846 6010B	P
Beryllium	0.00500	0.00550	110	mg/L	SW-846 6010B	P
Boron	0.500	0.510	101	mg/L	SW-846 6010B	P
Cadmium	0.00500	0.00540	109	mg/L	SW-846 6010B	P
Calcium	0.100	0.110	113	mg/L	SW-846 6010B	P
Chromium	0.0100	0.0110	110	mg/L	SW-846 6010B	P
Cobalt	0.0100	0.0110	109	mg/L	SW-846 6010B	P
Copper	0.0100	0.0120	120	mg/L	SW-846 6010B	P
Iron	0.100	0.110	114	mg/L	SW-846 6010B	P
Lead	0.0150	0.0180	117	mg/L	SW-846 6010B	P
Lithium	0.0500	0.0460	91	mg/L	SW-846 6010B	P
Magnesium	0.100	0.100	102	mg/L	SW-846 6010B	P
Manganese	0.0150	0.0170	117	mg/L	SW-846 6010B	P
Molybdenum	0.0500	0.0520	104	mg/L	SW-846 6010B	P
Nickel	0.0400	0.0460	114	mg/L	SW-846 6010B	P
Potassium	0.500	0.510	103	mg/L	SW-846 6010B	P
Selenium	0.0400	0.0440	111	mg/L	SW-846 6010B	P
Silver	0.0100	0.0110	114	mg/L	SW-846 6010B	P
Sodium	1.00	1.14	114	mg/L	SW-846 6010B	P
Strontium	0.0500	0.0580	116	mg/L	SW-846 6010B	P
Thallium	0.0100	0.00790	79	mg/L	SW-846 6010B	P
Tin	0.100	0.110	106	mg/L	SW-846 6010B	P
Titanium	0.100	0.110	108	mg/L	SW-846 6010B	P
Vanadium	0.0200	0.0220	109	mg/L	SW-846 6010B	P
Zinc	0.0200	0.0400	201	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209071723

Calibration Source: 183-38-3 INORGANIC VENTURES Instrument ID: ICP6 ICAL ID: 1

Date Analyzed: 07/19/09 Time: 1648

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	5.00	100	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	99	mg/L	SW-846 6010B	P
Arsenic	0.500	0.520	104	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	100	mg/L	SW-846 6010B	P
Boron	2.50	2.47	99	mg/L	SW-846 6010B	P
Cadmium	0.500	0.510	102	mg/L	SW-846 6010B	P
Calcium	5.00	5.00	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	102	mg/L	SW-846 6010B	P
Copper	0.500	0.510	101	mg/L	SW-846 6010B	P
Iron	5.00	5.01	100	mg/L	SW-846 6010B	P
Lead	0.500	0.500	100	mg/L	SW-846 6010B	P
Lithium	0.500	0.480	96	mg/L	SW-846 6010B	P
Magnesium	5.00	5.00	100	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.510	101	mg/L	SW-846 6010B	P
Nickel	0.500	0.500	101	mg/L	SW-846 6010B	P
Potassium	10.0	9.81	98	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	101	mg/L	SW-846 6010B	P
Silicon	5.00	4.96	99	mg/L	SW-846 6010B	P
Silver	0.500	0.500	101	mg/L	SW-846 6010B	P
Sodium	20.0	19.8	99	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	99	mg/L	SW-846 6010B	P
Thallium	0.500	0.520	103	mg/L	SW-846 6010B	P
Tin	0.500	0.500	101	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	102	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	102	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	101	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209071723

Calibration Source: 183-38-3 INORGANIC VENTURES

Instrument ID: ICP6

ICAL ID: 1

Date Analyzed: 07/19/09

Time: 1804

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	5.08	102	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	98	mg/L	SW-846 6010B	P
Arsenic	0.500	0.510	102	mg/L	SW-846 6010B	P
Barium	0.500	0.510	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	101	mg/L	SW-846 6010B	P
Boron	2.50	2.44	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.510	102	mg/L	SW-846 6010B	P
Calcium	5.00	5.16	103	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	102	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	101	mg/L	SW-846 6010B	P
Copper	0.500	0.500	101	mg/L	SW-846 6010B	P
Iron	5.00	5.15	103	mg/L	SW-846 6010B	P
Lead	0.500	0.500	99	mg/L	SW-846 6010B	P
Lithium	0.500	0.490	97	mg/L	SW-846 6010B	P
Magnesium	5.00	5.19	104	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.500	100	mg/L	SW-846 6010B	P
Nickel	0.500	0.500	100	mg/L	SW-846 6010B	P
Potassium	10.0	9.85	99	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	5.09	102	mg/L	SW-846 6010B	P
Silver	0.500	0.500	101	mg/L	SW-846 6010B	P
Sodium	20.0	19.6	98	mg/L	SW-846 6010B	P
Strontium	0.500	0.490	99	mg/L	SW-846 6010B	P
Thallium	0.500	0.520	103	mg/L	SW-846 6010B	P
Tin	0.500	0.500	100	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	102	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	102	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	101	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209071723

Calibration Source: 183-38-3 INORGANIC VENTURES

Instrument ID: ICP6 ICAL ID: 1

Date Analyzed: 07/19/09 Time: 1917

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	5.00	4.97	99	mg/L	SW-846 6010B	P
Antimony	0.500	0.480	96	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	101	mg/L	SW-846 6010B	P
Barium	0.500	0.510	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	100	mg/L	SW-846 6010B	P
Boron	2.50	2.42	97	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	101	mg/L	SW-846 6010B	P
Calcium	5.00	4.96	99	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.500	100	mg/L	SW-846 6010B	P
Copper	0.500	0.500	100	mg/L	SW-846 6010B	P
Iron	5.00	4.96	99	mg/L	SW-846 6010B	P
Lead	0.500	0.490	98	mg/L	SW-846 6010B	P
Lithium	0.500	0.480	96	mg/L	SW-846 6010B	P
Magnesium	5.00	5.01	100	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.500	99	mg/L	SW-846 6010B	P
Nickel	0.500	0.490	99	mg/L	SW-846 6010B	P
Potassium	10.0	9.63	96	mg/L	SW-846 6010B	P
Selenium	0.500	0.490	98	mg/L	SW-846 6010B	P
Silicon	5.00	4.92	98	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	19.4	97	mg/L	SW-846 6010B	P
Strontium	0.500	0.490	98	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	101	mg/L	SW-846 6010B	P
Tin	0.500	0.500	99	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	102	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.510	101	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	101	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209071723

Lab Sample ID: ICB

ICAL ID: 1

Lab Sample DESC: ICB FOR HBN 415242 [ICP/5720]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP6

Date Analyzed: 07/19/09 Time: 1607

INITIAL CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209071723
Lab Sample ID: CCB		ICAL ID: 1	
Lab Sample DESC: CCB FOR HBN 415242 [ICP/5720]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 07/19/09	Time: 1654

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209071723
Lab Sample ID: 742321		ICAL ID: 1	
Lab Sample DESC: MB742321		Preparation Blank Matrix: (soil / water) Soil	
Instrument ID: ICP6		Date Analyzed: 07/19/09	Time: 1715

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Lead	0.071	U	mg/kg	0.071	0.60	SW-846 6010B	P
Manganese	0.16	B	mg/kg	0.021	0.60	SW-846 6010B	P

27

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209071723
Lab Sample ID: CCB		ICAL ID: 1	
Lab Sample DESC: CCB FOR HBN 415242 [ICP/5720]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP6		Date Analyzed: 07/19/09	Time: 1810

CONTINUING CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209071723
Lab Sample ID: CCB
ICAL ID: 1
Lab Sample DESC: CCB FOR HBN 415242 [ICP/5720]
Preparation Blank Matrix: (soil / water)
Instrument ID: ICP6
Date Analyzed: 07/19/09 Time: 1923

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Manganese	0.015	U	mg/L	0.00021	0.015	SW-846 6010B	P

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209071723

ICP ID Number: ICP6

ICS Source: 183-37-6 SPEX~183-37-1 SPEX

Concentration Units: mg/L

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A	Sol. AB	%R	Sol. A	Sol. AB	%R
Aluminum	200	200	229	216	108			
Antimony	0	1.00		1.06	106			
Arsenic	0	1.00		1.05	105			
Barium	0	0.50		0.56	112			
Beryllium	0	0.50		0.54	108			
Boron	0	1.00		1.08	108			
Cadmium	0	1.00		1.08	108			
Calcium	200	200	225	210	105			
Chromium	0	0.50		0.55	110			
Cobalt	0	0.50		0.53	106			
Copper	0	0.50		0.57	114			
Iron	80.0	80.0	89.3	83.9	105			
Lead	0	1.00		1.09	109			
Magnesium	200	200	230	216	108			
Manganese	0	0.50		0.55	110			
Molybdenum	0	1.00		1.05	105			
Nickel	0	1.00		1.06	106			
Selenium	0	1.00		1.13	113			
Silver	0	1.00		1.12	112			
Thallium	0	1.00		1.18	118			
Vanadium	0	0.50		0.55	110			
Zinc	0	1.00		1.11	111			

MS/MSD RECOVERY

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209071723

Matrix Spike - EPA Sample No: EX-D1-9 Method SW-846 6010B

SAMPLE NO. : 742324

COMPOUND	UNITS	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC	#	QC. LIMITS
Lead	mg/kg	23.7	1.03	24.3	98		75 - 125
Manganese	mg/kg	23.7	155	282	536	N	75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 1 out of 2 outside limits

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name: GCAL

Lab Code: LA024 Case No.:

Matrix: (soil / water) Soil

Level: (low / med)

Orig Lab Sample ID: 20907172301

Sample ID: EX-D1-9PDS

Contract:

SAS No.: SDG No.: 209071723

Lab Sample ID: 742768

Analyte	**LL**	**UL**	**Spiked Sample Result**	**C**	**Sample Result**	**C**	**Spike Added**	**% R**	**Q**	**Units**	**Method**	**Type**
Lead	75	125	22.7		1.03		23.7	92		mg/kg	SW-846 6010B	P
Manganese	75	125	176		155		23.7	89		mg/kg	SW-846 6010B	P

DUPLICATES

Lab Name: GCAL

Sample ID: EX-D1-9DUP

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

% Solids for Sample:

Level: (low / med)

% Solids for Duplicate:

Lab Sample ID: 742323

Analyte	***LL***	***UL***	***Sample***	***C***	***Duplicate***	***C***	***RPD***	***Q***	***Units***	***Method***	***Type***
Lead	0	20	1.03		1.85		57	*	mg/kg	SW-846 6010B	P
Manganese	0	20	155		348		77	*	mg/kg	SW-846 6010B	P

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS742322

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Lab Sample ID: 742322

LCS Source: 180-9-14 INORGANIC VENTURES

Analyte	True	Found	% R	LL	UL	Units	Method	Type
Lead	20.0	20.7	104	80	120	mg/kg	SW-846 6010B	P
Manganese	20.0	21.4	107	80	120	mg/kg	SW-846 6010B	P

SERIAL DILUTIONS

Lab Name: GCAL

Sample ID: EX-D1-9SD

Lab Code: LA024 Case No.

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209071723

Level: (low / med)

Org Lab Sample ID: 20907172301

Lab Sample ID: 742769

Analyte	LL	UL	Initial Sample Result	C	Serial Dilution Result	C	% Diff.	Q	Units	Method	Type
Lead			1.03		0.85	B	17.5		mg/kg	SW-846 6010B	P
Manganese	0	10	155		155		0		mg/kg	SW-846 6010B	P

FORM IX - IN

METHOD DETECTION LIMITS

Lab Name: GCAL

Sample ID:

Lab Code: LA024

SDG No.: 209071723

Study Date: (P)10/17/08

Instrument ID: (P) ICP5 / ICP6

Analyte	*MDL*	*Units*	*Type*
Lead	0.071	mg/kg	P
Manganese	0.021	mg/kg	P

IEC File Last Saved: 7/20/2009 8:21:49 AM
Printed On: 7/20/2009 10:08:01 AM

Results Data Set Name: 2090318 IEC_I
Method Name: ICP
Results Library: C:\pe\met\results2\Results\Results.md

Interfering Analytes

	Analytes	Aluminum,7429-90-5	Calcium,7440-70-2	Chromium,7440-47-3	Copper,7440-50-8
1	**Aluminum,7429-90-5**	**n/a**	0.0051258	-0.0400207	-0.132251
2	**Antimony,7440-36-0**	0.0179492	0.00209977	12.4757	0.0775186
5	**Arsenic,7440-38-2**	-0.167049	0.072707	1.34723	0.00959159
6	**Barium,7440-39-3**	0	0.0137205	0.00210163	0.0209223
7	**Beryllium,7440-41-7**	0	0	-0.211117	0.0319454
8	**Boron,7440-42-8**	0.012312	0.00466523	0.687199	0.0566646
9	**Cadmium,7440-43-9**	-0.00252923	0	-0.00682946	0.0833984
10	**Calcium,7440-70-2**	0.029381	**n/a**	-1.79411	0.381852
11	**Chromium,7440-47-3**	0.0507919	0	**n/a**	0.156201
12	**Cobalt,7440-48-4**	-0.00214498	0	0.107754	0.583736
13	**Copper,7440-50-8**	0.00350539	0.00394584	-0.175262	**n/a**
14	**Iron,7439-89-6**	0.0484253	0.00107505	0.322648	-0.00760521
15	**Lead,7439-92-1**	-0.328832	-0.0048314	-0.617794	8.69805
16	**Lithium,7439-93-2**	0.00177871	0.00118586	0.0112644	0.0239956
17	**Magnesium,7439-95-4**	0.0148608	0.0417867	-0.450866	0.040067
18	**Manganese, 7439-96-5**	-0.00174951	0.0201797	-0.0341244	0.0135016
19	**Molybdenum,7439-98-7**	-0.0140925	-0.0136712	-0.123921	0.0633878
20	**Nickel,7440-02-0**	-0.00367092	0.00191688	0.0165856	0.029184
21	**Potassium,7440-09-7**	-0.0296273	-0.0489272	-0.966881	-0.780911
23	**Selenium,7782-49-2**	0.00337914	0.158936	-0.12859	-0.0575345
24	**Silicon,7440-21-3**	0.129621	0.0213999	-0.059377	-0.01485
25	**Silver,7440-22-4**	0	-0.00628868	0.0196602	0.112721
26	**Sodium,7440-23-5**	0.15801	1.7198	0.778261	0.010989
27	**Strontium,7440-24-6**	0	0.0276851	-0.00829501	-0.00165849
28	**Thallium,7440-28-0**	0.00265522	0.0650365	0.201043	0.0142694
29	**Tin,7440-31-5**	0.0189882	-0.0500455	-0.273373	0.0172881
30	**Titanium,7440-32-6**	-0.00114134	-0.00112976	-0.0110929	0.00241505
31	**Vanadium,7440-62-2**	0.00220106	0.00382741	-0.866779	0.00505495
34	**Zinc,7440-66-6**	0.007955	-0.0537626	-0.00458583	0.694115
35	**Zirconium,7440-67-7**	0	0.00339605	0.00392414	0.0393352

IEC File Name: ICP62090318IEC

IEC File Last Saved: 7/20/2009 8:21:49 AM
Printed On: 7/20/2009 10:08:01 AM

Results Data Set Name: 2090318 IEC_I
Method Name: ICP
Results Library: C:\pe\met\results2\Results\Results.md

Interfering Analytes

	Analytes	Iron,7439-89-6	Magnesium,7439-95-4	Manganese, 7439-96-5	Nickel,7440-02-0
1	**Aluminum,7429-90-5**	0.706944	0.00662836	-0.329619	-1.17959
2	**Antimony,7440-36-0**	-0.177562	0.0220108	-0.0703392	0.0784969
5	**Arsenic,7440-38-2**	-0.145952	-0.00730553	-0.000998319	-1.30864
6	**Barium,7440-39-3**	0.0626289	0	-1.01896	0.0807982
7	**Beryllium,7440-41-7**	0.021987	0	0	0
8	**Boron,7440-42-8**	-0.30501	0.0220515	0.00154713	0.0368623
9	**Cadmium,7440-43-9**	0.0241224	0	0.0153359	0.0352933
10	**Calcium,7440-70-2**	-0.0296523	0.0157883	-0.00907461	0.188939
11	**Chromium,7440-47-3**	-0.156876	0.0252662	0.229703	0.00216543
12	**Cobalt,7440-48-4**	0.0532612	0	0.190805	0.151336
13	**Copper,7440-50-8**	-0.00353344	0.0387048	0.00558892	-0.00499047
14	**Iron,7439-89-6**	**n/a**	0.0151773	-0.00732303	0.0210605
15	**Lead,7439-92-1**	0.633688	0	-0.0440618	0.40388
16	**Lithium,7439-93-2**	0.513548	0.00251535	0.122964	-0.0525472
17	**Magnesium,7439-95-4**	-0.1102	**n/a**	-2.19031	0.160908
18	**Manganese, 7439-96-5**	-0.143767	0.0367068	**n/a**	0.00712562
19	**Molybdenum,7439-98-7**	-0.336648	0.00247675	0.0094322	0.2318
20	**Nickel,7440-02-0**	0.0308272	0	0.050027	**n/a**
21	**Potassium,7440-09-7**	-0.230527	-0.0411972	-4.2375	-1.66649
23	**Selenium,7782-49-2**	-0.998522	0.0701505	1.66558	-0.0184552
24	**Silicon,7440-21-3**	-0.141188	0.472989	0.165369	-0.184181
25	**Silver,7440-22-4**	0.007746	0	0.177525	0.00370739
26	**Sodium,7440-23-5**	0.116586	0.154875	-3.66251	-2.01979
27	**Strontium,7440-24-6**	-0.00160453	0	-0.0161512	-0.00733539
28	**Thallium,7440-28-0**	-0.224678	0.00458751	0.193427	-0.0119431
29	**Tin,7440-31-5**	-0.0122387	-0.00274942	-0.0249698	-0.0716513
30	**Titanium,7440-32-6**	0	-0.00198816	-0.0504404	-0.0214771
31	**Vanadium,7440-62-2**	0.0157915	-0.0881956	-0.0489963	-0.0402758
34	**Zinc,7440-66-6**	0.040451	0.0193471	0.294812	6.10384
35	**Zirconium,7440-67-7**	0.0128327	0	-0.0223717	-0.00387371

IEC File Last Saved: 7/20/2009 8:21:49 AM
Printed On: 7/20/2009 10:08:01 AM

Results Data Set Name: 2090318 IEC_I
Method Name: ICP
Results Library: C:\pe\met\results2\Results\Results.md

Interfering Analytes

	Analytes	Titanium,7440-32-6	Vanadium,7440-62-2
1	**Aluminum,7429-90-5**	0.947639	11.7709
2	**Antimony,7440-36-0**	0.27492	0.107677
5	**Arsenic,7440-38-2**	0.0631524	-31.1182
6	**Barium,7440-39-3**	0.0230954	-0.260445
7	**Beryllium,7440-41-7**	0.351349	0.0396
8	**Boron,7440-42-8**	0.639553	-0.630168
9	**Cadmium,7440-43-9**	-0.282071	-0.0732728
10	**Calcium,7440-70-2**	0.391311	0.396008
11	**Chromium,7440-47-3**	0.0643933	-0.508493
12	**Cobalt,7440-48-4**	2.19527	0.0224256
13	**Copper,7440-50-8**	-0.548071	-0.253141
14	**Iron,7439-89-6**	0.139591	-0.120378
15	**Lead,7439-92-1**	0.193528	-0.0232953
16	**Lithium,7439-93-2**	0.042984	0.00138388
17	**Magnesium,7439-95-4**	0.412177	0.787437
18	**Manganese, 7439-96-5**	0.103269	0.0033559
19	**Molybdenum,7439-98-7**	0.0492752	-0.185423
20	**Nickel,7440-02-0**	0.00420631	-0.00300721
21	**Potassium,7440-09-7**	-2.14192	-1.09338
23	**Selenium,7782-49-2**	0.150158	0.229736
24	**Silicon,7440-21-3**	0	0.221396
25	**Silver,7440-22-4**	0.00280201	-0.135266
26	**Sodium,7440-23-5**	-3.34234	-1.65733
27	**Strontium,7440-24-6**	0.0908888	-0.00137017
28	**Thallium,7440-28-0**	-7.87427	-18.8559
29	**Tin,7440-31-5**	-0.195245	-0.0982356
30	**Titanium,7440-32-6**	n/a	0.0454921
31	**Vanadium,7440-62-2**	-0.0641213	n/a
34	**Zinc,7440-66-6**	-0.440903	-0.0271549
35	**Zirconium,7440-67-7**	0.538135	-0.0165747

ICP LINEAR RANGES

Lab Name: GCAL

Sample ID:

Lab Code: LA024

SDG No.: 209071723

Study Date: 03/18/09

Instrument ID: ICP6

Analyte	***Concentration***	***% Recovery***	***Units***	***Type***
Aluminum	60000	96	mg/kg	P
Antimony	1400	96	mg/kg	P
Arsenic	1000	95	mg/kg	P
Barium	1000	101	mg/kg	P
Beryllium	200	99	mg/kg	P
Boron	2000	94	mg/kg	P
Cadmium	1000	99	mg/kg	P
Calcium	80000	97	mg/kg	P
Chromium	4800	100	mg/kg	P
Cobalt	6000	103	mg/kg	P
Copper	4000	97	mg/kg	P
Iron	2800	99	mg/kg	P
Lead	32000	102	mg/kg	P
Lithium	800	94	mg/kg	P
Magnesium	32000	95	mg/kg	P
Manganese	1400	95	mg/kg	P
Molybdenum	4000	94	mg/kg	P
Nickel	2400	97	mg/kg	P
Potassium	6400	95	mg/kg	P
Selenium	600	101	mg/kg	P
Silicon	2000	90	mg/kg	P
Silver	600	102	mg/kg	P
Sodium	24000	100	mg/kg	P
Strontium	400	109	mg/kg	P
Thallium	1000	105	mg/kg	P
Tin	2000	94	mg/kg	P
Titanium	1600	98	mg/kg	P
Vanadium	4000	97	mg/kg	P
Zinc	800	95	mg/kg	P
Zirconium	1000	97	mg/kg	P

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209071723

Method: SW-846 6010B

Method Type: P

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
EX-A1-7	07/19/09	1.25	g	50	mL
EX-A1-8	07/19/09	1.25	g	50	mL
EX-A1-9	07/19/09	1.25	g	50	mL
EX-C1-1	07/19/09	1.26	g	50	mL
EX-C1-2	07/19/09	1.25	g	50	mL
EX-C1-3	07/19/09	1.26	g	50	mL
EX-C1-4	07/19/09	1.26	g	50	mL
EX-C1-5	07/19/09	1.25	g	50	mL
EX-D1-7	07/19/09	1.25	g	50	mL
EX-D1-9	07/19/09	1.25	g	50	mL
EX-D1-9DUP	07/19/09	1.25	g	50	mL
EX-D1-9MS	07/19/09	1.25	g	50	mL
LCS742322	07/19/09	1.25	g	50	mL
MB742321	07/19/09	1.25	g	50	mL

ANALYSIS RUN LOG

Lab Name: GCAL Contract: Start Date: 07/19/09

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209071723 End Date: 07/19/09

Instrument ID Number: ICP6 Method: SW-846 6010B Method Type: P

				Analyte Symbols																												
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	1554													X			X															
ICV2	*	1	1600																															
ICB	*	1	1607													X			X															
CRDL	*	1	1614													X			X															
CRDL2	*	1	1626													~~X~~			~~X~~															
ICSA	*	1	1633													X			X															
ICSAB	*	1	1640													X			X															
CCV	*	1	1648													X			X															
CCB	*	1	1654													X			X															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1703																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1709																															
MB742321	*	1	1715													X			X															
LCS742322	*	1	1723													X			X															
EX-D1-9	*	1	1730																X															
EX-D1-9DUP	*	1	1736													X			X															
EX-D1-9MS	*	1	1742													X			X															
EX-D1-9PDS	*	1	1747													X			X															
EX-D1-9SD	*	5	1752													X			X															
EX-D1-7	*	1	1759																X															
CCV	*	1	1804													X			X															
CCB	*	1	1810													X			X															
EX-C1-5	*	1	1817													X																		
EX-A1-8	*	1	1823																X															
EX-A1-9	*	1	1828													X																		
EX-C1-4	*	1	1834													X																		
EX-C1-3	*	1	1840													X																		
EX-C1-2	*	1	1846													X																		

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 07/19/09

Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 209071723
End Date: 07/19/09

Instrument ID Number: ICP6
Method: SW-846 6010B
Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
EX-C1-1	*	1	1852													X																		
EX-A1-7	*	1	1858																X															
CCV	*	1	1917													X			X															
CCB	*	1	1923													X			X															

FORM XIV - IN

ICP SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	Start: 8:00 End: 13:00	**BATCH NO:**	415156
MATRIX:	WATER ☐ SOIL ☑ TCLP EXT ☐ ORGANIC ☐	**METHOD:**	200.0 ☐ 200.7 ☐ 3010A ☐ 3050B ☑ 3051 ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT mL [✓ g]	FINAL VOLUME (mL)	SAMPLE TYPE	COMMENTS	REAGENTS/ STANDARDS
1	QC ACCOUNT	MB for HBN 415156 [DIGM/21500]	742321	1.25	50	MB		HNO3 180-10-10
2	QC ACCOUNT	LCS for HBN 415156 [DIGM/21500	742322	1.25		LCS		
3	3031	EX-D1-9	20907172301	1.25		SAMPLE		HCL 180-10-11
4	QC ACCOUNT	EX-D1-9(742221DUP)	742323	1.25		DUP		
5	QC ACCOUNT	EX-D1-9(742221MS)	742324	1.25		MS		H2O2 180-7-1
6	3031	EX-D1-7	20907172302	1.25		SAMPLE		
7	3031	EX-C1-5	20907172303	1.25		SAMPLE		
8	3031	EX-A1-8	20907172304	1.25		SAMPLE		
9	3031	EX-A1-9	20907172305	1.25		SAMPLE		
10	3031	EX-C1-4	20907172306	1.26		SAMPLE		
11	3031	EX-C1-3	20907172307	1.26		SAMPLE		
12	3031	EX-C1-2	20907172308	1.25		SAMPLE		
13	3031	EX-C1-1	20907172309	1.26		SAMPLE		
14	3031	EX-A1-7	20907172310	1.25		SAMPLE		
15								
16								
17								SPIKING SOLUTIONS (LCS/MS)
18								
19								GCALI-1 - 250uL 180-9-14
20								
21								GCALI-2 - 250uL 180-9-15
22								
23								ORGANOMETALLIC ICP SPIKE 0.025g
24								
25								
26								
27								
28								

COMMENTS:

BALANCE ID: VS-104

TEMP: 950

BLOCK ID	**TECHNICIAN**	**DATE**
AL 33- 12-17-08	JL	7-19-09
REPIPET BOTTLES VERIFIED	**REVIEW**	**DATE**
JL	ab	7/21/09

Data Usability Review Evaluation Tool: Metals QC

Client Name:Weston Solutions ,Inc.	Project Number:
Affected Property Location: El Campo	Project Manager: Russ Johnson
Laboratory:GCAL	Laboratory Job No:209071723
Reviewer: Robyn Migues	Date Checked: 07/31/09

ITEM		Yes	No	N/A	Comments
R5	Method Blank Data Included in Lab Package? Criteria met? (RL)	✓ ✓			
R6	LCS Data Included in Lab Package? %R ciriteria met?	✓ ✓			
R7	Matrix Spike Data Included in Lab Package? %R Criteria met?	✓ ✓		 ✓	See ER & narrative
R8	Sample Duplicate Data Included in Lab Package? RPD criteria met? (MSD)	✓ 	 ✓	 ✓	See ER & narrative
S1	Initial Calibration Data Inluded in Lab Package? Blank/1 std (ICP) or blank/3 stds (AA) or blank/5stds (Hg)	 ✓	✓ 		
S2	Continuing Calibration Data Included in Lab Package? %R criteria met?	✓ ✓			
S8	Interference Check Sample Data Included (ICP Only)? R% criteria met? (80-120%)	✓ ✓			
S9	Dilution Test Data Included? Results within 10% original?	✓ ✓			

TOTAL SOLIDS AND MOISTURE ANALYSIS FOR DRY WEIGHT CORRECTION

HBN	415327			ANALYST:	CSS		DATE:	7/21/2009
SOLI	12618			REVIEW:	Bmc 7/22/09		TIME:	12:00:00
Sample ID	Pan ID	Pan Mass (g)	Initial Mass (g) (Sample & Pan)	Final Mass (g) (Sample & Pan)	Initial Mass Less Pan (g)	Final Mass Less Pan (g)	% Moisture In Sample	% Solids In Sample
20907172301	A	0.9945	11.4456	9.8259	10.4511	8.8314	15.50	84.50
20907172302	B	0.9778	11.5804	10.1100	10.6026	9.1322	13.87	86.13
20907172303	C	0.9900	11.2757	8.4798	10.2857	7.4898	27.18	72.82
20907172304	D	0.9737	11.7854	10.6313	10.8117	9.6576	10.67	89.33
20907172305	E	0.9527	11.0977	8.5685	10.1450	7.6158	24.93	75.07
20907172306	F	0.9622	11.3896	10.4117	10.4274	9.4495	9.38	90.62
20907172307	G	0.9840	11.2328	9.0142	10.2488	8.0302	21.65	78.35
20907172308	H	0.9950	11.1130	9.5747	10.1180	8.5797	15.20	84.80
20907172309	I	0.9995	11.3564	10.4609	10.3569	9.4614	8.65	91.35
20907172310	J	0.9735	11.1793	10.2840	10.2058	9.3105	8.77	91.23
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!

TS % = (Final Sample Mass x 100) / Initial Sample Mass

TM % = 100-TS%

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC
7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

CHAIN OF CUSTODY RECORD

Lab use only

Client Name	Client #	Workorder #	Due Date
weston	3031	209071723	7-29-9

Report to:
Client: Weston Solutions
Address: 2705 Bee Cave Rd STE 100
Austin, TX 78746
Contact: Russ K Johnson
Phone: 512 651 7115
Fax: 512 651 7101

Bill to:
Client: SAME
Address:
Contact:
Phone:
Fax:

Lab use only:
Custody Seal
used ☐ yes ☐ no
in tact ☐ yes ☐ no
Temperature °C 3.8

P.O. Number:
Project Name/Number: TXARNG - El Campo Armory

Sampled By: Brent C Ferry

Matrix¹	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	Lead	Manganese	Hold *	Remarks:	Lab ID
S	7/15/09	1350		X	Ex-D1-9	NA	1		X			1
		1355			Ex-D1-7				X			2
		1400			Ex-C1-5			X				3
		1405			Ex-A1-8			~~X~~ BF	X			4
		1410			Ex-A1-9			X	~~X~~ BF			5
		1415			Ex-C1-4			X				6
		1420			Ex-C1-4A			X		X	Hold	
		1425			Ex-C1-3			X				7
		1430			Ex-C1-3A			X		X	Hold	
		1435			Ex-C1-2			X				8
		1440			Ex-C1-2A			X		X	Hold	
		1445			Ex-C1-1			X				9
		1450			Ex-C1-1A			X		X	Hold	
S	7/15/09	1455		X	Ex-A1-7	NA	1		X			10

Turn Around Time: ☐ 24-48 hrs. ☐ 3 days ☐ 1 week ☒ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
FedEx		7-17-9	945

Note: TRRP T3

*Do not need to analyze hold samples per Brent Ferry. EM 07/29/09

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11/98

Matrix¹: W = water S = soil SD = solid L = liquid SL = sludge O = oil CT = charcoal tube A = air bag

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

PRESERVATION CHECKLIST / COOLER RECEIPT

Gulf Coast Analytical Laboratories, Inc.

WO: 209071723
Desc:
Work ID: El Campo
Project Seq: 92491
Client: 3031 - Weston Solutions, Inc.
Profile: 113215 - El Campo - El Campo

Type: M
Report: REVIEW_RPT
Status: WP
Created: 7/17/2009 11:01
QA:
PO: 0064776

WORKORDER SAMPLES

			pH PRESERVATIVE			VOA HEADSPACE			
Container ID	**Type**	**Preservative**	A	U	N\A	A	U	N\A	**CONTAINER CONDITION**
20907172301-1	4	NONE			X			X	OK
20907172302-1	4	NONE			X			X	OK
20907172303-1	4	NONE			X			X	OK
20907172304-1	4	NONE			X			X	OK
20907172305-1	4	NONE			X			X	OK
20907172306-1	4	NONE			X			X	OK
20907172307-1	4	NONE			X			X	OK
20907172308-1	4	NONE			X			X	OK
20907172309-1	4	NONE			X			X	OK
20907172310-1	4	NONE			X			X	OK

pH PRESERVATIVE VOA HEADSPACE

A = ACCEPTABLE
U = UNACCEPTABLE
N\A = NOT APPLICABLE

COOLER (S) TEMPERATURE [✓ A] U LIMIT = 4C + \ - 2C
MAXIMUM VOLATILE HEADSPACE BUBBLE 6MM

Custody Seal
used [ ] Yes [ ] No
in tact [ ] Yes [ ] No

LABEL(S)
VERIFIED________________ CUSTODIAN________________

NELAP CERTIFICATE NUMBER 01955

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.

Report Date 07/14/2009

GCAL Report 209070905

Deliver To	Weston Solutions 2705 Bee Cave Road Suite 100 Austin, TX 78746 512-651-7115
Attn	Russ Johnson

Customer Weston Solutions, Inc.

Project El Campo TXARNG

Appendix A Laboratory Data Package Cover Page

This data package consists of:

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

☑ R1 Field chain-of-custody documentation;

☑ R2 Sample identification cross-reference;

☑ R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).

☑ R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.

☑ R5 Test reports/summary forms for blank samples;

☑ 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.

☑ 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

☑ R8 Laboratory analytical 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.

☑ R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

☑ R10 Other problems or anomalies.

☑ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Robyn Migues	Robyn Migues	Technical Director	07/20/09
Name (Printed)	Signature	Official Title (printed)	Date

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

Laboratory Name: GCAL	LRC Date: 07/20/09
Project Name: EL Campo TXARNG	Laboratory Job Number:209070905
Reviewer Name: Robyn Migues	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-custody (C-O-C)					
R1	OI	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	√				
		Were all departures from standard conditions described in an exception report?	√				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	√				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	√				
R3	OI	**Test Reports**					
		Were all samples prepared and analyzed within holding times?	√				
		Are results bracketed by calibration standards (except ICP)?	√				
		Were calculations checked by a peer or supervisor?	√				
		Were all analyte identifications checked by a peer or supervisor?	√				
		Were sample quantitation limits reported for all analytes not detected?	√				
		Were all results for soil and sediment samples reported on a dry weight basis?	√				
		Were %moisture (or solids) reported for all solid samples?	√				
		If required for the project, TIC's reported?			√		
R4	OI	**Surrogate recovery data**					
		Were surrogates added prior to extraction and or analysis?	√				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	√				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	√				
		Were blanks analyzed at the appropriate frequency?	√				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	√				
		Were blank concentrations <MQL?	√				
R6	OI	**Laboratory control samples (LCS)**					
		Were all COC's included in the LCS?	√				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	√				
		Were LCSs analyzed at the required frequency?	√				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			√		
		Does the detectablity data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	√				
		Was the LCSD RPD within QC limits?			√		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	√				
		Were MS/MSD analyzed at the appropriate frequency?	√		√		
		Were MS (and MSD, if applicable) %Rs wthin the laboratory control limits?	√	√			1
		Were MS/MSD RPDs within control limits?			√		
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	√				
		Were analytical duplicates analyzed at the appropriate frequency?	√				
		Were RPDs or relative within control limits?	√		√		2
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	√				
		Does the MQLs correspond to the concentration of the lowest non-zero calibration standard (except ICP)?	√				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	√				
		Were all necessary corrective actions performed for the reported data?	√				
		Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	√				

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

Laboratory Name: GCAL	LRC Date: 07/20/09
Project Name: EL Campo TXARNG	Laboratory Job Number:209070905
Reviewer Name: Robyn Migues	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
SI	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	√				
		Were percent RSDs or correlation coefficient criteria met?	√				
		Was the number of standards recommended in the method used for all analytes?	√				
		Were all points generated between the lowest and highest standard used to calculate the curve?	√				
		Are ICAL data available for all instruments used?	√				
		Has the initial calibration curve been verified using an appropriate second source standard?	√				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	√				
		Were % differences or recoveries for each analyte within the method-required QC limits?	√				
		Was the ICAL curve verifed for each analyte?	√				
		Was the absolute value of the analyte concentration in the inorganic CCB<MQL?	√				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	√				
		Were ion abundance data within the method-required QC limits?	√				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	√				
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	√				
		Were data associated with manual integrations flagged on the raw data?	√				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			√		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			√		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	√				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were precent differences, recoveries, and the linearity within the control limits?	√				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	√				
		Is the MDL either adjusted or supported by the analysis of DCSs?	√				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	√				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	√				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	√				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	√				
		Is documentation of the analyst's competency up-to-date and on file?	√				
S15	OI	**Verification/validation documentationf or methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	√				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method perfomed?	√				

[1] Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-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: 1= 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).

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

Laboratory Name: GCAL	LRC Date: 07/20/09
Project Name: EL Campo TXARNG	Laboratory Job Number:209070905
Reviewer Name: Robyn Migues	

ER#[1]	DESCRIPTION
1,2	In the SW-846 6010B analysis for prep batch 414700, the MS recovery was outside the control limits for Barium. The LCS recovery was within control limits. This indicates the analysis is in control and the sample is affected by matrix interference or the element is non-homogeneous in the sample matrix. A post-digestion spike was performed on the QC sample for this batch with a recovery of 99%. The Sample/Duplicate RPDs for Arsenic and Cadmium are not applicable because the sample and/or duplicate concentration is less than five times the reporting limit.

---

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

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the **Environmental** Protection Agency or other recognized agencies. The samples and their corresponding **extracts will** be maintained for a period of 30 days unless otherwise arranged. Following this retention **period** the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates an estimated value
U	Indicates the compound was analyzed for but not detected
B	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
B	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with ISO **Guide** 25 and NELAC, this report shall be reproduced only in full and with the written permission of GCAL. **The results** contained within this report relate only to the samples reported. The documented results are **presented** within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as **a permanent** record thereof. The results contained within this report are intended for the use of the client. **Any** unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the **contract** and Statement of Work both technically and for completeness, for other than the conditions in the **case** narrative. Release of the data contained in this hardcopy data package and in the **computer**-readable data submitted has been authorized by the Quality Assurance Manager or his/her **designee**, as verified by the following signature.

Robyn Migues
Technical Director
GCAL REPORT 209070905

THIS REPORT CONTAINS ______ PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
20907090501	GEC-BACKFILL	Solid	07/08/2009 16:00	07/09/2009 09:30

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GEC-BACKFILL

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Matrix: (soil/water) Soil

Sample wt/vol: 5.13 (g/ml) g

Lab Sample ID: 20907090501

Level: (low/med) LOW

Lab File ID: 2090713/i9378

% Moisture: not dec. 20.6

Date Collected: 07/08/09 Time: 1600

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 07/09/09

Instrument ID: MSV5

Date Analyzed: 07/13/09 Time: 1230

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: WAS

Soil Aliquot Volume: (µL)

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MQL	SQL	MDL
630-20-6	1,1,1,2-Tetrachloroethane	0.129	U	6.14	0.129	0.105
71-55-6	1,1,1-Trichloroethane	0.283	U	6.14	0.283	0.231
79-34-5	1,1,2,2-Tetrachloroethane	0.339	U	6.14	0.339	0.276
79-00-5	1,1,2-Trichloroethane	0.288	U	6.14	0.288	0.235
75-34-3	1,1-Dichloroethane	0.407	U	6.14	0.407	0.332
75-35-4	1,1-Dichloroethene	0.819	U	6.14	0.819	0.667
563-58-6	1,1-Dichloropropene	0.255	U	6.14	0.255	0.208
96-18-4	1,2,3-Trichloropropane	0.426	U	6.14	0.426	0.347
120-82-1	1,2,4-Trichlorobenzene	0.374	U	6.14	0.374	0.305
95-63-6	1,2,4-Trimethylbenzene	0.366	U	6.14	0.366	0.298
96-12-8	1,2-Dibromo-3-chloropropane	0.983	U	6.14	0.983	0.801
106-93-4	1,2-Dibromoethane	0.293	U	6.14	0.293	0.239
95-50-1	1,2-Dichlorobenzene	0.399	U	6.14	0.399	0.325
107-06-2	1,2-Dichloroethane	0.161	U	6.14	0.161	0.131
540-59-0	1,2-Dichloroethene	0.427	U	12.3	0.427	0.348
78-87-5	1,2-Dichloropropane	0.133	U	6.14	0.133	0.108
108-67-8	1,3,5-Trimethylbenzene	0.296	U	6.14	0.296	0.241
541-73-1	1,3-Dichlorobenzene	0.391	U	6.14	0.391	0.319
142-28-9	1,3-Dichloropropane	0.220	U	6.14	0.220	0.179
106-46-7	1,4-Dichlorobenzene	0.504	U	6.14	0.504	0.411
594-20-7	2,2-Dichloropropane	1.42	U	6.14	1.42	1.16
78-93-3	2-Butanone	0.740	U	6.14	0.740	0.603
95-49-8	2-Chlorotoluene	0.324	U	6.14	0.324	0.264
591-78-6	2-Hexanone	0.416	U	6.14	0.416	0.339
106-43-4	4-Chlorotoluene	0.376	U	6.14	0.376	0.306
99-87-6	4-Isopropyltoluene	0.326	U	6.14	0.326	0.266
108-10-1	4-Methyl-2-pentanone	0.418	U	6.14	0.418	0.341
67-64-1	Acetone	1.30	U	30.7	1.30	1.06
71-43-2	Benzene	0.168	U	6.14	0.168	0.137
108-86-1	Bromobenzene	0.369	U	6.14	0.369	0.301
74-97-5	Bromochloromethane	0.474	U	6.14	0.474	0.386
75-27-4	Bromodichloromethane	0.184	U	6.14	0.184	0.150
75-25-2	Bromoform	0.283	U	6.14	0.283	0.231

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GEC-BACKFILL

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Matrix: (soil/water) Soil

Sample wt/vol: 5.13 (g/ml) g

Lab Sample ID: 20907090501

Level: (low/med) LOW

Lab File ID: 2090713/i9378

% Moisture: not dec. 20.6

Date Collected: 07/08/09 Time: 1600

GC Column: RTX-VMS-30 ID: .25 (mm)

Date Received: 07/09/09

Instrument ID: MSV5

Date Analyzed: 07/13/09 Time: 1230

Soil Extract Volume: (µL)

Dilution Factor: 1 Analyst: WAS

Soil Aliquot Volume: (µL)

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MQL	SQL	MDL
74-83-9	Bromomethane	1.79	U	6.14	1.79	1.46
104-51-8	n-Butylbenzene	0.428	U	6.14	0.428	0.349
75-15-0	Carbon disulfide	0.571	U	6.14	0.571	0.465
56-23-5	Carbon tetrachloride	0.290	U	6.14	0.290	0.236
108-90-7	Chlorobenzene	0.231	U	6.14	0.231	0.188
75-00-3	Chloroethane	0.809	U	6.14	0.809	0.659
67-66-3	Chloroform	0.302	U	6.14	0.302	0.246
74-87-3	Chloromethane	0.929	U	6.14	0.929	0.757
124-48-1	Dibromochloromethane	0.172	U	6.14	0.172	0.140
74-95-3	Dibromomethane	0.385	U	6.14	0.385	0.314
75-71-8	Dichlorodifluoromethane	0.136	U	6.14	0.136	0.111
10061-01-5	cis-1,3-Dichloropropene	0.178	U	6.14	0.178	0.145
10061-02-6	trans-1,3-Dichloropropene	0.270	U	6.14	0.270	0.220
100-41-4	Ethylbenzene	0.253	U	6.14	0.253	0.206
87-68-3	Hexachlorobutadiene	0.286	U	6.14	0.286	0.233
98-82-8	Isopropylbenzene (Cumene)	0.239	U	6.14	0.239	0.195
74-88-4	Methyl iodide	1.61	U	6.14	1.61	1.31
75-09-2	Methylene chloride	0.427	U	12.3	0.427	0.348
91-20-3	Naphthalene	1.01	U	6.14	1.01	0.825
100-42-5	Styrene	0.324	U	6.14	0.324	0.264
127-18-4	Tetrachloroethene	0.254	U	6.14	0.254	0.207
108-88-3	Toluene	0.245	U	6.14	0.245	0.200
79-01-6	Trichloroethene	0.287	U	6.14	0.287	0.234
75-69-4	Trichlorofluoromethane	0.164	U	6.14	0.164	0.134
76-13-1	Trichlorotrifluoroethane	1.41	U	6.14	1.41	1.15
75-01-4	Vinyl chloride	0.166	U	6.14	0.166	0.135
1330-20-7	Xylene (total)	0.842	U	12.3	0.842	0.686
156-59-2	cis-1,2-Dichloroethene	0.211	U	6.14	0.211	0.172
136777-61-	m,p-Xylene	0.617	U	6.14	0.617	0.503
103-65-1	n-Propylbenzene	0.333	U	6.14	0.333	0.271
95-47-6	o-Xylene	0.232	U	6.14	0.232	0.189
135-98-8	sec-Butylbenzene	0.308	U	6.14	0.308	0.251
1634-04-4	tert-Butyl methyl ether (MTBE)	0.205	U	6.14	0.205	0.167

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GEC-BACKFILL

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Matrix: (soil/water) Soil

Sample wt/vol: 5.13 (g/ml) g Lab Sample ID: 20907090501

Level: (low/med) LOW Lab File ID: 2090713/i9378

% Moisture: not dec. 20.6 Date Collected: 07/08/09 Time: 1600

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received: 07/09/09

Instrument ID: MSV5 Date Analyzed: 07/13/09 Time: 1230

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: WAS

Soil Aliquot Volume: (µL)

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MQL	SQL	MDL
98-06-6	tert-Butylbenzene	0.291	U	6.14	0.291	0.237
156-60-5	trans-1,2-Dichloroethene	0.248	U	6.14	0.248	0.202
110-57-6	trans-1,4-Dichloro-2-butene	0.697	U	6.14	0.697	0.568

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB740418

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Matrix: (soil/water) Soil

Sample wt/vol: 5 (g/ml) g Lab Sample ID: 740418

Level: (low/med) LOW Lab File ID: 2090713/i9368

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received:

Instrument ID: MSV5 Date Analyzed: 07/13/09 Time: 0814

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: WAS

Soil Aliquot Volume: (µL)

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MQL	SQL	MDL
67-64-1	Acetone	1.06	U	25.0	1.06	1.06
74-97-5	Bromochloromethane	0.386	U	5.00	0.386	0.386
75-27-4	Bromodichloromethane	0.150	U	5.00	0.150	0.150
75-25-2	Bromoform	0.231	U	5.00	0.231	0.231
74-83-9	Bromomethane	1.46	U	5.00	1.46	1.46
75-15-0	Carbon disulfide	0.465	U	5.00	0.465	0.465
56-23-5	Carbon tetrachloride	0.236	U	5.00	0.236	0.236
75-00-3	Chloroethane	0.659	U	5.00	0.659	0.659
136777-61-	m,p-Xylene	0.503	U	5.00	0.503	0.503
67-66-3	Chloroform	0.246	U	5.00	0.246	0.246
74-87-3	Chloromethane	0.757	U	5.00	0.757	0.757
124-48-1	Dibromochloromethane	0.140	U	5.00	0.140	0.140
74-95-3	Dibromomethane	0.314	U	5.00	0.314	0.314
75-71-8	Dichlorodifluoromethane	0.111	U	5.00	0.111	0.111
75-34-3	1,1-Dichloroethane	0.332	U	5.00	0.332	0.332
107-06-2	1,2-Dichloroethane	0.131	U	5.00	0.131	0.131
156-59-2	cis-1,2-Dichloroethene	0.172	U	5.00	0.172	0.172
156-60-5	trans-1,2-Dichloroethene	0.202	U	5.00	0.202	0.202
75-09-2	Methylene chloride	0.348	U	10.0	0.348	0.348
78-87-5	1,2-Dichloropropane	0.108	U	5.00	0.108	0.108
10061-01-5	cis-1,3-Dichloropropene	0.145	U	5.00	0.145	0.145
10061-02-6	trans-1,3-Dichloropropene	0.220	U	5.00	0.220	0.220
100-41-4	Ethylbenzene	0.206	U	5.00	0.206	0.206
591-78-6	2-Hexanone	0.339	U	5.00	0.339	0.339
98-82-8	Isopropylbenzene (Cumene)	0.195	U	5.00	0.195	0.195
78-93-3	2-Butanone	0.603	U	5.00	0.603	0.603
74-88-4	Methyl iodide	1.31	U	5.00	1.31	1.31
108-10-1	4-Methyl-2-pentanone	0.341	U	5.00	0.341	0.341
103-65-1	n-Propylbenzene	0.271	U	5.00	0.271	0.271
100-42-5	Styrene	0.264	U	5.00	0.264	0.264
127-18-4	Tetrachloroethene	0.207	U	5.00	0.207	0.207
630-20-6	1,1,1,2-Tetrachloroethane	0.105	U	5.00	0.105	0.105
79-34-5	1,1,2,2-Tetrachloroethane	0.276	U	5.00	0.276	0.276

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
MB740418

Lab Name: GCAL
Contract:

Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 209070905

Matrix: (soil/water) Soil

Sample wt/vol: 5 (g/ml) g
Lab Sample ID: 740418

Level: (low/med) LOW
Lab File ID: 2090713/i9368

% Moisture: not dec.
Date Collected:
Time:

GC Column: RTX-VMS-30 ID: .25 (mm)
Date Received:

Instrument ID: MSV5
Date Analyzed: 07/13/09
Time: 0814

Soil Extract Volume: (µL)
Dilution Factor: 1
Analyst: WAS

Soil Aliquot Volume: (µL)

CONCENTRATION UNITS: ug/kg

CAS NO.	COMPOUND	RESULT	Q	MQL	SQL	MDL
120-82-1	1,2,4-Trichlorobenzene	0.305	U	5.00	0.305	0.305
71-55-6	1,1,1-Trichloroethane	0.231	U	5.00	0.231	0.231
79-00-5	1,1,2-Trichloroethane	0.235	U	5.00	0.235	0.235
75-69-4	Trichlorofluoromethane	0.134	U	5.00	0.134	0.134
96-18-4	1,2,3-Trichloropropane	0.347	U	5.00	0.347	0.347
95-63-6	1,2,4-Trimethylbenzene	0.298	U	5.00	0.298	0.298
108-67-8	1,3,5-Trimethylbenzene	0.241	U	5.00	0.241	0.241
75-01-4	Vinyl chloride	0.135	U	5.00	0.135	0.135
95-47-6	o-Xylene	0.189	U	5.00	0.189	0.189
96-12-8	1,2-Dibromo-3-chloropropane	0.801	U	5.00	0.801	0.801
106-93-4	1,2-Dibromoethane	0.239	U	5.00	0.239	0.239
1634-04-4	tert-Butyl methyl ether (MTBE)	0.167	U	5.00	0.167	0.167
99-87-6	4-Isopropyltoluene	0.266	U	5.00	0.266	0.266
540-59-0	1,2-Dichloroethene	0.348	U	10.0	0.348	0.348
1330-20-7	Xylene (total)	0.686	U	10.0	0.686	0.686
110-57-6	trans-1,4-Dichloro-2-butene	0.568	U	5.00	0.568	0.568
594-20-7	2,2-Dichloropropane	1.16	U	5.00	1.16	1.16
76-13-1	Trichlorotrifluoroethane	1.15	U	5.00	1.15	1.15
563-58-6	1,1-Dichloropropene	0.208	U	5.00	0.208	0.208
142-28-9	1,3-Dichloropropane	0.179	U	5.00	0.179	0.179
108-86-1	Bromobenzene	0.301	U	5.00	0.301	0.301
95-49-8	2-Chlorotoluene	0.264	U	5.00	0.264	0.264
106-43-4	4-Chlorotoluene	0.306	U	5.00	0.306	0.306
98-06-6	tert-Butylbenzene	0.237	U	5.00	0.237	0.237
135-98-8	sec-Butylbenzene	0.251	U	5.00	0.251	0.251
541-73-1	1,3-Dichlorobenzene	0.319	U	5.00	0.319	0.319
106-46-7	1,4-Dichlorobenzene	0.411	U	5.00	0.411	0.411
104-51-8	n-Butylbenzene	0.349	U	5.00	0.349	0.349
95-50-1	1,2-Dichlorobenzene	0.325	U	5.00	0.325	0.325
87-68-3	Hexachlorobutadiene	0.233	U	5.00	0.233	0.233
91-20-3	Naphthalene	2.74	J	5.00	0.825	0.825
75-35-4	1,1-Dichloroethene	0.667	U	5.00	0.667	0.667
71-43-2	Benzene	0.137	U	5.00	0.137	0.137

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB740418

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Matrix: (soil/water) Soil

Sample wt/vol: 5 (g/ml) g Lab Sample ID: 740418

Level: (low/med) LOW Lab File ID: 2090713/i9368

% Moisture: not dec. Date Collected: Time:

GC Column: RTX-VMS-30 ID: .25 (mm) Date Received:

Instrument ID: MSV5 Date Analyzed: 07/13/09 Time: 0814

Soil Extract Volume: (µL) Dilution Factor: 1 Analyst: WAS

Soil Aliquot Volume: (µL)

CONCENTRATION UNITS: ug/kg

CAS NO.	***COMPOUND***	***RESULT***	***Q***	***MQL***	***SQL***	***MDL***
79-01-6	Trichloroethene	0.234	U	5.00	0.234	0.234
108-88-3	Toluene	0.200	U	5.00	0.200	0.200
108-90-7	Chlorobenzene	0.188	U	5.00	0.188	0.188

3B
SOIL VOLATILE LCS/LCSD RECOVERY

Lab Name: GCAL

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Contract: Method: SW-846 8260

Analytical Batch: 414820

SAMPLE NO : 740419

COMPOUND	*UNITS*	*SPIKE ADDED*	*SAMPLE CONCENTRATION*	*LCS CONCENTRATION*	*LCS % REC*	*#*	*QC. LIMITS*
1,1,1,2-Tetrachloroethane	ug/kg	50	0	51	102		77 - 125
1,1,1-Trichloroethane	ug/kg	50	0	53.2	106		77 - 131
1,1,2,2-Tetrachloroethane	ug/kg	50	0	46.8	94		77 - 123
1,1,2-Trichloroethane	ug/kg	50	0	47.4	95		78 - 120
1,1-Dichloroethane	ug/kg	50	0	54	108		80 - 120
1,1-Dichloroethene	ug/kg	50	0	52.7	105		77 - 126
1,1-Dichloropropene	ug/kg	50	0	52.6	105		79 - 126
1,2,3-Trichloropropane	ug/kg	50	0	48.2	96		69 - 130
1,2,4-Trichlorobenzene	ug/kg	50	0	52.6	105		66 - 124
1,2,4-Trimethylbenzene	ug/kg	50	0	49.6	99		79 - 120
1,2-Dibromo-3-chloropropane	ug/kg	50	0	48.7	97		64 - 132
1,2-Dibromoethane	ug/kg	50	0	49.2	98		77 - 126
1,2-Dichlorobenzene	ug/kg	50	0	49.6	99		80 - 120
1,2-Dichloroethane	ug/kg	50	0	52.1	104		73 - 128
1,2-Dichloroethene	ug/kg	100	0	102	102		75 - 129
1,2-Dichloropropane	ug/kg	50	0	49.5	99		79 - 122
1,3,5-Trimethylbenzene	ug/kg	50	0	47.7	95		80 - 121
1,3-Dichlorobenzene	ug/kg	50	0	50.8	102		80 - 121
1,3-Dichloropropane	ug/kg	50	0	48.8	98		80 - 122
1,4-Dichlorobenzene	ug/kg	50	0	49.5	99		80 - 120
2,2-Dichloropropane	ug/kg	50	0	51.1	102		63 - 141
2-Butanone	ug/kg	50	0	51.7	103		56 - 142
2-Chlorotoluene	ug/kg	50	0	47.2	94		80 - 122
2-Hexanone	ug/kg	50	0	47	94		64 - 128
4-Chlorotoluene	ug/kg	50	0	48.8	98		80 - 120
4-Isopropyltoluene	ug/kg	50	0	53.1	106		75 - 130
4-Methyl-2-pentanone	ug/kg	50	0	47.5	95		65 - 131
Acetone	ug/kg	50	0	49.3	99		48 - 151
Benzene	ug/kg	50	0	50.1	100		78 - 120
Bromobenzene	ug/kg	50	0	48.7	97		80 - 120
Bromochloromethane	ug/kg	50	0	50.9	102		75 - 126
Bromodichloromethane	ug/kg	50	0	48.3	97		80 - 125
Bromoform	ug/kg	50	0	50.4	101		70 - 132
Bromomethane	ug/kg	50	0	40.5	81		32 - 161
Carbon disulfide	ug/kg	50	0	57	114		75 - 128
Carbon tetrachloride	ug/kg	50	0	53.1	106		73 - 139

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 69 outside limits

Spike Recovery: 0 out of 138 outside limits

3B
SOIL VOLATILE LCS/LCSD RECOVERY

Lab Name: GCAL

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Contract: Method: SW-846 8260

Analytical Batch: 414820

Chlorobenzene	ug/kg	50	0	48.8	98		79	-	120
Chloroethane	ug/kg	50	0	50.2	100		58	-	142
Chloroform	ug/kg	50	0	50.6	101		75	-	121
Chloromethane	ug/kg	50	0	46.3	93		54	-	138
Dibromochloromethane	ug/kg	50	0	48.4	97		77	-	126
Dibromomethane	ug/kg	50	0	51.4	103		80	-	123
Dichlorodifluoromethane	ug/kg	50	0	47.9	96		49	-	139
Ethylbenzene	ug/kg	50	0	51.8	104		80	-	123
Hexachlorobutadiene	ug/kg	50	0	58	116		66	-	144
Isopropylbenzene (Cumene)	ug/kg	50	0	52.7	105		74	-	129
Methyl iodide	ug/kg	50	0	50.3	101		42	-	156
Methylene chloride	ug/kg	50	0	57.5	115		64	-	132
Naphthalene	ug/kg	50	0	52.6	105		58	-	137
Styrene	ug/kg	50	0	51	102		75	-	127
Tetrachloroethene	ug/kg	50	0	45.5	91		71	-	134
Toluene	ug/kg	50	0	52.1	104		78	-	122
Trichloroethene	ug/kg	50	0	51.5	103		77	-	126
Trichlorofluoromethane	ug/kg	50	0	52.4	105		72	-	133
Trichlorotrifluoroethane	ug/kg	50	0	54.7	109		76	-	130
Vinyl chloride	ug/kg	50	0	53.1	106		73	-	128
Xylene (total)	ug/kg	150	0	156	104		80	-	120
cis-1,2-Dichloroethene	ug/kg	50	0	50.7	101		79	-	123
cis-1,3-Dichloropropene	ug/kg	50	0	50.5	101		77	-	126
m,p-Xylene	ug/kg	100	0	104	104		80	-	121
n-Butylbenzene	ug/kg	50	0	51.5	103		72	-	132
n-Propylbenzene	ug/kg	50	0	48.7	97		77	-	123
o-Xylene	ug/kg	50	0	52.5	105		76	-	127
sec-Butylbenzene	ug/kg	50	0	48.9	98		76	-	126
tert-Butyl methyl ether (MTBE)	ug/kg	50	0	51.9	104		69	-	131
tert-Butylbenzene	ug/kg	50	0	48.5	97		79	-	127
trans-1,2-Dichloroethene	ug/kg	50	0	51.4	103		73	-	129
trans-1,3-Dichloropropene	ug/kg	50	0	51.9	104		80	-	120
trans-1,4-Dichloro-2-butene	ug/kg	50	0	44.3	89		57	-	145

 # Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 69 outside limits

Spike Recovery: 0 out of 138 outside limits

3B

SOIL VOLATILE LCS/LCSD RECOVERY

Lab Name: GCAL

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Contract: Method: SW-846 8260

Analytical Batch: 414820

SAMPLE NO : 740420

COMPOUND	*UNITS*	*SPIKE ADDED*	*LCSD CONC.*	*LCSD % REC*	*#*	*% RPD*	*#*	*QC. LIMITS REC*	*RPD*
1,1,1,2-Tetrachloroethane	ug/kg	50	51.8	104		2		77 - 125	0 - 30
1,1,1-Trichloroethane	ug/kg	50	54.5	109		3		77 - 131	0 - 30
1,1,2,2-Tetrachloroethane	ug/kg	50	49.3	99		5		77 - 123	0 - 30
1,1,2-Trichloroethane	ug/kg	50	49.9	100		6		78 - 120	0 - 30
1,1-Dichloroethane	ug/kg	50	58.4	117		8		80 - 120	0 - 30
1,1-Dichloroethene	ug/kg	50	55.3	111		4		77 - 126	0 - 22
1,1-Dichloropropene	ug/kg	50	53.9	108		2		79 - 126	0 - 30
1,2,3-Trichloropropane	ug/kg	50	50.9	102		5		69 - 130	0 - 30
1,2,4-Trichlorobenzene	ug/kg	50	55.2	110		5		66 - 124	0 - 30
1,2,4-Trimethylbenzene	ug/kg	50	51.7	103		4		79 - 120	0 - 30
1,2-Dibromo-3-chloropropane	ug/kg	50	53.5	107		9		64 - 132	0 - 30
1,2-Dibromoethane	ug/kg	50	50.5	101		3		77 - 126	0 - 30
1,2-Dichlorobenzene	ug/kg	50	51.8	104		4		80 - 120	0 - 30
1,2-Dichloroethane	ug/kg	50	54	108		4		73 - 128	0 - 30
1,2-Dichloroethene	ug/kg	100	105	105		3		75 - 129	0 - 30
1,2-Dichloropropane	ug/kg	50	51	102		2		79 - 122	0 - 30
1,3,5-Trimethylbenzene	ug/kg	50	50.2	100		5		80 - 121	0 - 30
1,3-Dichlorobenzene	ug/kg	50	53.1	106		4		80 - 121	0 - 30
1,3-Dichloropropane	ug/kg	50	48.9	98		2		80 - 122	0 - 30
1,4-Dichlorobenzene	ug/kg	50	52.7	105		5		80 - 120	0 - 30
2,2-Dichloropropane	ug/kg	50	53	106		4		63 - 141	0 - 30
2-Butanone	ug/kg	50	54.3	109		5		56 - 142	0 - 30
2-Chlorotoluene	ug/kg	50	49.4	99		5		80 - 122	0 - 30
2-Hexanone	ug/kg	50	47.3	95		6		64 - 128	0 - 30
4-Chlorotoluene	ug/kg	50	51.6	103		6		80 - 120	0 - 30
4-Isopropyltoluene	ug/kg	50	54.7	109		3		75 - 130	0 - 30
4-Methyl-2-pentanone	ug/kg	50	49.6	99		4		65 - 131	0 - 30
Acetone	ug/kg	50	55.2	110		11		48 - 151	0 - 30
Benzene	ug/kg	50	53	106		6		78 - 120	0 - 21
Bromobenzene	ug/kg	50	50.1	100		3		80 - 120	0 - 30
Bromochloromethane	ug/kg	50	52.7	105		3		75 - 126	0 - 30
Bromodichloromethane	ug/kg	50	50.1	100		4		80 - 125	0 - 30
Bromoform	ug/kg	50	53.5	107		7		70 - 132	0 - 30
Bromomethane	ug/kg	50	53	106		26		32 - 161	0 - 30
Carbon disulfide	ug/kg	50	59.7	119		5		75 - 128	0 - 30
Carbon tetrachloride	ug/kg	50	55.7	111		5		73 - 139	0 - 30

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 69 outside limits

Spike Recovery: 0 out of 138 outside limits

3B

SOIL VOLATILE LCS/LCSD RECOVERY

Lab Name: GCAL

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Contract: Method: SW-846 8260

Analytical Batch: 414820

Chlorobenzene	ug/kg	50	49.4	99		.8		79 - 120	0 - 21
Chloroethane	ug/kg	50	65.3	131		27		58 - 142	0 - 30
Chloroform	ug/kg	50	53.7	107		5		75 - 121	0 - 30
Chloromethane	ug/kg	50	54.7	109		17		54 - 138	0 - 30
Dibromochloromethane	ug/kg	50	49.3	99		3		77 - 126	0 - 30
Dibromomethane	ug/kg	50	54.5	109		6		80 - 123	0 - 30
Dichlorodifluoromethane	ug/kg	50	51.8	104		8		49 - 139	0 - 30
Ethylbenzene	ug/kg	50	53.8	108		4		80 - 123	0 - 30
Hexachlorobutadiene	ug/kg	50	58.7	117		1		66 - 144	0 - 30
Isopropylbenzene (Cumene)	ug/kg	50	52.4	105		.6		74 - 129	0 - 30
Methyl iodide	ug/kg	50	57.3	115		13		42 - 156	0 - 30
Methylene chloride	ug/kg	50	59	118		2		64 - 132	0 - 30
Naphthalene	ug/kg	50	55	110		4		58 - 137	0 - 30
Styrene	ug/kg	50	51.6	103		1		75 - 127	0 - 30
Tetrachloroethene	ug/kg	50	49.5	99		7		71 - 134	0 - 30
Toluene	ug/kg	50	52.7	105		1		78 - 122	0 - 21
Trichloroethene	ug/kg	50	53.7	107		3		77 - 126	0 - 24
Trichlorofluoromethane	ug/kg	50	56.8	114		9		72 - 133	0 - 30
Trichlorotrifluoroethane	ug/kg	50	55.7	111		2		76 - 130	0 - 30
Vinyl chloride	ug/kg	50	60.1	120		13		73 - 128	0 - 30
Xylene (total)	ug/kg	150	160	107		3		80 - 120	0 - 30
cis-1,2-Dichloroethene	ug/kg	50	51.4	103		.8		79 - 123	0 - 30
cis-1,3-Dichloropropene	ug/kg	50	52.6	105		3		77 - 126	0 - 30
m,p-Xylene	ug/kg	100	106	106		2		80 - 121	0 - 30
n-Butylbenzene	ug/kg	50	53.6	107		4		72 - 132	0 - 30
n-Propylbenzene	ug/kg	50	50.6	101		4		77 - 123	0 - 30
o-Xylene	ug/kg	50	53.9	108		3		76 - 127	0 - 30
sec-Butylbenzene	ug/kg	50	51.6	103		5		76 - 126	0 - 30
tert-Butyl methyl ether (MTBE)	ug/kg	50	51.7	103		.4		69 - 131	0 - 30
tert-Butylbenzene	ug/kg	50	49.9	100		3		79 - 127	0 - 30
trans-1,2-Dichloroethene	ug/kg	50	53.7	107		5		73 - 129	0 - 30
trans-1,3-Dichloropropene	ug/kg	50	51.3	103		1		80 - 120	0 - 30
trans-1,4-Dichloro-2-butene	ug/kg	50	47.7	95		7		57 - 145	0 - 30

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 69 outside limits

Spike Recovery: 0 out of 138 outside limits

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

MB740418

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Lab File ID: 2090713/i9368

Lab Sample ID: 740418

Date Extracted:

GC Column: RTX-VMS-30

ID: .25 (mm)

Date Analyzed: 07/13/09

Time: 0814

Instrument ID: MSV5

Matrix: Soil

Heated Purge: Y

Level: LOW

Prep Batch:

Analytical Batch: 414820

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	SAMPLE NO.	*LAB SAMPLE ID*	*LAB FILE ID*	*DATE ANALYZED*	*TIME ANALYZED*
1.	LCS740419	740419	2090713/i9366L	07/13/09	0728
2.	LCSD740420	740420	2090713/i9367	07/13/09	0751
3.	GEC-BACKFILL	20907090501	2090713/i9378	07/13/09	1230

FORM IV VOA

5A

VOLATILE ORGANICS INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Lab File ID: 2090710/i9301b

BFB Injection Date: 07/10/09

Instrument ID: MSV5

BFB Injection Time: 0921

GC Column: RTX-VMS-30 ID: .25 (mm)

Analytical Batch: 414747

m / e	ION ABUNDANCE CRITERIA	% Relative Abundance		
50	15.0 - 40.0% of mass 95	15.96	( )	
75	30.0 - 60.0% of mass 95	40.02	( )	
95	Base Peak, 100% relative abundance	100	( )	
96	5.0 -9.0% of mass 95	6.91	( )	
173	Less than 2.0% of mass 174	0	(0)	1
174	50.0 - 120.0% of mass 95	65.26	( )	
175	5.0 - 9.0% of mass 174	4.97	(7.62)	1
176	95.0 - 101.0% of mass 174	65.68	(100.6)	1
177	5.0 - 9.0% of mass 176	4.83	(7.36)	2

1- Value is % mass 174

2- Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1.	V5STD002	1206	2090710/i9302	07/10/09	0944
2.	V5STD005	1201	2090710/i9303	07/10/09	1009
3.	V5STD010	1207	2090710/i9304	07/10/09	1032
4.	V5STD020	1202	2090710/i9305	07/10/09	1055
5.	V5STD050	1203	2090710/i9306	07/10/09	1117
6.	V5STD100	1204	2090710/i9307	07/10/09	1139
7.	V5STD200	1205	2090710/i9308	07/10/09	1202
8.	V5ICV050	1600	2090710/i9310	07/10/09	1247

5A

VOLATILE ORGANICS INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: GCAL

Contract:

Lab Code: LA024 **Case No.:**

SAS No.: **SDG No.:** 209070905

Lab File ID: 2090713/i9364

BFB Injection Date: 07/13/09

Instrument ID: MSV5

BFB Injection Time: 0642

GC Column: RTX-VMS-30 **ID:** .25 (mm)

Analytical Batch: 414820

m / e	*ION ABUNDANCE CRITERIA*	*% Relative Abundance*		
50	15.0 - 40.0% of mass 95	18.3	( )	
75	30.0 - 60.0% of mass 95	40.61	( )	
95	Base Peak, 100% relative abundance	100	( )	
96	5.0 -9.0% of mass 95	6.84	( )	
173	Less than 2.0% of mass 174	0	(0)	1
174	50.0 - 120.0% of mass 95	69.14	( )	
175	5.0 - 9.0% of mass 174	5.4	(7.82)	1
176	95.0 - 101.0% of mass 174	68.11	(98.52)	1
177	5.0 - 9.0% of mass 176	5.07	(7.45)	2

1- Value is % mass 174

2- Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	*LAB SAMPLE ID*	*LAB FILE ID*	*DATE ANALYZED*	*TIME ANALYZED*
1.	V5STD050	1400	2090713/i9366	07/13/09	0728
2.	LCS740419	740419	2090713/i9366L	07/13/09	0728
3.	LCSD740420	740420	2090713/i9367	07/13/09	0751
4.	MB740418	740418	2090713/i9368	07/13/09	0814
5.	GEC-BACKFILL	20907090501	2090713/i9378	07/13/09	1230

GCAL, Inc.

INITIAL CALIBRATION DATA

```
Start Cal Date    : 10-JUL-2009 09:44
End Cal Date      : 10-JUL-2009 12:02
Quant Method      : ISTD
Target Version    : 3.50
Integrator        : HP RTE
Method file       : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date          : 13-Jul-2009 11:12 rjo

Calibration File Names:
Level 1: /var/chem/msv5.i/2090710.b/i9303.d
Level 2: /var/chem/msv5.i/2090710.b/i9305.d
Level 3: /var/chem/msv5.i/2090710.b/i9306.d
Level 4: /var/chem/msv5.i/2090710.b/i9307.d
Level 5: /var/chem/msv5.i/2090710.b/i9308.d
Level 6: /var/chem/msv5.i/2090710.b/i9302.d
Level 7: /var/chem/msv5.i/2090710.b/i9304.d
```

Compound	5 Level 1	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients			%RSD or R^2
	10 Level 7							b	m1	m2	
1 Dichlorodifluoromethane	0.33360	0.32511	0.30461	0.30788	0.30898	+++++					
	0.31053						AVRG		0.31512		3.65507
2 Chloromethane ++	19890	66442	159728	313351	682778	10729					
	33170						LINR	0.01964	0.38806		0.99801
3 Vinyl Chloride +	14470	54687	134072	275755	552796	8060					
	26924						LINR	0.00435	0.31742		0.99978
4 1,3 Butadiene	+++++	+++++	+++++	+++++	+++++	+++++					
	+++++						AVRG		0.000e+00		0.000e+00 <-

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
5 Bromomethane	8133 14804	28485	63881	127630	251670	5573	LINR	-0.03837	0.14326		0.99983	
6 Chloroethane	6887 12404	23091	55346	85720	133229	5113	QUAD	0.02332	4.67984	27.08225	0.99958	
7 Trichlorofluoromethane	0.29248 0.30411	0.28635	0.28680	0.28820	0.27672	0.36206	AVRG		0.29953		9.60400	
163 Ethanol	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
10 2-Chloropropene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
9 Ethyl Ether	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
13 1,1-Dichloroethene +	0.21668 0.19012	0.18973	0.17492	0.17715	0.17974	0.25586	AVRG		0.19774		14.78308	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
16 Carbon Disulfide	32786	116065	280391	554845	1135997	19690						
	62248						LINR	-0.00858	0.64757		0.99972	
11 1,1,2Trichlotrifluoroethane	0.20138	0.20177	0.19076	0.19462	0.19338	0.22877						
	0.21659						AVRG		0.20390		6.81913	
15 Methyl Iodide	5919	24906	72881	156571	312106	3138						
	10246						LINR	0.04941	0.18175		0.99937	
12 Acrolein	0.02579	0.02394	0.02203	0.02139	0.02203	0.02300						
	0.02546						AVRG		0.02338		7.45415	
18 Allyl Chloride	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
19 Methylene Chloride	12742	41201	97294	184919	346069	8024						
	21996						LINR	-0.07507	0.19763		0.99906	
14 Acetone	7781	16721	32385	65607	120276	+++++						
	9375						LINR	-0.15041	0.06722		0.99846	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	 m1	 m2	%RSD or R^2
23 trans-1,2-Dichloroethene	0.26754 0.27604	0.28010	0.27386	0.26620	0.25970	0.37946	AVRG		0.28613		14.57953
17 Methyl Acetate	0.12765 0.12715	0.10798	0.10389	0.10251	0.09668	+++++	AVRG		0.11098		11.91809
26 Hexane	0.36075 0.37089	0.33930	0.33284	0.33620	0.30585	0.42211	AVRG		0.35256		10.52047
22 MTBE	0.53023 0.51424	0.51118	0.46977	0.47120	0.46797	0.58836	AVRG		0.50756		8.59427
24 tert-butyl alcohol	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00 <-
21 Acetonitrile	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00 <-
29 Isopropyl Ether	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00 <-

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2	
164 ethyl tert-butyl ether	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
165 tert-butyl formate	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
27 1,1-Dichloroethane ++	16269 31882	64011	153244	296377	590249	8836	LINR	-0.02114	0.33757		0.99995	
30 Chloroprene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
25 Acrylonitrile	0.05401 0.05525	0.05020	0.04813	0.04962	0.04841	0.06497	AVRG		0.05294		11.26540	
28 Vinyl Acetate	0.34545 0.30807	0.29985	0.27829	0.27174	0.25805	+++++	AVRG		0.29357		10.67751	
32 cis-1,2-Dichloroethene	0.32051 0.33184	0.31738	0.31567	0.31620	0.32824	0.40349	AVRG		0.33333		9.46731	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	 m1	 m2	%RSD or R^2	
31 2,2-Dichloropropane	0.32340 0.30075	0.29356	0.27967	0.27950	0.28488	0.38782	AVRG		0.30708		12.62130	
39 Cyclohexane	0.46690 0.45782	0.48158	0.46717	0.45169	0.45642	0.61106	AVRG		0.48466		11.67583	
35 Bromochloromethane	0.11394 0.10057	0.10315	0.09425	0.09439	0.09241	0.11496	AVRG		0.10195		9.16548	
40 Methylacrylonitrile	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
36 Chloroform +	18748 38358	72110	180146	345948	703835	10796	LINR	-0.01108	0.40194		0.99990	
20 Isobutyl Alcohol	0.25775 0.24038	0.24278	0.22933	0.23635	0.22589	0.27311	AVRG		0.24366		6.80909	
43 Carbon Tetrachloride	0.24064 0.22498	0.23158	0.21732	0.22187	0.22497	0.29210	AVRG		0.23621		10.90343	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
38 Tetrahydrofuran	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
34 Ethyl Acetate	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
41 1,1,1-Trichloroethane	0.30644 0.29640	0.30190	0.30031	0.29294	0.29538	0.36967	AVRG		0.30901		8.77855	
8 2-Butanol	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
33 2-Butanone	10553 13684	25636	59687	116546	234977	5348	LINR	-0.04398	0.13293		0.99971	
45 1,1-Dichloropropene	0.37153 0.34049	0.34464	0.32619	0.33766	0.33251	0.45230	AVRG		0.35790		12.30468	
51 2,2,4 trimethyl Pentane	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	 m1	 m2	%RSD or R^2	
	10 Level 7											
49 Heptane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
46 Benzene	1.15664	1.17467	1.09806	1.10188	1.12879	1.47619						
	1.13127						AVRG		1.18107		11.25962	
37 Proprionitrile	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
166 tert-amyl methyl ether	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
50 1,2-Dichloroethane	0.26279	0.27695	0.25006	0.25790	0.25175	0.27170						
	0.25095						AVRG		0.26030		4.10381	
48 1,3 Difluorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
167 tert-amyl alcohol	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
55 Methyl cyclohexane	0.52262 0.48104	0.49242	0.45309	0.46801	0.48348	0.53419	AVRG		0.49069		5.87551	
54 Trichloroethene	0.24362 0.23735	0.26524	0.23644	0.23876	0.24929	0.30956	AVRG		0.25432		10.35406	
53 1,4 Difluorobenzene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
44 N-Butyl Alcohol	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
59 Dibromomethane	0.13857 0.15508	0.14894	0.14590	0.14792	0.14497	+++++	AVRG		0.14690		3.68305	
60 2,3-Dichloro-1-propene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
58 1,2-Dichloropropane +	0.32067 0.32032	0.32241	0.30258	0.31280	0.31701	0.37860	AVRG		0.32491		7.57615	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	 m1	 m2	%RSD or R^2	
	10 Level 7											
63 Bromodichloromethane	0.33306	0.34534	0.33283	0.34173	0.34806	0.42263						
	0.34807						AVRG		0.35310		8.87051	
56 1,2 Difluorobenzene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
79 Methyl Methacrylate	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
62 1,4-Dioxane	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
M 64 Total Difluorobenzene(1)	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
(2)	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
66 1-Bromo-2-chloroethane	0.02680	0.03517	0.03414	0.03490	0.03579	+++++						
	0.03649						AVRG		0.03388		10.50354	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	 m1	 m2	%RSD or R^2	
65 2-Chloroethyl vinyl ether	0.09155 0.10008	0.11236	0.10846	0.11684	0.11758	0.08592	AVRG		0.10469		11.91136	
68 cis-1,3-Dichloropropene	0.44496 0.45022	0.47181	0.45061	0.46296	0.46733	0.60801	AVRG		0.47941		12.00659	
69 Methyl disulfide	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
73 Toluene +	56213 106499	218351	528424	1079810	2200957	33114	LINR	0.00004	2.88969		0.99981	
70 trans-1,2 Dibromoethylene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
57 2-Nitropropane	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
71 4-methyl-2-pentanone	0.29230 0.28172	0.29053	0.26117	0.28100	0.26635	0.36546	AVRG		0.29122		11.91959	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
81 Tetrachloroethene	0.63211 0.62458	0.60981	0.58456	0.60446	+++++	0.71830	AVRG		0.62897		7.43992	
78 trans-1,3-Dichloropropene	0.82184 0.85309	0.87234	0.83756	0.85291	0.86552	0.97184	AVRG		0.86787		5.62827	
61 Ethyl Methacrylate	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
67 1-Nitropropane	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
80 1,1,2-Trichloroethane	0.54057 0.55033	0.53774	0.52817	0.51391	0.51249	0.67723	AVRG		0.55149		10.36298	
74 2-Methoxyethanol	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
M 75 Total 1,2-Dichloroethene	0.29402 0.30394	0.29874	0.29477	0.29120	0.29397	0.39148	AVRG		0.30973		11.71500	

GCAL, Inc.

INITIAL CALIBRATION DATA

```
Start Cal Date   : 10-JUL-2009 09:44
End Cal Date     : 10-JUL-2009 12:02
Quant Method     : ISTD
Target Version   : 3.50
Integrator       : HP RTE
Method file      : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date         : 13-Jul-2009 11:12 rjo
```

```
---------------------------------------------------------------------------------------------------------------------------------------------------
|                                 |    5      |    20     |    50     |    100    |    200    |     2     |     |          Coefficients          |  %RSD    |
|  Compound                       |  Level 1  |  Level 2  |  Level 3  |  Level 4  |  Level 5  |  Level 6  |Curve|    b          m1          m2   |  or R^2  |
|                                 |-----------|-----------|-----------|-----------|-----------|-----------|     |                                |          |
|                                 |    10     |           |           |           |           |           |     |                                |          |
|                                 |  Level 7  |           |           |           |           |           |     |                                |          |
|=================================|===========|===========|===========|===========|===========|===========|=====|================================|==========|
|M  76 1-3 Dichloropropene-Total  |   0.39556|   0.42502|   0.40263|   0.41744|   0.42219|   0.50512|     |          |          |          |          |
|                                 |   0.40210|           |           |           |           |           |AVRG |          |   0.42429|          |   8.80385|
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|   77 Methyl isobutenyl ketone   |   +++++   |   +++++   |   +++++   |   +++++   |   +++++   |   +++++   |     |          |          |          |          |
|                                 |   +++++   |           |           |           |           |           |AVRG |          | 0.000e+00|          | 0.000e+00|<-
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|   84 Dibromochloromethane       |   0.49787|   0.50513|   0.50218|   0.50943|   0.50600|   0.67472|     |          |          |          |          |
|                                 |   0.52771|           |           |           |           |           |AVRG |          |   0.53186|          |  11.97738|
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|   82 1,3-Dichloropropane        |   0.96557|   0.95608|   0.95323|   0.95235|   0.93551|   1.25950|     |          |          |          |          |
|                                 |   0.99857|           |           |           |           |           |AVRG |          |   1.00297|          |  11.44133|
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|   86 1,2-Dibromoethane(EDB)     |   0.47175|   0.48638|   0.49237|   0.48181|   0.49901|   0.57489|     |          |          |          |          |
|                                 |   0.50748|           |           |           |           |           |AVRG |          |   0.50195|          |   6.81032|
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|   83 2-Hexanone                 |   0.60010|   0.49926|   0.49936|   0.51133|   0.51486|   0.67194|     |          |          |          |          |
|                                 |   0.50603|           |           |           |           |           |AVRG |          |   0.54327|          |  12.31676|
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|   87 1-Chlorohexane             |   0.41399|   0.44148|   0.45708|   0.48991|   0.45288|   0.46711|     |          |          |          |          |
|                                 |   0.43172|           |           |           |           |           |AVRG |          |   0.45060|          |   5.46972|
|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|----------|
|_________________________________|___________|___________|___________|___________|___________|___________|_____|__________|__________|__________|__________|
```

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
89 Chlorobenzene ++	1.81116 1.74402	1.70217	1.68845	1.70776	1.72388	2.20697	AVRG		1.79778		10.28582	
90 Ethylbenzene +	19450 37279	74156	185411	368566	745204	12965	LINR	-0.01115	0.97756		0.99992	
91 1,1,1,2-Tetrachloroethane	0.46489 0.52315	0.53134	0.50810	0.49584	0.50582	+++++	AVRG		0.50486		4.62482	
94 p,m-Xylene	47631 87945	182479	452552	908804	1852972	37963	LINR	-0.01311	1.21437		0.99974	
85 cis-1,2 Dibromoethylene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
95 o-Xylene	21902 42522	88633	214213	431577	895199	11080	LINR	0.00762	1.17462		0.99963	
96 Styrene	2.04450 2.04839	2.00117	1.99171	2.06587	2.06621	2.44938	AVRG		2.09532		7.58257	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
97 Bromoform ++	0.29455 0.31960	0.31346	0.30646	0.32652	0.31830	0.37997	AVRG		0.32269		8.45332	
100 1-5 Cyclooctadiene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
98 Isopropylbenzene	2.87297 2.93761	3.00614	2.94609	2.93188	3.05262	3.55126	AVRG		3.04265		7.60827	
168 3,3 Dimethyl-1-butanol	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
104 n-Propylbenzene	5.43420 5.36708	5.33426	5.00052	5.33809	5.35808	7.10424	AVRG		5.56235		12.48075	
102 Bromobenzene	2.05628 2.02187	1.97084	1.86045	1.93189	1.88811	+++++	AVRG		1.95491		3.89096	
103 1,1,2,2-Tetrachloroethane++	1.04509 1.09217	1.08723	0.99380	1.05020	0.99290	1.23937	AVRG		1.07154		7.82848	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2
108 1,3,5-Trimethylbenzene	3.48593 3.35396	3.37647	3.11416	3.30079	3.26994	4.41724	AVRG		3.47407		12.40800
107 2-Chlorotoluene	3.86297 3.80946	3.71351	3.41954	3.62756	3.64373	4.94498	AVRG		3.86025		12.93528
105 1,2,3-Trichloropropane	1.44571 1.45804	1.52887	1.45324	1.57139	1.50541	1.67443	AVRG		1.51958		5.41287
106 trans-1,4-Dichloro-2-Butene	0.50935 0.48648	0.51500	0.52461	0.55965	0.54530	0.56314	AVRG		0.52908		5.33465
109 4-Chlorotoluene	3.25080 3.17717	3.17477	2.98699	3.17421	3.09905	4.11359	AVRG		3.28237		11.44752
101 Cyclohexanone	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00 <-
110 tert-butylbenzene	2.16326 2.03130	1.94900	1.85224	1.92360	1.84914	2.25277	AVRG		2.00304		7.74737

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	10 Level 7	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
111 1,2,4-Trimethylbenzene	3.61577	3.48926	3.25357	3.38140	3.30867	+++++	3.29336	AVRG		3.39034		4.07557	
112 Pentachloroethane	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
113 sec-Butylbenzene	5.09522	4.92759	4.53624	4.75776	4.65217	5.91902	4.78796	AVRG		4.95371		9.33704	
92 Phenyl Isopropanol	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
160 Dicyclopentadiene	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
93 Mesityloxide	+++++	+++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
114 p-Isopropyltoluene	3.25000	3.33322	3.06317	3.24640	3.18830	3.85223	3.18447	AVRG		3.30254		7.75241	

```
                              GCAL, Inc.

                       INITIAL CALIBRATION DATA

Start Cal Date   : 10-JUL-2009 09:44
End Cal Date     : 10-JUL-2009 12:02
Quant Method     : ISTD
Target Version   : 3.50
Integrator       : HP RTE
Method file      : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date         : 13-Jul-2009 11:12 rjo

___________________________________________________________________________________________________________________________________________________
|                                   |    5      |    20     |    50     |   100     |   200     |    2      |     |           Coefficients           |  %RSD     |
|  Compound                         |  Level 1  |  Level 2  |  Level 3  |  Level 4  |  Level 5  |  Level 6  |Curve|     b         m1          m2     |  or R^2   |
|                                   |-----------|-----------|-----------|-----------|-----------|-----------|     |                                  |           |
|                                   |   10      |           |           |           |           |           |     |                                  |           |
|                                   |  Level 7  |           |           |           |           |           |     |                                  |           |
|===================================|===========|===========|===========|===========|===========|===========|=====|==================================|===========|
| 115 1,3-Dichlorobenzene           |   1.56124|   1.66108|   1.61293|   1.68170|   1.63476|   1.97203|     |          |          |          |           |
|                                   |   1.72165|           |           |           |           |           |AVRG |          |   1.69220|          |    7.89115|
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
| 118 1,4-Dichlorobenzene           |   1.73729|   1.73969|   1.61267|   1.70499|   1.64742|   2.27360|     |          |          |          |           |
|                                   |   1.77563|           |           |           |           |           |AVRG |          |   1.78447|          |   12.49246|
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
| 120 n-Butylbenzene                |   3.36521|   3.55969|   3.37148|   3.56274|   3.37643|   4.03612|     |          |          |          |           |
|                                   |   3.58261|           |           |           |           |           |AVRG |          |   3.55061|          |    6.64275|
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
| 162 N-butyl acrylate              |   +++++   |   +++++   |   +++++   |   +++++   |   +++++   |   +++++   |     |          |          |          |           |
|                                   |   +++++   |           |           |           |           |           |AVRG |          | 0.000e+00|          |  0.000e+00|<-
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
| 121 1,2-Dichlorobenzene           |   1.56444|   1.57477|   1.45352|   1.53997|   1.47815|   1.88727|     |          |          |          |           |
|                                   |   1.56143|           |           |           |           |           |AVRG |          |   1.57994|          |    9.06243|
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
| 122 1,2-Dibromo-3-Chloropropane   |   0.13479|   0.12987|   0.12750|   0.13695|   0.12903|   0.16244|     |          |          |          |           |
|                                   |   0.15055|           |           |           |           |           |AVRG |          |   0.13873|          |    9.39511|
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
| 124 Benzal chloride               |   +++++   |   +++++   |   +++++   |   +++++   |   +++++   |   +++++   |     |          |          |          |           |
|                                   |   +++++   |           |           |           |           |           |AVRG |          | 0.000e+00|          |  0.000e+00|<-
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|----------|----------|----------|-----------|
|___________________________________|___________|___________|___________|___________|___________|___________|_____|__________|__________|__________|___________|
```

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	 m1	 m2	%RSD or R^2	
127 Hexachlorobutadiene	0.52966 0.61809	0.51947	0.51937	0.55354	0.52629	+++++	AVRG		0.54440		7.02169	
126 1,2,4-Trichlorobenzene	0.93036 0.91469	0.95937	0.89695	1.00095	0.93445	1.16856	AVRG		0.97219		9.54745	
117 Cumene Hydroperoxide	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
119 alpha-methylstyrene	+++++ +++++	+++++	+++++	+++++	+++++	+++++	AVRG		0.000e+00		0.000e+00	<-
128 Napthalene	1.82475 1.75866	1.82256	1.71941	1.95059	1.81461	+++++	AVRG		1.81510		4.32758	
129 1,2,3-Trichlorobenzene	0.86808 0.84140	0.92537	0.80852	0.90612	0.83164	1.00091	AVRG		0.88315		7.50667	
M 123 TOTAL XYLENE	69533 130467	271112	666765	1340381	2748171	49043	LINR	-0.00590	1.20109		0.99973	

GCAL, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 10-JUL-2009 09:44
End Cal Date : 10-JUL-2009 12:02
Quant Method : ISTD
Target Version : 3.50
Integrator : HP RTE
Method file : /var/chem/msv5.i/2090710.b/8260Bs5.m
Cal Date : 13-Jul-2009 11:12 rjo

Compound	5 Level 1 10 Level 7	20 Level 2	50 Level 3	100 Level 4	200 Level 5	2 Level 6	Curve	Coefficients b	Coefficients m1	Coefficients m2	%RSD or R^2	
M 125 Total-1,2 Dibromoethylene	+++++	+++++	+++++	+++++	+++++	+++++						
	+++++						AVRG		0.000e+00		0.000e+00	<-
$ 42 Dibromofluoromethane	0.19512	0.19290	0.19731	0.19834	0.19782	0.20545						
	0.19649						AVRG		0.19763		1.97836	
$ 47 1,2-Dichloroethane-d4	0.10185	0.09831	0.09637	0.10512	0.10161	0.11002						
	0.09958						AVRG		0.10184		4.48538	
$ 72 Toluene-d8	1.88302	1.84168	1.86579	2.01706	1.87466	2.12423						
	1.91887						AVRG		1.93219		5.28596	
$ 99 Bromofluorobenzene	0.43772	0.44378	0.44632	0.49614	0.46623	0.48853						
	0.43419						AVRG		0.45899		5.45726	

Data File: /var/chem/msv5.i/2090710.b/i9310.d
Report Date: 10-Jul-2009 15:28

Page 1

GCAL, Inc.

RECOVERY REPORT

Client Name:
Sample Matrix: SOLID
Lab Smp Id: 1600
Level: LOW
Data Type: MS DATA
SpikeList File: ICV.spk
Sublist File: 8260b+isobutyl.sub
Method File: /var/chem/msv5.i/2090710.b/8260Bs5.m
Misc Info: MSV~16550~*1*WAS

Client SDG: 2090710
Fraction: VOA
Client Smp ID: V5ICV050
Operator: WAS
SampleType: LCS
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
1 Dichlorodifluoromethane	50.0	47.9	95.71	60-140
20 Isobutyl Alcohol	250	192	76.99	60-140
2 Chloromethane ++	50.0	54.6	109.29	70-130
3 Vinyl Chloride +	50.0	58.0	115.95	70-130
5 Bromomethane	50.0	57.6	115.17	60-140
6 Chloroethane	50.0	68.2	136.36*	70-130
7 Trichlorofluoromethane	50.0	56.3	112.66	70-130
11 1,1,2Trichlotrifluoroethane	50.0	60.3	120.51	70-130
12 Acrolein	250	235	94.01	60-140
13 1,1-Dichloroethene +	50.0	56.4	112.71	70-130
14 Acetone	50.0	48.4	96.84	60-140
15 Methyl Iodide	50.0	46.5	92.91	70-130
16 Carbon Disulfide	50.0	59.1	118.19	70-130
17 Methyl Acetate	50.0	68.6	137.27*	70-130 NT
19 Methylene Chloride	50.0	64.3	128.57	70-130
22 MTBE	50.0	57.4	114.76	70-130
23 trans-1,2-Dichloroethene	50.0	54.8	109.55	70-130
25 Acrylonitrile	250	240	95.87	60-140
26 Hexane	50.0	49.7	99.34	70-130
27 1,1-Dichloroethane ++	50.0	60.4	120.86	70-130
28 Vinyl Acetate	50.0	50.7	101.45	70-130
31 2,2-Dichloropropane	50.0	55.4	110.75	70-130
32 cis-1,2-Dichloroethene	50.0	56.3	112.69	70-130
33 2-Butanone	50.0	60.9	121.76	60-140
35 Bromochloromethane	50.0	56.6	113.12	70-130
36 Chloroform +	50.0	61.1	122.11	70-130
39 Cyclohexane	50.0	54.8	109.65	70-130
41 1,1,1-Trichloroethane	50.0	59.2	118.33	70-130
43 Carbon Tetrachloride	50.0	56.0	111.94	70-130
45 1,1-Dichloropropene	50.0	54.6	109.17	70-130
46 Benzene	50.0	53.1	106.23	70-130
50 1,2-Dichloroethane	50.0	52.4	104.73	70-130
54 Trichloroethene	50.0	53.8	107.65	70-130

SPIKE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
55 Methyl cyclohexane	50.0	54.1	108.27	70-130
58 1,2-Dichloropropane +	50.0	52.5	105.06	70-130
59 Dibromomethane	50.0	58.4	116.84	70-130
63 Bromodichloromethane	50.0	54.4	108.71	70-130
65 2-Chloroethyl vinyl ether	50.0	53.7	107.45	60-140
68 cis-1,3-Dichloropropene	50.0	51.4	102.70	70-130
71 4-methyl-2-pentanone	50.0	48.2	96.44	60-140
73 Toluene +	50.0	53.8	107.59	70-130
78 trans-1,3-Dichloropropene	50.0	54.4	108.74	70-130
M 75 Total 1,2-Dichloroethene	100	111	111.24	70-130
80 1,1,2-Trichloroethane	50.0	52.2	104.46	70-130
81 Tetrachloroethene	50.0	48.5	97.07	70-130
82 1,3-Dichloropropane	50.0	52.4	104.87	70-130
83 2-Hexanone	50.0	47.7	95.33	70-130
84 Dibromochloromethane	50.0	51.0	101.96	70-130
86 1,2-Dibromoethane(EDB)	50.0	53.1	106.13	70-130
89 Chlorobenzene ++	50.0	52.6	105.10	70-130
90 Ethylbenzene +	50.0	51.4	102.82	70-130
91 1,1,1,2-Tetrachloroethane	50.0	53.5	107.03	70-130
94 p,m-Xylene	100	102	102.19	70-130
95 o-Xylene	50.0	51.8	103.58	70-130
96 Styrene	50.0	53.5	106.97	70-130
97 Bromoform ++	50.0	53.9	107.74	70-130
98 Isopropylbenzene	50.0	52.7	105.34	70-130
102 Bromobenzene	50.0	52.4	104.88	70-130
103 1,1,2,2-Tetrachloroethane++	50.0	51.3	102.64	70-130
104 n-Propylbenzene	50.0	55.0	109.93	70-130
105 1,2,3-Trichloropropane	50.0	51.7	103.32	70-130
106 trans-1,4-Dichloro-2-Butene	50.0	51.7	103.40	60-140
107 2-Chlorotoluene	50.0	49.2	98.37	70-130
108 1,3,5-Trimethylbenzene	50.0	50.8	101.51	70-130
109 4-Chlorotoluene	50.0	52.9	105.89	70-130
110 tert-butylbenzene	50.0	52.9	105.80	70-130
111 1,2,4-Trimethylbenzene	50.0	51.9	103.80	70-130
113 sec-Butylbenzene	50.0	50.8	101.53	70-130
115 1,3-Dichlorobenzene	50.0	53.5	106.93	70-130
114 p-Isopropyltoluene	50.0	54.7	109.41	70-130
118 1,4-Dichlorobenzene	50.0	52.2	104.49	70-130
120 n-Butylbenzene	50.0	57.3	114.70	70-130
121 1,2-Dichlorobenzene	50.0	51.5	103.08	70-130
122 1,2-Dibromo-3-Chloropropane	50.0	53.8	107.67	60-140
M 123 TOTAL XYLENE	150	154	102.65	70-130
126 1,2,4-Trichlorobenzene	50.0	55.3	110.51	70-130
127 Hexachlorobutadiene	50.0	51.1	102.25	70-130
128 Napthalene	50.0	53.3	106.69	70-130
129 1,2,3-Trichlorobenzene	50.0	53.9	107.80	70-130

Data File: /var/chem/msv5.i/2090713.b/i9366.d
Report Date: 13-Jul-2009 09:18

GCAL, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: msv5.i
Lab File ID: i9366.d
Analysis Type: SOIL
Lab Sample ID: 1400
Method: /var/chem/msv5.i/2090713.b/8260Bs5.m

Injection Date: 13-JUL-2009 07:28
Init. Cal. Date(s): 10-JUL-2009 10-JUL-2009
Init. Cal. Times: 09:44 12:02
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
1 Dichlorodifluoromethane	0.31512	0.30191	0.30191	0.010	-4.19114	30.00000	Averaged
2 Chloromethane ++	46.30591	50.00000	0.35177	0.100	-7.38817	30.00000	Linear
3 Vinyl Chloride +	53.08615	50.00000	0.33563	0.010	6.17229	20.00000	Linear
5 Bromomethane	40.45796	50.00000	0.12142	0.005	-19.08407	30.00000	Linear
6 Chloroethane	50.18141	50.00000	0.12256	0.010	0.36282	30.00000	Quadratic
7 Trichlorofluoromethane	0.29953	0.31381	0.31381	0.010	4.76762	30.00000	Averaged
13 1,1-Dichloroethene +	0.19774	0.20834	0.20834	0.010	5.36115	20.00000	Averaged
16 Carbon Disulfide	56.95432	50.00000	0.74319	0.100	13.90864	30.00000	Linear
11 1,1,2Trichlotrifluoroethane	0.20390	0.22304	0.22304	0.010	9.38939	30.00000	Averaged
15 Methyl Iodide	50.33754	50.00000	0.17399	0.010	0.67508	30.00000	Linear
12 Acrolein	0.02338	0.02026	0.02026	0.001	-13.35314	40.00000	Averaged
19 Methylene Chloride	57.51683	50.00000	0.24217	0.100	15.03366	30.00000	Linear
14 Acetone	49.31859	50.00000	0.07642	0.010	-1.36282	40.00000	Linear
23 trans-1,2-Dichloroethene	0.28613	0.29390	0.29390	0.100	2.71740	30.00000	Averaged
17 Methyl Acetate	0.11098	0.10679	0.10679	0.010	-3.77835	30.00000	Averaged
26 Hexane	0.35256	0.39885	0.39885	0.100	13.13102	30.00000	Averaged
22 MTBE	0.50756	0.52640	0.52640	0.100	3.71121	30.00000	Averaged
27 1,1-Dichloroethane ++	54.01166	50.00000	0.37179	0.100	8.02332	30.00000	Linear
25 Acrylonitrile	0.05294	0.05240	0.05240	0.010	-1.02224	40.00000	Averaged
28 Vinyl Acetate	0.29357	0.26723	0.26723	0.100	-8.97268	40.00000	Averaged
32 cis-1,2-Dichloroethene	0.33333	0.33814	0.33814	0.100	1.44341	30.00000	Averaged
31 2,2-Dichloropropane	0.30708	0.31377	0.31377	0.100	2.17775	30.00000	Averaged
35 Bromochloromethane	0.10195	0.10375	0.10375	0.050	1.76591	30.00000	Averaged
39 Cyclohexane	0.48466	0.51680	0.51680	0.100	6.63045	30.00000	Averaged
36 Chloroform +	50.62316	50.00000	0.41140	0.100	1.24632	20.00000	Linear
43 Carbon Tetrachloride	0.23621	0.25081	0.25081	0.100	6.18245	30.00000	Averaged
20 Isobutyl Alcohol	0.24366	0.22119	0.22119	0.001	-9.21936	40.00000	Averaged
$ 42 Dibromofluoromethane	0.19763	0.21232	0.21232	0.100	7.43157	30.00000	Averaged
41 1,1,1-Trichloroethane	0.30901	0.32859	0.32859	0.100	6.33741	30.00000	Averaged
33 2-Butanone	51.74221	50.00000	0.14341	0.050	3.48442	40.00000	Linear
45 1,1-Dichloropropene	0.35790	0.37671	0.37671	0.100	5.25405	30.00000	Averaged
46 Benzene	1.18107	1.18461	1.18461	0.100	0.29967	30.00000	Averaged
$ 47 1,2-Dichloroethane-d4	0.10184	0.11375	0.11375	0.010	11.70014	30.00000	Averaged
50 1,2-Dichloroethane	0.26030	0.27117	0.27117	0.100	4.17595	30.00000	Averaged
55 Methyl cyclohexane	0.49069	0.53995	0.53995	0.100	10.03862	30.00000	Averaged

GCAL, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: msv5.i Injection Date: 13-JUL-2009 07:28
Lab File ID: i9366.d Init. Cal. Date(s): 10-JUL-2009 10-JUL-2009
Analysis Type: SOIL Init. Cal. Times: 09:44 12:02
Lab Sample ID: 1400 Quant Type: ISTD
Method: /var/chem/msv5.i/2090713.b/8260Bs5.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
54 Trichloroethene	0.25432	0.26180	0.26180	0.100	2.94086	30.00000	Averaged
59 Dibromomethane	0.14690	0.15104	0.15104	0.100	2.81908	30.00000	Averaged
58 1,2-Dichloropropane +	0.32491	0.32139	0.32139	0.100	-1.08515	20.00000	Averaged
63 Bromodichloromethane	0.35310	0.34090	0.34090	0.100	-3.45646	30.00000	Averaged
65 2-Chloroethyl vinyl ether	0.10469	0.11131	0.11131	0.010	6.32651	30.00000	Averaged
66 1-Bromo-2-chloroethane	0.03388	0.03644	0.03644	0.010	7.53413	30.00000	Averaged
68 cis-1,3-Dichloropropene	0.47941	0.48388	0.48388	0.100	0.93174	30.00000	Averaged
$ 72 Toluene-d8	1.93219	2.11299	2.11299	0.100	9.35723	30.00000	Averaged
73 Toluene +	52.06505	50.00000	3.00893	0.100	4.13010	20.00000	Linear
71 4-methyl-2-pentanone	0.29122	0.27680	0.27680	0.100	-4.94988	40.00000	Averaged
81 Tetrachloroethene	0.62897	0.57200	0.57200	0.100	-9.05764	30.00000	Averaged
78 trans-1,3-Dichloropropene	0.86787	0.90092	0.90092	0.100	3.80856	30.00000	Averaged
80 1,1,2-Trichloroethane	0.55149	0.52257	0.52257	0.100	-5.24311	30.00000	Averaged
M 75 Total 1,2-Dichloroethene	0.30973	0.31602	0.31602	0.100	2.03186	30.00000	Averaged
M 76 1-3 Dichloropropene-Total	0.42429	0.43520	0.43520	0.100	2.56930	30.00000	Averaged
84 Dibromochloromethane	0.53186	0.51499	0.51499	0.100	-3.17309	30.00000	Averaged
82 1,3-Dichloropropane	1.00297	0.97826	0.97826	0.100	-2.46337	30.00000	Averaged
86 1,2-Dibromoethane(EDB)	0.50195	0.49372	0.49372	0.100	-1.64091	30.00000	Averaged
83 2-Hexanone	0.54327	0.51042	0.51042	0.100	-6.04591	40.00000	Averaged
87 1-Chlorohexane	0.45060	0.46667	0.46667	0.100	3.56792	30.00000	Averaged
89 Chlorobenzene ++	1.79778	1.75561	1.75561	0.300	-2.34515	30.00000	Averaged
90 Ethylbenzene +	51.80567	50.00000	1.02376	0.100	3.61134	20.00000	Linear
91 1,1,1,2-Tetrachloroethane	0.50486	0.51485	0.51485	0.100	1.97955	30.00000	Averaged
94 p,m-Xylene	104	100	1.26776	0.100	3.74128	30.00000	Linear
95 o-Xylene	52.47225	50.00000	1.22375	0.100	4.94449	30.00000	Linear
96 Styrene	2.09532	2.13522	2.13522	0.100	1.90457	30.00000	Averaged
97 Bromoform ++	0.32269	0.32537	0.32537	0.100	0.83093	30.00000	Averaged
98 Isopropylbenzene	3.04265	3.20931	3.20931	0.100	5.47752	30.00000	Averaged
$ 99 Bromofluorobenzene	0.45899	0.49118	0.49118	0.100	7.01299	30.00000	Averaged
104 n-Propylbenzene	5.56235	5.41710	5.41710	0.100	-2.61139	30.00000	Averaged
102 Bromobenzene	1.95491	1.90538	1.90538	0.100	-2.53349	30.00000	Averaged
103 1,1,2,2-Tetrachloroethane++	1.07154	1.00305	1.00305	0.300	-6.39137	30.00000	Averaged
107 2-Chlorotoluene	3.86025	3.64383	3.64383	0.100	-5.60626	30.00000	Averaged
108 1,3,5-Trimethylbenzene	3.47407	3.31477	3.31477	0.100	-4.58549	30.00000	Averaged
105 1,2,3-Trichloropropane	1.51958	1.46378	1.46378	0.100	-3.67230	30.00000	Averaged

GCAL, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: msv5.i
Lab File ID: i9366.d
Analysis Type: SOIL
Lab Sample ID: 1400
Method: /var/chem/msv5.i/2090713.b/8260Bs5.m

Injection Date: 13-JUL-2009 07:28
Init. Cal. Date(s): 10-JUL-2009 10-JUL-2009
Init. Cal. Times: 09:44 12:02
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
106 trans-1,4-Dichloro-2-Butene	0.52908	0.46824	0.46824	0.100	-11.49851	40.00000	Averaged
109 4-Chlorotoluene	3.28237	3.20061	3.20061	0.100	-2.49073	30.00000	Averaged
110 tert-butylbenzene	2.00304	1.94356	1.94356	0.100	-2.96975	30.00000	Averaged
111 1,2,4-Trimethylbenzene	3.39034	3.36641	3.36641	0.100	-0.70586	30.00000	Averaged
113 sec-Butylbenzene	4.95371	4.84086	4.84086	0.100	-2.27806	30.00000	Averaged
114 p-Isopropyltoluene	3.30254	3.50867	3.50867	0.100	6.24144	30.00000	Averaged
115 1,3-Dichlorobenzene	1.69220	1.72021	1.72021	0.100	1.65537	30.00000	Averaged
118 1,4-Dichlorobenzene	1.78447	1.76587	1.76587	0.100	-1.04217	30.00000	Averaged
120 n-Butylbenzene	3.55061	3.65414	3.65414	0.100	2.91585	30.00000	Averaged
121 1,2-Dichlorobenzene	1.57994	1.56693	1.56693	0.100	-0.82328	30.00000	Averaged
122 1,2-Dibromo-3-Chloropropane	0.13873	0.13502	0.13502	0.100	-2.67829	40.00000	Averaged
127 Hexachlorobutadiene	0.54440	0.63154	0.63154	0.100	16.00664	30.00000	Averaged
126 1,2,4-Trichlorobenzene	0.97219	1.02357	1.02357	0.100	5.28482	30.00000	Averaged
128 Napthalene	1.81510	1.90808	1.90808	0.100	5.12272	30.00000	Averaged
129 1,2,3-Trichlorobenzene	0.88315	0.91372	0.91372	0.100	3.46206	30.00000	Averaged
M 123 TOTAL XYLENE	156	150	1.25309	0.100	4.14235	30.00000	Linear

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Lab File ID (Standard): 2090713/i9366

Date Analyzed: 07/13/09

Instrument ID: MSV5

Time: 0728

GC Column: RTX-VMS-30 ID: .25 (mm)

Heated Purge: (Y/N) Y

Analytical Batch: 414820

		IS 1 Area		RT		IS 2 Area		RT		IS 3 Area		RT	
	STANDARD	193236		9.9		141914		11.98		450417		7.11	
	EPA Sample		#		#		#		#		#		#
1.	LCS740419	193236		9.9		141914		11.98		450417		7.11	
2.	LCSD740420	187856		9.9		132929		11.98		426971		7.12	
3.	MB740418	184329		9.9		122142		11.97		422262		7.11	
4.	GEC-BACKFILL	167471		9.9		110059		11.98		420894		7.11	

IS 1 ID : Chlorobenzene-d5
IS 2 ID : 1,4-Dichlorobenzene-d4
IS 3 ID : Fluorobenzene

AREA UPPER LIMIT = +1000% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RTLOWER LIMIT = -0.50 minutes of internal standard RT
Column used to flag values outside QC limits with an asterisk
* Value outside of QC limits

LABORATORY CHRONICLE: MSV DEPARTMENT

Date: 10-JUL-2009
Instrument: msv5.i
Analyst(s): WAS

Standard	Conc ppm	
Int. Standard	50	6-57-3
Surrogate	50	6-57-4
8260	50	6-58-3
Ac/Ac/VA	250/50	6-58-6
CVE	50	6-57-5

Sample ID	Comments	DataFile	Wgt/Vol	Injection Time	Dil	Anal	ALS
1000		i9296.d	0.00 ml	10-JUL-2009 06:36	1.000	WAS	2
1000		i9297.d	0.00 ml	10-JUL-2009 07:00	1.000	WAS	2
1400	RECALIBRATE	i9298.d	5.00 g	10-JUL-2009 07:44	1.000	WAS	4
LCSD		i9299.d	5.00 g	10-JUL-2009 08:07	1.000	WAS	5
BLANK		i9300.d	5.00 g	10-JUL-2009 08:58	1.000	WAS	6
1000		i9301bfb.d	0.00 ml	10-JUL-2009 09:21	1.000	JCK	7
1206		i9302.d	5.00 g	10-JUL-2009 09:44	1.000	WAS	8
1201		i9303.d	5.00 g	10-JUL-2009 10:09	1.000	WAS	9
1207		i9304.d	5.00 g	10-JUL-2009 10:32	1.000	WAS	10
1202		i9305.d	5.00 g	10-JUL-2009 10:55	1.000	WAS	11
1203		i9306.d	5.00 g	10-JUL-2009 11:17	1.000	WAS	12
1204		i9307.d	5.00 g	10-JUL-2009 11:39	1.000	WAS	13
1205		i9308.d	5.00 g	10-JUL-2009 12:02	1.000	WAS	14
BLANK		i9309.d	5.00 g	10-JUL-2009 12:24	1.000	WAS	15
1600		i9310.d	5.00 g	10-JUL-2009 12:47	1.000	WAS	16
BLANK		i9311.d	5.00 g	10-JUL-2009 13:10	1.000	WAS	17
1600	NOT USED	i9312.d	5.00 g	10-JUL-2009 13:33	1.000	WAS	18
739885		i9313.d	5.00 g	10-JUL-2009 13:56	1.000	WAS	19
739886		i9314.d	5.00 g	10-JUL-2009 14:19	1.000	JCK	20
BLANK		i9315.d	5.00 g	10-JUL-2009 14:42	1.000	JCK	21
739884		i9316.d	5.00 g	10-JUL-2009 15:05	1.000	JCK	22
20907071002		i9317.d	9.55 g	10-JUL-2009 15:28	1.000	JCK	23
20907071003		i9318.d	11.15 g	10-JUL-2009 15:51	1.000	JCK	24
20907071004		i9319.d	7.46 g	10-JUL-2009 16:14	1.000	JCK	25
BLANK		i9320.d	5.00 g	10-JUL-2009 16:36	1.000	CLH	26
20907073101		i9321.d	6.87 g	10-JUL-2009 16:59	1.000	CLH	27
20907081201	NOT USED	i9323.d	5.95 g	10-JUL-2009 17:47	1.000	CLH	29
20907090501	RR	i9324.d	6.24 g	10-JUL-2009 18:10	1.000	CLH	30
20907100901		i9325.d	4.05 g	10-JUL-2009 18:44	1.000	CLH	31
20907100902		i9326.d	3.64 g	10-JUL-2009 19:07	1.000	CLH	32
20907090501	RR 5	i9327.d	5.15 g	10-JUL-2009 19:29	1.000	CLH	33
20907100903	RR W MS/MSD	i9328.d	5.34 g	10-JUL-2009 19:52	1.000	CLH	34
20907100904		i9329.d	3.66 g	10-JUL-2009 20:15	1.000	CLH	35
20907100905		i9330.d	3.72 g	10-JUL-2009 20:38	1.000	CLH	36
20907090501	RR	i9331.d	5.00 g	10-JUL-2009 21:00	5.000	CLH	37

LABORATORY CHRONICLE: MSV DEPARTMENT

Date: 13-JUL-2009
Instrument: msv5.i
Analyst(s): WAS

Standard	Conc ppm	
Int. Standard	50	6-57-3
Surrogate	50	6-57-4
8260	50	6-58-3
Ac/Ac/VA	250/50	6-58-6
CVE	50	6-57-5
APP9 MIX 2	250	6-58-7

Sample ID	Comments	DataFile	Wgt/Vol	Injection Time	Dil	Anal	ALS
1000	RR	i9363.d	0.00 ml	13-JUL-2009 05:58	1.000	WAS	2
1000		i9364.d	0.00 ml	13-JUL-2009 06:42	1.000	WAS	2
BLANK	SOIL BLANK	i9365.d	5.00 g	13-JUL-2009 07:06	1.000	WAS	3
1400		i9366.d	5.00 g	13-JUL-2009 07:28	1.000	WAS	4
740419		i9366L.d	5.00 g	13-JUL-2009 07:28	1.000	WAS	4
740420		i9367.d	5.00 g	13-JUL-2009 07:51	1.000	WAS	5
740418		i9368.d	5.00 g	13-JUL-2009 08:14	1.000	WAS	6
740418	SS 1 HIGH	i9369.d	5.00 g	13-JUL-2009 08:36	1.000	WAS	7
20907100903		i9370.d	4.29 g	13-JUL-2009 08:59	1.000	WAS	8
20907100912		i9371.d	4.81 g	13-JUL-2009 09:44	1.000	WAS	9
20907100913		i9372.d	4.71 g	13-JUL-2009 10:07	1.000	WAS	10
BLANK		i9373.d	5.00 g	13-JUL-2009 10:30	1.000	WAS	11
20907111601	RR IS OUT	i9374.d	5.84 g	13-JUL-2009 10:53	1.000	WAS	12
20907111602		i9375.d	6.33 g	13-JUL-2009 11:16	1.000	WAS	13
20907111603		i9376.d	5.92 g	13-JUL-2009 11:39	1.000	WAS	14
20907111604		i9377.d	5.00 g	13-JUL-2009 12:02	1.000	WAS	15
20907090501		i9378.d	5.13 g	13-JUL-2009 12:30	1.000	WAS	16
BLANK		i9379.d	5.00 g	13-JUL-2009 12:53	1.000	WAS	17
20907111601		i9380.d	5.85 g	13-JUL-2009 13:17	1.000	WAS	18
20907111701		i9381.d	5.10 g	13-JUL-2009 13:41	1.000	WAS	19
20907111702		i9382.d	5.03 g	13-JUL-2009 14:05	1.000	RJU	20
20907111703		i9383.d	5.07 g	13-JUL-2009 14:29	1.000	RJU	21
20907111704		i9384.d	5.13 g	13-JUL-2009 14:53	1.000	RJU	22
20907111705		i9385.d	5.00 g	13-JUL-2009 15:17	1.000	RJU	23
BLANK		i9386.d	0.00 ml	13-JUL-2009 15:42	1.000	RJU	2

TUNE = 18:42

Data Usability Review Evaluation Tool: GC/MS QC 8260B

Client Name:Weston Solutions ,Inc.	Project Number:
Affected Property Location: El Campo	Project Manager: Russ Johnson
Laboratory:GCAL	Laboratory Job No:209070905
Reviewer: Robyn Migues	Date Checked: 07/20/09

ITEM		Yes	No	N/A	Comments
R4	Surrogate Data Included in Lab Package? Required surrogates included? Recoveries within limits (see below OR Lab limits OR DQO Limits)? (Reject <10%R) Areas within limits? (within -50% to +100% of last calibration check) RRT within limits? (<30sec. differ	✓ ✓ ✓ ✓ ✓			
R5	Method Blank Data Included in Lab Package? Criteria met? (<MQL)	✓ ✓			
R6	QC Check Samples/LCS Data Included in Lab Package?	✓			
R7	Matrix Spike Data Included in Lab Package? %R Criteria met?			✓	
S1	Initial Calibration Data Inluded in Lab Package?	✓			
	RF criteria met for SPCC?*; RRF <0.05 must be rejected.	✓			
	%RSD criteria met for CCC?**; (<30%RSD for CCC;>15%RSD must have fit)	✓			
S2	Continuing Calibration Data Included in Lab Package?	✓			
	RF criteria met for SPCC?*; RRF <0.05 must be rejected.	✓			
	% Difference(%D) criteria met for CCC?**; 20% D Max;	✓			
S3	Instrument Tune for GC-MS Included in Lab Package?	✓			
S4	Internal Standard Data Included in Lab Package?	✓			

* SPCC (System Performance Check Compounds)

** CCC (Calibration Check Compounds)

U.S. EPA - CLP
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: GCAL
Contract:
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 209070905
SOW No.:

EPA Sample No.	**Lab Sample ID**
GEC-BACKFILL	20907090501

Were ICP interelement corrections applied ?	Yes / No	YES
Were ICP background corrections applied ?	Yes / No	YES
If yes-were raw data generated before application of background corrections ?	Yes / No	NO

COVER PAGE - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: GCAL

Sample ID: GEC-BACKFILL

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 209070905

Level: (low / med) % Solids: 79.41

Lab Sample ID: 20907090501

Date Received: 07/09/09 Time: 0930

Date Collected: 07/08/09 Time: 1600

Analyte	***Concentration***	***Units***	***C***	***Q***	***MQL***	***SQL***	***MDL***	***Method***	***Type***
Arsenic	1.47	mg/kg	B		2.01	0.32	.25	SW-846 6010B	P
Barium	36.0	mg/kg			0.50	0.028	.022	SW-846 6010B	P
Cadmium	0.019	mg/kg	B		0.25	0.014	.011	SW-846 6010B	P
Chromium	2.16	mg/kg			0.50	0.035	.028	SW-846 6010B	P
Lead	2.94	mg/kg			0.76	0.089	.071	SW-846 6010B	P
Mercury	0.0084	mg/kg	B		0.013	0.0045	.0036	SW-846 7471B	AV
Selenium	0.49	mg/kg	U		2.01	0.49	.39	SW-846 6010B	P
Silver	0.018	mg/kg	U		0.50	0.018	.014	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209070905
Calibration Source: 183-34-1 CPI/EXAXOL
Instrument ID: ICP5 ICAL ID: 2
Date Analyzed: 07/10/09 Time: 0931

INITIAL CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	10.0	10.3	103	mg/L	SW-846 6010B	P
Antimony	1.00	0.980	98	mg/L	SW-846 6010B	P
Arsenic	1.00	1.01	101	mg/L	SW-846 6010B	P
Barium	1.00	1.05	105	mg/L	SW-846 6010B	P
Beryllium	1.00	1.00	100	mg/L	SW-846 6010B	P
Boron	5.00	5.07	101	mg/L	SW-846 6010B	P
Cadmium	1.00	0.990	99	mg/L	SW-846 6010B	P
Calcium	10.0	10.7	107	mg/L	SW-846 6010B	P
Chromium	1.00	1.01	101	mg/L	SW-846 6010B	P
Cobalt	1.00	0.990	99	mg/L	SW-846 6010B	P
Copper	1.00	1.00	100	mg/L	SW-846 6010B	P
Iron	10.0	10.4	104	mg/L	SW-846 6010B	P
Lead	1.00	1.01	101	mg/L	SW-846 6010B	P
Lithium	1.00	1.02	102	mg/L	SW-846 6010B	P
Magnesium	10.0	10.2	102	mg/L	SW-846 6010B	P
Manganese	1.00	1.01	101	mg/L	SW-846 6010B	P
Molybdenum	1.00	0.990	99	mg/L	SW-846 6010B	P
Nickel	1.00	1.00	100	mg/L	SW-846 6010B	P
Potassium	10.0	9.89	99	mg/L	SW-846 6010B	P
Selenium	1.00	0.990	99	mg/L	SW-846 6010B	P
Silver	1.00	1.05	105	mg/L	SW-846 6010B	P
Sodium	10.0	10.3	103	mg/L	SW-846 6010B	P
Strontium	1.00	0.960	96	mg/L	SW-846 6010B	P
Thallium	1.00	1.02	102	mg/L	SW-846 6010B	P
Tin	1.00	1.02	102	mg/L	SW-846 6010B	P
Titanium	1.00	1.00	100	mg/L	SW-846 6010B	P
Vanadium	1.00	0.990	99	mg/L	SW-846 6010B	P
Zinc	1.00	0.980	98	mg/L	SW-846 6010B	P

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209070905
Calibration Source: 183-36-5 INORGANIC VENTURES
Instrument ID: ICP5 ICAL ID: 2
Date Analyzed: 07/10/09 Time: 0959

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	0.200	0.190	93	mg/L	SW-846 6010B	P
Antimony	0.0600	0.0610	101	mg/L	SW-846 6010B	P
Barium	0.0100	0.0100	102	mg/L	SW-846 6010B	P
Beryllium	0.00500	0.00500	100	mg/L	SW-846 6010B	P
Boron	0.500	0.470	95	mg/L	SW-846 6010B	P
Cadmium	0.00500	0.00470	95	mg/L	SW-846 6010B	P
Calcium	0.100	0.0920	92	mg/L	SW-846 6010B	P
Chromium	0.0100	0.0100	101	mg/L	SW-846 6010B	P
Cobalt	0.0100	0.0100	100	mg/L	SW-846 6010B	P
Copper	0.0100	0.0100	103	mg/L	SW-846 6010B	P
Iron	0.100	0.100	104	mg/L	SW-846 6010B	P
Lead	0.0150	0.0140	96	mg/L	SW-846 6010B	P
Lithium	0.0500	0.0550	111	mg/L	SW-846 6010B	P
Magnesium	0.100	0.140	136	mg/L	SW-846 6010B	P
Manganese	0.0150	0.0160	105	mg/L	SW-846 6010B	P
Molybdenum	0.0500	0.0500	100	mg/L	SW-846 6010B	P
Nickel	0.0400	0.0430	107	mg/L	SW-846 6010B	P
Potassium	0.500	0.470	95	mg/L	SW-846 6010B	P
Selenium	0.0400	0.0440	110	mg/L	SW-846 6010B	P
Silver	0.0100	0.0100	100	mg/L	SW-846 6010B	P
Sodium	1.00	1.00	100	mg/L	SW-846 6010B	P
Strontium	0.0500	0.0520	103	mg/L	SW-846 6010B	P
Thallium	0.0100	0.00680	68	mg/L	SW-846 6010B	P
Tin	0.100	0.100	103	mg/L	SW-846 6010B	P
Titanium	0.100	0.100	101	mg/L	SW-846 6010B	P
Vanadium	0.0200	0.0190	93	mg/L	SW-846 6010B	P
Zinc	0.0200	0.0180	92	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-35-8 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 2

Date Analyzed: 07/10/09

Time: 1006

CRDL STANDARD

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Arsenic	0.00500	0.00640	129	mg/L	SW-846 6010B	P

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-36-4 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 2

Date Analyzed: 07/10/09

Time: 1054

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	5.00	100	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	98	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	100	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 6010B	P
Boron	2.50	2.45	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	101	mg/L	SW-846 6010B	P
Calcium	5.00	5.03	101	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	101	mg/L	SW-846 6010B	P
Copper	0.500	0.500	101	mg/L	SW-846 6010B	P
Iron	5.00	5.09	102	mg/L	SW-846 6010B	P
Lead	0.500	0.500	101	mg/L	SW-846 6010B	P
Lithium	0.500	0.510	101	mg/L	SW-846 6010B	P
Magnesium	5.00	5.09	102	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.500	101	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	103	mg/L	SW-846 6010B	P
Potassium	10.0	9.73	97	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	101	mg/L	SW-846 6010B	P
Silicon	5.00	5.04	101	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	20.0	100	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	101	mg/L	SW-846 6010B	P
Tin	0.500	0.510	102	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	102	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	100	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.:
SDG No.: 209070905
Calibration Source: 183-36-4 INORGANIC VENTURES
Instrument ID: ICP5
ICAL ID: 2
Date Analyzed: 07/10/09
Time: 1223

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	5.35	107	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	98	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	99	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 6010B	P
Boron	2.50	2.45	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	101	mg/L	SW-846 6010B	P
Calcium	5.00	5.20	104	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	102	mg/L	SW-846 6010B	P
Copper	0.500	0.500	101	mg/L	SW-846 6010B	P
Iron	5.00	5.23	105	mg/L	SW-846 6010B	P
Lead	0.500	0.500	100	mg/L	SW-846 6010B	P
Lithium	0.500	0.470	95	mg/L	SW-846 6010B	P
Magnesium	5.00	5.21	104	mg/L	SW-846 6010B	P
Manganese	0.500	0.510	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.500	100	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	103	mg/L	SW-846 6010B	P
Potassium	10.0	9.23	92	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	99	mg/L	SW-846 6010B	P
Silicon	5.00	5.22	104	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	19.1	96	mg/L	SW-846 6010B	P
Strontium	0.500	0.500	100	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	101	mg/L	SW-846 6010B	P
Tin	0.500	0.500	101	mg/L	SW-846 6010B	P
Titanium	0.500	0.510	102	mg/L	SW-846 6010B	P
Vanadium	0.500	0.510	102	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	100	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Calibration Source: 183-36-4 INORGANIC VENTURES

Instrument ID: ICP5 ICAL ID: 2

Date Analyzed: 07/10/09 Time: 1346

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	5.09	102	mg/L	SW-846 6010B	P
Antimony	0.500	0.500	99	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	101	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	101	mg/L	SW-846 6010B	P
Boron	2.50	2.45	98	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	100	mg/L	SW-846 6010B	P
Calcium	5.00	5.02	100	mg/L	SW-846 6010B	P
Chromium	0.500	0.500	100	mg/L	SW-846 6010B	P
Cobalt	0.500	0.500	101	mg/L	SW-846 6010B	P
Copper	0.500	0.500	100	mg/L	SW-846 6010B	P
Iron	5.00	5.06	101	mg/L	SW-846 6010B	P
Lead	0.500	0.500	100	mg/L	SW-846 6010B	P
Lithium	0.500	0.480	96	mg/L	SW-846 6010B	P
Magnesium	5.00	5.04	101	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	100	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.500	100	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	9.32	93	mg/L	SW-846 6010B	P
Selenium	0.500	0.510	102	mg/L	SW-846 6010B	P
Silicon	5.00	5.03	101	mg/L	SW-846 6010B	P
Silver	0.500	0.500	99	mg/L	SW-846 6010B	P
Sodium	20.0	18.9	94	mg/L	SW-846 6010B	P
Strontium	0.500	0.480	96	mg/L	SW-846 6010B	P
Thallium	0.500	0.510	102	mg/L	SW-846 6010B	P
Tin	0.500	0.510	101	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	101	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.490	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	99	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-36-4 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 2

Date Analyzed: 07/10/09

Time: 1515

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	4.82	96	mg/L	SW-846 6010B	P
Antimony	0.500	0.490	97	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	101	mg/L	SW-846 6010B	P
Barium	0.500	0.510	102	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	102	mg/L	SW-846 6010B	P
Boron	2.50	2.58	103	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	101	mg/L	SW-846 6010B	P
Calcium	5.00	4.80	96	mg/L	SW-846 6010B	P
Chromium	0.500	0.510	101	mg/L	SW-846 6010B	P
Cobalt	0.500	0.510	102	mg/L	SW-846 6010B	P
Copper	0.500	0.500	100	mg/L	SW-846 6010B	P
Iron	5.00	4.80	96	mg/L	SW-846 6010B	P
Lead	0.500	0.500	100	mg/L	SW-846 6010B	P
Lithium	0.500	0.490	97	mg/L	SW-846 6010B	P
Magnesium	5.00	4.82	96	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	101	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.560	112	mg/L	SW-846 6010B	P
Nickel	0.500	0.520	103	mg/L	SW-846 6010B	P
Potassium	10.0	9.47	95	mg/L	SW-846 6010B	P
Selenium	0.500	0.500	100	mg/L	SW-846 6010B	P
Silicon	5.00	4.77	95	mg/L	SW-846 6010B	P
Silver	0.500	0.500	100	mg/L	SW-846 6010B	P
Sodium	20.0	18.8	94	mg/L	SW-846 6010B	P
Strontium	0.500	0.460	92	mg/L	SW-846 6010B	P
Thallium	0.500	0.500	101	mg/L	SW-846 6010B	P
Tin	0.500	0.510	102	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	100	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	101	mg/L	SW-846 6010B	P
Zinc	0.500	0.500	99	mg/L	SW-846 6010B	P
Zirconium	0.500	0.500	99	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-36-4 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 2

Date Analyzed: 07/10/09

Time: 1650

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Aluminum	5.00	4.76	95	mg/L	SW-846 6010B	P
Antimony	0.500	0.480	96	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	99	mg/L	SW-846 6010B	P
Barium	0.500	0.500	101	mg/L	SW-846 6010B	P
Beryllium	0.500	0.510	101	mg/L	SW-846 6010B	P
Boron	2.50	2.80	112	mg/L	SW-846 6010B	P
Cadmium	0.500	0.500	100	mg/L	SW-846 6010B	P
Calcium	5.00	4.74	95	mg/L	SW-846 6010B	P
Chromium	0.500	0.500	100	mg/L	SW-846 6010B	P
Cobalt	0.500	0.500	100	mg/L	SW-846 6010B	P
Copper	0.500	0.490	98	mg/L	SW-846 6010B	P
Iron	5.00	4.75	95	mg/L	SW-846 6010B	P
Lead	0.500	0.490	99	mg/L	SW-846 6010B	P
Lithium	0.500	0.450	91	mg/L	SW-846 6010B	P
Magnesium	5.00	4.74	95	mg/L	SW-846 6010B	P
Manganese	0.500	0.500	99	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.630	126	mg/L	SW-846 6010B	P
Nickel	0.500	0.510	102	mg/L	SW-846 6010B	P
Potassium	10.0	8.95	89	mg/L	SW-846 6010B	P
Selenium	0.500	0.490	98	mg/L	SW-846 6010B	P
Silicon	5.00	4.73	95	mg/L	SW-846 6010B	P
Silver	0.500	0.490	99	mg/L	SW-846 6010B	P
Sodium	20.0	18.1	90	mg/L	SW-846 6010B	P
Strontium	0.500	0.450	89	mg/L	SW-846 6010B	P
Thallium	0.500	0.500	100	mg/L	SW-846 6010B	P
Tin	0.500	0.500	100	mg/L	SW-846 6010B	P
Titanium	0.500	0.500	100	mg/L	SW-846 6010B	P
Vanadium	0.500	0.500	99	mg/L	SW-846 6010B	P
Zinc	0.500	0.490	98	mg/L	SW-846 6010B	P
Zirconium	0.500	0.490	97	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

FORM II - IN

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-36-4 INORGANIC VENTURES

Instrument ID: ICP5

ICAL ID: 2

Date Analyzed: 07/10/09

Time: 1755

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Aluminum	5.00	4.71	94	mg/L	SW-846 6010B	P
Antimony	0.500	0.480	96	mg/L	SW-846 6010B	P
Arsenic	0.500	0.500	99	mg/L	SW-846 6010B	P
Barium	0.500	0.500	99	mg/L	SW-846 6010B	P
Beryllium	0.500	0.500	99	mg/L	SW-846 6010B	P
Boron	2.50	2.41	97	mg/L	SW-846 6010B	P
Cadmium	0.500	0.490	98	mg/L	SW-846 6010B	P
Calcium	5.00	4.70	94	mg/L	SW-846 6010B	P
Chromium	0.500	0.490	99	mg/L	SW-846 6010B	P
Cobalt	0.500	0.490	98	mg/L	SW-846 6010B	P
Copper	0.500	0.490	97	mg/L	SW-846 6010B	P
Iron	5.00	4.70	94	mg/L	SW-846 6010B	P
Lead	0.500	0.490	98	mg/L	SW-846 6010B	P
Lithium	0.500	0.470	94	mg/L	SW-846 6010B	P
Magnesium	5.00	4.71	94	mg/L	SW-846 6010B	P
Manganese	0.500	0.490	98	mg/L	SW-846 6010B	P
Molybdenum	0.500	0.520	105	mg/L	SW-846 6010B	P
Nickel	0.500	0.500	100	mg/L	SW-846 6010B	P
Potassium	10.0	9.03	90	mg/L	SW-846 6010B	P
Selenium	0.500	0.490	98	mg/L	SW-846 6010B	P
Silicon	5.00	4.70	94	mg/L	SW-846 6010B	P
Silver	0.500	0.490	98	mg/L	SW-846 6010B	P
Sodium	20.0	18.2	91	mg/L	SW-846 6010B	P
Strontium	0.500	0.450	89	mg/L	SW-846 6010B	P
Thallium	0.500	0.500	99	mg/L	SW-846 6010B	P
Tin	0.500	0.500	99	mg/L	SW-846 6010B	P
Titanium	0.500	0.490	99	mg/L	SW-846 6010B	P
Vanadium	0.500	0.490	98	mg/L	SW-846 6010B	P
Zinc	0.500	0.480	96	mg/L	SW-846 6010B	P
Zirconium	0.500	0.480	96	mg/L	SW-846 6010B	P

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-32-7 CPI

Instrument ID: FIMS1

ICAL ID: 1

Date Analyzed: 07/10/09

Time: 1207

INITIAL CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Mercury	0.00500	0.00489	98	mg/L	SW-846 7471B	AV

ICV CONTROL LIMITS EPA 6010B = 90-110 EPA 200.7 = 95-105

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL

Instrument ID: FIMS1

ICAL ID: 1

Date Analyzed: 07/10/09

Time: 1210

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Mercury	0.00500	0.00507	101	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL

Instrument ID: FIMS1

ICAL ID: 1

Date Analyzed: 07/10/09

Time: 1229

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Mercury	0.00500	0.00514	103	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL

Instrument ID: FIMS1

ICAL ID: 1

Date Analyzed: 07/10/09

Time: 1249

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Mercury	0.00500	0.00516	103	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL

Instrument ID: FIMS1 ICAL ID: 1

Date Analyzed: 07/10/09 Time: 1310

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00513	103	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL

Instrument ID: FIMS1

ICAL ID: 1

Date Analyzed: 07/10/09

Time: 1329

CONTINUING CALIBRATION VERIFICATION

Analyte	*True*	*Found*	*CAL %R*	*Units*	*Method*	*Type*
Mercury	0.00500	0.00510	102	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL Instrument ID: FIMS1 ICAL ID: 1

Date Analyzed: 07/10/09 Time: 1437

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00506	101	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

67

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Calibration Source: 183-32-6 EXAXOL

Instrument ID: FIMS1 ICAL ID: 1

Date Analyzed: 07/10/09 Time: 1450

CONTINUING CALIBRATION VERIFICATION

Analyte	***True***	***Found***	***CAL %R***	***Units***	***Method***	***Type***
Mercury	0.00500	0.00506	101	mg/L	SW-846 7471B	AV

CCV CONTROL LIMITS EPA 6010B AND 200.7 = 90-110 EPA 7470/7471 AND 7XXX = 80-120

FORM II - IN

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Lab Sample ID: ICB

ICAL ID: 2

Lab Sample DESC: ICB FOR HBN 414786 [ICP/5708]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 07/10/09 Time: 0952

INITIAL CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Lab Sample ID: CCB

ICAL ID: 2

Lab Sample DESC: CCB FOR HBN 414786 [ICP/5708]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 07/10/09 Time: 1108

CONTINUING CALIBRATION BLANK

Analyte	**Conc.**	**C**	**Units**	**MDL**	**PQL**	**Method**	**Type**
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Lab Sample ID: CCB

ICAL ID: 2

Lab Sample DESC: CCB FOR HBN 414786 [ICP/5708]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 07/10/09

Time: 1230

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209070905
Lab Sample ID: CCB		ICAL ID: 2	
Lab Sample DESC: CCB FOR HBN 414786 [ICP/5708]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP5		Date Analyzed: 07/10/09	Time: 1353

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Arsenic	0.0047	B	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Lab Sample ID: CCB

ICAL ID: 2

Lab Sample DESC: CCB FOR HBN 414786 [ICP/5708]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 07/10/09

Time: 1522

CONTINUING CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Lab Sample ID: CCB

ICAL ID: 2

Lab Sample DESC: CCB FOR HBN 414786 [ICP/5708]

Preparation Blank Matrix: (soil / water)

Instrument ID: ICP5

Date Analyzed: 07/10/09

Time: 1657

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Lab Sample ID: 739656

ICAL ID: 2

Lab Sample DESC: MB739656

Preparation Blank Matrix: (soil / water) Soil

Instrument ID: ICP5

Date Analyzed: 07/10/09 Time: 1706

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Arsenic	0.25	U	mg/kg	0.25	1.60	SW-846 6010B	P
Barium	0.022	U	mg/kg	0.022	0.40	SW-846 6010B	P
Cadmium	0.011	U	mg/kg	0.011	0.20	SW-846 6010B	P
Chromium	0.028	U	mg/kg	0.028	0.40	SW-846 6010B	P
Lead	0.071	U	mg/kg	0.071	0.60	SW-846 6010B	P
Selenium	0.39	U	mg/kg	0.39	1.60	SW-846 6010B	P
Silver	0.014	U	mg/kg	0.014	0.40	SW-846 6010B	P

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209070905
Lab Sample ID: CCB		ICAL ID: 2	
Lab Sample DESC: CCB FOR HBN 414786 [ICP/5708]		Preparation Blank Matrix: (soil / water)	
Instrument ID: ICP5		Date Analyzed: 07/10/09	Time: 1802

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Arsenic	0.010	U	mg/L	0.0038	0.010	SW-846 6010B	P
Barium	0.010	U	mg/L	0.00052	0.010	SW-846 6010B	P
Cadmium	0.0050	U	mg/L	0.00017	0.0050	SW-846 6010B	P
Chromium	0.010	U	mg/L	0.00030	0.010	SW-846 6010B	P
Lead	0.015	U	mg/L	0.0027	0.015	SW-846 6010B	P
Selenium	0.040	U	mg/L	0.0045	0.040	SW-846 6010B	P
Silver	0.010	U	mg/L	0.00062	0.010	SW-846 6010B	P

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Lab Sample ID: ICB

ICAL ID: 1

Lab Sample DESC: ICB FOR HBN 414669 [HG/4313]

Preparation Blank Matrix: (soil / water)

Instrument ID: FIMS1

Date Analyzed: 07/10/09 Time: 1208

INITIAL CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

77

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209070905
Lab Sample ID: CCB		ICAL ID: 1	
Lab Sample DESC: CCB FOR HBN 414669 [HG/4313]		Preparation Blank Matrix: (soil / water)	
Instrument ID: FIMS1		Date Analyzed: 07/10/09	Time: 1211

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Lab Sample ID: CCB

ICAL ID: 1

Lab Sample DESC: CCB FOR HBN 414669 [HG/4313]

Preparation Blank Matrix: (soil / water)

Instrument ID: FIMS1

Date Analyzed: 07/10/09

Time: 1231

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

BLANKS

Lab Name:	GCAL	Contract:	
Lab Code:	LA024	Case No.:	
SAS No.:		SDG No.:	209070905
Lab Sample ID:	CCB	ICAL ID:	1
Lab Sample DESC:	CCB FOR HBN 414669 [HG/4313]	Preparation Blank Matrix: (soil / water)	
Instrument ID:	FIMS1	Date Analyzed:	07/10/09
Time:	1250		

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

BLANKS

Lab Name: GCAL

Contract:

Lab Code: LA024 Case No.:

SAS No.: SDG No.: 209070905

Lab Sample ID: CCB

ICAL ID: 1

Lab Sample DESC: CCB FOR HBN 414669 [HG/4313]

Preparation Blank Matrix: (soil / water)

Instrument ID: FIMS1

Date Analyzed: 07/10/09 Time: 1311

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

FORM III - IN

BLANKS

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Lab Sample ID: CCB ICAL ID: 1

Lab Sample DESC: CCB FOR HBN 414669 [HG/4313] Preparation Blank Matrix: (soil / water)

Instrument ID: FIMS1 Date Analyzed: 07/10/09 Time: 1331

CONTINUING CALIBRATION BLANK

Analyte	***Conc.***	***C***	***Units***	***MDL***	***PQL***	***Method***	***Type***
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

FORM III - IN

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209070905
Lab Sample ID: CCB
ICAL ID: 1
Lab Sample DESC: CCB FOR HBN 414669 [HG/4313]
Preparation Blank Matrix: (soil / water)
Instrument ID: FIMS1
Date Analyzed: 07/10/09 Time: 1438

CONTINUING CALIBRATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

BLANKS

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209070905
Lab Sample ID: 739677
ICAL ID: 1
Lab Sample DESC: MB739677
Preparation Blank Matrix: (soil / water) Soil
Instrument ID: FIMS1
Date Analyzed: 07/10/09 Time: 1440

PREPARATION BLANK

Analyte	Conc.	C	Units	MDL	PQL	Method	Type
Mercury	0.0060	B	mg/kg	0.0036	0.010	SW-846 7471B	AV

BLANKS

Lab Name: GCAL		Contract:	
Lab Code: LA024	Case No.:	SAS No.:	SDG No.: 209070905
Lab Sample ID: CCB		ICAL ID: 1	
Lab Sample DESC: CCB FOR HBN 414669 [HG/4313]		Preparation Blank Matrix: (soil / water)	
Instrument ID: FIMS1		Date Analyzed: 07/10/09	Time: 1451

CONTINUING CALIBRATION BLANK

Analyte	*Conc.*	*C*	*Units*	*MDL*	*PQL*	*Method*	*Type*
Mercury	0.00020	U	mg/L	0.000066	0.00020	SW-846 7471B	AV

ICP INTERFERENCE CHECK SAMPLE

Lab Name: GCAL
Contract:
Lab Code: LA024 Case No.:
SAS No.: SDG No.: 209070905
ICP ID Number: ICP5
ICS Source: 183-35-4 SPEX~183-37-1 SPEX

Concentration Units: mg/L

Analyte	True		Initial Found			Final Found		
	Sol. A	**Sol. AB**	**Sol. A**	**Sol. AB**	**%R**	**Sol. A**	**Sol. AB**	**%R**
Aluminum	200	200	205	205	102			
Antimony	0	1.00		0.99	99			
Arsenic	0	1.00		1.05	105			
Barium	0	0.50		0.51	102			
Beryllium	0	0.50		0.51	102			
Boron	0	1.00		1.15	115			
Cadmium	0	1.00		0.99	99			
Calcium	200	200	206	207	104			
Chromium	0	0.50		0.52	104			
Cobalt	0	0.50		0.47	94			
Copper	0	0.50		0.53	106			
Iron	80.0	80.0	80.5	80.3	100			
Lead	0	1.00		0.99	99			
Magnesium	200	200	203	203	102			
Manganese	0	0.50		0.50	100			
Molybdenum	0	1.00		1.02	102			
Nickel	0	1.00		0.96	96			
Selenium	0	1.00		1.02	102			
Silver	0	1.00		1.06	106			
Thallium	0	1.00		1.03	103			
Vanadium	0	0.50		0.50	100			
Zinc	0	1.00		0.99	99			

MS/MSD RECOVERY

Lab Name: GCAL Contract:

Lab Code: LA024 Case No.: SAS No.: SDG No.: 209070905

Matrix Spike - EPA Sample No: GEC-BACKFILL Method SW-846 6010B

SAMPLE NO. : 739659

COMPOUND	***UNITS***	***SPIKE ADDED***	***SAMPLE CONCENTRATION***	***MS CONCENTRATION***	***MS % REC***	***#***	***QC. LIMITS***
Arsenic	mg/kg	25.2	1.47	25.1	94		75 - 125
Barium	mg/kg	25.2	36	70.9	139	N	75 - 125
Cadmium	mg/kg	25.2	.019	23	91		75 - 125
Chromium	mg/kg	25.2	2.16	30.4	112		75 - 125
Lead	mg/kg	25.2	2.94	26.9	95		75 - 125
Selenium	mg/kg	25.2	0	23.4	93		75 - 125
Silver	mg/kg	25.2	0	24.3	97		75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 1 out of 7 outside limits

FORM V (PART 1) - IN

MS/MSD RECOVERY

Lab Name: GCAL

Contract:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Matrix Spike - EPA Sample No: GEC-BACKFILL

Method SW-846 7471B

SAMPLE NO. : 739680

COMPOUND	***UNITS***	***SPIKE ADDED***	***SAMPLE CONCENTRATION***	***MS CONCENTRATION***	***MS % REC***	***#***	***QC. LIMITS***
Mercury	mg/kg	.31	.0084	.32	98		75 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD : 0 out of 0 outside limits

Spike Recovery: 0 out of 1 outside limits

FORM V (PART 1) - IN

POST DIGEST SPIKE SAMPLE RECOVERY

Lab Name: GCAL

Sample ID: GEC-BACKFILLPDS

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209070905

Level: (low / med)

Lab Sample ID: 740038

Orig Lab Sample ID: 20907090501

Analyte	LL	UL	Spiked Sample Result	C	Sample Result	C	Spike Added	% R	Q	Units	Method	Type
Arsenic	75	125	27.8		1.47	B	25.2	105		mg/kg	SW-846 6010B	P
Barium	75	125	61		36		25.2	99		mg/kg	SW-846 6010B	P
Cadmium	75	125	24.4		.019	B	25.2	97		mg/kg	SW-846 6010B	P
Chromium	75	125	27.2		2.16		25.2	100		mg/kg	SW-846 6010B	P
Lead	75	125	27.5		2.94		25.2	98		mg/kg	SW-846 6010B	P
Selenium	75	125	26.6		0	U	25.2	105		mg/kg	SW-846 6010B	P
Silver	75	125	25.9		0	U	25.2	103		mg/kg	SW-846 6010B	P

FORM V (PART 2) - IN

DUPLICATES

Lab Name: GCAL

Sample ID: GEC-BACKFILLDUP

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209070905

% Solids for Sample:

Level: (low / med)

% Solids for Duplicate:

Lab Sample ID: 739658

Analyte	LL	UL	Sample	C	Duplicate	C	RPD	Q	Units	Method	Type
Arsenic	0	20	1.47	B	2.07		34	*	mg/kg	SW-846 6010B	P
Barium	0	20	36		41.9		15		mg/kg	SW-846 6010B	P
Cadmium	0	20	.019	B	.028	B	38	*	mg/kg	SW-846 6010B	P
Chromium	0	20	2.16		2.12		2		mg/kg	SW-846 6010B	P
Lead	0	20	2.94		3.37		14		mg/kg	SW-846 6010B	P
Selenium	0	20	0	U	0	U	0		mg/kg	SW-846 6010B	P
Silver	0	20	0	U	0	U	0		mg/kg	SW-846 6010B	P

DUPLICATES

Lab Name: GCAL

Sample ID: GEC-BACKFILLDUP

Lab Code: LA024 Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.: SDG No.: 209070905

% Solids for Sample:

Level: (low / med)

% Solids for Duplicate:

Lab Sample ID: 739679

Analyte	LL	UL	Sample	C	Duplicate	C	RPD	Q	Units	Method	Type
Mercury	0	20	.0084	B	.007	B	18		mg/kg	SW-846 7471B	AV

FORM VI - IN

LABORATORY CONTROL SAMPLE

Lab Name: GCAL

Sample ID: LCS739657

Lab Code: LA024

Case No.:

Contract:

Matrix: (soil / water) Soil

SAS No.:

SDG No.: 209070905

Lab Sample ID: 739657

LCS Source: 180-9-14 INORGANIC VENTURES

Analyte	*True*	*Found*	*% R*	*LL*	*UL*	*Units*	*Method*	*Type*
Arsenic	20.0	20.3	101	80	120	mg/kg	SW-846 6010B	P
Barium	20.0	20.4	102	80	120	mg/kg	SW-846 6010B	P
Cadmium	20.0	20.2	101	80	120	mg/kg	SW-846 6010B	P
Chromium	20.0	20.2	101	80	120	mg/kg	SW-846 6010B	P
Lead	20.0	20.3	102	80	120	mg/kg	SW-846 6010B	P
Selenium	20.0	20.2	101	80	120	mg/kg	SW-846 6010B	P
Silver	20.0	19.6	98	80	120	mg/kg	SW-846 6010B	P

LABORATORY CONTROL SAMPLE

Lab Name:	GCAL	Sample ID:	LCS739678
Lab Code:	LA024 Case No.:	Contract:	
Matrix (soil / water)	Soil	SAS No.:	SDG No.: 209070905
Lab Sample ID:	739678	LCS Source:	183-32-6 EXAXOL

Analyte	*True*	*Found*	*% R*	*LL*	*UL*	*Units*	*Method*	*Type*
Mercury	0.25	0.27	106	80	120	mg/kg	SW-846 7471B	AV

FORM VII - IN

SERIAL DILUTIONS

Lab Name: GCAL
Sample ID: GEC-BACKFILLSD
Lab Code: LA024 Case No.
Contract:
Matrix: (soil / water) Soil
SAS No.: SDG No.: 209070905
Level: (low / med)
Org Lab Sample ID: 20907090501
Lab Sample ID: 740039

Analyte	LL	UL	Initial Sample Result	C	Serial Dilution Result	C	% Diff.	Q	Units	Method	Type
Arsenic			1.47	B	2.31	B	57.1		mg/kg	SW-846 6010B	P
Barium	0	10	36.0		35.5		1.4		mg/kg	SW-846 6010B	P
Cadmium			0.019	B	0	U	100		mg/kg	SW-846 6010B	P
Chromium	0	10	2.16		1.98	B	8.3		mg/kg	SW-846 6010B	P
Lead			2.94		2.48	B	15.6		mg/kg	SW-846 6010B	P
Selenium			0	U	0	U			mg/kg	SW-846 6010B	P
Silver			0	U	0	U			mg/kg	SW-846 6010B	P

METHOD DETECTION LIMITS

Lab Name: GCAL

Sample ID:

Lab Code: LA024

SDG No.: 209070905

Study Date: (P)10/17/08 (AV)10/01/08

Instrument ID:(P) ICP5 / ICP6 (AV) FIMS1

Analyte	*MDL*	*Units*	*Type*
Arsenic	0.25	mg/kg	P
Barium	0.022	mg/kg	P
Cadmium	0.011	mg/kg	P
Chromium	0.028	mg/kg	P
Lead	0.071	mg/kg	P
Mercury	0.0036	mg/kg	AV
Selenium	0.39	mg/kg	P
Silver	0.014	mg/kg	P

IEC File Last Saved: 7/2/2009 9:05:07 AM
Printed On: 7/11/2009 9:02:08 AM

Results Data Set Name: 2090126 IE
Method Name: ICP5Combine
Results Library: C:\pe\met\Results\Results.md

Interfering Analytes

	Analytes	Aluminum,7429-90-5	Calcium,7440-70-2	Chromium,7440-47-3	Copper,7440-50-8
1	**Aluminum,7429-90-5**	n/a	0.010824	0.213393	0.0291282
2	**Antimony,7440-36-0**	0.0253721	0.00262833	20.7138	0.0900728
5	**Arsenic,7440-38-2**	-0.002082	0.0185373	-1.00923	0.0534126
6	**Barium,7440-39-3**	0.00159208	0.0134876	0.0670221	0.020412
7	**Beryllium,7440-41-7**	0	0	0.540391	0.0313934
8	**Boron,7440-42-8**	-0.0458459	-0.017603	-0.281296	-0.59033
9	**Cadmium,7440-43-9**	0	0	0.91073	0.0885074
10	**Calcium,7440-70-2**	0.0140773	n/a	-1.62729	0.368177
11	**Chromium,7440-47-3**	-0.275591	0	n/a	0.1509
12	**Cobalt,7440-48-4**	0	0	-0.134454	0.591596
13	**Copper,7440-50-8**	0.0166717	0.00164272	-0.111872	n/a
14	**Iron,7439-89-6**	0.0409129	-0.015907	0.0602162	0.172091
15	**Lead,7439-92-1**	-0.0738998	-0.00504146	0.0212854	0.171979
16	**Lithium,7439-93-2**	0	-0.0013297	0.00228165	0.0026465
17	**Magnesium,7439-95-4**	0.00827248	-0.0029703	0.0195	0.11825
18	**Manganese,7439-96-5**	-0.00967997	0	-0.0270295	0.085578
19	**Molybdenum,7439-98-7**	-0.0121388	0	0.0713256	0.0583647
20	**Nickel,7440-02-0**	0.00455503	0	0.027801	0.0356169
21	**Potassium,7440-09-7**	-0.0422941	-0.0309107	-0.285935	-0.315608
23	**Selenium,7782-49-2**	0.0639102	-0.0181683	-0.0382675	0.149393
24	**Silicon,7440-21-3**	0.00785445	0.0123144	-0.212007	-0.0157597
25	**Silver,7440-22-4**	0.00153798	0.00144886	0.0414592	0.0785219
26	**Sodium,7440-23-5**	0.0384904	0.096101	1.17146	11.8641
27	**Strontium,7440-24-6**	0	0.0281816	0.00587867	0.00300522
28	**Thallium,7440-28-0**	-0.0470001	-0.0119617	0.318942	-0.0652657
29	**Tin,7440-31-5**	0.00265774	-0.0406902	-0.0190359	-0.0539905
30	**Titanium,7440-32-6**	0	0	0.0350326	0.0165063
31	**Vanadium,7440-62-2**	0.00240563	0.003086	0.0126556	0.0243602
34	**Zinc,7440-66-6**	0.00385108	-0.027851	0.598128	1.65243
35	**Zirconium,7440-67-7**	0	0	0.0209932	0.0216212

Interfering Analytes

	Analytes	Iron,7439-89-6	Magnesium,7439-95-4	Manganese,7439-96-5	Nickel,7440-02-0
1	**Aluminum,7429-90-5**	0.701868	0.0114507	1.54113	0.166043
2	**Antimony,7440-36-0**	0.0140182	0.0285909	0.028326	0.203694
5	**Arsenic,7440-38-2**	-0.0555779	0.0183078	0.0662111	-0.170594
6	**Barium,7440-39-3**	0.00133253	0	0.0133958	0.0933646
7	**Beryllium,7440-41-7**	0	0	0.0443749	0.0437425
8	**Boron,7440-42-8**	5.90045	-0.0570874	-1.56194	-0.5781
9	**Cadmium,7440-43-9**	0.0244082	-0.00194539	0.0386505	0.254547
10	**Calcium,7440-70-2**	0.00978473	0.0361024	0.681001	0.818624
11	**Chromium,7440-47-3**	0.657436	-0.0150692	0.499524	0.136094
12	**Cobalt,7440-48-4**	0.00526419	0	0.111561	0.392802
13	**Copper,7440-50-8**	-0.174937	0.0173514	1.02557	0.687016
14	**Iron,7439-89-6**	**n/a**	0.0117612	0.0643748	-0.359643
15	**Lead,7439-92-1**	0.00926169	0.00624607	0.20971	0.566382
16	**Lithium,7439-93-2**	0	0	-0.0356529	0.0732104
17	**Magnesium,7439-95-4**	-1.14258	**n/a**	2.37685	0.336561
18	**Manganese,7439-96-5**	-0.00688206	0.0344236	**n/a**	0.257843
19	**Molybdenum,7439-98-7**	-0.0469652	-0.00121207	-0.0380117	0.0554416
20	**Nickel,7440-02-0**	-0.0136113	0	0.178529	**n/a**
21	**Potassium,7440-09-7**	-0.416402	-0.113888	-3.16046	-0.486245
23	**Selenium,7782-49-2**	-0.354579	0.0427689	1.18933	0.243095
24	**Silicon,7440-21-3**	-0.153717	0.0959548	-0.436582	-0.426179
25	**Silver,7440-22-4**	-0.0121631	0.0021653	0.184509	0.0832374
26	**Sodium,7440-23-5**	-0.0311301	0	9.55024	-0.390549
27	**Strontium,7440-24-6**	0	0.000118676	0.0022423	0.00643396
28	**Thallium,7440-28-0**	0.339749	0.00751649	-1.44247	-0.10463
29	**Tin,7440-31-5**	-0.00343575	0.00441502	-0.0834714	-0.0229971
30	**Titanium,7440-32-6**	0.00239982	0	0.0250957	0.073299
31	**Vanadium,7440-62-2**	0.0599478	0.00196455	0.0914533	0.0223932
34	**Zinc,7440-66-6**	0.104305	0.0188884	0.0397894	6.88167
35	**Zirconium,7440-67-7**	-0.00456887	0	0.0392405	0.0410968

Interfering Analytes

	Analytes	Titanium,7440-32-6	Vanadium,7440-62-2
1	**Aluminum,7429-90-5**	2.37623	11.3988
2	**Antimony,7440-36-0**	-2.17169	-0.57215
5	**Arsenic,7440-38-2**	0.0604387	-6.84324
6	**Barium,7440-39-3**	0.0313953	-0.473311
7	**Beryllium,7440-41-7**	-2.40744	0.0254145
8	**Boron,7440-42-8**	-1.43759	0.0432324
9	**Cadmium,7440-43-9**	0.00783962	0.0210034
10	**Calcium,7440-70-2**	0.33251	0.602746
11	**Chromium,7440-47-3**	0.0687023	-0.66058
12	**Cobalt,7440-48-4**	2.15071	0.0286924
13	**Copper,7440-50-8**	0.242397	-0.657501
14	**Iron,7439-89-6**	-0.407577	0.0125595
15	**Lead,7439-92-1**	-0.61818	-0.0452313
16	**Lithium,7439-93-2**	0.0162728	0.00234641
17	**Magnesium,7439-95-4**	-1.09989	0.445576
18	**Manganese,7439-96-5**	0.189654	0.104514
19	**Molybdenum,7439-98-7**	0.00712235	0.045835
20	**Nickel,7440-02-0**	0.081411	0.118369
21	**Potassium,7440-09-7**	-1.775	0.00156795
23	**Selenium,7782-49-2**	0.346108	0.181589
24	**Silicon,7440-21-3**	66.0605	0.112797
25	**Silver,7440-22-4**	0	-0.250581
26	**Sodium,7440-23-5**	-0.342987	-0.641123
27	**Strontium,7440-24-6**	0.0875317	0.0437528
28	**Thallium,7440-28-0**	-5.8711	0.430763
29	**Tin,7440-31-5**	-1.13179	0.0481019
30	**Titanium,7440-32-6**	n/a	0.470796
31	**Vanadium,7440-62-2**	0.0243107	n/a
34	**Zinc,7440-66-6**	0.161953	0.319796
35	**Zirconium,7440-67-7**	0.289147	0.0181212

ICP LINEAR RANGES

Lab Name: GCAL
Lab Code: LA024
Study Date: 01/26/2009

Sample ID:
SDG No.: 209070905
Instrument ID: ICP5

Analyte	***Concentration***	***% Recovery***	***Units***	***Type***
Aluminum	52000	95	mg/kg	P
Antimony	800	92	mg/kg	P
Arsenic	1000	104	mg/kg	P
Barium	1000	98	mg/kg	P
Beryllium	200	102	mg/kg	P
Boron	2000	96	mg/kg	P
Cadmium	600	104	mg/kg	P
Calcium	80000	95	mg/kg	P
Chromium	4800	96	mg/kg	P
Cobalt	6000	99	mg/kg	P
Copper	3600	95	mg/kg	P
Iron	32000	95	mg/kg	P
Lead	20000	106	mg/kg	P
Lithium	800	101	mg/kg	P
Magnesium	32000	98	mg/kg	P
Manganese	1200	96	mg/kg	P
Molybdenum	3200	92	mg/kg	P
Nickel	2000	101	mg/kg	P
Potassium	6000	98	mg/kg	P
Selenium	600	106	mg/kg	P
Silver	600	95	mg/kg	P
Sodium	24000	97	mg/kg	P
Strontium	200	104	mg/kg	P
Thallium	800	106	mg/kg	P
Tin	2000	92	mg/kg	P
Titanium	1600	95	mg/kg	P
Vanadium	4000	95	mg/kg	P
Zinc	600	100	mg/kg	P
Zirconium	1000	107	mg/kg	P

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Method: SW-846 6010B

Method Type: P

EPA Sample No.	***Preparation Date***	***Weight***	***Units***	***Volume***	***Units***
GEC-BACKFILL	07/09/09	1.25	g	50	mL
GEC-BACKFILLDUP	07/09/09	1.25	g	50	mL
GEC-BACKFILLMS	07/09/09	1.25	g	50	mL
LCS739657	07/09/09	1.25	g	50	mL
MB739656	07/09/09	1.25	g	50	mL

PREPARATION LOG

Lab Name: GCAL

Sample ID:

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

Method: SW-846 7471B

Method Type: AV

EPA Sample No.	Preparation Date	Weight	Units	Volume	Units
GEC-BACKFILL	07/09/09	0.6	g	30	mL
GEC-BACKFILLDUP	07/09/09	0.6	g	30	mL
GEC-BACKFILLMS	07/09/09	0.6	g	30	mL
LCS739678	07/09/09	0.6	g	30	mL
MB739677	07/09/09	0.6	g	30	mL

FORM XIII - IN

ANALYSIS RUN LOG

Lab Name: GCAL

Contract:

Start Date: 07/10/09

Lab Code: LA024

Case No.:

SAS No.:

SDG No.: 209070905

End Date: 07/10/09

Instrument ID Number: ICP5

Method: SW-846 6010B

Method Type: P

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	0931			X	X			X		X				X								X		X								
ICV2	*	1	0945																															
ICB	*	1	0952			X	X			X		X				X								X		X								
CRDL	*	1	0959				X			X		X				X								X		X								
CRDL2	*	1	1006			X																												
ICSA	*	1	1023			X	X			X		X				X								X		X								
ICSAB	*	1	1042			X	X			X		X				X								X		X								
CCV	*	1	1054			X	X			X		X				X								X		X								
CCB	*	1	1108			X	X			X		X				X								X		X								
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1115																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1122																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1129																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1136																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1143																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1149																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	5	1216			X	X			X		X				X								X		X								
CCV	*	1	1223			X	X			X		X				X								X		X								
CCB	*	1	1230			X	X			X		X				X								X		X								
LCS739657	*	1	1338			X	X			X		X				X								X		X								
CCV	*	1	1346			X	X			X		X				X								X		X								
CCB	*	1	1353			X	X			X		X				X								X		X								
GEC-BACKFILL	*	1	1400			X	X			X		X				X								X		X								
GEC-BACKFILLDUP	*	1	1410			X	X			X		X				X								X		X								
GEC-BACKFILLMS	*	1	1416			X	X			X		X				X								X		X								
GEC-BACKFILLPDS	*	1	1422			X	X			X		X				X								X		X								
GEC-BACKFILLSD	*	5	1429			X	X			X		X				X								X		X								
CCV	*	1	1515			X	X			X		X				X								X		X								

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 07/10/09
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 209070905
End Date: 07/10/09
Instrument ID Number: ICP5
Method: SW-846 6010B
Method Type: P

				Analyte Symbols																														
Sample No.	PF	D/F	Time	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
CCB	*	1	1522			X	X			X		X				X								X		X								
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1534																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1541																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1548																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1555																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1603																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	1	1610			X	X			X		X				X								X		X								
ZZZZZZZZZZZZZZZZZZZZZZZZZZ	*	5	1617			X	X			X		X				X								X		X								
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		10	1636																															
CCV	*	1	1650			X	X			X		X				X								X		X								
CCB	*	1	1657			X	X			X		X				X								X		X								
MB739656	*	1	1706			X	X			X		X				X								X		X								
CCV	*	1	1755			X	X			X		X				X								X		X								
CCB	*	1	1802			X	X			X		X				X								X		X								

FORM XIV - IN

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 07/10/09

Lab Code: LA024 Case No.:
SAS No.:
SDG No.: 209070905
End Date: 07/10/09

Instrument ID Number: FIMS1
Method: SW-846 7471B
Method Type: AV

				Analyte Symbols																														
Sample No.	PF	D/F	Time	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
ICV	*	1	1207																	X														
ICB	*	1	1208																	X														
CCV	*	1	1210																	X														
CCB	*	1	1211																	X														
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1213																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1215																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1216																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1218																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1219																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		5	1221																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1223																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1224																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1226																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1228																															
CCV	*	1	1229																	X														
CCB	*	1	1231																	X														
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1232																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1234																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1236																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1237																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1239																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1241																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		5	1242																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1244																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1246																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1247																															
CCV	*	1	1249																	X														

ANALYSIS RUN LOG

Lab Name: GCAL
Contract:
Start Date: 07/10/09
Lab Code: LA024
Case No.:
SAS No.:
SDG No.: 209070905
End Date: 07/10/09
Instrument ID Number: FIMS1
Method: SW-846 7471B
Method Type: AV

				Analyte Symbols																														
Sample No.	**PF**	**D/F**	**Time**	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr
CCB	*	1	1250																	X														
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1252																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1254																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		5	1255																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1257																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1259																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1300																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1302																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1304																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1305																															
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1307																															
CCV	*	1	1310																	X														
CCB	*	1	1311																	X														
GEC-BACKFILLMS	*	1	1319																	X														
GEC-BACKFILLSD	*	5	1321																	X														
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1323																															
CCV	*	1	1329																	X														
CCB	*	1	1331																	X														
CCV	*	1	1437																	X														
CCB	*	1	1438																	X														
MB739677	*	1	1440																	X														
LCS739678	*	1	1441																	X														
GEC-BACKFILL	*	1	1443																	X														
GEC-BACKFILLDUP	*	1	1445																	X														
ZZZZZZZZZZZZZZZZZZZZZZZZZZ		1	1446																															
CCV	*	1	1450																	X														
CCB	*	1	1451																	X														

FORM XIV - IN

ICP SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	Start: 13:10 End: 18:10	**BATCH NO:**	414700
MATRIX:	WATER ☐ SOIL ☑ TCLP EXT ☐ ORGANIC ☐	**METHOD:**	200.0 ☐ 200.7 ☐ 3010A ☐ 3050B ☑ 3051 ☐

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT mL [✓ g]	FINAL VOLUME (mL)	SAMPLE TYPE	COMMENTS	REAGENTS/ STANDARDS
1	QC ACCOUNT	MB for HBN 414700 [DIGM/21434]	739656	1.25	50	MB		HNO3 180-10-1
2	QC ACCOUNT	LCS for HBN 414700 [DIGM/21434	739657	1.25		LCS		
3	3031	GEC-BACKFILL	20907090501	1.25		SAMPLE		HCL 180-10-2
4	QC ACCOUNT	GEC-BACKFILL (739625DUP)	739658	1.25		DUP		
5	QC ACCOUNT	GEC-BACKFILL(739625MS)	739659	1.25		MS		H2O2 186-9-1
6	4329	UNUSED CATALYST	20907091401	1.25		SAMPLE		
7	4329	UNUSED CATALYST	20907091501	1.26		SAMPLE		
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								SPIKING SOLUTIONS (LCS/MS)
18								
19								GCALI-1 - 250uL 186-9-44
20								
21								GCALI-2 - 250uL 186-9-45
22								
23								ORGANOMETALLIC ICP SPIKE 0.025g
24								
25								
26								
27								
28								

COMMENTS:

BALANCE ID: XS-104

TEMP: 95°

BLOCK ID	**TECHNICIAN**	**DATE**
A1 7-6-09	JEH	7-9-09
REPIPET BOTTLES VERIFIED	**REVIEW**	**DATE**
JEH	CIB	7/10/09

HG SAMPLE PREPARATION FORM

EXTRACTION DATE/TIME:	Start: 1340 End: 15:35	**BATCH NO:**	414707
MATRIX:	WATER ☐ SOIL ☑ TCLP EXT ☐ ORGANIC ☐	**METHOD:**	245.2 ☐ 7470A ☐ 7471A ☑

	CLIENT	CLIENT ID	GCAL ID	INITIAL VOL/WT mL [✓ g]	FINAL VOLUME (mL)	SAMPLE TYPE	COMMENTS	REAGENTS/ STANDARDS
1	QC ACCOUNT	MB for HBN 414707 [DIGM/21436]	739677	0.60	30	MB		HNO3
2	QC ACCOUNT	LCS for HBN 414707 [DIGM/21436	739678	0.60		LCS		
3	3031	GEC-BACKFILL	20907090501	0-60		SAMPLE		H2SO4
4	QC ACCOUNT	GEC-BACKFILL (739625DUP)	739679	0-60		DUP		
5	QC ACCOUNT	GEC-BACKFILL(739625MS)	739680	0.60		MS		Aqua Regia 1809-12
6	4329	UNUSED CATALYST	20907091401	0.50		SAMPLE		
7	4329	UNUSED CATALYST	20907091501	.052		SAMPLE		KMN04 180-9-18
8								
9								K2S2O6
10								
11								Hg Calib ID
12								
13								0.1 ppm CCV Working Solution
14								
15								0.1 ppm ICV Working Solution
16								
17								Hg ICV
18								
19								**SPIKE SOLUTIONS (LCS/MS)**
20								
21								Hg Spike 100uL / [✓ 150uL] 183-326
22								
23								ORGANOMETALLIC HG SPIKE 0.025g
24								
25								
26								

Hg Solid Calibration

Calib Blk	Conc (ug/L)	0.1ppm Spk Added	Final Volume
Standard 1	0.20	60 uL	30mL
Standard 2	0.50	150 uL	30 mL
Standard 3	2.00	600 uL	30 mL
Standard 4	5.00	1500 ul	30 mL
Standard 5	10.0	3000 uL	30 mL
ICV	5.00	1500 uL	30 mL

Hg Water Calibration

Calib Blk	Conc (ug/L)	0.1ppm Spk Added	Final Volume
Standard 1	0.20	40 uL	20 mL
Standard 2	0.50	100 uL	20 mL
Standard 3	2.00	400 uL	20 mL
Standard 4	5.00	1000 ul	20 mL
Standard 5	10.0	2000 uL	20 mL
ICV	5.00	1000 uL	20 mL

BLOCK ID	**TECHNICIAN**	**DATE**
AL 33-6-4-09	JG	7-9-09
REPIPET BOTTLES VERIFIED	**REVIEW**	**DATE**
JG	CB	7/10/09

BALANCE ID: VS-104

TEMP: 950

Data Usability Review Evaluation Tool: Metals QC

Client Name:Weston Solutions ,Inc.	Project Number:
Affected Property Location: El Campo	Project Manager: Russ Johnson
Laboratory:GCAL	Laboratory Job No:209070905
Reviewer: Robyn Migues	Date Checked: 07/20/09

ITEM		Yes	No	N/A	Comments
R5	Method Blank Data Included in Lab Package? Criteria met? (RL)	✓ ✓			
R6	LCS Data Included in Lab Package? %R ciriteria met?	✓ ✓			
R7	Matrix Spike Data Included in Lab Package? %R Criteria met?	✓ ✓			See ER & narrative
R8	Sample Duplicate Data Included in Lab Package? RPD criteria met? (MSD)	✓ ✓			See ER & narrative
S1	Initial Calibration Data Inluded in Lab Package? Blank/1 std (ICP) or blank/3 stds (AA) or blank/5stds (Hg)	✓	✓		
S2	Continuing Calibration Data Included in Lab Package? %R criteria met?	✓ ✓			
S8	Interference Check Sample Data Included (ICP Only)? R% criteria met? (80-120%)	✓ ✓			
S9	Dilution Test Data Included? Results within 10% original?	✓ ✓			

TOTAL SOLIDS AND MOISTURE ANALYSIS FOR DRY WEIGHT CORRECTION

	SW	TS						
HBN	**414749**	414752		**ANALYST:**	**JEM**		**DATE:**	**7/10/2009**
SOLI	**12571**	12573		**REVIEW:**	Bmc 7/13/09		**TIME:**	**7:50:00**
Sample ID	Pan ID	Pan Mass (g)	Initial Mass (g) (Sample & Pan)	Final Mass (g) (Sample & Pan)	Initial Mass Less Pan (g)	Final Mass Less Pan (g)	% Moisture in Sample	% Solids in Sample
20907071002	5	0.9694	10.1678	9.3860	9.1984	8.4166	8.50	91.50
20907071003	6	0.9621	11.1548	9.1553	10.1927	8.1932	19.62	80.38
20907071004	7	0.9463	8.2840	7.1925	7.3377	6.2462	14.88	85.12
20907073101	8	0.9791	11.4745	10.2207	10.4954	9.2416	11.95	88.05
✓ 20907090501	9	0.9879	11.8159	9.5874	10.8280	8.5995	20.58	79.42
20907081201	10	0.9664	11.8598	11.1942	10.8934	10.2278	6.11	93.89
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!
					0.0000	0.0000	#DIV/0!	#DIV/0!

TS % = (Final Sample Mass x 100) / Initial Sample Mass

TM % = 100-TS%

QUALITY • INTEGRITY • SERVICE

☐ 10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

The Chain of Custody is a Legal Document. All information must be completed accurately.

☐ e-Lab Analytical, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

Weston / 3031 / 2090 7090 5 / Due 7/14/09

e-Lab Project Manager:

e-Lab Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	El Campo TX ARNG	A	RCRA 8 Metals
Work Order		Project Number		B	VOCs
Company Name	Weston Solutions	Bill To Company	Weston Solutions	C	
Send Report To	Russ K Johnson	Invoice Attn	SAME	D	
Address	2705 Bee Cave Rd Suite 100	Address		E	
				F	
City/State/Zip	Austin TX 78746	City/State/Zip		G	
Phone	512-651-7115	Phone		H	
Fax	512-651-7101	Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	GEC - Backfill	07/08/09	1600	Soil	–	2	X	X									-1
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																4.2°C	
10																	

Sampler(s) Please Print & Sign: Brent C Ferry

Shipment Method:

Required Turnaround Time: (Check Box) ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☒ Other 3 Day

Results Due Date: 07/14/09

Relinquished by:	Date: ~~Time~~ 1630	~~Time:~~ Date 07/08/09	Received by:	Notes:
Relinquished by: Fed Ex	Date: 7/9/09	Time: 0930	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

e-Lab Analytical Cooler ID	Trip Blank Number

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other ____________
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to e-Lab Analytical, Inc.
2. Unless otherwise agreed in a formal contract, services provided by e-Lab Analytical, Inc. are expressly limited to the terms and conditions stated on the reverse.

PRESERVATION CHECKLIST / COOLER RECEIPT

Gulf Coast Analytical Laboratories, Inc.

WO: 209070905
Desc:
Work ID: El Campo
Project Seq: 92119
Client: 3031 - Weston Solutions, Inc.
Profile: 113215 - El Campo - El Campo

Type: M
Report: REVIEW_RPT
Status: WP
Created: 7/9/2009 9:59
QA:
PO:

WORKORDER SAMPLES

			pH PRESERVATIVE			VOA HEADSPACE			
Container ID	**Type**	**Preservative**	A	U	N\A	A	U	N\A	CONTAINER CONDITION
20907090501-1	4	NONE			X			X	OK
20907090501-2	4	NONE			X			X	OK

A = ACCEPTABLE
U = UNACCEPTABLE
N\A = NOT APPLICABLE

COOLER (S) TEMPERATURE [✓ A] U LIMIT = 4C + \ - 2C
MAXIMUM VOLATILE HEADSPACE BUBBLE 6MM

Custody Seal
used [✓] Yes [ ] No
in tact [✓] Yes [ ] No

LABEL(S) VERIFIED________ CUSTODIAN________

APPENDIX 8 – WASTE DISPOSITION
Response Action Completion Report
Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, Texas

APPENDIX 8 – WASTE DISPOSITION

WESTON excavated affected soil based on the PCLE zones identified in the APAR (CORRIGAN, 2006). Excavated soils were temporarily stockpiled on-site while laboratory analyses were performed and disposal arrangements were made. Soil stockpiles were enveloped in 6-mil plastic sheeting and protected from wind and precipitation.

Once the confirmation, vertical delineation, and waste characterization analytical data were received and the results confirmed the response action objectives had been met, WESTON backfilled the excavations and loaded the soil for transport and disposal.

WESTON utilized a subcontractor (Gruene Environmental Construction, Gruene, TX) to transport the soil to an appropriate landfill facility, Fort Bend Regional Landfill, Needville, TX. In total, 460 cubic yards (ex-situ) of Class II non-hazardous soil were disposed. Shipping manifests were signed by the TXARNG Environmental Compliance Manager, David N. Boucher and are provided in this appendix.

WCA Waste Corporation

Requested Disposal Facility: Ft. Bend Regional LF

Waste Profile #
F00319
WCA Sales Rep:
Date: Amended 6/17/09

I. Generator Information

Generator Name :Roy P. Benavidez national Guard Armory			
Generator Site Address:891 Armory (CR 406) Rd			
City: El Campo	County:	State: TX	Zip: 77437
State ID/Reg No:NA	State Approval/Waste Code: NA (if applicable)		SIC Code: NA
Generator Mailing Address (if different):			
City:	County:	State:	Zip:
Generator Contact Name:			
Phone Number:		Fax Number:	

IIa. Transporter Information

Transporter Name: Gruene environmental		Contact Name: Doug Anderson	
Transporter Address:1025 Mountain Dr			
City: San Marcos	County:	State: TX	Zip: 78666
Phone Number: 830-221-5607	Fax Number: 512-667-6602	State Transportation Number: 008414449C	

IIb. Billing Information

Bill To: Gruene Environmental Construction		Contact Name: Doug Anderson	
Billing Address: 1025 Mountain Drive			
City: San Marcos	State: TX	Zip: 78666	Phone Number: 830-221-5607

III. Waste Stream Information

Name of Waste: Soil

Process Generating Waste: Soil from excavation at former shooting range

Type of Waste: ☐ INDUSTRIAL PROCESS WASTE ☒ POLLUTION CONTROL WASTE

Physical State: ☒ SOLID ☐ SEMI SOLID ☐ POWDER ☐ LIQUID ☐ OTHER:

Method of Shipment: ☒ Bulk ☐ Drum ☐ Bagged ☐ Other

ADD Additional 600 CY same characteristics [illegible]

Estimated Annual Volume: CUBIC YARDS: 250 TONS: ____ GALLONS ____ OTHER: ____

Frequency: ☒ ONE TIME ☐ DAILY ☐ WEEKLY ☐ MONTHLY ☐ OTHER

Special Handling Instructions: NONE

IV. Representative Sample Certification

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent rules?	☑ YES ☐ NO ☐ NA
Sample Date: 10/10/08	Type of Sample: ☑ COMPOSITE SAMPLE ☐ GRAB SAMPLE
Laboratory: GCAL	Sample ID Numbers: SP A1 - Thru SP-04
Sampler's Employer: Weston Solutions	
Sampler's Name (printed): Brent Ferry	Signature:

Waste Profile #
F00319

Characteristic Components	% by Weight (range)
1. Soil	100
2.	
3.	
4.	
5.	

Color	Odor (describe)	Free Liquids	% Solids	pH:	Flash Point:
Brown/Blk	None	☐ YES OR ☒ NO Content ____ %	100	N/A	NA - solid

Attach Laboratory Analytical Report (and/or Material Safety Data Sheet) Including Required Parameters Provided for this Profile

Does this waste or generating process contain regulated concentrations of the following Pesticides and/or Herbicides: Chlordane, Endrin, Heptachlor (and it epoxides), Lindane, Methoxychlor, Toxaphene, 2,4-D, or 2,4,5-TP Silvex as defined in 40 CFR 261.33?	☐ YES OR ☒ NO
Does this waste or generating process cause it to exceed OSHA exposure limits from high levels of Hydrogen Sulfide or Hydrogen Cyanide as defined in 40 CFR 261.23?	☐ YES OR ☒ NO
Does this waste contain regulated concentrations of Polychlorinated Biphenyls (PCBs) as defined in 40 CFR Part 761?	☐ YES OR ☒ NO
Does this waste contain regulated concentrations of listed hazardous wastes defined in 40 CFR 261.31, 261.32, 261.33, including RCRA F-Listed Solvents?	☐ YES OR ☒ NO
Does this waste contain regulated concentrations of 2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCDD), or any other dioxin as defined in 40 CFR 261.31?	☐ YES OR ☒ NO
Is this a regulated Toxic Material as defined by Federal and/or State regulations?	☐ YES OR ☒ NO
Is this a regulated Radioactive Waste as defined by Federal and/or State regulations?	☐ YES OR ☒ NO
Is this a regulated Medical or Infectious Waste as defined by Federal and/or State regulations?	☐ YES OR ☒ NO
Is this waste generated at a Federal Superfund Clean Up Site?	☐ YES OR ☒ NO

V.Physical Characteristics of Waste

VI.Generator Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste. I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue. I further certify that the company has not altered the form or content of this profile sheet as provided by Waste Corporation. The undersigned individual warrants that he/she is authorized to sign this document on behalf of the Generator.

DAVID N. BOUCHER
Authorized Representative Name And Title (Printed)

Texas Army National Guard
Company Name

Authorized Representative Signature

11/25/08
Date

VII. Waste Approval Decision

☒ Approved ☐ Rejected Expiration: ____________

Conditions:
WASTE LIMITED TO MATERIAL REPRESENTED
BY SAMPLES SPA1 - SP04 OR LESS CONTAMINATED
ADD'L VOLUME APPROVED

DAN NELSON, GEN MGR
Name, Title

Signature

6/17/09
Date

WCA
Waste Corporation of Texas

FB 01265

NON-HAZARDOUS MANIFEST

(10)

GENERATOR

Generator Roy P. Benevidez -

Address National Guard Armory
801 Armory (CR406) Rd.
El Campo, TX 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soils		F00319	20	Yards^3	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. BOUCHER
Generator Authorized Agent Name (Print)

Signature

12/4/08
Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction

Address 1025 Mountain Dr.
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Melvin Washington
Driver Signature

12/4/08
Shipment Date

Driver Name (Print) Melvin Washington

Truck Number 122

Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Melvin Washington
Driver Signature

12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ____ **East** ____ **Level** ____

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original | Canary - Disposer Retain | Pink - Transporter Retain | Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

NON-HAZARDOUS MANIFEST

FB 01264

(9)

GENERATOR

Generator Roy P. Benavidez -
Address National Guard Armory
801 Armory (CR 406) Rd.
El Campo, TX 77437
Phone

EPA I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards^3	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature
12/4/08
Delivery Date

TRANSPORTER

Transporter Name Green Environmental Construction
Address 1025 Mountain Dr
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature
12/4/08
Shipment Date

Driver Name (Print) Joe Dominguez
Truck Number 130
Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature
12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original
Canary - Disposer Retain
Pink - Transporter Retain
Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

NON-HAZARDOUS MANIFEST

FB 01263

(8)

GENERATOR

Generator Roy P. Benavidez -

Address National Guard Armory
801 Armory (CR406) Rd.
El Campo, TX 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards³	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

12/4/08
Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction

Address 1025 Mountain Drive
San Marcos TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Tracy Giff
Driver Signature

12/4/08
Shipment Date

Driver Name (Print) Tracy Griffin

Truck Number 118

Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Tracy Giff
Driver Signature

12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ____ **East** ____ **Level** ____

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

NON-HAZARDOUS MANIFEST

FB 01262

(7)

GENERATOR

Generator Roy P. Benavidez-

Address National Guard Armory
801 Armory (CR406) Rd.
El Campo, TX 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards^3	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature

12/4/08
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 1025 Mountain Dr.
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Joe Banda
Driver Signature

12/4/08
Shipment Date

Driver Name (Print) JOE BANDA

Truck Number M142

Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Joe Banda
Driver Signature

12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 01261

NON-HAZARDOUS MANIFEST

⑥

GENERATOR

Generator Roy P. Benavidez

Address National Guard Armory
801 Armory (CR406) Rd
El Campo, TX 77437

Phone

EPA
I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards³	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

12/4/08
Delivery Date

TRANSPORTER

Transporter Name Green Environmental Construction

Address 1025 Mountain Drive
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Richard Sosa Jr
Driver Signature

12/4/08
Shipment Date

Driver Name (Print) Richard Sosa, Jr

Truck Number 307, Big RED

Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Richard Sosa Jr
Driver Signature

12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original **Canary - Disposer Retain** **Pink - Transporter Retain** **Goldenrod - Generator Retain**

WCA
Waste Corporation of Texas

FB 01260

NON-HAZARDOUS MANIFEST

(5)

GENERATOR

Generator Roy P. Benavidez
Address National Guard Armory
801 Armory (CR406) Rd.
El Campo, TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards³	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature
12/4/08
Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction
Address 1025 Mountain Dr.
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Melvin Washington
Driver Signature
12/4/08
Shipment Date

Driver Name (Print) Melvin Washington
Truck Number 122
Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Melvin Washington
Driver Signature
12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature
Receipt Date

White - Original
Canary - Disposer Retain
Pink - Transporter Retain
Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 01259

NON-HAZARDOUS MANIFEST

(4)

GENERATOR

Generator Roy P. Benavidez -
Address National Guard Armory
801 Armory (CR406) Rd.
El Campo, TX 77437
Phone

EPA I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards³	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

David N D
Signature

12/4/08
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction
Address 1025 Mountain Dr.
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Joe D
Driver Signature

12/4/08
Shipment Date

Driver Name (Print) JOE DOMINGUEZ
Truck Number 130
Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Joe D
Driver Signature

12/4/08
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

NON-HAZARDOUS MANIFEST

FB 01258

③

GENERATOR

Generator Roy P. Benavidez -
Address National Guard Armory
801 Armory (CR 406) Rd.
El Campo, TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	Yards^3	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

Generator Authorized Agent Name (Print) DAVID N. BOUCHER
Signature
Delivery Date 12/4/08

TRANSPORTER

Transporter Name Gruene Environmental Construction
Address 1025 Mountain Dr.
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature Tracy Griffin
Shipment Date 12/4/08

Driver Name (Print) Tracy Griffin
Truck Number MM 118
Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature Tracy Griffin
Delivery Date 12/4/08

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA Waste Corporation of Texas

NON-HAZARDOUS MANIFEST

FB 01257

(2)

GENERATOR

Generator Roy P. Benavidez -

Address National Guard Armory
801 Armory (CR 406) Rd.
El Campo, TX 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated soil		F00319	20	Yards^3	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

12/4/08
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 1025 Mountain Dr.
San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Joe Banda 12/4/08
Driver Signature **Shipment Date**

Driver Name (Print) JOE BANDA

Truck Number 142

Truck Type End Dump Truck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Joe Banda 12/4/08
Driver Signature **Delivery Date**

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA Waste Corporation of Texas

NON-HAZARDOUS MANIFEST

FB 01256

①

GENERATOR

Generator Roy P. Benavidez -

Address National Guard Armory

801 Armory (CR 406) Rd

El Campo, TX 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
contaminated soil		F00319	20	Yard³	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

~~Richard N. Sosa Jr~~ DB 12/4/08
Signature **Delivery Date**

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 1025 Mountain Dr.

San Marcos, TX 78666

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Richard Sosa Jr 12/4/08
Driver Signature **Shipment Date**

Driver Name (Print)

Truck Number 307

Truck Type End Dumptruck

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Richard Sosa Jr 12/4/08
Driver Signature **Delivery Date**

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road

Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print) **Signature** **Receipt Date**

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03758

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory Rd (CR 406 Rd)
El Campo Tx 77437

Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contammated Soil		F00319	20	Yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x 7 15 09
Driver Signature
Shipment Date

Driver Name (Print) [illegible]

Truck Number G65

Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x 7 15 09
Driver Signature
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

David N. Boucher
Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03757

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory Rd (CR 406 Rd)
El Campo Tx 77437

Phone

EPA
I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

Generator Authorized Agent Name (Print) David N. Boucher

Signature

Delivery Date

TRANSPORTER

Transporter Name Greene Environmental
Construction, LLC

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature

Shipment Date 7/15/09

Driver Name (Print) Nick CASAN

Truck Number 196

Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature

Delivery Date 7/15/09

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: North ______ East ______ Level ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print) ~~David N. Boucher~~

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03759

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address (National Guard Armory)
501 Armory Rd (CR 406 Rd)
El Campo Tx 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	Yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction LLC

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

7-15-09
Driver Signature
Shipment Date

Driver Name (Print) Melvin Washington

Truck Number 122

Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

7-15-09
Driver Signature
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

~~David N. Boucher~~
Name of Authorized Agent (Print)

Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 03760

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavides
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction
Address 11 NAFTA Circle
New Braunfels TX 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Charles Foley 7-15-09
Driver Signature Shipment Date

Driver Name (Print) Charles Foley
Truck Number 123
Truck Type Belly Dump

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Charles Foley 7-15-09
Driver Signature Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

David N. Boucher
Name of Authorized Agent (Print)

Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 03761

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez
Address National Guard Armory
801 Armory (CR406) Rd
El Campo TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Michael Foster 7-15-09
Driver Signature Shipment Date

Driver Name (Print) Michael Foster
Truck Number 164
Truck Type Belly Dump

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Michael Foster 7-15-09
Driver Signature Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

~~David N. Boucher~~
Name of Authorized Agent (Print)

Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA Waste Corporation of Texas

FB 03762

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P. Benavidez
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction
Address 11 Nafta Circle
New Braunfels TX 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Terry Sheppard 7/15/09
Driver Signature
Shipment Date

Driver Name (Print) Terry Sheppard
Truck Number N35
Truck Type Belly Dump

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Terry Sheppard 7/15/09
Driver Signature
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

~~DAVID N. B~~
Name of Authorized Agent (Print)

Signature
Receipt Date

White - Original
Canary - Disposer Retain
Pink - Transporter Retain
Goldenrod - Generator Retain

WCA Waste Corporation of Texas

FB 03763

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	Yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature

Shipment Date 7-15-09

Driver Name (Print) [illegible]

Truck Number #241

Truck Type Belly Dump

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature

Delivery Date 7-15-09

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03764

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavides
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yards	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)
Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental
Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Joe D x 7-15-08
Driver Signature Shipment Date

Driver Name (Print) Joe Dominguez
Truck Number 130
Truck Type Kenworth

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Joe D x 7-15-08
Driver Signature Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03765

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437
Phone

EPA I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	Dump Truck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature **Delivery Date**

TRANSPORTER

Transporter Name Gruene Environmental
Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature **Shipment Date**

Driver Name (Print) Joe BANDA
Truck Number M142
Truck Type Sterling

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature **Delivery Date** 7-15-09

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: **North** **East** **Level**

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature **Receipt Date**

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA Waste Corporation of Texas

FB 03766

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory Rd (CR 406)
El Campo Tx 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	Yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucha
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

X Tracy Giff X 7-15-09
Driver Signature Shipment Date

Driver Name (Print) Tracy Giffin

Truck Number 192

Truck Type KW

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

X Tracy Giff
Driver Signature Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03767

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P. Benavidez
Address National Guard Armory
801 Armory Rd (CR 406)
El Camp Tx 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yard	DumpTruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Bruce Rothbauer 7-15-09
Driver Signature **Shipment Date**

Driver Name (Print) BRUCE ROTHBAUER
Truck Number M&M 126
Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Bruce Rothbauer 7-15-09
Driver Signature **Delivery Date**

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** **East** **Level**

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature **Receipt Date**

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 03768

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucha
Generator Authorized Agent Name (Print)
Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental
Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

7-15-09
Driver Signature
Shipment Date

Driver Name (Print) Ernest Gonzalez Jr
Truck Number 143
Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

7-15-09
Driver Signature
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: **North** ______ **East** ______ **Level** ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 03769

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx ~~78~~ 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yards	Dump Truck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

Generator Authorized Agent Name (Print) DAVID N. BOUCHE
Signature
Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature
Shipment Date 7-15-09

Driver Name (Print) Bobby Wisker
Truck Number 137
Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature
Delivery Date 7-15-09

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03770

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavides
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yards	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental
Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Rick Casarez 7/15/09
Driver Signature Shipment Date

Driver Name (Print) RICK CASAREZ
Truck Number 196
Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Rick Casarez 7/15/07
Driver Signature Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 03771

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavides
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

David N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental
Construction
Address 11 ~~National~~ Nalta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature
Shipment Date 7-15-09

Driver Name (Print) Elvis Garcia
Truck Number G65
Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature
Delivery Date 7-15-09

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: **North** **East** **Level**

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original
Canary - Disposer Retain
Pink - Transporter Retain
Goldenrod - Generator Retain

WCA Waste Corporation of Texas

FB 03772

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory

801 Armory (CR 406) Rd

El Campo TX ~~TS~~ 77437

Phone

EPA

I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yard	

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher

Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction

Address 11 Nafta Circle

New Braunfels, TX 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x 7-15-09

Driver Signature

Shipment Date

Driver Name (Print) Melvin Washington

Truck Number 122

Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x 7-15-09

Driver Signature

Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road

Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: North ______ East ______ Level ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03773

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory (CR 406) Rd
El Campo Tx 77437

Phone

EPA
I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yards	Dumptruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Charles Foley 7/15/09
Driver Signature Shipment Date

Driver Name (Print) Charles Foley

Truck Number 123

Truck Type Belley Dump

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Charles Foley 7/15/09
Driver Signature Delivery Date

DESTINATION

Site Name **Fort Bend Regional Landfill**

Address **14115 Davis Estate Road**
Needville, TX 77461

Phone Number **979-793-4430**

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA Waste Corporation of Texas

FB 03774

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		FD0319	20	Yards	Dump Truck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction

Address 11 Nafta Circle
New Braunfels TX 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Cornelius Sidney x 7-15-09
Driver Signature Shipment Date

Driver Name (Print) Cornelius Sidney

Truck Number 144

Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Cornelius Sidney x 7-15-09
Driver Signature Delivery Date

DESTINATION

Site Name **Fort Bend Regional Landfill**

Address **14115 Davis Estate Road**
Needville, TX 77461

Phone Number **979-793-4430**

Disposal Location: North ______ East ______ Level ______

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03775

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX ~~77~~ 77437

Phone

EPA

I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soils		F00319	20	yard	Dump Truck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental
Construction

Address 11 Nafta Circle
New Braunfels TX 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Jim Sheppard x 7/15/09
Driver Signature Shipment Date

Driver Name (Print) Jim Sheppard

Truck Number 135

Truck Type

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Jim Sheppard x 7/15/09
Driver Signature Delivery Date

DESTINATION

Site Name **Fort Bend Regional Landfill**

Address **14115 Davis Estate Road**
Needville, TX 77461

Phone Number **979-793-4430**

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation of Texas

FB 03776

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	DumpTruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Michael Foster x 7-15-09
Driver Signature Shipment Date

Driver Name (Print) Michael Foster
Truck Number 1169
Truck Type Belly Dump

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Michael Foster x 7-15-09
Driver Signature Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03777

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez
Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX 77437
Phone

EPA
I.D.#
Shipping Location
Address
Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	yard	DumpTruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. Boucher
Generator Authorized Agent Name (Print)

Signature
Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental
Construction
Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Tracy Giff
Driver Signature
7-15-09
Shipment Date

Driver Name (Print) Tracy Giffin
Truck Number 192
Truck Type KW.

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Tracy Giff
Driver Signature
7-15-09
Delivery Date

DESTINATION

Site Name Fort Bend Regional Landfill
Address 14115 Davis Estate Road
Needville, TX 77461
Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)
Signature
Receipt Date

White - Original
Canary - Disposer Retain
Pink - Transporter Retain
Goldenrod - Generator Retain

WCA
Waste Corporation
of Texas

FB 03778

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P Benavidez

Address National Guard Armory
801 Armory (CR 406) Rd
El Campo TX 77437

Phone

EPA

I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		FD0319	20	yard	Dump Truck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. BOUCHER
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Greene Environmental Construction

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

x Joe Dominguez 7-15-08
Driver Signature **Shipment Date**

Driver Name (Print) Joe Dominguez

Truck Number 130

Truck Type KENWorth

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

x Joe Dominguez 7-15-08
Driver Signature **Delivery Date**

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: **North** ________ **East** ________ **Level** ________

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original   Canary - Disposer Retain   Pink - Transporter Retain   Goldenrod - Generator Retain

WCA Waste Corporation of Texas

FB 03779

NON-HAZARDOUS MANIFEST

GENERATOR

Generator Roy P. Benavidez

Address National Guard Armory
801 Armory (cr-406) Rd
El Campo Tx 77437

Phone

EPA I.D.#

Shipping Location

Address

Phone

Description of Waste Materials	Industrial Waste Code #	Profile Number	Total Quantity	Unit of Measure	Container Type
Contaminated Soil		F00319	20	Yard	DumpTruck

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR, Part 261 or any applicable state law or regulation, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable law and regulations.

DAVID N. BOUCHER
Generator Authorized Agent Name (Print)

Signature

Delivery Date

TRANSPORTER

Transporter Name Gruene Environmental Constrution

Address 11 Nafta Circle
New Braunfels Tx 78132

I hereby acknowledge receipt of the above-described materials for transport from the generator shipping location listed above.

Driver Signature

Shipment Date 7.15.09

Driver Name (Print) Joe Banda

Truck Number M142

Truck Type Sterling

I hereby acknowledge that the above-described materials were received from the generator shipping location and were transported without incident to the destination listed below.

Driver Signature

Delivery Date 7.15.09

DESTINATION

Site Name Fort Bend Regional Landfill

Address 14115 Davis Estate Road
Needville, TX 77461

Phone Number 979-793-4430

Disposal Location: North East Level

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

Weston Solutions, Inc.
2705 Bee Cave Road, Suite 100
Austin, Texas 78746
512-651-7100 • Fax 512-651-7101

30 October 2009

TO: Mr. Dave Boucher
AGTX-EV Building 1
200 W. 35th St.
Camp Mabry
Austin, TX 78763

RE: Addendum 1, Affected Property Assessment Report
Former Small Arms Firing Range, El Campo Armory
Texas Army National Guard, El Campo, Texas
TXMAS Contract No. TXMAS-6-899030
TCEQ Regulatory ID Number: T-1856

Dear Mr. Boucher:

Weston Solutions, Inc. (WESTON) is providing this document as Addendum 1 to the Affected Property Assessment Report (APAR) dated August 2005, as amended in December 2006 for the Texas Army National Guard (TXARNG) El Campo Armory small arms firing range (SAFR).

In response to the findings reported in the APAR, TXARNG performed a self-implemented response action (soil removal action) to address chemicals of concern (COCs) above critical protective concentration levels (PCLs) in soil at the SAFR backstop berm, and additional investigation at the El Campo SAFR backstop berm to address the findings of the APAR. A Self Implementation Notice (SIN) describing the response action objectives was submitted to the Texas Commission on Environmental Quality (TCEQ) on 17 October 2008. The results of the soil removal are reported in a separate Response Action Completion Report (RACR). Concurrent with the soil removal, additional vertical delineation was performed as requested by the TCEQ project manager. This APAR Addendum provides additional information, including updated COC screening and vertical delineation.

APAR ADDEDUM 1

The December 2006 Revised APAR (Corrigan Consulting, Inc., 2006), identified three PCL exceedance (PCLE) zones in the surface soil of the SAFR backstop berm. Firing platforms also were evaluated as part of the APAR. No COCs were reported above either Tier 1 combined human health exposure ($^{Tot}Soil_{Comb}$) PCLs, nor were they reported above Tier 1 or site-specific Tier 2 soil attenuation model (SAM)-based soil-to-groundwater exposure pathway ($^{GW}Soil_{Ing}$) PCLs in soil samples collected from the firing platforms. Therefore the PCLE zones identified in the backstop berm comprise the affected property at the El Campo Armory SAFR.

Additional COC Screening

As discussed in Section 4.2 of the December 2006 Revised APAR, COCs identified during initial comparison of soil analytical results to residential Tier 1 Protective Concentration Levels (PCLs) and Texas Specific Background values included the following:

- Antimony
- Cadmium
- Cobalt
- Copper
- Lead
- Manganese
- Mercury
- Nickel
- Selenium
- Silver
- Zinc
- Bis(2-ethylhexylphthalate)

The APAR concluded that these COCs exceeded their respective Residential Assessment Levels and removal or further evaluation was necessary. Antimony, lead, and manganese exceeded their critical PCLs and warranted a response action, whereas the other COCs exceeded residential assessment levels, but not critical PCLs, and required only additional delineation.

During the development of the SIN for the response action, and in coordination with the TCEQ project manager (Ronald Dildine), several COCs including bis(2-ethylhexylphthalate), cadmium, cobalt, mercury, nickel, selenium, and silver, were screened on the basis that they are not listed as potential COCs associated with SAFR activities according to the Interstate Technology Regulatory Council (ITRC) guidance document *Technical/Regulatory Guidelines - Characterization and Remediation of Soils at Closed Small Arms Firing Ranges*, Table 1-1, January 2003. These COCs exceeded only their residential assessment levels (either the horizontal residential assessment level, or background or the MQL for the vertical assessment level). Since these COCs did not exceed their critical PCLs and were not listed as COCs typically attributable to SAFR activities, these metals were screened from further delineation activities.

The remaining COCs, that could not be screened, include:

- Antimony (exceeded critical PCL, removal)
- Copper (exceeded residential assessment level only, vertical delineation)
- Lead (exceeded critical PCL, removal)
- Manganese (exceeded critical PCL, removal)
- Zinc (exceeded residential assessment level only, vertical delineation)

Therefore a removal action was planned to address the antimony, lead, and manganese PCLE zones identified in the APAR, including additional vertical delineation sampling where appropriate for copper and zinc, which are listed as COCs associated with SAFRs and therefore could not be screened from additional delineation.

The SIN is provided as Attachment 1.

Response Action – Removal of antimony-, lead-, and manganese-affected soil

As described in the RACR, (submitted separately), a soil removal was performed to address antimony-, lead-, and manganese-affected soil in the PCLE zones associated with the backstop berm of the firing range. Metals-affected soils reported above critical PCLs were removed and disposed off-site. Results obtained from laboratory analyses of confirmation samples collected from the floors and sidewalls of the excavations indicate that 1) remaining metals concentrations in soil are below critical PCLs and 2) the metals that warranted removal (antimony, lead, manganese) have been vertically delineated to background.

Additional Vertical Delineation Activities

During the response action activities and removal of metal-affected soils, soil samples were collected to assess the vertical extent of copper and zinc in soil. Copper and zinc results obtained from the laboratory analyses of samples collected from the backstop berm in the floors of the soil removal excavations were compared to their respective vertical assessment levels (i.e., Texas-specific background), of 15 mg/kg and 30 mg/kg, respectively. The maximum concentration reported for copper was collected from 3-feet below ground surface (bgs) in Excavation B (EXB-3) at 9.94 mg/kg. The maximum reported concentration of zinc was collected from 3-feet bgs in

Excavation B (EXB-3) at 27.1 mg/kg. The reported analytical results from the backstop berm area indicate that copper and zinc have been vertically delineated.

Analytical results for copper and zinc are displayed in the table below:

Vertical Delineation Sampling		**Sample ID**	**EXA-3**	**EXB-3**	**EXC-3**	**EXD-5**
		Matrix	**Soil**	**Soil**	**Soil**	**Soil**
		Sample Date	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**	**17-Oct-08**
METALS	**CAS #**	**Critical PCL (mg/kg)**	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Copper	7440-50-8	15	5.11	9.94	9.42	7.73
Zinc	7440-66-6	30	12.1	27.1	–	–

The results of confirmation and vertical delineation sampling indicate that metals-affected soil is very limited in vertical extent, suggesting little to no migration of COCs from the most affected areas where small arms rounds were fired directly into the backstop berm.

Reference should be made to the RACR for more detail regarding the antimony-, lead-, and manganese affected soil removal, off-site disposal, horizontal and vertical delineation activities and confirmation sampling results.

Closing

If you have any questions about this document, please contact Russ K. Johnson at (512) 651-7115.

Very Truly Yours,
Weston Solutions, Inc.

Russ K. Johnson, P.G.
Project Manager

Enclosure
cc: Brent Ferry, P.G., WESTON
File

ATTACHMENT 1 – SELF IMPLEMENTATION NOTICE
Addendum 1, Affected Property Assessment Report
Former Small Arms Firing Range
Roy P. Benavidez National Guard Armory, El Campo, Texas

Texas Commission on Environmental Quality
SELF-IMPLEMENTATION NOTICE

TCEQ Regulatory ID No.: T-1856 Page 1 of 4

Use the Self-Implementation Notice (SIN) form to notify the TCEQ that you choose to self-implement response actions under Remedy Standard A in accordance with the Texas Risk Reduction Program Rule in Title 30, Texas Administrative Code §350.32(d). Submit a copy of this form to both the applicable TCEQ program area in the Austin Central Office as indicated below and to the appropriate TCEQ Region Office at least 10 days prior to conducting the response action.

Submittal Date: **17 October 2008 Revision** TCEQ Region No.: 12

TCEQ Program (check one)

☒ Corrective Action Section (MC-127)
☐ Municipal Solid Waste Permits Section (MC-124)
☐ Petroleum Storage Tank Program RPR Section (MC-137)
☐ Superfund PRP Lead (MC-143)
☐ Superfund Site Assessment (MC-142)

On-Site Property Information

On-Site Property Name: Roy P. Benavidez National Guard Armory, El Campo, TX

Street no. 801 Pre dir. Street name Armory (CR406) Street type Rd. Post dir.

City El Campo County Wharton County Code 241 Zip 77437

Nearest street intersection or location description: East of Highway 71 on south side of Highway 59

Latitude: Degrees, Minutes, ~~Seconds OR~~ **Decimal Degrees**: (indicate) North 29 10.263’

Longitude: Degrees, Minutes, ~~Seconds OR~~ **Decimal Degrees**: (indicate) West 96 15.176’

Description of Release

Provide a brief description of the release at the affected property and reason for filing this form:

The site is the location of a former unofficial small arms firing range constructed at the El Campo Armory between 1959 and 1964 and used for an unspecified period of time. Results of an Affected Property Assessment (APA) conducted for the site indicate elevated concentrations of metals (lead and antimony) in the soils, resulting from the firing of lead slugs, primarily in the backstop and one firing range platform.

The Self-Implementation Notice is being filed to notify TCEQ of the planned removal and disposal of metals-affected soil documented in the APA report (APAR). The soil removal is scheduled to be initiated on 16 October 2008.

Affected Property

Affected Property Name/No. for which this notice is filed El Campo National Guard Armory

Off-Site Affected Property Information

Off-site affected property name: Not Applicable. There are no off-site affected properties.

Street no. Pre dir. Street name Street type Post dir.

City County County Code Zip

Contact Person Information

Person (or company) Name: Adjutant General’s Department

Contact Person: David Boucher Title: Environmental Specialist

Mailing Address: 2200 West 35th Street, Building 1, AGTX-EV

City Austin State: TX Zip: 78703 Phone: 512.782.5753

Email: Dave.Boucher@tx.ngb.army.mil Fax: 512.465.5141

Texas Commission on Environmental Quality
SELF-IMPLEMENTATION NOTICE

TCEQ Regulatory ID No.: T-1856

Acknowledgement

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

I acknowledge that any permits needed to implement the remedy will be obtained prior to implementation of the remedy.

Signature of Person Name (print) Dave Boucher Date 17 October 2008

Chemicals of Concern:

Provide a list of the chemicals of concern that require a response action as determined pursuant to program area requirements. For each environmental media, provide a comparison of the Critical Protective Concentration Level (PCL) to the available maximum or representative chemical of concern (COC) concentrations. Also identify the Tier (1, 2 or 3) and ecological (Eco) or human health (HH residential or commercial/industrial) on which each critical PCL is based:

Chemical of Concern	Environmental Media	COC Concentration (specify unit, e.g., mg/kg or mg/L)	Critical PCL (or Residential Assessment Level)		Tier (1, 2, or 3)	Exceeds Critical PCL?	Remedy?
			Concentration (specify unit, e.g., mg/kg or mg/L)	Eco or HH (Res or Com/Ind)			
Antimony	Soil (berm only)	14.5 mg/kg (max)	2.7 mg/kg	HH	1	YES	YES
Lead	Soil	8,840 mg/kg (max)	89.56 mg/kg(berm) 179.1 mg/kg(platform)	HH	2	YES	YES
Manganese	Soil (berm only)	834 mg/kg (max)	576 mg/kg	HH	1	YES	YES

Qualitative Objectives:

Provide additional discussion not provided in the table above on the qualitative objectives to be achieved by the response action:

The objectives of the planned response action are as follows: 1) to remove and dispose of metals-affected soil resulting from the firing of lead slugs, 2) to conduct confirmation soil sampling and laboratory analysis to document that the affected soils have been removed to below critical PCLs, and 3) to further evaluate the vertical extent of metals-affected soil (antimony, copper, lead, manganese, zinc – these will be analyzed only beneath excavations where present above Texas-specific background, see notes following Attachment A - Figure B). The excavations are to be backfilled with clean fill material.

Exposure Conditions:

Describe any exposure conditions when there is an actual or probable human exposure to a chemical of concern at a concentration that exceeds the Tier 1 human health PCL. These exposure conditions require notice under §350.55(e). If not previously provided to the TCEQ, attach any needed certifications in response to §350.55(d) or (e).

The previous and current threat of human exposure to a chemical of concern at the affected property is limited to direct contact with affected soils. The affected areas are wholly contained within the fenced facility boundary and behind a locked gate, and the area is no longer used by the facility personnel, therefore the potential for exposure is relatively low.

Response Action:

Describe the response action chosen to achieve Remedy Standard A. Discuss if institutional controls are required.

The planned response action includes the removal and disposal of affected soil from the PCLE zones identified in the APAR and APAR Addendum for the site. The planned areas of excavation are illustrated on the maps provided as Attachment A.

Attachment A - Figure A is the affected property map from the APAR;
Attachment A - Figure B illustrates the planned soil removal areas and their dimensions, as well as the COCs that exceed critical PCLs in each area (and for which confirmation sampling will be performed).

Soil removal and disposal activities and the laboratory results obtained from confirmation sampling will be provided to TCEQ in a Response Action Completion Report (RACR). Documentation will also be provided in the RACR regarding excavation procedures, transportation of removed soil, decontamination procedures for equipment, disposal records at an approved facility and subsequent filing of institutional controls as needed. TXARNG intends to remove affected soil to below the critical PCLs documented in the APAR. Pending the results of confirmation sampling, institutional controls will not be required.

Schedule:

Provide the schedule for implementation and completion of the response action. If the response action is predicted to take more than 15 years to complete (refer to §350.31(h)), provide a copy of the institutional control proposed to comply with §350.111(b)(1):

The implementation of the response action is scheduled to begin on 16 October 2008. Completion of the response action is expected by 31 December 2008, once confirmation sampling analysis has confirmed impacted soils have been removed.

Texas Commission on Environmental Quality

SELF-IMPLEMENTATION NOTICE

TCEQ Regulatory ID No.: T-1856

ATTACHMENT A

STATE OF TEXAS
Mandy R. Mercer
Geology
6650
LICENSED PROFESSIONAL GEOSCIENTIST

Legend

- ● Sample location
- ● Sample location with COC exceedance (lead)
- ▨ PCLE Zone (lead) (Critical PCL = 70.23 mg/kg)
- ○ Affected property boundary

Affected Property and PCLE Zone Map

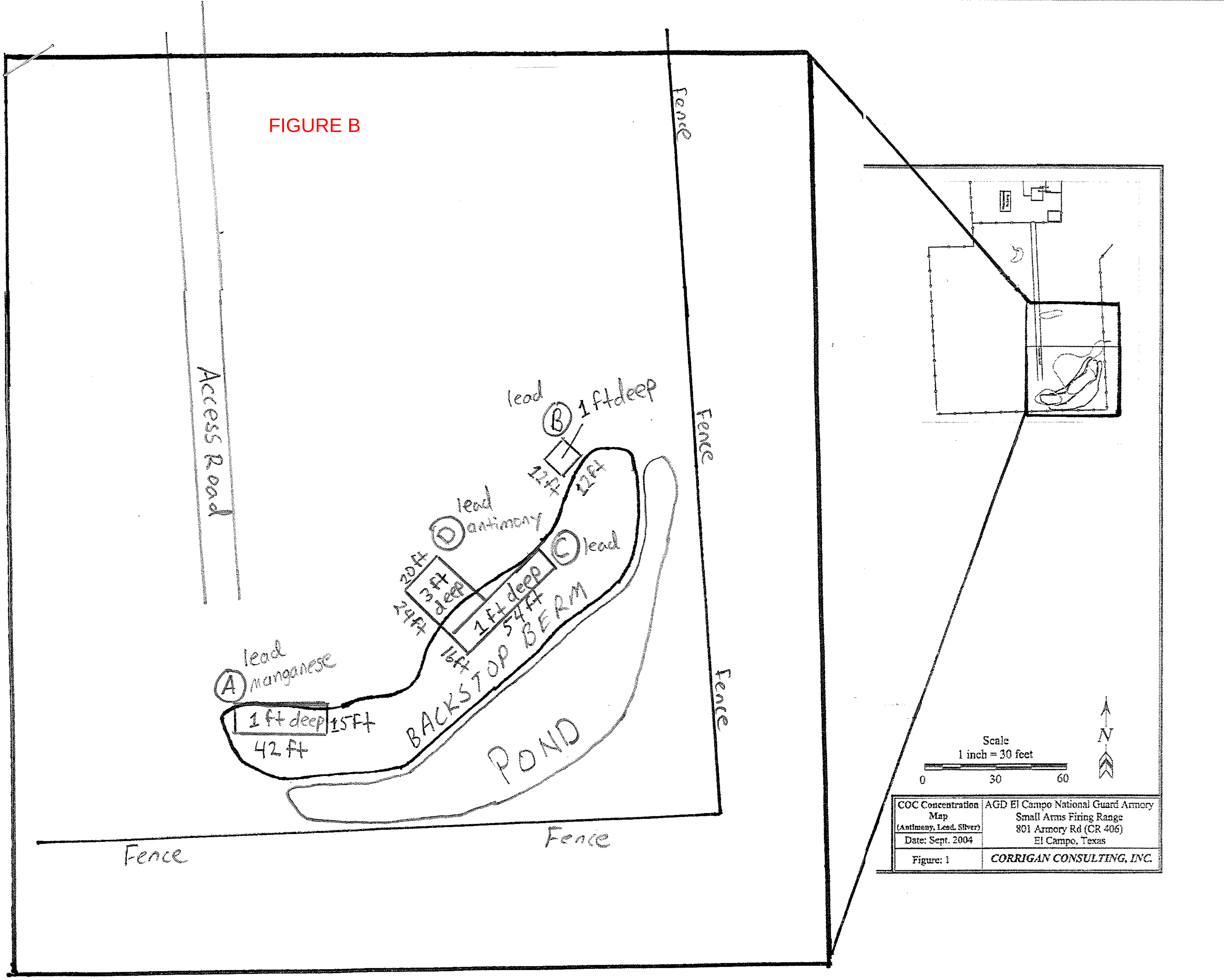
Date: 06/05

Figure A

Roy P. Benavidez National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

FIGURE B



COC Concentration Map (Antimony, Lead, Silver)
Date: Sept. 2004
Figure: 1

AGD El Campo National Guard Armory
Small Arms Firing Range
801 Armory Rd (CR 406)
El Campo, Texas

CORRIGAN CONSULTING, INC.

El Campo Self Implementation Notice 17 October 2008 Revision
T-1856

FIGURE B NOTES

Confirmation samples will be analyzed only for metals present above critical PCLs in each area (based on the December 2006 APAR Revision) as listed below.

Vertical delineation samples will be analyzed only for metals present above Texas-specific background in each area (based on the December 2006 APAR Revision) as listed below.

Excavation A - west berm 1 ft depth

removal COCs - lead and manganese
confirmation sample (sidewall and floor) COCs - lead, manganese
vertical delineation analyses - antimony, copper, lead, manganese, zinc

Excavation B - northeast berm 1 ft depth

removal COCs - lead
confirmation sample (sidewall and floor) COCs - lead
vertical delineation analyses - antimony, copper, lead, zinc

Excavation C - middle berm 1 ft depth

removal COCs - lead
confirmation sample (sidewall and floor) COCs - lead
vertical delineation analyses - antimony, copper, lead, manganese

Excavation D - middle berm 3 ft depth

removal COCs - antimony, lead
confirmation sample (sidewall and floor) COCs - lead, antimony
vertical delineation analyses - antimony, copper, lead, manganese

A FORENSIC APPROACH TO SOLVE A GROUND WATER CONTAMINATION PROBLEM

Coby A. Scher and Dennis L. Caputo
Quest Consulting, Inc.
6700 West Loop South, Suite 310
Bellaire, Texas 77401

ABSTRACT

In 2000, a subdivision outside a small city in southeast Texas discovered that the water supply wells that individual households had drilled were contaminated with trichloroethylene or TCE as it is commonly called. Since the extent of TCE contamination seemed to extend for over a mile in length, it was thought the “event” or “events” leading to the contamination had occurred some years ago. The shape of the plume seemed to indicate that the source of the TCE contamination originated at a closed industrial facility located approximately 600 yards north of the subdivision. However, the width and shape of the plume implied that there might have been more than one source or that ground water flow had shifted direction in the past. Finally, one particular well serving a small commercial facility located at the western edge of the plume seemed to have the highest concentration of TCE.

While the closed industrial plant was already subject to a state-led voluntary cleanup, the subdivision residents and nearby facilities whose wells had been impacted joined forces and sued the closed plant’s owners for damages. The closed plant’s owners, while not admitting any liability, agreed to install temporary carbon adsorbers on each contaminated well while the field investigation to determine the plume’s parameters proceeded under state guidance and oversite. Since the timing of the field investigation and the lawsuit did not precisely coincide, it was necessary to accumulate data to support the plaintiff’s lawsuit while at the same time refute the defendant’s attempt to deflect responsibility for the TCE contamination. Superimposed on this scenario was the constraint to not independently conduct a field investigation to support the plaintiff’s allegation. Thus, it was important to analyze the existing and evolving data to support the case, ensure that the conclusions reached were scientifically supportable, and refute the defendant’s attempts to “blame someone else” for most if not all of the ground water TCE contamination. The result was that forensic methodology, which is the application of the art and science of engineering in matters that will or may ultimately appear in court, was used to characterize the history, source, movement, and present disposition of the TCE ground water plume.

KEYWORDS

Forensic, trichloroethylene, TCE, ground water, lawsuit, hydrogeology, Phase II, liability, isotopic ratio, research.

INTRODUCTION

To design and complete an effective environmental forensic investigation, the environmental professional must know:

1. Historic and current operations on the subject site
2. Historic and current operations on surrounding sites that could impact the subject site
3. Raw materials, intermediate products, by products, final products and wastes from historic and current operations
4. Chemical and physical characteristics of each of these materials
5. Environmental transport and fate for each of the these materials
6. Site geologic, hydraulic and/or hydrogeologic conditions at and surrounding the site

While the goals of a typical Phase II investigation may be met by determining the presence of hazardous substances or petroleum products, the environmental professional when conducting an environmental forensic investigation will often need to determine the chemical form of each of the substances and the process that created each of them. For example, a typical Phase II goal may be achieved by confirming the presence of lead in the soil or groundwater above a certain standard. On the other hand, to achieve the goals of an environmental forensic investigation, the environmental professional may need to determine the specific lead compounds present and ratios of those compounds, to identify possible sources of the lead found at the site. The ratio of lead to other elements or compounds may also be needed to identify possible sources. These ratios can aid in determining if the lead came from combustion sources, wastewater treatment residues, or lead acid batteries.

Thus it can be seen that one type of professional background or education may not provide one all of the tools needed to perform a thorough forensic environmental investigation. Frequently, a team of individuals including chemists, chemical engineers, atmospheric scientists, hydrogeologists, and other disciplines band together to execute the work. However, the best training and background is chemical engineering because knowledge of chemical processing and manufacturing is gained through schooling and experience. Only with an innate historical knowledge of how chemicals are manufactured, what raw materials are used, how chemicals react and are transported, how residuals are managed, and what a mass balance calculation tells one can you pursue an inductive analysis of a complex environmental scenario. Now with the Internet available as an almost limitless information source, the research required to analyze chemical information, processes, and reactions can be easily accessed. While each chemical contamination situation is unique, careful consideration of what actually transpired will lead one to the answer.

OVERVIEW

In the spring of 2001, residents of a suburb of El Campo, Texas were told that there was TCE contamination in water wells serving their residences. In addition, several nearby businesses not on city water also discovered TCE contamination in their wells. A nearby closed aluminum extrusion plant owned by Alcoa (that also happened to be roughly up-gradient) was suspected as the source of the TCE and initially took responsibility for surveying and testing all of the private water wells in the area. Also, because the plant was already in the Texas Voluntary Cleanup Program (VCP) for other reasons, the Texas Commission of Environmental Quality ordered the plant to install ground water monitor wells to define the horizontal and vertical extent of contamination. At the same time, the plant agreed to temporarily install and maintain carbon filters on the affected wells to capture TCE and any daughter products. City water was nearby, but since the affected wells were outside the city, no entity wanted to bring in water because of the cost and logistics. Also, at about the same time, the owners of the affected wells banded together and sued the presumed source of the TCE, the owners of the closed extrusion plant. Quest was hired by one of the plaintiff's attorneys to provide expert technical testimony in the suit. A constraint though was to not perform any independent testing but to rely upon the defendant's data for forming any technical opinions. The defendant's VCP field investigation did not proceed as swiftly as the case unfolded and even then, the defendant was slow to release any substantial results for fear of implicating themselves. Quest, therefore, had to rely almost completely upon historical information, state initiated investigations, depositions, and investigations performed by several of the businesses.

Fortunately for Quest, several basic data sources presented themselves. The historical records and depositions showed that TCE was used and disposed of for some period of years at the plant. Various Phase I Assessments (because the plant had been bought and sold several times since 1990) and limited Phase II investigations demonstrated that some TCE was present at or near the plant. However, the shape of the plume and TCE water well concentrations were inconsistent with the one point source theory and suggested either several sources of TCE or a series of events that would have defined the plume's present shape and TCE distribution. Recognizing that the plume had over 30 years to evolve into its present shape, it was important in winning the lawsuit to recreate the sequence of events leading to the plume's present form. Fortunately for the plaintiffs, the lawsuit discovery process revealed some key emails among the defendant and its consultants pointing to how they intended to shed responsibility. In fact, using some fairly obscure but, in theory some technically valid analysis, they intended to show that there were indeed three plumes, not one, and that the plant (defendant) was only responsible for one of them. It was incumbent upon Quest to refute these arguments and show that the extrusion plant was the sole source of TCE and that simple hydraulic transport could explain the shape and TCE concentrations in the plume.

METHODOLOGY

The primary complaint by the citizens was that the defendants had contaminated their drinking water wells with trichloroethylene (TCE), a solvent that had reportedly been used at the plant in the 1960s and 1970s. The wells used by the citizens were all located down gradient roughly ½ to 1 ½ miles from the plant and was their only source of potable water. The aluminum extrusion plant was not the only industry located in the general area, but appeared initially to have the potential to be the largest TCE user based upon historical purchase records and recollections of the plant personnel deposed. No other plant was named in the lawsuit.

The aluminum extrusion plant, under the ownership of Reynolds Metals Company in the 1990s, was already involved in remediation with the Texas Commission on Environmental Quality (TCEQ) because of heavy metal contamination discovered in the soil at the facility. As a consequence of being accepted in the Voluntary Compliance Program (VCP) with TCEQ, Reynolds was required to monitor for metals and other constituents in the groundwater at the site within the plant boundaries. It was during this period of groundwater monitoring in the 1998-1999 period that TCE was discovered in the groundwater onsite. TCE was eventually found by Reynolds (and after the purchase by Alcoa) to be located in the soil regime adjacent to and under the extrusion building and down gradient at the property line. Alcoa was required to drill monitoring wells offsite and test for TCE. Eventually, the testing of monitoring wells and citizen drinking wells revealed a TCE plume as shown in Figure 1. The outline of the plume exhibits TCE concentrations above the EPA and TCEQ Maximum Concentration Limit (MCL) for TCE of 5 ug/l (~5 ppb) in potable water. Alcoa was astute enough to add carbon canisters to the individual wells at their expense to remove TCE from the water. Simultaneously, the TCEQ added the groundwater contamination issue to the Alcoa VCP meaning that a state-mandated process of groundwater evaluation and remediation would begin. It was about this time that the citizens sued the defendants for diminution of property value and various medical problems. The case at this point seemed rather straight forward since no other plants or defendants were named.

Alcoa decided to fight the lawsuit, probably realizing that the TCE groundwater plume would either be (1)cleaned up by them or (2)the private citizens put on a public water and sewer collection and treatment system,. The cost of either alternative would be in the tens of millions of dollars including all capital costs and 30+ years of operating costs. Alcoa decided to contest the lawsuit and only accept some of the blame for contaminating the groundwater. Their strategy was to try to establish a situation where

- Other industries would be named because they used TCE,
- “Midnight dumping” of TCE may have occurred,
- There were three (3) independent groundwater plumes and they only contributed to one of them, and
- If enough obscure science is thrown at the case, some of it might stick and create doubt in the minds of TCEQ that they were the only polluter.

This is when the forensic environmental investigation and analysis became important. A standard environmental assessment of the situation as described above (and which was performed) would indicate that Alcoa and its predecessors were indeed the only user and contributor of TCE to the groundwater. The process would not provide the answers to describe the unusual shape of the plume (Figure 1) nor the subtleties that Alcoa created during the development of the case. One of the key components of forensic analysis is to review all pertinent depositions, manuals, standard, literature, design drawings, and specifications. To explain the TCE distribution, it was important that Quest consider any and all possibilities of sources, hydraulics, materials transport, and chemistry. The result was that an array of possibilities had to be considered in order to deduce what actually happened. From analyzing this realm of potentials, plus working through considering and refuting the defendants ‘high-tech" methodology, plus utilizing some data obtained by a parallel group of plaintiff's consultants, plus utilizing the defendants own slowly evolving data and the TCEQ's reaction to its conclusions, the actual mechanism for TCE source(s) and transport was explained. It turned out that all of the TCE actually emanated from the extrusion plant, but a line source of a leaky sewer line leading away from the plant became a significant secondary source and a high-capacity industrial pumping well distorted the plume's shape and TCE concentration enough to imply a second source. Some experienced engineering and hydrogeology was needed to explain the sequence of events that led to the plume's shape and TCE distribution.

As orientation, Figure 2 shows the location of the El Campo Aluminum Company site and the surrounding industries. The citizens lived in the Westhill and Quail Meadows subdivisions and beyond the El Campo city limits. North of Highway 59, houses were on city water and any wells had been closed years before. None of these citizens were party to the lawsuit.

Alcoa's attempt to decrease its liability centered on the following arguments. Because Alcoa was already in the TCEQ VCP program and liable for the total cleanup bill, it was to their economic advantage to make any or all of the following arguments stick with the TCEQ. Only in that manner could Alcoa reduce both its VCP costs and its financial exposure in the lawsuit.

- Demonstrate through soil analysis of surrounding industries that they could have used TCE.
- Pin the plume to the east on midnight dumping.
- Show through some regional geology considerations that the groundwater flow could not create the plume shape just from their plant.
- Show that other TCE sources such as historical pesticide spraying, treatment of septic systems, other household uses, etc. could account for the plume shape.
- Use non-traditional environmental chemistry such as isotope ratios, inorganic species ratios, TCE degradation products, etc. to explain the plume shape and TCE distribution.
- Use a box plot statistical method to account for the data distribution.

The environmental forensic investigation was divided into two major thrusts; geological/hydro geological and historical/chemical. Since legal discovery had revealed from Alcoa's emails their overall and even some details of their strategy, an effort to counter their eventual claims was begun by the plaintiffs. After Alcoa submitted their claims to the TCEQ in November 2003 and by copy to the plaintiffs, the TCEQ independently performed their own analysis which resulted in the same technical conclusions reached by the plaintiffs and their experts. The conclusions reached by the plaintiff's experts and the TCEQ were the following:

- The source of TCE at the El Campo facility would contaminate the underlying groundwater, which would flow to the southwest. The variable nature of the aquifer materials and hydraulic conductivity would cause dispersion of the TCE. Dispersion leads to lateral spreading of a contaminant and causes a contaminant boundary to extend laterally and down gradient beyond the center of mass of the contaminant. It is also evident from the distribution of TCE, aquifer thickness, transmissivity, and hydraulic gradient that the entire areal extent of TCE contamination is unlikely to have been caused only be a single source located at the plant. Rather, the data indicate that, in addition to a source at the facility, there was also a line source of TCE that extended parallel to Lily Street along the southern margin of the El Campo facility to some distance east of Palacios Street. It is likely that the line source was a ditch or sanitary sewer that had served as a receptor of TCE some time in the past[1]. (See Figure 3). Indeed, subsequent borings along the line source found substantial concentrations of TCE in the soil.

- No other sources of TCE contamination have been located in the vicinity of the Property, despite efforts to do so. The TCE found in the southern portion of the plume may have a slightly different isotopic carbon/chlorine than the remainder of the plume (south of US 59), but the referenced data is only for recently manufactured TCE (1990 and later) and does not address the following variables[5]:
    1. The supplier of TCE to the aluminum plant likely received their TCE from a variety of manufacturers during the years of TCE release from the plant because it purchased TCE from Van Waters and Rogers, a chemical wholesale supplier. The result is a mixture of carbon/chlorine isotopic ratios in the contaminated groundwater.
    2. TCE manufactured by the chemical companies vary in isotopic carbon constituency depending upon the source of the ethylene; i.e., whether the ethylene was cracked from gas, distillate, or heavy oil. Ethylene is the hydrocarbon molecule that is the primary building block for TCE.
    3. Chlorine in TCE exhibits a much more uniform isotopic ratio from manufacturer to manufacturer because almost all of the chlorine made in this country is a co-product (along with caustic) of the electrolysis of seawater. The small range is probably due to variation in the diffusion process used in chlorine manufacture and purification.
    4. If a slightly different $\delta^{13}C$ ratio interval is chosen to construct the plume map, the plume will be uniform throughout. This interval corresponds much closer to the actual ratios of the manufactured TCE as of the early 1990s. However, it does not address the ratios of isotopic carbon that occurred from the various TCE manufacturers in the 1960s and 1970s for which there is no data. One would also expect a stronger influence of a lower negative δC^{13}upon the southwest section of the plume because either it contains more TCE from a particular source or the age of the plume varies somewhat internally. That would happen if the TCE releases caused by different isotopic ratios occurred at different times during the use of TCE at the plant. This would be true either since the TCE water well data indicates that there was a TCE release to the east or southeast from a line source in the easterly direction from the plant along Lily Street (see Figures 1 and 3).

- The chemical data for inorganic species (boron, chromium, chloride, etc.) is consistent with what one would expect near a source of inorganic discharges.

Since the quantity of these discharges from ditches, piping leaks, ponds, etc at the Property were small in comparison with the groundwater flow, the effect would be minimal, and the species concentration would be localized. The exchange capacity of the upper 25 - 30 feet of the clay-type property soil matrix would also minimize any far-reaching impact by providing both cation and anion soil sites to complex or exchange any inorganic species[2].

- The organic data in the plume indicate that very little degradation of TCE has occurred in the TCE plume. TCE degrades most rapidly in anaerobic reducing conditions (lack of oxygen). The absence of degradation products implies that the aquifer is oxidizing and contains oxygen. The implication is that natural biological attenuation will probably not work to degrade unless a co-metabolite or oxygen scavenger or both are injected into the TCE plume. Even under these conditions, MCL levels may be difficult to reach[2].
- Research into historical uses of TCE by surrounding industries, aerial spraying, or homeowner use revealed no other sources that could account for the TCE plume distribution and concentration[5].
- Box plots do not portray an objective statistical analysis of the data and can be used to portray data in a variety of subjective manners[3].

To conclude the case, the use of an environmental forensic approach enabled the plaintiffs to win the case with a substantial financial settlement from Alcoa and its predecessors.

Lessons Learned

The technical issues involved in this lawsuit and the methodology used to determine "what really happened" provide real insight into the use of forensic science and engineering. The following highlights are important to providing an accurate and winning strategy:

1. Express an opinion only when it is founded on adequate knowledge. This means that a detailed investigation and study must be made.
2. Inspect the site and evidence personally whenever possible and witness all tests where practical. Understand the test results and their limitations. Make sure that you are privy to current events, field tests, reports, etc. in ongoing activities related to the litigation.
3. Make thorough and detailed inspections, taking color photographs and personally collecting other data to provide documentation and study material.
4. Review all pertinent discovery material, depositions, manuals, standards, reports, literature, design drawings, and specifications.
5. Recommend to your client the need for, and make, all calculations, analyses, and tests necessary to establish and confirm an opinion.
6. Strongly recommend that you and the attorney involved conduct a case status at key intervals and that you conduct a thorough review and analysis of testimony prior to the trial. Make sure that you are current with external issues and activities that may influence the case development.
7. Be prepared for anything – you never know what might happen.

REFERENCES

1. Preliminary Report – Hydrogeology in the Vicinity of the Alcoa-Reynolds El Campo Site, El Campo, Texas, Wayne A. Pettyjohn, February 2004.
2. Professional Opinion, Coby A Scher, PE, DEE, February 6, 2004.
3. Interoffice Memorandum, Review of Groundwater Characterization Report: El Campo Aluminum Company Site (Alcoa); VCP No. 538, Texas Commission on Environmental Quality, February 10, 2004.

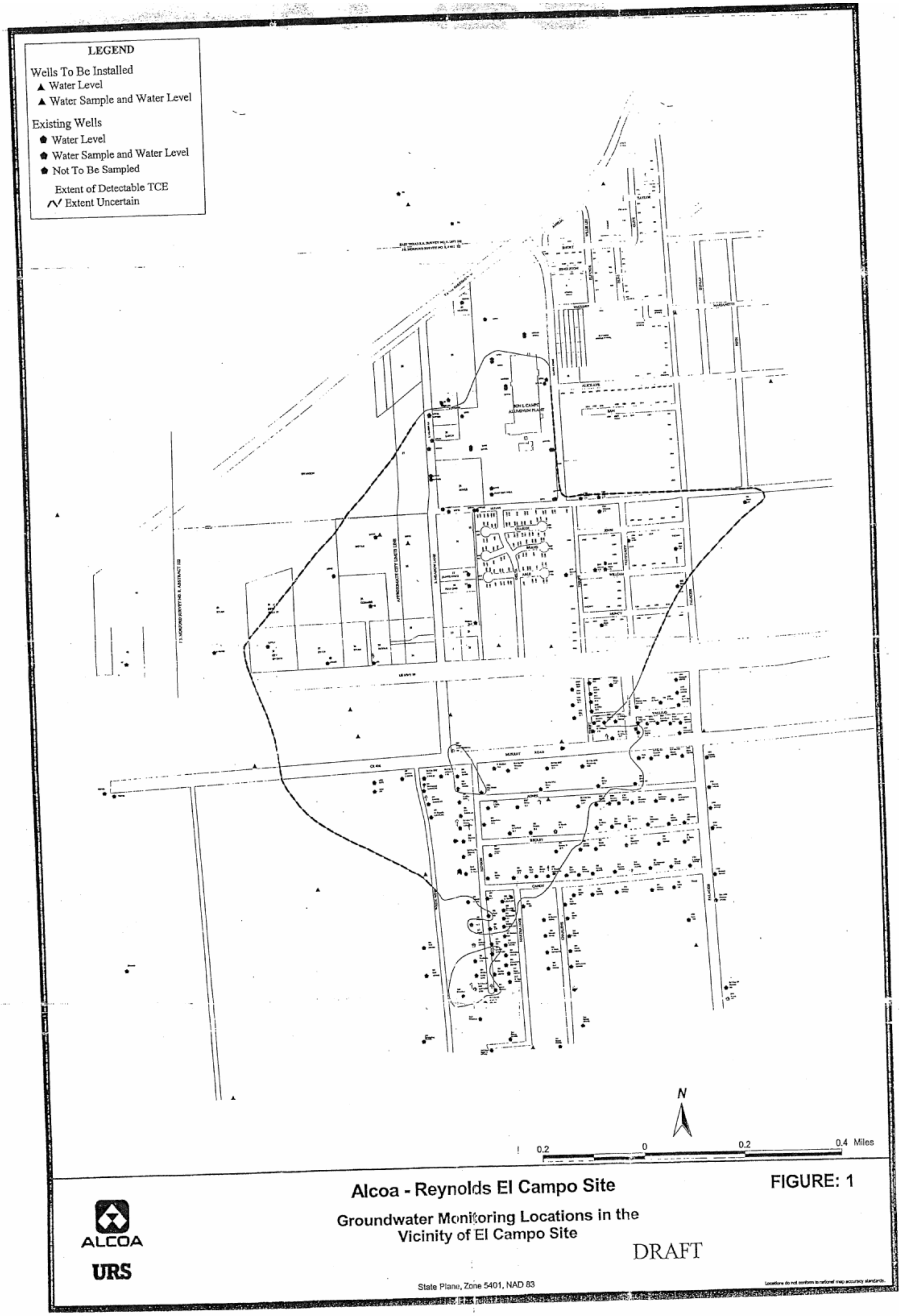

LEGEND
Wells To Be Installed
▲ Water Level
▲ Water Sample and Water Level
Existing Wells
⬟ Water Level
⬟ Water Sample and Water Level
⬟ Not To Be Sampled
Extent of Detectable TCE
Extent Uncertain
N
0.2
0
0.2
0.4 Miles
ALCOA
URS
Alcoa - Reynolds El Campo Site
FIGURE: 1
Groundwater Monitoring Locations in the Vicinity of El Campo Site
DRAFT
State Plane, Zone 5401, NAD 83

Figure 2

El Campo Site
Land Use Map

URS

El Campo Site
Historical Industrial Outfalls
and
Local Sanitary Sewer Lines

Figure 3

File name:
El_campo_CADD.mxd
Location:
S:/2003/alcoa/el_campo/el_campo_gis
Created by:
James Russ
Date:
9/10/03

El Campo Armory
1552 County Road 406
El Campo, TX 77437

Inquiry Number: 5685887.2s
June 17, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION **PAGE**

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2019 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1552 COUNTY ROAD 406
EL CAMPO, TX 77437

COORDINATES

Latitude (North):	29.1708460 - 29˚ 10' 15.04''
Longitude (West):	96.2534620 - 96˚ 15' 12.46''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	767130.9
UTM Y (Meters):	3229859.8
Elevation:	100 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5937211 EL CAMPO, TX
Version Date:	2013
East Map:	5937295 PIERCE, TX
Version Date:	2013

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140813
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
1552 COUNTY ROAD 406
EL CAMPO, TX 77437

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	PIONEER SOUTH CENTRA		US MINES	Lower	1084, 0.205, SE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
NPL LIENS	Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL	National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY	Federal Facility Site Information listing
SEMS	Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE	Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS	Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF	RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG	RCRA - Large Quantity Generators
RCRA-SQG	RCRA - Small Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS	Land Use Control Information System
US ENG CONTROLS	Engineering Controls Sites List

US INST CONTROL	Sites with Institutional Controls

Federal ERNS list

ERNS	Emergency Response Notification System

State- and tribal - equivalent NPL

SHWS	State Superfund Registry

State and tribal landfill and/or solid waste disposal site lists

SWF/LF	Permitted Solid Waste Facilities
DEBRIS	DEBRIS
CLI	Closed Landfill Inventory
WASTE MGMT	Commercial Hazardous & Solid Waste Management Facilities

State and tribal leaking storage tank lists

INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
LPST	Leaking Petroleum Storage Tank Listing

State and tribal registered storage tank lists

FEMA UST	Underground Storage Tank Listing
UST	Petroleum Storage Tank Database
AST	Petroleum Storage Tank Database
INDIAN UST	Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

AUL	Sites with Controls

State and tribal voluntary cleanup sites

VCP	Voluntary Cleanup Program Database
INDIAN VCP	Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS	Brownfields Site Assessments

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS	A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY	Recycling Facility Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
ODI	Open Dump Inventory

IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
CDL	CDL
PRIORITYCLEANERS	Dry Cleaner Remediation Program Prioritization List
DEL SHWS	Deleted Superfund Registry Sites
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

NON REGIST PST	Petroleum Storage Tank Non Registered

Local Land Records

HIST LIENS	Environmental Liens Listing
LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
SPILLS	Spills Database
SPILLS 90	SPILLS 90 data from FirstSearch
SPILLS 80	SPILLS 80 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data

CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
AIRS	Current Emission Inventory Data
APAR	Affected Property Assessment Report Site Listing
ASBESTOS	ASBESTOS
COAL ASH	Coal Ash Disposal Sites
DRYCLEANERS	Drycleaner Registration Database Listing
ED AQUIF	Edwards Aquifer Permits
ENF	Notice of Violations Listing
Financial Assurance	Financial Assurance Information Listing
GCC	Groundwater Contamination Cases
IOP	Innocent Owner/Operator Program
LEAD	LEAD
Ind. Haz Waste	Industrial & Hazardous Waste Database
MSD	Municipal Settings Designations Database
NPDES	NPDES Facility List
RWS	Radioactive Waste Sites
TIER 2	Tier 2 Chemical Inventory Reports
UIC	Underground Injection Wells Database Listing
IHW CORR ACTION	IHW CORR ACTION
PST STAGE 2	PST Stage 2
COMP HIST	Compliance History Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS	Recovered Government Archive State Hazardous Waste Facilities List
RGA LF	Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, has revealed that there is 1 US MINES site within approximately 0.25 miles of the target property.

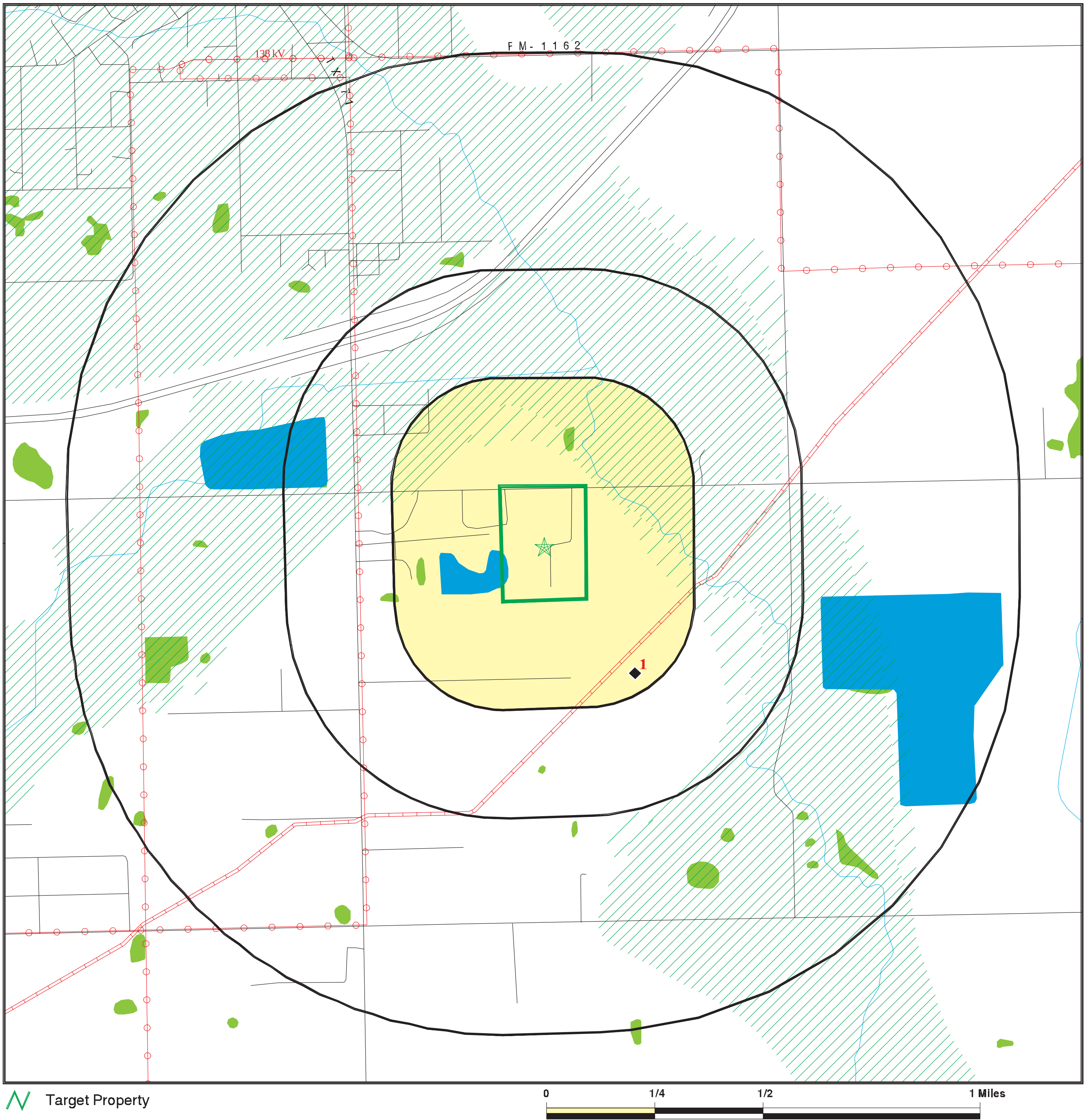
Lower Elevation	Address	Direction / Distance	Map ID	Page
PIONEER SOUTH CENTRA Database: US MINES, Date of Government Version: 11/27/2018 Mine ID:: 4101697		SE 1/8 - 1/4 (0.205 mi.)	1	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
EL CAMPO COUNTRY CLUB	ENF, COMP HIST

OVERVIEW MAP - 5685887.2S



Target Property

▲ Sites at elevations higher than or equal to the target property

◆ Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

Pipelines

▨ 100-year flood zone

▨ 500-year flood zone

🟩 National Wetland Inventory

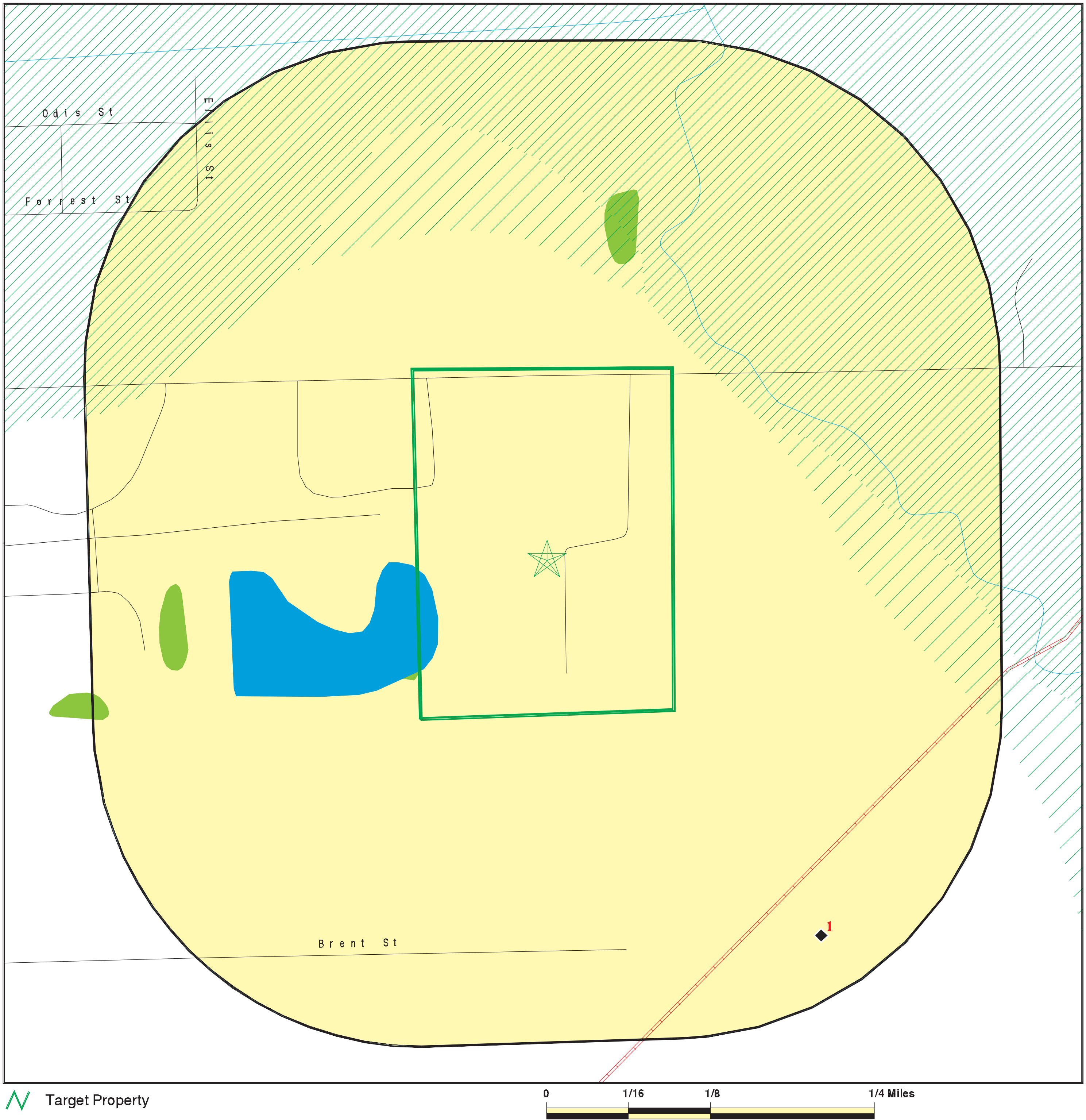
State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: El Campo Armory
ADDRESS: 1552 County Road 406
El Campo TX 77437
LAT/LONG: 29.170846 / 96.253462

CLIENT: AECOM
CONTACT: Hans Sund
INQUIRY #: 5685887.2s
DATE: June 17, 2019 1:12 pm

DETAIL MAP - 5685887.2S



- 🟩 Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ♟ Manufactured Gas Plants
- ⚑ Sensitive Receptors
- ▨ National Priority List Sites
- ▨ Dept. Defense Sites
- ▨ Indian Reservations BIA
- ▨ Pipelines
- ▨ 100-year flood zone
- ▨ 500-year flood zone
- 🟩 National Wetland Inventory
- 🟩 State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	El Campo Armory	CLIENT:	AECOM
ADDRESS:	1552 County Road 406 El Campo TX 77437	CONTACT:	Hans Sund
		INQUIRY #:	5685887.2s
LAT/LONG:	29.170846 / 96.253462	DATE:	June 17, 2019 1:19 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
DEBRIS	0.500		0	0	0	NR	NR	0
CLI	0.500		0	0	0	NR	NR	0
WASTE MGMT	TP		NR	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
INDIAN LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LPST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
PRIORITYCLEANERS	0.500		0	0	0	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
NON REGIST PST	0.250		0	0	NR	NR	NR	0
Local Land Records								
HIST LIENS	TP		NR	NR	NR	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
SPILLS 80	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	1	NR	NR	NR	1
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
APAR	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ED AQUIF	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
GCC	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
IOP	TP		NR	NR	NR	NR	NR	0
LEAD	TP		NR	NR	NR	NR	NR	0
Ind. Haz Waste	0.250		0	0	NR	NR	NR	0
MSD	0.500		0	0	0	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
RWS	TP		NR	NR	NR	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
IHW CORR ACTION	0.250		0	0	NR	NR	NR	0
PST STAGE 2	0.250		0	0	NR	NR	NR	0
COMP HIST	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	1	0	0	0	1

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
1 **SE** **1/8-1/4** **0.205 mi.** **1084 ft.**	**PIONEER SOUTH CENTRAL INC** **COLORADO (County), TX**	**US MINES**	**1011226835** **N/A**

Relative:
Lower

Actual:
98 ft.

US MINES:

Sic Code(s):	144200
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Sic Code(s):	000000
Mine ID:	4101697
Entity Name:	BLUE ROAN REND
Company:	PIONEER SOUTH CENTRAL INC
Status:	4
Status Date:	20001026
Operation Class:	2
Number of Shops:	0
Number of Plants:	0
Latitude Degree:	00
Longitude Degree:	000
Latitude Minute:	00
Latitude Seconds:	00
Longitude Minutes:	00
Longitude Seconds:	00
Number of Pits:	000

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
EL CAMPO	S110650738	EL CAMPO COUNTRY CLUB	INTERSECTION OF CR 351 AND FM		ENF, COMP HIST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/11/2019	Source: EPA
Date Data Arrived at EDR: 04/18/2019	Telephone: N/A
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 06/06/2019
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1 Telephone 617-918-1143	EPA Region 6 Telephone: 214-655-6659
EPA Region 3 Telephone 215-814-5418	EPA Region 7 Telephone: 913-551-7247
EPA Region 4 Telephone 404-562-8033	EPA Region 8 Telephone: 303-312-6774
EPA Region 5 Telephone 312-886-6686	EPA Region 9 Telephone: 415-947-4246
EPA Region 10 Telephone 206-553-8665	

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/11/2019	Source: EPA
Date Data Arrived at EDR: 04/18/2019	Telephone: N/A
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 06/06/2019
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/22/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 41

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

SHWS: State Superfund Registry

State Hazardous Waste Sites. State hazardous waste site records are the states’ equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 11/08/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 02/12/2019
Number of Days to Update: 47

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5680
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 01/25/2019
Date Data Arrived at EDR: 01/25/2019
Date Made Active in Reports: 03/29/2019
Number of Days to Update: 63

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6706
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

DEBRIS: DEBRIS

A listing of temporary debris management sites and MSW landfills for debris resulting from Hurricane Harvey.

Date of Government Version: 03/27/2018
Date Data Arrived at EDR: 04/04/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 65

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6840
Last EDR Contact: 06/10/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

H-GAC CLI: Houston-Galveston Closed Landfill Inventory

Closed Landfill Inventory for the Houston-Galveston Area Council Region. In 1993, the Texas Legislature passed House Bill (HB) 2537, which required Councils of Governments (COGs) to develop an inventory of closed municipal solid waste landfills for their regional solid waste management plans.

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 02/08/2019
Number of Days to Update: 36

Source: Houston-Galveston Area Council
Telephone: 832-681-2518
Last EDR Contact: 04/04/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

CLI: Closed Landfill Inventory

Closed and abandoned landfills (permitted as well as unauthorized) across the state of Texas. For current information regarding any of the sites included in this database, contact the appropriate Council of Governments agency.

Date of Government Version: 08/30/1999	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 09/28/2000	Telephone: N/A
Date Made Active in Reports: 10/30/2000	Last EDR Contact: 04/02/2019
Number of Days to Update: 32	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Varies

WASTE MGMT: Commercial Hazardous & Solid Waste Management Facilities

This list contains commercial recycling facilities and facilities permitted or authorized (interim status) by the Texas Natural Resource Conservation Commission.

Date of Government Version: 02/02/2018	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 04/06/2018	Telephone: 512-239-2920
Date Made Active in Reports: 06/13/2018	Last EDR Contact: 04/05/2019
Number of Days to Update: 68	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Varies

State and tribal leaking storage tank lists

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/17/2018	Source: EPA Region 10
Date Data Arrived at EDR: 03/07/2019	Telephone: 206-553-2857
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2018	Source: EPA, Region 5
Date Data Arrived at EDR: 03/07/2019	Telephone: 312-886-7439
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/16/2018	Source: EPA Region 8
Date Data Arrived at EDR: 03/07/2019	Telephone: 303-312-6271
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/19/2019	Source: EPA Region 7
Date Data Arrived at EDR: 03/07/2019	Telephone: 913-551-7003
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/13/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 03/08/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

LPST: Leaking Petroleum Storage Tank Database
An inventory of reported leaking petroleum storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 03/28/2019
Date Made Active in Reports: 04/11/2019
Number of Days to Update: 14

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2200
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/25/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

UST: Petroleum Storage Tank Database
Registered Underground Storage Tanks. UST’s are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 03/04/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 03/27/2019	Telephone: 512-239-2160
Date Made Active in Reports: 04/11/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 15	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

AST: Petroleum Storage Tank Database
Registered Aboveground Storage Tanks.

Date of Government Version: 03/04/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 03/27/2019	Telephone: 512-239-2160
Date Made Active in Reports: 04/11/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 15	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/17/2018	Source: EPA Region 10
Date Data Arrived at EDR: 03/07/2019	Telephone: 206-553-2857
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/10/2018	Source: EPA Region 9
Date Data Arrived at EDR: 03/08/2019	Telephone: 415-972-3368
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 54	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/16/2018	Source: EPA Region 8
Date Data Arrived at EDR: 03/07/2019	Telephone: 303-312-6137
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/07/2018	Source: EPA Region 7
Date Data Arrived at EDR: 03/07/2019	Telephone: 913-551-7003
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 04/26/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 08/05/2019
	Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/12/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/03/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Sites with Controls

Activity and use limitations include both engineering controls and institutional controls.

Date of Government Version: 10/04/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 11/07/2018
Number of Days to Update: 26

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

VCP RRC: Voluntary Cleanup Program Sites

The Voluntary Cleanup Program (RRC-VCP) provides an incentive to remediate Oil & Gas related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

Date of Government Version: 11/20/2018
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 02/08/2019
Number of Days to Update: 36

Source: Railroad Commission of Texas
Telephone: 512-463-6969
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

VCP TCEQ: Voluntary Cleanup Program Database

The Texas Voluntary Cleanup Program was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas.

Date of Government Version: 10/01/2018
Date Data Arrived at EDR: 10/02/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 38

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site Assessments

Brownfield site assessments that are being cleaned under EPA grant monies.

Date of Government Version: 12/04/2018
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 02/07/2019
Number of Days to Update: 35

Source: TCEQ
Telephone: 512-239-5872
Last EDR Contact: 04/04/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

CAPCOG LI: Capitol Area Landfill Inventory

Permitted and unpermitted landfills for the CAPCOG region. Serving Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, and Williamson Counties.

Date of Government Version: 01/06/2017
Date Data Arrived at EDR: 01/10/2017
Date Made Active in Reports: 03/15/2017
Number of Days to Update: 64

Source: Capital Area Council of Governments
Telephone: 512-916-6000
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

NCTCOG LI: North Central Landfill Inventory

North Central Texas Council of Governments landfill database.

Date of Government Version: 01/03/2019
Date Data Arrived at EDR: 01/04/2019
Date Made Active in Reports: 02/08/2019
Number of Days to Update: 35

Source: North Central Texas Council of Governments
Telephone: 817-695-9223
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SWRCY: Recycling Facility Listing

A listing of recycling facilities in the state.

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/29/2019
Number of Days to Update: 38

Source: TCEQ
Telephone: 512-239-6700
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/23/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Site Locations Listing

A listing of former clandestine drug site locations

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/15/2017
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 269

Source: Department of Public Safety
Telephone: 512-424-2144
Last EDR Contact: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

PRIORITY CLEANERS: Dry Cleaner Remediation Program Prioritization List

A listing of dry cleaner related contaminated sites.

Date of Government Version: 02/25/2019
Date Data Arrived at EDR: 03/06/2019
Date Made Active in Reports: 04/11/2019
Number of Days to Update: 36

Source: Texas Commisision on Environmenatl Quality
Telephone: 512-239-5658
Last EDR Contact: 06/07/2019
Next Scheduled EDR Contact: 06/18/2108
Data Release Frequency: Varies

DEL SHWS: Deleted Superfund Registry Sites

Sites have been deleted from the state Superfund registry in accordance with the Act, ?361.189

Date of Government Version: 11/08/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 02/12/2019
Number of Days to Update: 47

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0666
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

PFOS and PFOA stand for perfluorooctane sulfonate and perfluorooctanoic acid, respectively. Both are fluorinated organic chemicals, part of a larger family of compounds referred to as perfluoroalkyl substances (PFASs).

Date of Government Version: 03/13/2019
Date Data Arrived at EDR: 03/19/2019
Date Made Active in Reports: 04/15/2019
Number of Days to Update: 27

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2341
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

NON REGIST PST: Petroleum Storage Tank Non Registered

A listing of non-registered petroleum storage tank site locations.

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/29/2019
Number of Days to Update: 57

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2081
Last EDR Contact: 05/01/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

Local Land Records

HIST LIENS: Environmental Liens Listing

This listing contains information fields that are no longer tracked in the LIENS database.

Date of Government Version: 03/23/2007
Date Data Arrived at EDR: 03/23/2007
Date Made Active in Reports: 05/02/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Qualilty
Telephone: 512-239-2209
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

LIENS: Environmental Liens Listing

The listing covers TCEQ liens placed against either State Superfund sites or Federal Superfund sites to recover cost incurred by TCEQ.

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/29/2019
Number of Days to Update: 80

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2209
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 49

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

SPILLS: Spills Database

Spills reported to the Emergency Response Division.

Date of Government Version: 10/18/2018	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 10/19/2018	Telephone: 512-239-2507
Date Made Active in Reports: 11/09/2018	Last EDR Contact: 04/04/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 10/23/2012	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 03/07/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 63	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

SPILLS 80: SPILLS80 data from FirstSearch

Spills 80 includes those spill and release records available from FirstSearch databases prior to 1990. Typically, they may include chemical, oil and/or hazardous substance spills recorded before 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 80.

Date of Government Version: 05/15/2005	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 03/07/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 63	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: 214-665-6444
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 03/27/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 03/07/2019	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 04/03/2019	Telephone: 202-528-4285
Date Made Active in Reports: 05/23/2019	Last EDR Contact: 05/21/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 09/02/2019
	Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/13/2019
Next Scheduled EDR Contact: 08/26/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/07/2019
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/10/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/24/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/06/2019
Next Scheduled EDR Contact: 08/19/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2019
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 34

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/07/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/07/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/26/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/02/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/02/2019	Telephone: 202-343-9775
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 04/02/2019
Number of Days to Update: 42	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2007
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2008
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 12/03/2018	Source: Department of Transporation, Office of Pipeline Safety
Date Data Arrived at EDR: 01/29/2019	Telephone: 202-366-4595
Date Made Active in Reports: 03/21/2019	Last EDR Contact: 04/30/2019
Number of Days to Update: 51	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2019	Source: Department of Justice, Consent Decree Library
Date Data Arrived at EDR: 04/23/2019	Telephone: Varies
Date Made Active in Reports: 05/23/2019	Last EDR Contact: 04/05/2019
Number of Days to Update: 30	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015	Source: EPA/NTIS
Date Data Arrived at EDR: 02/22/2017	Telephone: 800-424-9346
Date Made Active in Reports: 09/28/2017	Last EDR Contact: 05/24/2019
Number of Days to Update: 218	Next Scheduled EDR Contact: 09/02/2019
	Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014	Source: USGS
Date Data Arrived at EDR: 07/14/2015	Telephone: 202-208-3710
Date Made Active in Reports: 01/10/2017	Last EDR Contact: 04/11/2019
Number of Days to Update: 546	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017	Source: Department of Energy
Date Data Arrived at EDR: 09/11/2018	Telephone: 202-586-3559
Date Made Active in Reports: 09/14/2018	Last EDR Contact: 05/02/2019
Number of Days to Update: 3	Next Scheduled EDR Contact: 08/19/2019
	Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017	Source: Department of Energy
Date Data Arrived at EDR: 10/11/2017	Telephone: 505-845-0011
Date Made Active in Reports: 11/03/2017	Last EDR Contact: 05/24/2019
Number of Days to Update: 23	Next Scheduled EDR Contact: 09/02/2019
	Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/11/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/18/2019	Telephone: 703-603-8787
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 06/06/2019
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001	Source: American Journal of Public Health
Date Data Arrived at EDR: 10/27/2010	Telephone: 703-305-6451
Date Made Active in Reports: 12/02/2010	Last EDR Contact: 12/02/2009
Number of Days to Update: 36	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016	Source: EPA
Date Data Arrived at EDR: 10/26/2016	Telephone: 202-564-2496
Date Made Active in Reports: 02/03/2017	Last EDR Contact: 09/26/2017
Number of Days to Update: 100	Next Scheduled EDR Contact: 01/08/2018
	Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016	Source: EPA
Date Data Arrived at EDR: 10/26/2016	Telephone: 202-564-2496
Date Made Active in Reports: 02/03/2017	Last EDR Contact: 09/26/2017
Number of Days to Update: 100	Next Scheduled EDR Contact: 01/08/2018
	Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/27/2018	Source: Department of Labor, Mine Safety and Health Administration
Date Data Arrived at EDR: 02/27/2019	Telephone: 303-231-5959
Date Made Active in Reports: 04/01/2019	Last EDR Contact: 05/29/2019
Number of Days to Update: 33	Next Scheduled EDR Contact: 09/09/2019
	Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005	Source: USGS
Date Data Arrived at EDR: 02/29/2008	Telephone: 703-648-7709
Date Made Active in Reports: 04/18/2008	Last EDR Contact: 05/31/2019
Number of Days to Update: 49	Next Scheduled EDR Contact: 09/09/2019
	Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011	Source: USGS
Date Data Arrived at EDR: 06/08/2011	Telephone: 703-648-7709
Date Made Active in Reports: 09/13/2011	Last EDR Contact: 05/31/2019
Number of Days to Update: 97	Next Scheduled EDR Contact: 09/09/2019
	Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/27/2019	Source: Department of Interior
Date Data Arrived at EDR: 03/28/2019	Telephone: 202-208-2609
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 06/10/2019
Number of Days to Update: 34	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 10

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 06/05/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/24/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/07/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/21/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 39

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/21/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Quarterly

AIRS: Current Emission Inventory Data

The database lists by company, along with their actual emissions, the TNRCC air accounts that emit EPA criteria pollutants.

Date of Government Version: 01/16/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/25/2019
Number of Days to Update: 66

Source: Texas Commission on Environmental Quality
Telephone: N/A
Last EDR Contact: 06/10/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

APAR: Affected Property Assessment Report Site Listing
Listing of Sites That Have Received an APAR (Affected Property Assessment Report)

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/25/2019
Number of Days to Update: 73

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5872
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

ASBESTOS: Asbestos Notification Listing
A listing of asbestos notification site locations.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/11/2019
Number of Days to Update: 35

Source: Department of State Health Services
Telephone: 512-834-6787
Last EDR Contact: 05/15/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Sites
A listing of facilities that use surface impoundments or landfills to dispose of coal ash.

Date of Government Version: 05/02/2018
Date Data Arrived at EDR: 05/07/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 31

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6624
Last EDR Contact: 04/29/2019
Next Scheduled EDR Contact: 08/12/2019
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Registration Database Listing
A listing of drycleaning facilities.

Date of Government Version: 02/01/2019
Date Data Arrived at EDR: 02/27/2019
Date Made Active in Reports: 04/11/2019
Number of Days to Update: 43

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 05/30/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

ED AQUIF: Edwards Aquifer Permits
A listing of permits in the Edwards Aquifer Protection Program database. The information provided is for the counties located in the Austin Region (Hays, Travis, and Williamson counties).

Date of Government Version: 01/25/2019
Date Data Arrived at EDR: 01/25/2019
Date Made Active in Reports: 03/26/2019
Number of Days to Update: 60

Source: Texas Commission on Environmental Quality, Austin Region
Telephone: 512-339-2929
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

ENFORCEMENT: Notice of Violations Listing
A listing of permit violations.

Date of Government Version: 01/25/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/26/2019
Number of Days to Update: 56

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6012
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

Financial Assurance 1: Financial Assurance Information Listing
Financial assurance information.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/26/2019
Number of Days to Update: 75

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6239
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

Financial Assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/12/2019
Number of Days to Update: 16

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0986
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

GCC: Groundwater Contamination Cases

Texas Water Code, Section 26.406 requires the annual report to describe the current status of groundwater monitoring activities conducted or required by each agency at regulated facilities or associated with regulated activities. The report is required to contain a description of each case of groundwater contamination documented during the previous calendar year. Also to be included, is a description of each case of contamination documented during previous periods for which voluntary clean up action was incomplete at the time the preceding report was issued. The report is also required to indicate the status of enforcement action for each listed case.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 08/31/2018
Date Made Active in Reports: 09/26/2018
Number of Days to Update: 26

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5690
Last EDR Contact: 05/31/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Annually

IOP: Innocent Owner/Operator Program

Contains information on all sites that are in the IOP. An IOP is an innocent owner or operator whose property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination.

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/21/2019
Number of Days to Update: 14

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5894
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

LEAD: Lead Inspection Listing

Lead inspection sites

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/29/2019
Number of Days to Update: 35

Source: Department of State Health Services
Telephone: 512-834-6600
Last EDR Contact: 05/15/2019
Next Scheduled EDR Contact: 09/02/2019
Data Release Frequency: Varies

Ind. Haz Waste: Industrial & Hazardous Waste Database

Summary reports reported by waste handlers, generators and shippers in Texas.

Date of Government Version: 01/04/2019
Date Data Arrived at EDR: 01/16/2019
Date Made Active in Reports: 03/26/2019
Number of Days to Update: 69

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0985
Last EDR Contact: 04/17/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

MSD: Municipal Settings Designations Database

An MSD is an official state designation given to property within a municipality or its extraterritorial jurisdiction that certifies that designated groundwater at the property is not use as potable water, and is prohibited from future use as potatable water because that groundwater is contaminated in excess of the applicable potable-water protective concentration level.

Date of Government Version: 01/18/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 01/23/2019	Telephone: 512-239-4982
Date Made Active in Reports: 03/29/2019	Last EDR Contact: 04/29/2019
Number of Days to Update: 65	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Varies

NPDES: NPDES Facility List

Permitted wastewater outfalls.

Date of Government Version: 02/12/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 02/14/2019	Telephone: 512-239-4591
Date Made Active in Reports: 03/29/2019	Last EDR Contact: 05/15/2019
Number of Days to Update: 43	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: Varies

RWS: Radioactive Waste Sites

Sites in the State of Texas that have been designated as Radioactive Waste sites.

Date of Government Version: 07/24/2006	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 12/14/2006	Telephone: 512-239-0859
Date Made Active in Reports: 01/23/2007	Last EDR Contact: 05/13/2019
Number of Days to Update: 40	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: Semi-Annually

TIER 2: Tier 2 Chemical Inventory Reports

A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2012	Source: Department of State Health Services
Date Data Arrived at EDR: 06/07/2013	Telephone: 512-834-6603
Date Made Active in Reports: 07/22/2013	Last EDR Contact: 05/15/2019
Number of Days to Update: 45	Next Scheduled EDR Contact: 09/02/2019
	Data Release Frequency: Annually

UIC: Underground Injection Wells Database Listing

Class V injection wells regulated by the TCEQ. Class V wells are used to inject non-hazardous fluids underground. Most Class V wells are used to dispose of wastes into or above underground sources of drinking water and can pose a threat to ground water quality, if not managed properly.

Date of Government Version: 01/15/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 01/17/2019	Telephone: 512-239-6627
Date Made Active in Reports: 03/29/2019	Last EDR Contact: 04/05/2019
Number of Days to Update: 71	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Varies

IHW CORR ACTION: IHW CORR ACTION

Industrial hazardous waste facilities with corrective actions.

Date of Government Version: 01/14/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 01/17/2019	Telephone: 512-239-5872
Date Made Active in Reports: 03/26/2019	Last EDR Contact: 04/01/2019
Number of Days to Update: 68	Next Scheduled EDR Contact: 07/15/2019
	Data Release Frequency: Varies

PST STAGE 2: PST Stage 2

State II Vapor Recovery. Decommissioning of Stage II Rule a?? Gasoline dispensing facilities (GDFs) may begin the process of removing Stage II equipment on May 16, 2014 providing that all other requirements for decommissioning have been met, including appropriate notification.

Date of Government Version: 01/17/2019	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 01/23/2019	Telephone: 512-239-2160
Date Made Active in Reports: 04/11/2019	Last EDR Contact: 03/25/2019
Number of Days to Update: 78	Next Scheduled EDR Contact: 07/08/2019
	Data Release Frequency: Varies

COMP HIST: Compliance History Listing

A listing of compliance histories of regulated entities

Date of Government Version: 11/15/2018
Date Data Arrived at EDR: 11/29/2018
Date Made Active in Reports: 02/08/2019
Number of Days to Update: 71

Source: Txas Commission on Environmental Quality
Telephone: 512-239-3282
Last EDR Contact: 05/31/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Texas Commission of Environmental Quality in Texas formerly known as Texas Natural Resources Conservation Commission which changed in 2002.

Date of Government Version: N/A	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 12/26/2013	Last EDR Contact: 06/01/2012
Number of Days to Update: 178	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Texas Commission of Environmental Quality in Texas formerly known as Texas Natural Resources Conservation Commission which changed in 2002.

Date of Government Version: N/A	Source: Texas Commission on Environmental Quality
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 01/13/2014	Last EDR Contact: 06/01/2012
Number of Days to Update: 196	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

COUNTY RECORDS

TRAVIS COUNTY:

HIST UST AUSTIN: Historic Tank Records

A listing of historic records from the City of Austin.

Date of Government Version: 06/25/2012	Source: Department of Planning & Development Review
Date Data Arrived at EDR: 06/29/2012	Telephone: 512-974-2715
Date Made Active in Reports: 08/23/2012	Last EDR Contact: 06/03/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 09/16/2019
	Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/11/2019	Source: Department of Energy & Environmental Protection
Date Data Arrived at EDR: 02/12/2019	Telephone: 860-424-3375
Date Made Active in Reports: 03/04/2019	Last EDR Contact: 05/14/2019
Number of Days to Update: 20	Next Scheduled EDR Contact: 08/26/2019
	Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 04/10/2019	Telephone: N/A
Date Made Active in Reports: 05/16/2019	Last EDR Contact: 04/10/2019
Number of Days to Update: 36	Next Scheduled EDR Contact: 07/22/2019
	Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 01/30/2019	Telephone: 518-402-8651
Date Made Active in Reports: 02/14/2019	Last EDR Contact: 05/01/2019
Number of Days to Update: 15	Next Scheduled EDR Contact: 08/12/2019
	Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017	Source: Department of Environmental Protection
Date Data Arrived at EDR: 10/23/2018	Telephone: 717-783-8990
Date Made Active in Reports: 11/27/2018	Last EDR Contact: 04/15/2019
Number of Days to Update: 35	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017	Source: Department of Environmental Management
Date Data Arrived at EDR: 02/23/2018	Telephone: 401-222-2797
Date Made Active in Reports: 04/09/2018	Last EDR Contact: 05/17/2019
Number of Days to Update: 45	Next Scheduled EDR Contact: 09/02/2019
	Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data
Hazardous waste manifest information.

Date of Government Version: 01/16/2019	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 01/17/2019	Telephone: 802-241-3443
Date Made Active in Reports: 02/19/2019	Last EDR Contact: 04/15/2019
Number of Days to Update: 33	Next Scheduled EDR Contact: 07/29/2019
	Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017	Source: Department of Natural Resources
Date Data Arrived at EDR: 06/15/2018	Telephone: N/A
Date Made Active in Reports: 07/09/2018	Last EDR Contact: 06/10/2019
Number of Days to Update: 24	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association’s annual survey of hospitals.
Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.
Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics’ primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics’ primary database on private school locations in the United States.
Daycare Centers: Child Care Facility List
Source: Department of Protective & Regulatory Services
Telephone: 512-438-3269

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Texas General Land Office
Telephone: 512-463-0745

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

EL CAMPO ARMORY
1552 COUNTY ROAD 406
EL CAMPO, TX 77437

TARGET PROPERTY COORDINATES

Latitude (North):	29.170846 - 29˚ 10’ 15.05’’
Longitude (West):	96.253462 - 96˚ 15’ 12.46’’
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	767130.9
UTM Y (Meters):	3229859.8
Elevation:	100 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5937211 EL CAMPO, TX
Version Date:	2013
East Map:	5937295 PIERCE, TX
Version Date:	2013

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

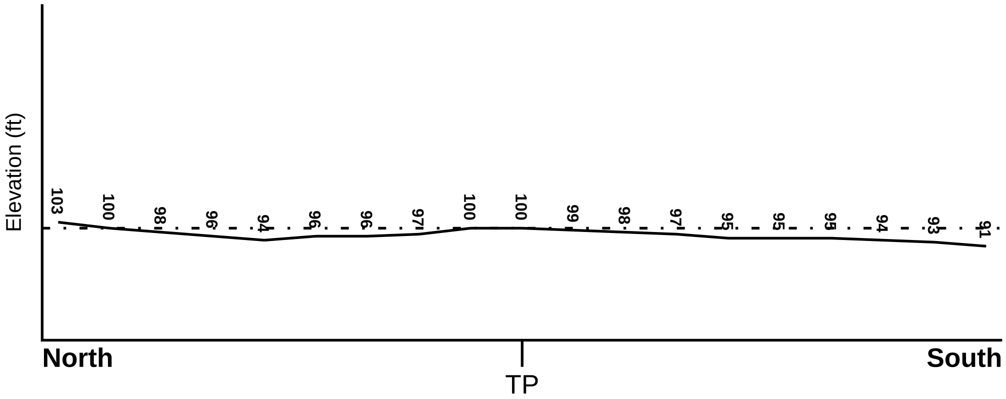
TOPOGRAPHIC INFORMATION

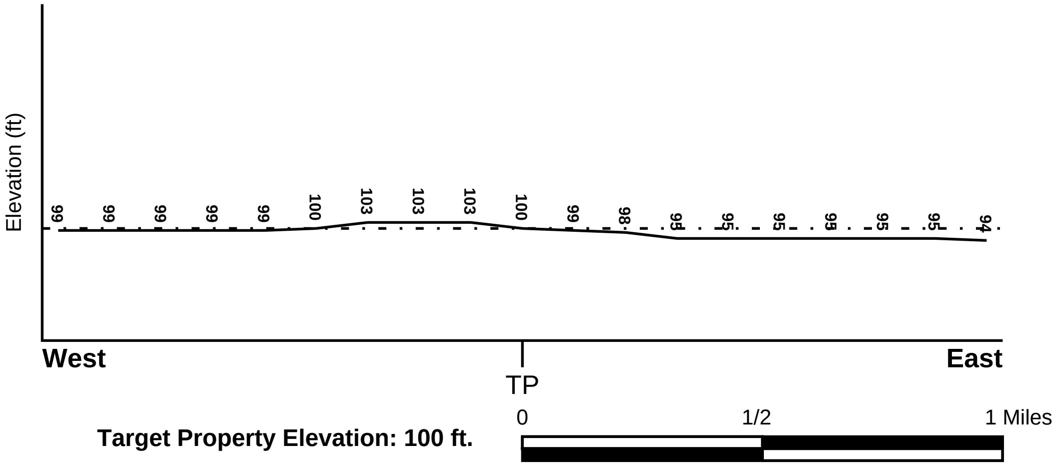
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 100 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
4806520195C	FEMA Q3 Flood data

Additional Panels in search area:	FEMA Source Type
4806530005C	FEMA Q3 Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
EL CAMPO	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

---

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

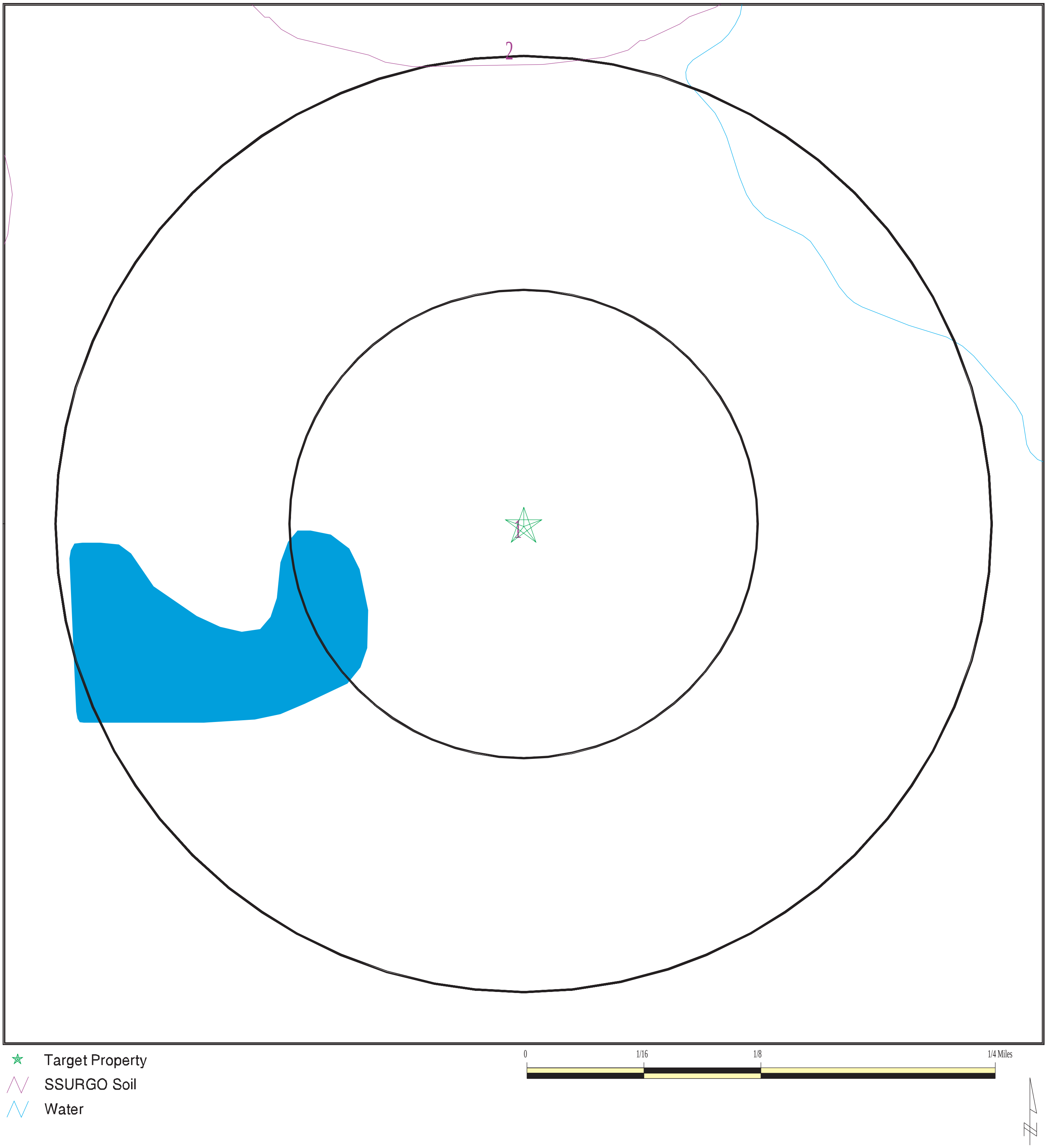
Era:	Cenozoic
System:	Quaternary
Series:	Pleistocene
Code:	Qp *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5685887.2s



SITE NAME:	El Campo Armory
ADDRESS:	1552 County Road 406 El Campo TX 77437
LAT/LONG:	29.170846 / 96.253462

CLIENT:	AECOM
CONTACT:	Hans Sund
INQUIRY #:	5685887.2s
DATE:	June 17, 2019 1:21 pm

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture’s (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name:	Edna
Soil Surface Texture:	fine sandy loam
Hydrologic Group:	Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.
Soil Drainage Class:	Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel:	High
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 0 inches

Soil Layer Information

	Boundary			**Classification**		**Saturated hydraulic conductivity micro m/sec**	**Soil Reaction (pH)**
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		
1	0 inches	9 inches	fine sandy loam	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
2	9 inches	38 inches	clay	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
3	38 inches	50 inches	clay	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
4	50 inches	64 inches	clay loam	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name:	Bernard
Soil Surface Texture:	clay loam
Hydrologic Group:	Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.
Soil Drainage Class:	Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 31 inches

Soil Layer Information

	Boundary			**Classification**			
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**	**Saturated hydraulic conductivity micro m/sec**	**Soil Reaction (pH)**
1	0 inches	7 inches	clay loam	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
2	7 inches	48 inches	clay	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
3	48 inches	59 inches	clay loam	Not reported	Not reported	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	TXMON5000017469	0 - 1/8 Mile North
A2	TXPLU5000104399	0 - 1/8 Mile North
A3	TXPLU5000104400	0 - 1/8 Mile North
A4	TXMON5000010038	0 - 1/8 Mile North
A5	TXMON5000017464	0 - 1/8 Mile North
A6	TXMON5000017466	0 - 1/8 Mile North
A7	TXPLU5000105389	0 - 1/8 Mile North
A8	TXPLU5000105390	0 - 1/8 Mile North
A9	TXPLU5000105391	0 - 1/8 Mile North
A10	TXPLU5000104401	0 - 1/8 Mile North
A11	TXPLU5000104402	0 - 1/8 Mile North
A12	TXPLU5000104403	0 - 1/8 Mile North
A13	TXMON5000010037	0 - 1/8 Mile North
A14	TXMON5000010034	0 - 1/8 Mile North
A15	TXMON5000010035	0 - 1/8 Mile North
A16	TXMON5000010036	0 - 1/8 Mile North
A17	TXDOL2000164005	0 - 1/8 Mile North
A18	TXDOL2000164004	0 - 1/8 Mile North
A19	TXDOL2000164003	0 - 1/8 Mile North
A20	TXDOL2000164021	0 - 1/8 Mile North
A21	TXDOL2000164024	0 - 1/8 Mile North
A22	TXDOL2000164025	0 - 1/8 Mile North
A23	TXDOL2000164022	0 - 1/8 Mile North
A24	TXDOL2000164023	0 - 1/8 Mile North
25	TXWDB7000112779	1/8 - 1/4 Mile SSE
26	TXMON5000302555	1/8 - 1/4 Mile WNW
27	TXMON5000437256	1/4 - 1/2 Mile NE
B28	TXMON5000083472	1/4 - 1/2 Mile NW
B29	TXDOL2000163649	1/4 - 1/2 Mile NW
C30	TXWDB7000112778	1/4 - 1/2 Mile West
D31	TXDOL2000082546	1/4 - 1/2 Mile SE
D32	TXDOL2000163512	1/4 - 1/2 Mile SE
C33	TXWDB7000112782	1/4 - 1/2 Mile West
D34	TXMON5000126458	1/4 - 1/2 Mile SE
D35	TXMON5000128398	1/4 - 1/2 Mile SE
36	TXWDB7000112777	1/4 - 1/2 Mile WNW
E37	TXMON5000036027	1/4 - 1/2 Mile WSW
E38	TXDOL2000163787	1/4 - 1/2 Mile WSW
F39	TXMON5000134742	1/4 - 1/2 Mile SW
F40	TXDOL2000163479	1/4 - 1/2 Mile SW
E41	TXMON5000123920	1/4 - 1/2 Mile SW
E42	TXMON5000125690	1/4 - 1/2 Mile SW
E43	TXDOL2000163526	1/4 - 1/2 Mile SW
E44	TXDOL2000163528	1/4 - 1/2 Mile SW
45	TXMON5000292765	1/4 - 1/2 Mile NW
46	TXMON5000283957	1/4 - 1/2 Mile SW
G47	TXMON5000115487	1/2 - 1 Mile WNW
G48	TXDOL2000163551	1/2 - 1 Mile WNW
H49	TXMON5000406251	1/2 - 1 Mile WSW
I50	TXWDB7000112786	1/2 - 1 Mile WSW
H51	TXMON5000036032	1/2 - 1 Mile WSW
H52	TXDOL2000163869	1/2 - 1 Mile WSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

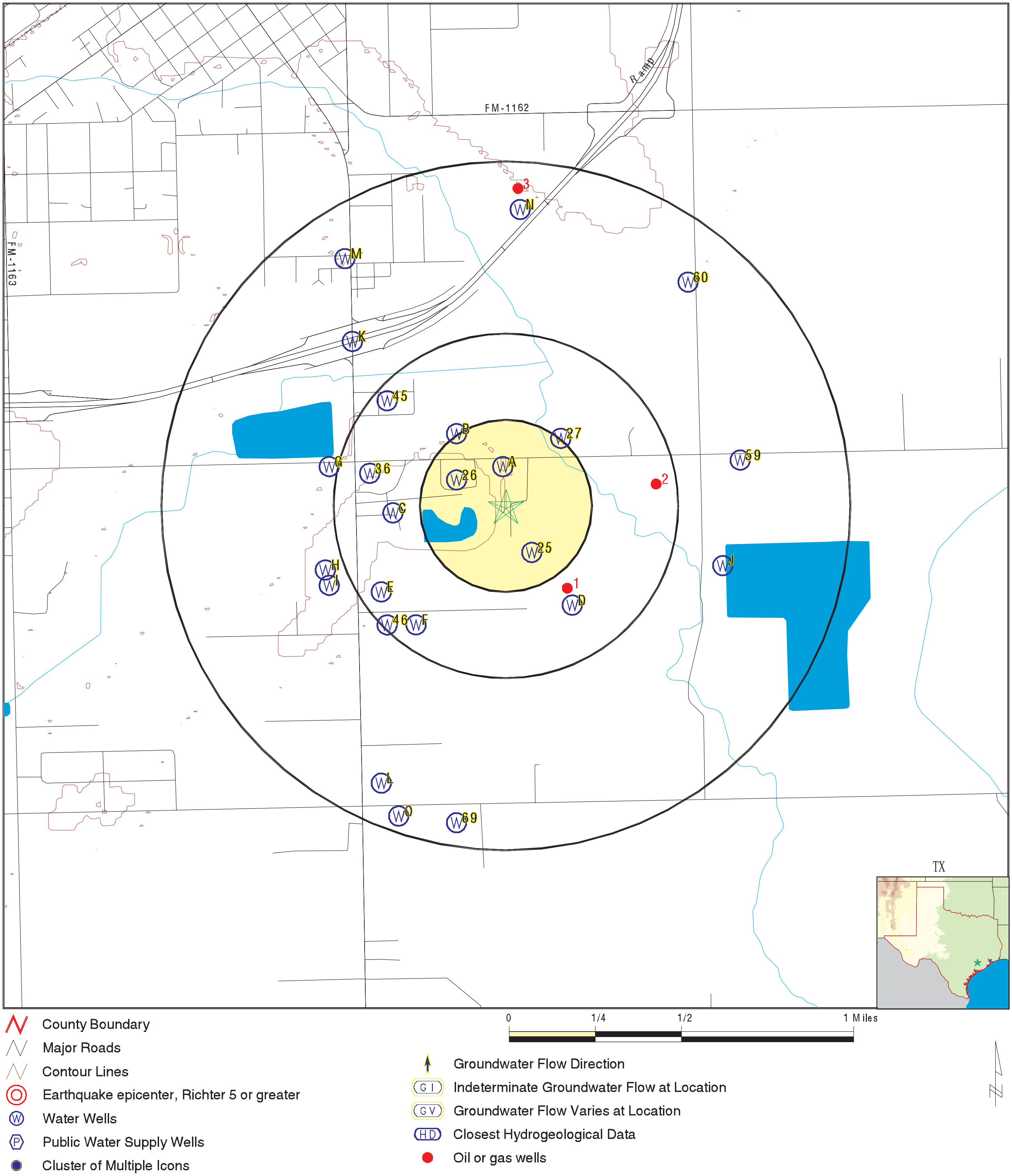
MAP ID	WELL ID	LOCATION FROM TP
I53	TXWDB7000112785	1/2 - 1 Mile WSW
J54	TXWDB7000112859	1/2 - 1 Mile ESE
K55	TXPLU5000000388	1/2 - 1 Mile NW
K56	TXPLU5000000389	1/2 - 1 Mile NW
K57	TXPLU5000000390	1/2 - 1 Mile NW
J58	TXMON5000368483	1/2 - 1 Mile ESE
59	TXMON5000214409	1/2 - 1 Mile East
60	TXWDB7000112858	1/2 - 1 Mile NE
L61	TXMON5000235154	1/2 - 1 Mile SSW
M62	TXMON5000423744	1/2 - 1 Mile NNW
M63	TXMON5000423735	1/2 - 1 Mile NNW
M64	TXMON5000423749	1/2 - 1 Mile NNW
M65	TXMON5000423747	1/2 - 1 Mile NNW
N66	TXMON5000051684	1/2 - 1 Mile North
N67	TXDOL2000163796	1/2 - 1 Mile North
L68	TXMON5000191196	1/2 - 1 Mile SSW
69	TXMON5000311856	1/2 - 1 Mile South
O70	TXDOL2000163753	1/2 - 1 Mile SSW
O71	TXMON5000064170	1/2 - 1 Mile SSW

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	TXOG70000225984	1/4 - 1/2 Mile SE
2	TXOG70000224560	1/4 - 1/2 Mile East
3	TXOG70000225899	1/2 - 1 Mile North

PHYSICAL SETTING SOURCE MAP - 5685887.2s



SITE NAME: El Campo Armory
ADDRESS: 1552 County Road 406
El Campo TX 77437
LAT/LONG: 29.170846 / 96.253462

CLIENT: AECOM
CONTACT: Hans Sund
INQUIRY #: 5685887.2s
DATE: June 17, 2019 1:21 pm

Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXMON5000017469**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	18204	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	8
Injurious Water Quality:	no	Plugging Rpt #:	107312

Submitted Date:	2003-03-25	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-7	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2003-03-19	Drill End Date:	2003-03-19
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	Not Reported
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	107312
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	8

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Other - Pluuged

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 8 Bentonite 0.4		

Details Reports For:	Well Strata	Migrated Strata Depth:	Not Reported
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	None		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0 to 1 Light brown, coarse-grained sand w/gravel		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported

Lithology: 1 to 4 Dark gray and light brown sandy clay

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	4 to 8 Grayish brown to orange-brown sandy clay; moist		

A2
North
0 - 1/8 Mile
Higher

TX WELLS **TXPLU5000104399**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	106319	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	8	Well Report #:	10592

Details Reports For:	Plug Data	Submitted Date:	2002-08-21
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-1
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2002-08-20
Plug Method:	Unknown	Plug Date:	2002-08-20
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Not Reported
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	8

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 8 Bentonite 0.3
Amount:	Not Reported	Unit:	Not Reported

A3
North
0 - 1/8 Mile
Higher

TX WELLS **TXPLU5000104400**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	106320	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	4	Well Report #:	10593

Details Reports For:	Plug Data	Submitted Date:	2002-08-21
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-2
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2002-08-20
Plug Method:	Unknown	Plug Date:	2002-08-20
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		

Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Not Reported
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 4 Bentonite 0.15
Amount:	Not Reported	Unit:	Not Reported

A4
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000010038**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	10596	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	4
Injurious Water Quality:	no	Plugging Rpt #:	106323

Submitted Date:	2002-08-21	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-5 and -6	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2002-08-20	Drill End Date:	2002-08-20
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	two borings
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	106323
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Unknown

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 4 Bentonite 0.3		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	4
Lithology:	Dark gray clay; trace sand		

A5
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000017464**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	18199	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	8
Injurious Water Quality:	no	Plugging Rpt #:	107310

Submitted Date:	2003-03-25	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-1A	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2003-03-19	Drill End Date:	2003-03-19
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	Not Reported
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	107310
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	8

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Other - Pluuged

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 8 Bentonite 0.4		

Details Reports For:	Well Strata	Migrated Strata Depth:	Not Reported
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	None		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	.5
Lithology:	Void space		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	.5	Bottom Depth:	4
Lithology:	Dark oliver gray sandy clay; pea gravel content decreases with depth; occasional rust streaks along root casts		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	4	Bottom Depth:	8
Lithology:	Light gray to reddish brown sandy clay; moist		

A6
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000017466**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	18201	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	4
Injurious Water Quality:	no	Plugging Rpt #:	107311

Submitted Date:	2003-03-25	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-2A	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2003-03-19	Drill End Date:	2003-03-19
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	Not Reported
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	107311
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Other - Pluuged

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 4 Bentonite 0.2		

Details Reports For:	Well Strata	Migrated Strata Depth:	Not Reported
Top Depth:	Not Reported	Bottom Depth:	Not Reported

Water Type:	None

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0 to 0.5 Void space		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0.5 to 1 Tan, coarse-grained sand and gravel; moist		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	1 to 4 Dark gray sandy clay; dry		

A7
North
0 - 1/8 Mile
Higher

TX WELLS **TXPLU5000105389**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	107310	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	8	Well Report #:	18199

Details Reports For:	Plug Data	Submitted Date:	2003-03-25
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-1A
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2003-03-19
Plug Method:	Unknown	Plug Date:	2003-03-19
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Not Reported
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	8

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 8 Bentonite 0.4
Amount:	Not Reported	Unit:	Not Reported

A8
North
0 - 1/8 Mile
Higher

TX WELLS **TXPLU5000105390**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	107311	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	4	Well Report #:	18201

Details Reports For:	Plug Data	Submitted Date:	2003-03-25
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-2A
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2003-03-19
Plug Method:	Unknown	Plug Date:	2003-03-19
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Not Reported
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 4 Bentonite 0.2
Amount:	Not Reported	Unit:	Not Reported

A9
North
0 - 1/8 Mile
Higher

TX WELLS **TXPLU5000105391**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	107312	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	8	Well Report #:	18204

Details Reports For:	Plug Data	Submitted Date:	2003-03-25
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-7
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2003-03-19
Plug Method:	Unknown	Plug Date:	2003-03-19
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Not Reported
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	8

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 8 Bentonite 0.4
Amount:	Not Reported	Unit:	Not Reported

Map ID Direction Distance Elevation	Database	EDR ID Number
A10 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXPLU5000104401**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	106321	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	4	Well Report #:	10594

Details Reports For:	Plug Data	Submitted Date:	2002-08-21
Owner Name:	Texas Army National Guard	Well #:	EC-Bkgd
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2002-08-20
Plug Method:	Unknown	Plug Date:	2002-08-20
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Not Reported
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 4 Bentonite 0.15
Amount:	Not Reported	Unit:	Not Reported

A11 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXPLU5000104402**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	106322	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	4	Well Report #:	10595

Details Reports For:	Plug Data	Submitted Date:	2002-08-21
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-3 and -4
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2002-08-20
Plug Method:	Unknown	Plug Date:	2002-08-20
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Two borings
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 4 Bentonite 0.3
Amount:	Not Reported	Unit:	Not Reported

A12
North
0 - 1/8 Mile
Higher

TX WELLS **TXPLU5000104403**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	106323	Well Type:	Environmental Soil Boring
Borehole Depth (ft):	4	Well Report #:	10596

Details Reports For:	Plug Data	Submitted Date:	2002-08-21
Owner Name:	Texas Army National Guard	Well #:	EC-BSS-5 and -6
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	MagnaCore Drilling & Environmental Services		
Original Driller:	Cedric Cascio	Original License #:	54735
Original Well Use:	Environmental Soil Boring	Original Drill Date:	2002-08-20
Plug Method:	Unknown	Plug Date:	2002-08-20
Variance #:	Not Reported		
Company Name:	MagnaCore Drilling & Environmental Services		
Plugger Name:	Cedric Cascio	Driller License:	54735
Apprentice Reg #:	Not Reported	Comments:	Two borings
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Plug Range	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Plug Seal:	- - 0 4 Bentonite 0.3
Amount:	Not Reported	Unit:	Not Reported

A13
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000010037**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	10595	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	4
Injurious Water Quality:	no	Plugging Rpt #:	106322

Submitted Date:	2002-08-21	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-3 and -4	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2002-08-20	Drill End Date:	2002-08-20
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No

Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	two borings
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	106322
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Unknown

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 4 Bentonite 0.3		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	4
Lithology:	Dark gray clay; trace sand		

A14
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000010034**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	10592	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	8
Injurious Water Quality:	no	Plugging Rpt #:	106319

Submitted Date:	2002-08-21	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-1	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2002-08-20	Drill End Date:	2002-08-20
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	Not Reported
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	106319

Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	8

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Unknown

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 8 Bentonite 0.3		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0 to 1 Gravel		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	1 to 4 Olive green clay; black staining from 2-3.5		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	4 to 8 Light brown sandy clay to reddish bron clay w/marl		

A15
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000010035**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	10593	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	4
Injurious Water Quality:	no	Plugging Rpt #:	106320

Submitted Date:	2002-08-21	Owner Name:	Texas Army National Guard
Well #:	EC-BSS-2	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2002-08-20	Drill End Date:	2002-08-20
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		

Driller Name:	Cedric Cascio	Comments:	Not Reported
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	106320
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Unknown

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 4 Bentonite 0.15		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	1
Lithology:	Gravel		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	1	Bottom Depth:	4
Lithology:	Dark gray clay; trace sand		

A16
North
0 - 1/8 Mile
Higher

TX WELLS **TXMON5000010036**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	10594	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	4
Injurious Water Quality:	no	Plugging Rpt #:	106321

Submitted Date:	2002-08-21	Owner Name:	Texas Army National Guard
Well #:	EC-Bkgd	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2002-08-20	Drill End Date:	2002-08-20
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Unknown
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	MagnaCore Drilling & Environmental Services		
Driller Name:	Cedric Cascio	Comments:	Not Reported
Plugged within 48 hrs:	Yes	Plugging Rpt Tracking #:	106321
Driller License #:	54735	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	2
Top Depth:	0	Bottom Depth:	4

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Unknown

Details Reports For:	Well Plugback	Top Depth:	Not Reported
Bottom Depth:	Not Reported	Migrated Sort #:	1
Plugback:	- - 0 4 Bentonite 0.15		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	.5
Lithology:	Brown sandy clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	.5	Bottom Depth:	4
Lithology:	Dark gray clay; trace sand		

A17
North
0 - 1/8 Mile
Higher

TX WELLS **TXDOL2000164005**

Database:	Well Report Database	Fid:	164004
Rec id:	163990	Edr site i:	18199
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-1A
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 8 ft
Dmethod:	Not Reported	Bcompletio:	Not Reported
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	None	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000164005

Map ID Direction Distance Elevation	Database	EDR ID Number
A18 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXDOL2000164004**

Database:	Well Report Database	Fid:	164003
Rec id:	163989	Edr site i:	18201
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-2A
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 4 ft
Dmethod:	Not Reported	Bcompletio:	Not Reported
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	None	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000164004

A19 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXDOL2000164003**

Database:	Well Report Database	Fid:	164002
Rec id:	163988	Edr site i:	18204
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-7
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 8 ft
Dmethod:	Not Reported	Bcompletio:	Not Reported
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported

Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	None	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000164003

A20
North
0 - 1/8 Mile
Higher

TX WELLS TXDOL2000164021

Database:	Well Report Database	Fid:	164020
Rec id:	164006	Edr site i:	10596
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-5 and -6
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 4 ft
Dmethod:	Not Reported	Bcompletio:	No Data
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	two borings	Site id:	TXDOL2000164021

A21
North
0 - 1/8 Mile
Higher

TX WELLS TXDOL2000164024

Database:	Well Report Database	Fid:	164023
Rec id:	164009	Edr site i:	10593
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-2
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported

Completedd:	Not Reported	Diameter:	2 in From Surface To 4 ft
Dmethod:	Not Reported	Bcompletio:	No Data
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000164024

A22
North
0 - 1/8 Mile
Higher

TX WELLS **TXDOL2000164025**

Database:	Well Report Database	Fid:	164024
Rec id:	164010	Edr site i:	10592
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-1
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 8 ft
Dmethod:	Not Reported	Bcompletio:	No Data
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000164025

Map ID Direction Distance Elevation	Database	EDR ID Number
A23 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXDOL2000164022**

Database:	Well Report Database	Fid:	164021
Rec id:	164007	Edr site i:	10595
Owner:	Texas Army National Guard	Ownerwell:	EC-BSS-3 and -4
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 4 ft
Dmethod:	Not Reported	Bcompletio:	No Data
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	two borings	Site id:	TXDOL2000164022

A24 **North** **0 - 1/8 Mile** **Higher**	**TX WELLS**	**TXDOL2000164023**

Database:	Well Report Database	Fid:	164022
Rec id:	164008	Edr site i:	10594
Owner:	Texas Army National Guard	Ownerwell:	EC-Bkgd
Address:	2210 West 35th Street, Austin , TX 78763		
Grid:	66-54-6	Waddress:	801 Armory Road, El Campo , TX 77437
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 13 W	Elevation:	No Data
Gpsused:	Magellan 310	Typeofwork:	New Well
Propuse:	Environmental Soil Boring	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	2 in From Surface To 4 ft
Dmethod:	Not Reported	Bcompletio:	No Data
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	No Data
Staticleve:	No Data	Flow:	No Data
Packers:	No Data	Cementinwe:	Not Reported

Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	No Data	Yield:	Not Reported
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	MagnaCore Drilling & Environmental Services		
Companyadd:	381 Casa Linda Plaza, #202	Ccitystate:	Dallas , TX 75218
Licensenum:	54735	Wsignature:	Cedric Cascio
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000164023

25
SSE
1/8 - 1/4 Mile
Higher

TX WELLS **TXWDB7000112779**

Database:	Groundwater Database	Well #:	6654608
Primary Water Use:	Irrigation	Elevation:	99
Well Depth:	265	Observation Type:	None
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

26
WNW
1/8 - 1/4 Mile
Higher

TX WELLS **TXMON5000302555**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	306756	Well Type:	Replacement
Proposed Use:	Domestic	Borehole Depth (ft):	80
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2012-12-17	Owner Name:	John Banker
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	Replacement
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2012-11-13	Drill End Date:	2012-11-13
Seal Method:	Other - Presure Grouted Trimmie Pipe		
Seal Method Desc:	Presure Grouted Trimmie Pipe		
Dist to Septic/Other Contam:	100+	Distance to Septic Tank:	Not Reported
Dist to Property Line:	30	Distance Verify Meth:	Tape
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	45.00	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Cady’s Water Wells
Driller Name:	Lloyd H Cady	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	55024	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	8
Top Depth:	0	Bottom Depth:	80

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Filter Packed

Details Reports For:	Well Filter	Filter Material:	Gravel
Top Depth:	55	Bottom Depth:	80
Size:	20-40		

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	55	Annular Seal:	3 Benseal
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	2	Annular Seal:	2 Cement
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	35
Measurement Date:	2012-11-13	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	60	Drawdown:	Not Reported
Hours:	3		

Details Reports For:	Well Strata	Migrated Strata Depth:	65-79
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Good		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	2
Lithology:	Topsoil		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	2	Bottom Depth:	20
Lithology:	Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	20	Bottom Depth:	45
Lithology:	sand		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	45	Bottom Depth:	65
Lithology:	Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	65	Bottom Depth:	79
Lithology:	Sand		

Details Reports For:	Well Casing	Migrated Sort #:	1

Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 New Pvc +2-65 Sch 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 New Pvc 65-80 .012	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

27
NE
1/4 - 1/2 Mile
Lower

TX WELLS **TXMON5000437256**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	446667	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	112
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

B28
NW
1/4 - 1/2 Mile
Higher

TX WELLS **TXMON5000083472**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	84925	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	125
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2006-06-12	Owner Name:	James L. Perry II
Well #:	1	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2006-06-06	Drill End Date:	2006-06-06
Seal Method:	Slurry	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Other	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Friedel Drilling Company
Driller Name:	Edmund J Friedel	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	1573	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	7.875
Top Depth:	0	Bottom Depth:	130

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Filter Packed

Details Reports For:	Well Filter	Filter Material:	Gravel
Top Depth:	85	Bottom Depth:	130
Size:	Not Reported		

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	85	Annular Seal:	Not Reported
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	48
Measurement Date:	2006-06-06	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	35	Drawdown:	10
Hours:	2		

Details Reports For:	Well Strata	Migrated Strata Depth:	10
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Good		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	3 Top Soil		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	3 30 Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	30 40 Sand, Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	40 45 Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	5
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	45 55 Sand, Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	6
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	55 65 Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	7

Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	65 66 Sandstone		

Details Reports For:	Well Lithology	Migrated Sort #:	8
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	66 70 Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	9
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	70 85 Sand, Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	10
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	85 95 Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	11
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	95 105 Sand		

Details Reports For:	Well Lithology	Migrated Sort #:	12
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	105 115 Sand, Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	13
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	115 125 Clay		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 N Plastic Pipe 3 95 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 N Perforated Pipe 95 105 .048		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

B29
NW
1/4 - 1/2 Mile
Higher

TX WELLS **TXDOL2000163649**

Database:	Well Report Database	Fid:	163648
Rec id:	163647	Edr site i:	84925
Owner:	James L. Perry II	Ownerwell:	1
Address:	1405 CR 406, El Campo , TX 77437	Grid:	66-54-6
Waddress:	CR 406, El Campo , TX 77437	Lat:	29 10 26 N
County:	Wharton	Long:	096 15 21 W

Elevation:	No Data	Gpsused:	Garmin
Typeofwork:	New Well	Propuse:	Domestic
Sdate:	Not Reported	Completedd:	Not Reported
Diameter:	7 7/8 in From Surface To 125 ft	Dmethod:	Mud Rotary
Bcompletio:	Not Reported	Packedfrom:	125 ft to 85 ft
Packsize:	Not Reported		
Finterval:	From 85 ft to 0 ft with (No Data) (#sacks and material)		
Sinterval:	No Data	Tinterval:	No Data
Usedmethod:	Slurry	Cementedby:	Friedel Drilling Company
Contaminat:	No Data	Propertyli:	No Data
Verrimetho:	No Data	Varriance:	No Data
Surface:	Surface Sleeve Installed	Staticleve:	48 ft. below land surface on 6/6/2006
Flow:	No Data	Packers:	No Data
Cementinwe:	No Data	Typepump:	Other: (No Data)
Pumpbowl:	(No Data) ft	Welltests:	Jetted
Yield:	35 GPM with 10 ft drawdown after 2 hours		
Watertype:	Good	Stratadept:	10 ft.
Chemicalma:	No	Undesirabl:	No
Companynam:	Friedel Drilling Company	Companyadd:	555 City of Hochheim Rd
Ccitystate:	Yoakum , TX 77995	Licensenum:	1573
Wsignature:	Edmund J. Friedel	Dsignature:	Joe Flores
Regnum:	No Data	Comments:	no data
Site id:	TXDOL2000163649		

C30
West
1/4 - 1/2 Mile
Higher

TX WELLS **TXWDB7000112778**

Database:	Groundwater Database	Well #:	6654607
Primary Water Use:	Recreation	Elevation:	102
Well Depth:	114	Observation Type:	Miscellaneous Measurements
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

D31
SE
1/4 - 1/2 Mile
Lower

TX WELLS **TXDOL2000082546**

Database:	Well Report Database	Fid:	82545
Rec id:	82577	Edr site i:	130468
Owner:	Browning, Virgil	Ownerwell:	No Data
Address:	2798 FM 1833, Edna , TX 77957	Grid:	66-54-6
Waddress:	Edna , TX 77957	Lat:	29 10 00 N
County:	Jackson	Long:	096 15 01 W
Elevation:	No Data	Gpsused:	Magellan Explorist 200 GPS
Typeofwork:	New Well	Propuse:	Domestic
Sdate:	Not Reported	Completedd:	Not Reported
Diameter:	8 in From Surface To 100 ft	Dmethod:	Mud Rotary
Bcompletio:	Straight Wall	Packedfrom:	Not Reported
Packsize:	Not Reported	Finterval:	No Data
Sinterval:	No Data	Tinterval:	No Data
Usedmethod:	Not Reported	Cementedby:	Not Reported
Contaminat:	Not Reported	Propertyli:	Not Reported
Verrimetho:	Not Reported	Varriance:	Not Reported
Surface:	Alternative Procedure Used	Staticleve:	No Data
Flow:	No Data	Packers:	factory 3

Cementinwe:	No Data	Typepump:	No Data
Pumpbowl:	Not Reported	Welltests:	Jetted
Yield:	(No Data) GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	Joe Ferguson Water Well Drilling, Inc.		
Companyadd:	P. O. Box 1007	Ccitystate:	Edna , TX 77957
Licensenum:	1804	Wsignature:	Darrell W. Ferguson
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000082546

D32
SE
1/4 - 1/2 Mile
Lower

TX WELLS **TXDOL2000163512**

Database:	Well Report Database	Fid:	163511
Rec id:	163505	Edr site i:	128495
Owner:	Sellers, S. W.	Ownerwell:	No Data
Address:	2436 South State, El Campo , TX 77437		
Grid:	66-54-6	Waddress:	off Hwy. 71, El Campo , TX 77437
Lat:	29 10 00 N	County:	Wharton
Long:	096 15 01 W	Elevation:	No Data
Gpsused:	Magellan Explorist 200 GPS	Typeofwork:	New Well
Propuse:	Domestic	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	8 in From Surface To 120 ft
Dmethod:	Mud Rotary	Bcompletio:	Straight Wall
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	No Data	Sinterval:	No Data
Tinterval:	No Data	Usedmethod:	Not Reported
Cementedby:	Not Reported	Contaminat:	Not Reported
Propertyli:	Not Reported	Verrimetho:	Not Reported
Varriance:	Not Reported	Surface:	Alternative Procedure Used
Staticleve:	No Data	Flow:	No Data
Packers:	4 factory	Cementinwe:	No Data
Typepump:	No Data	Pumpbowl:	Not Reported
Welltests:	Jetted		
Yield:	(No Data) GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	Joe Ferguson Water Well Drilling, Inc.		
Companyadd:	P. O. Box 1007	Ccitystate:	Edna , TX 77957
Licensenum:	1804	Wsignature:	Darrell W. Ferguson
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000163512

C33
West
1/4 - 1/2 Mile
Higher

TX WELLS **TXWDB7000112782**

Database:	Groundwater Database	Well #:	6654611
Primary Water Use:	Plugged or Destroyed	Elevation:	102
Well Depth:	102	Observation Type:	Historical Observation Well
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

Map ID Direction Distance Elevation	Database	EDR ID Number
D34 **SE** **1/4 - 1/2 Mile** **Lower**	**TX WELLS**	**TXMON5000126458**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	128495	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	120
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2007-12-04	Owner Name:	Sellers, S. W.
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2007-09-19	Drill End Date:	2007-09-19
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	Joe Ferguson Water Well Drilling, Inc.		
Driller Name:	Darrell Wayne Ferguson	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	1804	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	8
Top Depth:	0	Bottom Depth:	120

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	4 factory	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	Not Reported	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0 to 41 surface soil		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	41 to 57 sand		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	57 to 70 clay		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	70 to 82 sand		

Details Reports For:	Well Lithology	Migrated Sort #:	5
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	82 to 88 clay		

Details Reports For:	Well Lithology	Migrated Sort #:	6
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	88 to 94 sand		

Details Reports For:	Well Lithology	Migrated Sort #:	7
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	94 t0 96 clay		

Details Reports For:	Well Lithology	Migrated Sort #:	8
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	96 to 120 coarse sand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" n pvc pipe 0 to 100	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" n commercial screen 100 to 120 .016		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

D35
SE
1/4 - 1/2 Mile
Lower

TX WELLS **TXMON5000128398**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	130468	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	100
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2007-12-28	Owner Name:	Browning, Virgil
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported

Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2007-09-20	Drill End Date:	2007-12-11
Seal Method:	Not Applicable	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	Joe Ferguson Water Well Drilling, Inc.		
Driller Name:	Darrell Wayne Ferguson	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	1804	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	8
Top Depth:	0	Bottom Depth:	100

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	factory 3	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	Not Reported	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0 to 34 surface soil		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	34 to 42 sand		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	42 ro 50 clay		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	50 to 100 coarse sand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" n pvc pipe 0 to 80	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported

Gauge: Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" n commercial screen 80 to 100 .016		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

36
WNW
1/4 - 1/2 Mile
Higher

TX WELLS **TXWDB7000112777**

Database:	Groundwater Database	Well #:	6654606
Primary Water Use:	Recreation	Elevation:	100
Well Depth:	112	Observation Type:	None
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

E37
WSW
1/4 - 1/2 Mile
Higher

TX WELLS **TXMON5000036027**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	37033	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	140
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2004-05-06	Owner Name:	KENNY CERNY
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2004-02-16	Drill End Date:	2004-02-17
Seal Method:	Other - HANDMIX	Seal Method Desc:	HANDMIX
Dist to Septic/Other Contam:	101	Distance to Septic Tank:	Not Reported
Dist to Property Line:	126	Distance Verify Meth:	TAPE MEASURE
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	WWDAPP00001187

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	140

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	7 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	39
Measurement Date:	2004-02-17	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP 20’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 SHALE TRAP 50’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	3
Packers:	1 SHALE TRAP 67’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	38	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0-8 TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	8-20 RED CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	20-34 MEDIUM-COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	34-40 C. BR. SAND & CLAY STRIPS		

Details Reports For:	Well Lithology	Migrated Sort #:	5
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	40-47 COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	6
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	47-50 BROWN CLAY & WHITE ROCK		

Details Reports For:	Well Lithology	Migrated Sort #:	7
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	50-55 COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	8
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	55-57 BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	9
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	57-68 ROCK & GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	10
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	68-87 COURSE BROWN SAND (L.H.)		

Details Reports For:	Well Lithology	Migrated Sort #:	11
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	87-89 BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	12
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	89 -100 MEDIUM SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	13
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	100 -107 C. BR. SAND & GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	14
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	107 -112 COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	15
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	112 -131 BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	16
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	131 -140 GRAY CLAY		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC CASING +2 - 90		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC SLOTTED 90 - 100 .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

E38
WSW
1/4 - 1/2 Mile
Higher

TX WELLS **TXDOL2000163787**

Database:	Well Report Database	Fid:	163786
Rec id:	163868	Edr site i:	37033
Owner:	KENNY CERNY	Ownerwell:	No Data
Address:	HCR 62 BOX 37-A, ELCAMPO , TX 77437	Grid:	66-54-6
Waddress:	0.7 MILE S. ON HWY. 71 OFF HWY.59, ELCAMPO , TX 77437		
Lat:	29 10 04 N	County:	Wharton
Long:	096 15 34 W	Elevation:	No Data
Gpsused:	GARMIN GPS III PLUS	Typeofwork:	New Well
Propuse:	Domestic	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	7 1/2 in From Surface To 140 ft
Dmethod:	Mud Rotary	Bcompletio:	Straight Wall
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	From +1 ft to 3 ft with 2 CEMENT (#sacks and material)		
Sinterval:	From 3 ft to 10 ft with 7 BENTONITE (#sacks and material)		
Tinterval:	No Data	Usedmethod:	HANDMIX
Cementedby:	CARLTON UTESEY	Contaminat:	101 ft
Propertyli:	126 ft	Verrimetho:	TAPE MEASURE
Varriance:	No Data	Surface:	Surface Sleeve Installed
Staticleve:	39 ft. below land surface on 2/17/2004		
Flow:	No Data	Packers:	1 SHALE TRAP 20
Cementinwe:	No Data	Typepump:	No Data
Pumpbowl:	Not Reported	Welltests:	Jetted
Yield:	38 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Companyadd:	1101 N. WELLS	Ccitystate:	EDNA , TX 77957
Licensenum:	4313	Wsignature:	CARLTON UTESEY
Dsignature:	REBECCA UTESEY	Regnum:	WWDAPP00001187
Comments:	no data	Site id:	TXDOL2000163787

F39
SW
1/4 - 1/2 Mile
Higher

TX WELLS **TXMON5000134742**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	136939	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	250
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2008-03-18	Owner Name:	A.J. PRIESMEYER
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	70	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported

Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2007-11-01	Drill End Date:	2007-11-02
Seal Method:	Other - HAND MIX	Seal Method Desc:	HAND MIX
Dist to Septic/Other Contam:	115	Distance to Septic Tank:	Not Reported
Dist to Property Line:	99	Distance Verify Meth:	RANGE FINDER
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	100.00	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	56930

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	250

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	8 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	56
Measurement Date:	2007-11-02	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP 20’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 SHALE TRAP 60’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	3
Packers:	1 SHALE TRAP 160’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	4
Packers:	1 SHALE TRAP 180’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	5
Packers:	1 SHALE TRAP 197’	Depth:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	140	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	200’ - 215’
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	6
Lithology:	BLACK TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	6	Bottom Depth:	15
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	15	Bottom Depth:	17
Lithology:	SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	17	Bottom Depth:	26
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	26	Bottom Depth:	48
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	48	Bottom Depth:	50
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	50	Bottom Depth:	57
Lithology:	COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	57	Bottom Depth:	63
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	63	Bottom Depth:	67
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	67	Bottom Depth:	95
Lithology:	MED. BROWN SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	95	Bottom Depth:	100

Lithology:	MEDIUM-COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	100	Bottom Depth:	100
Lithology:	WHITE ROCK		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	100	Bottom Depth:	110
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	150
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	150	Bottom Depth:	170
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	170	Bottom Depth:	180
Lithology:	FINE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	180	Bottom Depth:	200
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	200	Bottom Depth:	200
Lithology:	V.C. BROWN SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	200	Bottom Depth:	220
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	220	Bottom Depth:	250
Lithology:	GRAY CLAY		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC CASING +2 - 200’		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC SLOTTED 200’ - 215’ .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Map ID Direction Distance Elevation	Database	EDR ID Number
F40 **SW** **1/4 - 1/2 Mile** **Higher**	**TX WELLS**	**TXDOL2000163479**

Database:	Well Report Database	Fid:	163478
Rec id:	163470	Edr site i:	136939
Owner:	A.J. PRIESMEYER	Ownerwell:	No Data
Address:	112 BRENT, ELCAMPO , TX 77437	Grid:	66-54-9
Waddress:	112 BRENT, ELCAMPO , TX 77437	Lat:	29 09 57 N
County:	Wharton	Long:	096 15 28 W
Elevation:	70 ft.	Gpsused:	MAGELLAN MERIDIAN GOLD
Typeofwork:	New Well	Propuse:	Domestic
Sdate:	Not Reported	Completedd:	Not Reported
Diameter:	7 1/2 in From Surface To 250 ft	Dmethod:	Mud Rotary
Bcompletio:	Straight Wall	Packedfrom:	Not Reported
Packsize:	Not Reported		
Finterval:	From +1 ft to 3 ft with 2 CEMENT (#sacks and material)		
Sinterval:	From 3 ft to 10 ft with 8 BENTONITE (#sacks and material)		
Tinterval:	No Data	Usedmethod:	HAND MIX
Cementedby:	CARLTON UTESEY	Contaminat:	115 ft
Propertyli:	99 ft	Verrimetho:	RANGE FINDER
Varriance:	No Data	Surface:	Surface Sleeve Installed
Staticleve:	56 ft. below land surface on 11/2/2007		
Flow:	No Data	Packers:	1 SHALE TRAP 20
Cementinwe:	No Data	Typepump:	Submersible
Pumpbowl:	100 ft	Welltests:	Jetted
Yield:	140 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	200 - 215 ft.
Chemicalma:	No	Undesirabl:	No
Companynam:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Companyadd:	1101 N. WELLS	Ccitystate:	EDNA , TX 77957
Licensenum:	4313	Wsignature:	CARLTON UTESEY
Dsignature:	REBECCA UTESEY	Regnum:	56930
Comments:	no data	Site id:	TXDOL2000163479

E41 **SW** **1/4 - 1/2 Mile** **Higher**	**TX WELLS**	**TXMON5000123920**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	125868	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	200
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2007-10-30	Owner Name:	Mike Chandler
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2007-08-25	Drill End Date:	2007-08-25
Seal Method:	Other - trimmie	Seal Method Desc:	trimmie
Dist to Septic/Other Contam:	55	Distance to Septic Tank:	Not Reported
Dist to Property Line:	45	Distance Verify Meth:	tape/owner
Approved by Variance:	Not Reported	Sealed by Driller:	Yes

Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	140.00	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Finch Water Well Service
Driller Name:	John F Finch	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	2405	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	8
Top Depth:	0	Bottom Depth:	200

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	100	Annular Seal:	21
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	40
Measurement Date:	2007-08-25	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	rubber 180’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	rubber 20’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	25	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	20
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	fresh		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0-10-top soil		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	10-85-red clay		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	85-110-sand		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	110-180-red clay		

Details Reports For:	Well Lithology	Migrated Sort #:	5
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	180-200-sand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 n pvc 0-180 sch 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 n pvc slotted 180-190 .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 n pvc 190-200 sch 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

E42
SW
1/4 - 1/2 Mile
Higher

TX WELLS **TXMON5000125690**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	127707	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	180
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2007-11-21	Owner Name:	Mike Chandler
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2007-10-01	Drill End Date:	2007-10-01
Seal Method:	Other - Trimmie	Seal Method Desc:	Trimmie
Dist to Septic/Other Contam:	55	Distance to Septic Tank:	Not Reported
Dist to Property Line:	45	Distance Verify Meth:	tape/owner
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	100.00	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Finch Water Well

Driller Name:	John F Finch	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	2405	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	0
Top Depth:	0	Bottom Depth:	180

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	100	Annular Seal:	19
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	35
Measurement Date:	2007-10-01	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	rubber 160’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	rubber 25’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	65	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	20
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	fresh		

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0-9 topsoil		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	9-60-red clay		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	60-112 sand		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	112-160 red clay		

Details Reports For:	Well Lithology	Migrated Sort #:	5
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	160-180 sand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 n pvc 0-160 sch 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 n pvc slotted 160-170 .006		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 n pvc 170-180 sch 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

E43
SW
1/4 - 1/2 Mile
Higher

TX WELLS **TXDOL2000163526**

Database:	Well Report Database	Fid:	163525
Rec id:	163519	Edr site i:	127707
Owner:	Mike Chandler	Ownerwell:	No Data
Address:	167 Brent St., El Campo , TX 77437	Grid:	66-54-6
Waddress:	No Data	Lat:	29 10 01 N
County:	Wharton	Long:	096 15 34 W
Elevation:	No Data	Gpsused:	Garmin
Typeofwork:	New Well	Propuse:	Domestic
Sdate:	Not Reported	Completedd:	Not Reported
Diameter:	0 in From Surface To 180 ft	Dmethod:	Mud Rotary
Bcompletio:	Straight Wall	Packedfrom:	Not Reported
Packsize:	Not Reported		
Finterval:	From 0 ft to 100 ft with 19 (#sacks and material)		
Sinterval:	No Data	Tinterval:	No Data
Usedmethod:	Trimmie	Cementedby:	driller
Contaminat:	55 ft	Propertyli:	45 ft
Verrimetho:	tape/owner	Varriance:	No Data
Surface:	Alternative Procedure Used	Staticleve:	35 ft. below land surface on 10/1/2007
Flow:	No Data	Packers:	rubber 160
Cementinwe:	No Data	Typepump:	Submersible
Pumpbowl:	100 ft	Welltests:	Jetted
Yield:	65 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	fresh	Stratadept:	20 ft.
Chemicalma:	No	Undesirabl:	No
Companynam:	Finch Water Well	Companyadd:	F.m.524
Ccitystate:	Sweeny , TX 77480	Licensenum:	2405
Wsignature:	John F. Finch	Dsignature:	No Data

Regnum:	No Data	Comments:	no data
Site id:	TXDOL2000163526		

E44
SW
1/4 - 1/2 Mile
Higher

TX WELLS **TXDOL2000163528**

Database:	Well Report Database	Fid:	163527
Rec id:	163521	Edr site i:	125868
Owner:	Mike Chandler	Ownerwell:	No Data
Address:	167--Brent ST, Elcampo , TX	Grid:	66-54-6
Waddress:	No Data	Lat:	29 10 01 N
County:	Wharton	Long:	096 15 34 W
Elevation:	No Data	Gpsused:	Garmin
Typeofwork:	New Well	Propuse:	Domestic
Sdate:	Not Reported	Completedd:	Not Reported
Diameter:	8 in From Surface To 200 ft	Dmethod:	Mud Rotary
Bcompletio:	Straight Wall	Packedfrom:	Not Reported
Packsize:	Not Reported		
Finterval:	From 0 ft to 100 ft with 21 (#sacks and material)		
Sinterval:	No Data	Tinterval:	No Data
Usedmethod:	trimmie	Cementedby:	driller
Contaminat:	55 ft	Propertyli:	45 ft
Verrimetho:	tape/owner	Varriance:	No Data
Surface:	Alternative Procedure Used	Staticleve:	40 ft. below land surface on 8/25/2007
Flow:	No Data	Packers:	rubber 180
Cementinwe:	No Data	Typepump:	Submersible
Pumpbowl:	140 ft	Welltests:	Jetted
Yield:	25 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	fresh	Stradadept:	20 ft.
Chemicalma:	No	Undesirabl:	No
Companynam:	Finch Water Well Service	Companyadd:	p.o. box 508
Ccitystate:	Sweeny , TX 77480	Licensenum:	2405
Wsignature:	John F Finch	Dsignature:	No Data
Regnum:	No Data	Comments:	no data
Site id:	TXDOL2000163528		

45
NW
1/4 - 1/2 Mile
Higher

TX WELLS **TXMON5000292765**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	296857	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	110
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2012-08-28	Owner Name:	JOHN GOMEZ
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	314	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2012-08-23	Drill End Date:	2012-08-24
Seal Method:	Other - PRESSURE CEMENTED PER TRIMMIE PIPE		
Seal Method Desc:	PRESSURE CEMENTED PER TRIMMIE PIPE		

Dist to Septic/Other Contam:	NONE	Distance to Septic Tank:	Not Reported
Dist to Property Line:	5	Distance Verify Meth:	MEASURING TAPE
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Jet	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	5.5
Top Depth:	0	Bottom Depth:	110

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	86	Annular Seal:	4 BARATHERM
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	34
Measurement Date:	2012-08-24	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 PLASTIC 86’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	30	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	88 - 100
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	3
Lithology:	TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	3	Bottom Depth:	15
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	15	Bottom Depth:	20
Lithology:	CLAY & SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	20	Bottom Depth:	27
Lithology:	FINE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	27	Bottom Depth:	35
Lithology:	WHITE SANDSTONE		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	35	Bottom Depth:	40
Lithology:	MEDIUM BROWN SAND & SANDSTONE		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	40	Bottom Depth:	52
Lithology:	MEDIUM BROWN SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	52	Bottom Depth:	57
Lithology:	BROWN CLAY & ROCK		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	57	Bottom Depth:	63
Lithology:	COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	63	Bottom Depth:	67
Lithology:	CLAY & SANDSTONE		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	67	Bottom Depth:	77
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	77	Bottom Depth:	78
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	78	Bottom Depth:	87
Lithology:	COURSE BROWN SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	87	Bottom Depth:	88
Lithology:	CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	88	Bottom Depth:	110

Lithology:	MEDIUM-COURSE BROWN SAND		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	2" NEW SCH. 40 PVC CASING +2 - 90		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	2" NEW SCH. 40 PVC SLOTTED 90 - 100 .006		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

46
SW
1/4 - 1/2 Mile
Higher

TX WELLS **TXMON5000283957**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	287942	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	200
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2012-05-25	Owner Name:	JAUN LOPEZ
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2011-11-03	Drill End Date:	2011-11-05
Seal Method:	Other - HAND MIX	Seal Method Desc:	HAND MIX
Dist to Septic/Other Contam:	NONE	Distance to Septic Tank:	Not Reported
Dist to Property Line:	63	Distance Verify Meth:	TAPE MEASURE
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	56930

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	200

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	7 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	70
Measurement Date:	2011-11-05	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP & PLASTIC 161’		
Depth:	Not Reported		

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 PLASTIC 144’, 124’, 64’, 20’		
Depth:	Not Reported		

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	67	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	164’ - 173’
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	3
Lithology:	TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	3	Bottom Depth:	8
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	8	Bottom Depth:	24
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	24	Bottom Depth:	49
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	49	Bottom Depth:	69
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	69	Bottom Depth:	100

Lithology:	MEDIUM BROWN SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	100	Bottom Depth:	100
Lithology:	WHITE ROCK		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	100	Bottom Depth:	110
Lithology:	COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	160
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	160	Bottom Depth:	170
Lithology:	COURSE GRAY SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	170	Bottom Depth:	200
Lithology:	GRAY CLAY		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC CASING +2 - 164’		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC SLOTTED 164’ - 173’ .006		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

G47
WNW
1/2 - 1 Mile
Lower

TX WELLS **TXMON5000115487**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	117304	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	120
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2007-07-18	Owner Name:	GREGORY TOVAR
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	104	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported

Drill Start Date:	2007-03-28	Drill End Date:	2007-03-29
Seal Method:	Other - HAND MIX	Seal Method Desc:	HAND MIX
Dist to Septic/Other Contam:	173	Distance to Septic Tank:	Not Reported
Dist to Property Line:	65	Distance Verify Meth:	MEASURING TAPE
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	1188

Details Reports For:	Well Bore Hole	Diameter:	5.5
Top Depth:	0	Bottom Depth:	120

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	5 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	36
Measurement Date:	2007-03-29	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP 20’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 SHALE TRAP 67’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	3
Packers:	1 SHALE TRAP 87’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	15	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	2
Lithology:	TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	2	Bottom Depth:	10
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	10	Bottom Depth:	12
Lithology:	BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	12	Bottom Depth:	26
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	26	Bottom Depth:	34
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	34	Bottom Depth:	55
Lithology:	MEDIUM BR. SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	55	Bottom Depth:	57
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	57	Bottom Depth:	87
Lithology:	MEDIUM-COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	87	Bottom Depth:	100
Lithology:	MEDIUM BROWN SAND & CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	100	Bottom Depth:	100
Lithology:	GRAY CLAY & ROCK		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	100	Bottom Depth:	110
Lithology:	COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	120
Lithology:	BLUE CLAY		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	2" NEW SCH. 40 PVC CASING +2 - 90		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	2" NEW SCH. 40 PVC SLOTTED 90 - 100 .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

G48
WNW
1/2 - 1 Mile
Lower

TX WELLS **TXDOL2000163551**

Database:	Well Report Database	Fid:	163550
Rec id:	163549	Edr site i:	117304
Owner:	GREGORY TOVAR	Ownerwell:	No Data
Address:	1042 CR. 406, ELCAMPO , TX 77437	Grid:	66-54-6
Waddress:	0.1 MILE W. ON MURRAY RD. OFF HWY. 71, ELCAMPO , TX 77437		
Lat:	29 10 21 N	County:	Wharton
Long:	096 15 43 W	Elevation:	104 ft.
Gpsused:	MAGELLAN MERIDIAN GOLD	Typeofwork:	New Well
Propuse:	Domestic	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	5 1/2 in From Surface To 120 ft
Dmethod:	Mud Rotary	Bcompletio:	Straight Wall
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	From +1 ft to 3 ft with 2 CEMENT (#sacks and material)		
Sinterval:	From 3 ft to 10 ft with 5 BENTONITE (#sacks and material)		
Tinterval:	No Data	Usedmethod:	HAND MIX
Cementedby:	CARLTON UTESEY	Contaminat:	173 ft
Propertyli:	65 ft	Verrimetho:	MEASURING TAPE
Varriance:	No Data	Surface:	Surface Sleeve Installed
Staticleve:	36 ft. below land surface on 3/29/2007		
Flow:	No Data	Packers:	1 SHALE TRAP 20
Cementinwe:	No Data	Typepump:	No Data
Pumpbowl:	Not Reported	Welltests:	Jetted
Yield:	15 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Companyadd:	1101 N. WELLS	Ccitystate:	EDNA , TX 77957
Licensenum:	4313	Wsignature:	CARLTON UTESEY
Dsignature:	REBECCA UTESEY	Regnum:	1188
Comments:	no data	Site id:	TXDOL2000163551

H49
WSW
1/2 - 1 Mile
Higher

TX WELLS **TXMON5000406251**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	412499	Well Type:	New Well
Proposed Use:	Stock	Borehole Depth (ft):	104
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2016-01-08	Owner Name:	Shawn Bannert
Well #:	Not Reported	# Wells Drilled:	1
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported

Proposed Use:	Stock	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2015-12-17	Drill End Date:	2015-12-17
Seal Method:	Hand Mixed	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	106	Distance to Septic Tank:	145
Dist to Property Line:	250	Distance Verify Meth:	wheel
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Yes
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	80.00	Chemical Analysis:	No
Injurious Water:	No	Company Name:	1st Choice Water Wells
Driller Name:	Travis J Otto	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	58473	Apprentice Reg #:	59124

Details Reports For:	Well Bore Hole	Diameter:	7.25
Top Depth:	0	Bottom Depth:	100

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	10	Annular Seal:	Concrete
Amount:	7	Unit:	Bags/Sacks

Details Reports For:	Well Levels	Measurement:	32
Measurement Date:	2015-12-17	Artesian Flow:	Not Reported
Measurement Method:	Steel Tape		

Details Reports For:	Well Packers	Migrated Sort #:	Not Reported
Packers:	Other - formation	Depth:	84

Details Reports For:	Well Packers	Migrated Sort #:	Not Reported
Packers:	Other - formation	Depth:	84

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	50	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	Not Reported
Top Depth:	70	Bottom Depth:	100
Water Type:	Good		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	20
Lithology:	Topsoil/ clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	20	Bottom Depth:	45

Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	45	Bottom Depth:	55
Lithology:	sand		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	55	Bottom Depth:	70
Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	70	Bottom Depth:	100
Lithology:	sand		

Details Reports For:	Well Casing	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	84
Migrated Casing Info:	Not Reported	Diameter:	4
Casing Status:	New	Casing Material:	Plastic (PVC)
Casing Type:	Blank	Schedule:	40
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	0
Top Depth:	84	Bottom Depth:	100
Migrated Casing Info:	Not Reported	Diameter:	4
Casing Status:	New	Casing Material:	Plastic (PVC)
Casing Type:	Screen	Schedule:	40
Gauge:	8		

I50
WSW **TX WELLS** **TXWDB7000112786**
1/2 - 1 Mile
Higher

Database:	Groundwater Database	Well #:	6654615
Primary Water Use:	Domestic	Elevation:	101
Well Depth:	100	Observation Type:	None
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

H51
WSW **TX WELLS** **TXMON5000036032**
1/2 - 1 Mile
Higher

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	37038	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	130
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2004-05-06	Owner Name:	STEVE KORENEK
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well

Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2004-02-18	Drill End Date:	2004-02-19
Seal Method:	Other - HANDMIX	Seal Method Desc:	HANDMIX
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	71	Distance Verify Meth:	TAPE MEASURE
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	WWDAPP00001187

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	130

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	5 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	44
Measurement Date:	2004-02-19	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP 20’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 SHALE TRAP 57’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	3
Packers:	1 SHALE TRAP 106’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	39	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0

Top Depth:	0	Bottom Depth:	2
Lithology:	TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	2	Bottom Depth:	5
Lithology:	TAN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	5	Bottom Depth:	19
Lithology:	RED CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	19	Bottom Depth:	24
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	24	Bottom Depth:	27
Lithology:	RED CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	27	Bottom Depth:	36
Lithology:	COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	36	Bottom Depth:	43
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	43	Bottom Depth:	49
Lithology:	SANDSTONE, SAND & GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	49	Bottom Depth:	56
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	56	Bottom Depth:	58
Lithology:	SAND & BROWN CLAY (H)		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	58	Bottom Depth:	69
Lithology:	ROCK & GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	69	Bottom Depth:	85
Lithology:	COURSE-MED. BROWN SAND (LH)		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	85	Bottom Depth:	92
Lithology:	SAND & CLAY STRIPS		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	92	Bottom Depth:	98
Lithology:	COURSE BROWN SAND (S & H)		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	98	Bottom Depth:	110
Lithology:	BROWN CLAY & SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	120
Lithology:	C. BROWN SAND & PEA GRAVEL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	120	Bottom Depth:	130
Lithology:	GRAY CLAY		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC CASING +2 - 109		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC SLOTTED 109 - 119 .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

H52
WSW
1/2 - 1 Mile
Higher

TX WELLS **TXDOL2000163869**

Database:	Well Report Database	Fid:	163868
Rec id:	163867	Edr site i:	37038
Owner:	STEVE KORENEK	Ownerwell:	No Data
Address:	HCR 62 BOX 37, ELCAMPO , TX 77437	Grid:	66-54-6
Waddress:	0.7 MILE S. ON HWY. 71 OFF HWY. 59, ELCAMPO , TX 77437		
Lat:	29 10 04 N	County:	Wharton
Long:	096 15 44 W	Elevation:	No Data
Gpsused:	GARMIN GPS III PLUS	Typeofwork:	New Well
Propuse:	Domestic	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	7 1/2 in From Surface To 130 ft
Dmethod:	Mud Rotary	Bcompletio:	Straight Wall
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	From +1 ft to 3 ft with 2 CEMENT (#sacks and material)		
Sinterval:	From 3 ft to 10 ft with 5 BENTONITE (#sacks and material)		
Tinterval:	No Data	Usedmethod:	HANDMIX
Cementedby:	CARLTON UTESEY	Contaminat:	No Data
Propertyli:	71 ft	Verrimetho:	TAPE MEASURE
Varriance:	No Data	Surface:	Surface Sleeve Installed
Staticleve:	44 ft. below land surface on 2/19/2004		
Flow:	No Data	Packers:	1 SHALE TRAP 20

Cementinwe:	No Data	Typepump:	No Data
Pumpbowl:	Not Reported	Welltests:	Jetted
Yield:	39 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Companyadd:	1101 N. WELLS	Ccitystate:	EDNA , TX 77957
Licensenum:	4313	Wsignature:	CARLTON UTESEY
Dsignature:	REBECCA UTESEY	Regnum:	WWDAPP00001187
Comments:	no data	Site id:	TXDOL2000163869

I53
WSW
1/2 - 1 Mile
Higher

TX WELLS **TXWDB7000112785**

Database:	Groundwater Database	Well #:	6654614
Primary Water Use:	Irrigation	Elevation:	101
Well Depth:	120	Observation Type:	None
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

J54
ESE
1/2 - 1 Mile
Lower

TX WELLS **TXWDB7000112859**

Database:	Groundwater Database	Well #:	6655402
Primary Water Use:	Irrigation	Elevation:	95
Well Depth:	220	Observation Type:	None
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

K55
NW
1/2 - 1 Mile
Lower

TX WELLS **TXPLU5000000388**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	6519	Well Type:	Monitor
Borehole Depth (ft):	50	Well Report #:	Not Reported

Details Reports For:	Plug Data	Submitted Date:	2002-05-29
Owner Name:	EVANS SYSTEMS, INC.	Well #:	MW -1,2
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	Not Reported	Original Driller:	UNIVERSAL ENGINEER.
Original License #:	2698	Original Well Use:	Monitor
Original Drill Date:	1999-05-14		
Plug Method:	Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet		
Plug Date:	2002-04-24	Variance #:	Not Reported
Company Name:	EDCO ENVIRONMENTAL SYSTEMS, INC.		
Plugger Name:	ROY ROPER	Driller License:	52039
Apprentice Reg #:	Not Reported	Comments:	ENTERED BY WLS
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	8
Top Depth:	Not Reported	Bottom Depth:	50

Details Reports For:	Plug Casing	Top Depth:	10
Bottom Depth:	50	Diameter:	2

Details Reports For:	Plug Range	Top Depth:	0
Bottom Depth:	2	Plug Seal:	2 CEM
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Plug Range	Top Depth:	2
Bottom Depth:	50	Plug Seal:	3 BEN
Amount:	Not Reported	Unit:	Not Reported

K56
NW
1/2 - 1 Mile
Lower

TX WELLS **TXPLU5000000389**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	6520	Well Type:	Monitor
Borehole Depth (ft):	50	Well Report #:	Not Reported

Details Reports For:	Plug Data	Submitted Date:	2002-05-29
Owner Name:	EVANS SYSTEMS, INC.	Well #:	MW -3
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	Not Reported	Original Driller:	UNIVERSAL ENGINEER.
Original License #:	2698	Original Well Use:	Monitor
Original Drill Date:	1999-05-15		
Plug Method:	Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet		
Plug Date:	2002-04-24	Variance #:	Not Reported
Company Name:	EDCO ENVIRONMENTAL SYSTEMS, INC.		
Plugger Name:	ROY ROPER	Driller License:	52039
Apprentice Reg #:	Not Reported	Comments:	ENTERED BY WLS
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	8
Top Depth:	Not Reported	Bottom Depth:	50

Details Reports For:	Plug Casing	Top Depth:	1
Bottom Depth:	50	Diameter:	2

Details Reports For:	Plug Range	Top Depth:	0
Bottom Depth:	2	Plug Seal:	1 CEM
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Plug Range	Top Depth:	2
Bottom Depth:	50	Plug Seal:	1.5 BEN
Amount:	Not Reported	Unit:	Not Reported

K57 **NW** **1/2 - 1 Mile** **Lower**	**TX WELLS**	**TXPLU5000000390**

Database:	Submitted Drillers Reports Database (Plugged)		
Plugging Rpt #:	6521	Well Type:	Monitor
Borehole Depth (ft):	50	Well Report #:	Not Reported

Details Reports For:	Plug Data	Submitted Date:	2002-05-29
Owner Name:	EVANS SYSTEMS, INC.	Well #:	MW -4
# Wells Plugged:	Not Reported	Elevation:	Not Reported
Original Company Name:	Not Reported	Original Driller:	UNIVERSAL ENGINEER.
Original License #:	3060	Original Well Use:	Monitor
Original Drill Date:	2000-08-16		
Plug Method:	Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet		
Plug Date:	2002-04-24	Variance #:	Not Reported
Company Name:	EDCO ENVIRONMENTAL SYSTEMS, INC.		
Plugger Name:	ROY ROPER	Driller License:	52039
Apprentice Reg #:	Not Reported	Comments:	ENTERED BY WLS
Comments:	Not Reported		

Details Reports For:	Plug Bore Hole	Diameter:	8
Top Depth:	Not Reported	Bottom Depth:	50

Details Reports For:	Plug Casing	Top Depth:	1
Bottom Depth:	50	Diameter:	2

Details Reports For:	Plug Range	Top Depth:	2
Bottom Depth:	50	Plug Seal:	1.5 BEN
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Plug Range	Top Depth:	0
Bottom Depth:	2	Plug Seal:	1 CEM
Amount:	Not Reported	Unit:	Not Reported

J58 **ESE** **1/2 - 1 Mile** **Lower**	**TX WELLS**	**TXMON5000368483**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	373578	Well Type:	New Well
Proposed Use:	Stock	Borehole Depth (ft):	240
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2014-09-03	Owner Name:	ALIREZA ALIZADEH
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Stock	Proposed Use Desc:	Not Reported

TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2014-03-13	Drill End Date:	2014-03-15
Seal Method:	Other - HAND MIX	Seal Method Desc:	HAND MIX
Dist to Septic/Other Contam:	NONE	Distance to Septic Tank:	Not Reported
Dist to Property Line:	100+	Distance Verify Meth:	SIGHT
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	240

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	8 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP & PLASTIC 200’		
Depth:	Not Reported		

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 PLASTIC 180’, 160’, 140’, 100’, 20’		
Depth:	Not Reported		

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	140	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	194’ - 240’
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	3
Lithology:	TOPSOIL		

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 3 Bottom Depth: 10
Lithology: GRAY CLAY

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 10 Bottom Depth: 67
Lithology: VERY COURSE-MEDIUM BROWN SAND

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 67 Bottom Depth: 70
Lithology: BROWN CLAY

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 70 Bottom Depth: 76
Lithology: MEDIUM BROWN SAND

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 76 Bottom Depth: 85
Lithology: MEDIUM-COURSE BROWN SAND

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 85 Bottom Depth: 90
Lithology: BROWN CLAY

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 90 Bottom Depth: 98
Lithology: MEDIUM-COURSE BROWN SAND & CLAY

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 98 Bottom Depth: 110
Lithology: MEDIUM-COURSE BROWN SAND

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 110 Bottom Depth: 110
Lithology: BROWN CLAY

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 110 Bottom Depth: 120
Lithology: FINE-MEDIUM BROWN SAND

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 120 Bottom Depth: 160
Lithology: GRAY CLAY

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 160 Bottom Depth: 170
Lithology: SANDSTONE

Details Reports For: Well Lithology Migrated Sort #: 0
Top Depth: 170 Bottom Depth: 190

Lithology:	MEDIUM-COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	190	Bottom Depth:	190
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	190	Bottom Depth:	200
Lithology:	MEDIUM BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	200	Bottom Depth:	210
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	210	Bottom Depth:	220
Lithology:	VERY COURSE BROWN SAND LH		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	220	Bottom Depth:	230
Lithology:	VERY COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	230	Bottom Depth:	240
Lithology:	SANDSTONE		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC CASING +2 - 200’		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC SLOTTED 200’ - 220’ .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

59
East
1/2 - 1 Mile
Lower

TX WELLS **TXMON5000214409**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	217490	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	95
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2010-05-25	Owner Name:	Lawrence Kainer

Well #:	1	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2009-06-05	Drill End Date:	2009-06-05
Seal Method:	Poured	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	110	Distance to Septic Tank:	Not Reported
Dist to Property Line:	50	Distance Verify Meth:	Owner
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Dirba	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Jet	Pump Type Desc:	Not Reported
Pump Depth:	50.00	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Dirba Water Wells
Driller Name:	Daniel Dirba	Comments:	$mew
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	1914	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	5
Top Depth:	0	Bottom Depth:	95

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	10	Annular Seal:	4 Ready Mix
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	35
Measurement Date:	2009-06-05	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	20	Drawdown:	5
Hours:	1		

Details Reports For:	Well Strata	Migrated Strata Depth:	20
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Fresh		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	2
Lithology:	Top Soil		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	2	Bottom Depth:	9
Lithology:	Red Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	9	Bottom Depth:	21

Lithology:	Sand

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	21	Bottom Depth:	33
Lithology:	Red Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	33	Bottom Depth:	48
Lithology:	Sand		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	48	Bottom Depth:	75
Lithology:	Gray Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	75	Bottom Depth:	95
Lithology:	Sand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	2 New PVC 0 - 85 Sh 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	2 New PVC Slotted 85 - 95 .006		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

60
NE **TX WELLS** **TXWDB7000112858**
1/2 - 1 Mile
Higher

Database:	Groundwater Database	Well #:	6655401
Primary Water Use:	Irrigation	Elevation:	99
Well Depth:	101	Observation Type:	Miscellaneous Measurements
Water Quality Review:	N	Aquifer:	112CHCT - Chicot Aquifer
Well Type:	Withdrawal of Water		

L61
SSW **TX WELLS** **TXMON5000235154**
1/2 - 1 Mile
Lower

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	238503	Well Type:	Replacement
Proposed Use:	Domestic	Borehole Depth (ft):	95
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2010-12-20	Owner Name:	Charles Mertz
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	Replacement
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2010-11-18	Drill End Date:	2010-11-18
Seal Method:	Other - Presure Grouted Trimmie Pipe		
Seal Method Desc:	Presure Grouted Trimmie Pipe		
Dist to Septic/Other Contam:	53	Distance to Septic Tank:	Not Reported
Dist to Property Line:	55	Distance Verify Meth:	Owners Verification
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Cady’s Water Wells
Driller Name:	Lloyd H Cady	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	55024	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	95

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	2	Annular Seal:	2 Cement
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	2
Bottom Depth:	70	Annular Seal:	3 Benseal
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	32
Measurement Date:	2010-11-18	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	Shale 70,75	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	60	Drawdown:	Not Reported
Hours:	2		

Details Reports For:	Well Strata	Migrated Strata Depth:	20
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Fresh		

Details Reports For:	Well Lithology	Migrated Sort #:	0

Top Depth:	0	Bottom Depth:	2
Lithology:	Topsoil		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	2	Bottom Depth:	45
Lithology:	Layered Bron + Grey Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	45	Bottom Depth:	58
Lithology:	Sand		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	58	Bottom Depth:	75
Lithology:	Grey Clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	75	Bottom Depth:	95
Lithology:	Courseand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 New PVC +2 -75 Sch 40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 New PVC 75-95 .008	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

M62
NNW
1/2 - 1 Mile
Higher

TX WELLS **TXMON5000423744**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	432091	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	20
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2016-09-19	Owner Name:	Charles Chappell
Well #:	SB-2	# Wells Drilled:	1
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2016-09-01	Drill End Date:	2016-09-01
Seal Method:	Hand Mixed	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported

Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Yes
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Vortex Drilling Inc
Driller Name:	Robert Joiner	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	54776	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	3
Top Depth:	0	Bottom Depth:	20

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Plugged

Details Reports For:	Well Plugback	Top Depth:	2
Bottom Depth:	20	Migrated Sort #:	Not Reported
Plugback:	Bentonite		

Details Reports For:	Well Plugback	Top Depth:	0
Bottom Depth:	2	Migrated Sort #:	Not Reported
Plugback:	Cement		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	.25
Lithology:	Concrete		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	.25	Bottom Depth:	5
Lithology:	Dark gray to black CLAY, low-moderate plasticity		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	5	Bottom Depth:	10
Lithology:	Olive-Brown CLAY, mottled, dense		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	10	Bottom Depth:	20
Lithology:	Tan SAND, very fine grained		

M63
NNW
1/2 - 1 Mile
Higher

TX WELLS **TXMON5000423735**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	432085	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	29
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2016-09-19	Owner Name:	Charles Chappell
Well #:	SB-1	# Wells Drilled:	1
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2016-09-01	Drill End Date:	2016-09-01
Seal Method:	Hand Mixed	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Yes
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Vortex Drilling Inc
Driller Name:	Robert Joiner	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	54776	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	3
Top Depth:	0	Bottom Depth:	29

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Plugged

Details Reports For:	Well Plugback	Top Depth:	0
Bottom Depth:	2	Migrated Sort #:	Not Reported
Plugback:	Cement		

Details Reports For:	Well Plugback	Top Depth:	2
Bottom Depth:	29	Migrated Sort #:	Not Reported
Plugback:	Bentonite		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	6
Lithology:	Brown Sandy CLAY, 20% SAND, low plasticity		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	6	Bottom Depth:	25
Lithology:	Tan SAND, fine grain		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	25	Bottom Depth:	27
Lithology:	Olive CLAY, low to moderate plasticity		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	27	Bottom Depth:	29
Lithology:	Coarse to medium SAND, brown		

Map ID Direction Distance Elevation	Database	EDR ID Number
M64 **NNW** **1/2 - 1 Mile** **Higher**	**TX WELLS**	**TXMON5000423749**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	432094	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	20
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2016-09-19	Owner Name:	Charles Chappell
Well #:	SB-4	# Wells Drilled:	1
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2016-09-01	Drill End Date:	2016-09-01
Seal Method:	Hand Mixed	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Yes
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Vortex Drilling Inc
Driller Name:	Robert Joiner	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	54776	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	3
Top Depth:	0	Bottom Depth:	20

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Plugged

Details Reports For:	Well Plugback	Top Depth:	0
Bottom Depth:	2	Migrated Sort #:	Not Reported
Plugback:	Cement		

Details Reports For:	Well Plugback	Top Depth:	2
Bottom Depth:	20	Migrated Sort #:	Not Reported
Plugback:	Bentonite		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	12
Lithology:	Grass, Brown CLAYEY SAND, 20% SAND, very fine grained		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	12	Bottom Depth:	20
Lithology:	Tan SAND, very fine grained		

Map ID Direction Distance Elevation	Database	EDR ID Number
M65 **NNW** **1/2 - 1 Mile** **Higher**	**TX WELLS**	**TXMON5000423747**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	432093	Well Type:	New Well
Proposed Use:	Environmental Soil Boring	Borehole Depth (ft):	20
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2016-09-19	Owner Name:	Charles Chappell
Well #:	SB-3	# Wells Drilled:	1
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Environmental Soil Boring	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2016-09-01	Drill End Date:	2016-09-01
Seal Method:	Hand Mixed	Seal Method Desc:	Not Reported
Dist to Septic/Other Contam:	Not Reported	Distance to Septic Tank:	Not Reported
Dist to Property Line:	Not Reported	Distance Verify Meth:	Not Reported
Approved by Variance:	Not Reported	Sealed by Driller:	Yes
Sealed by Name:	Not Reported	Surface Completion:	Alternative Procedure Used
Surf Complete Desc:	Not Reported	Completed by Driller:	Yes
Pump Type:	Not Reported	Pump Type Desc:	Not Reported
Pump Depth:	Not Reported	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Vortex Drilling Inc
Driller Name:	Robert Joiner	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	54776	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	3
Top Depth:	0	Bottom Depth:	20

Details Reports For:	Well Drilling Method	Drill Method:	Direct Push

Details Reports For:	Well Completion	Borehole Completion:	Plugged

Details Reports For:	Well Plugback	Top Depth:	0
Bottom Depth:	2	Migrated Sort #:	Not Reported
Plugback:	Cement		

Details Reports For:	Well Plugback	Top Depth:	2
Bottom Depth:	20	Migrated Sort #:	Not Reported
Plugback:	Bentonite		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	.25
Lithology:	Concrete		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	.25	Bottom Depth:	5
Lithology:	Dark gray to black CLAY, low-moderate plasticity		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	5	Bottom Depth:	10
Lithology:	Olive-Brown CLAY, mottled, dense		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	10	Bottom Depth:	20
Lithology:	Tan SAND, very fine grained		

N66
North
1/2 - 1 Mile
Higher

TX WELLS **TXMON5000051684**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	52788	Well Type:	New Well
Proposed Use:	Rig Supply	Borehole Depth (ft):	200
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2005-02-07	Owner Name:	Brayton Operating Company
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Rig Supply	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2005-02-04	Drill End Date:	2005-02-04
Seal Method:	Other - poured with sleeve		
Seal Method Desc:	poured with sleeve	Dist to Septic/Other Contam:	Not Reported
Distance to Septic Tank:	Not Reported	Dist to Property Line:	Not Reported
Distance Verify Meth:	Not Reported	Approved by Variance:	Not Reported
Sealed by Driller:	Yes	Sealed by Name:	Not Reported
Surface Completion:	Surface Sleeve Installed	Surf Complete Desc:	Not Reported
Completed by Driller:	Not Reported	Pump Type:	Submersible
Pump Type Desc:	Not Reported	Pump Depth:	180.00
Chemical Analysis:	No	Injurious Water:	No
Company Name:	Everett Carroll Water Well Service		
Driller Name:	Everett Lee Carroll	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	2090	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	7.875
Top Depth:	0	Bottom Depth:	200

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	15	Annular Seal:	6 cement
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	15
Bottom Depth:	100	Annular Seal:	5 benonite
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	80
Measurement Date:	2005-02-04	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	rubber 30-55	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	rubber 110-150	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	75+	Drawdown:	10
Hours:	1		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	3
Lithology:	surface		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	3	Bottom Depth:	50
Lithology:	gravel		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	50	Bottom Depth:	55
Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	55	Bottom Depth:	110
Lithology:	sand & gravel		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	150
Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	150	Bottom Depth:	200
Lithology:	gravel.		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" new pvc casing 0 to 180		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" new mfg screen 180 to 200 .020		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Map ID Direction Distance Elevation	Database	EDR ID Number
N67 **North** **1/2 - 1 Mile** **Higher**	**TX WELLS**	**TXDOL2000163796**

Database:	Well Report Database	Fid:	163795
Rec id:	163788	Edr site i:	52788
Owner:	Brayton Operating Company	Ownerwell:	No Data
Address:	606 N. Carancahua, Suite 500, Corpus Christi , TX 78417		
Grid:	66-54-6	Waddress:	El Campo , TX
Lat:	29 11 00 N	County:	Wharton
Long:	096 15 10 W	Elevation:	No Data
Gpsused:	No Data	Typeofwork:	New Well
Propuse:	Rig Supply	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	7 7/8 in From Surface To 200 ft
Dmethod:	Mud Rotary	Bcompletio:	Straight Wall
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	From 0 ft to 15 ft with 6 cement (#sacks and material)		
Sinterval:	From 15 ft to 100 ft with 5 benonite (#sacks and material)		
Tinterval:	No Data	Usedmethod:	poured with sleeve
Cementedby:	Everett Carroll	Contaminat:	No Data
Propertyli:	No Data	Verrimetho:	No Data
Varriance:	No Data	Surface:	Surface Sleeve Installed
Staticleve:	80 ft. below land surface on 2/4/2005		
Flow:	No Data	Packers:	rubber 30-55
Cementinwe:	No Data	Typepump:	Submersible
Pumpbowl:	180 ft	Welltests:	Jetted\ Estimated
Yield:	75+ GPM with 10 ft drawdown after 1 hour		
Watertype:	No Data	Stratadept:	No Data
Chemicalma:	No	Undesirabl:	No
Companynam:	Everett Carroll Water Well Service	Companyadd:	1625 US Hwy 59 N.
Ccitystate:	Edna , TX 77957	Licensenum:	2090
Wsignature:	Everett Carroll	Dsignature:	No Data
Regnum:	No Data	Comments:	no data
Site id:	TXDOL2000163796		

L68 **SSW** **1/2 - 1 Mile** **Lower**	**TX WELLS**	**TXMON5000191196**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	194069	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	95
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2009-09-22	Owner Name:	Andrew Wakigura
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2007-02-10	Drill End Date:	2007-02-10
Seal Method:	Other - grouted	Seal Method Desc:	grouted
Dist to Septic/Other Contam:	100+	Distance to Septic Tank:	Not Reported
Dist to Property Line:	51	Distance Verify Meth:	measured
Approved by Variance:	Not Reported	Sealed by Driller:	No

Sealed by Name:	Johnson Water Well	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	80.00	Chemical Analysis:	No
Injurious Water:	No	Company Name:	Johnson Water Well Service
Driller Name:	Mary H Johnson	Comments:	pump depth is to pump bowl. $scd
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	54883	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	8
Top Depth:	0	Bottom Depth:	95

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Filter Packed

Details Reports For:	Well Filter	Filter Material:	Gravel
Top Depth:	85	Bottom Depth:	95
Size:	Not Reported		

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	3	Annular Seal:	3 ready mix
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	4 hole plug
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	35
Measurement Date:	Not Reported	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Test	Test Type:	Estimated
Yield:	60	Drawdown:	5
Hours:	1		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	3
Lithology:	black topsoil		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	3	Bottom Depth:	16
Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	16	Bottom Depth:	41
Lithology:	very coarse sand		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	41	Bottom Depth:	44

Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	44	Bottom Depth:	46
Lithology:	coarse sand and clay streaks		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	46	Bottom Depth:	63
Lithology:	clay with rock		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	63	Bottom Depth:	68
Lithology:	streaks		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	68	Bottom Depth:	89
Lithology:	very coarse sand		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	89	Bottom Depth:	91
Lithology:	clay		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	91	Bottom Depth:	95
Lithology:	very coarse sand		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 N plastic 0-85 sch40	Diameter:	Not Reported
Casing Status:	Not Reported	Casing Material:	Not Reported
Casing Type:	Not Reported	Schedule:	Not Reported
Gauge:	Not Reported		

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4 N plastic--slotted 85-95 .010		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

69
South
1/2 - 1 Mile
Lower

TX WELLS **TXMON5000311856**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	316165	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	97
Injurious Water Quality:	Not Reported	Plugging Rpt #:	Not Reported

Submitted Date:	2013-04-17	Owner Name:	Colby Yackel

Well #:	1	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2012-07-30	Drill End Date:	2012-07-31
Seal Method:	Other - Grouted	Seal Method Desc:	Grouted
Dist to Septic/Other Contam:	No Septic	Distance to Septic Tank:	Not Reported
Dist to Property Line:	50+	Distance Verify Meth:	Measured
Approved by Variance:	Not Reported	Sealed by Driller:	No
Sealed by Name:	Johnson Water Well	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	80.00	Chemical Analysis:	No
Injurious Water:	Not Reported	Company Name:	Johnson Water Well Svc.
Driller Name:	Mary H Johnson	Comments:	^ead
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	54883	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	8
Top Depth:	0	Bottom Depth:	97

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Filter Packed

Details Reports For:	Well Filter	Filter Material:	Gravel
Top Depth:	87	Bottom Depth:	97
Size:	Not Reported		

Details Reports For:	Well Seal Range	Top Depth:	0
Bottom Depth:	2	Annular Seal:	3 1/2 Ready Mix
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	2
Bottom Depth:	10	Annular Seal:	5 3/8 Hole Plug
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	31
Measurement Date:	2012-07-31	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	Rubber 10’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	70	Drawdown:	10
Hours:	1		

Details Reports For:	Well Strata	Migrated Strata Depth:	55-97
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Good		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Details Reports For:	Well Lithology	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	0-4 blk topsoil		

Details Reports For:	Well Lithology	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	4-17 light red clay		

Details Reports For:	Well Lithology	Migrated Sort #:	3
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	17-23 clay w/sand		

Details Reports For:	Well Lithology	Migrated Sort #:	4
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	23-34 sand		

Details Reports For:	Well Lithology	Migrated Sort #:	5
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	35-45 course sand		

Details Reports For:	Well Lithology	Migrated Sort #:	6
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	45-55 course sand & sm gravel		

Details Reports For:	Well Lithology	Migrated Sort #:	7
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	55-55 1/2 hard streaks		

Details Reports For:	Well Lithology	Migrated Sort #:	8
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Lithology:	55 1/2-97 course sand & sm gravel		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" N Plastic 0’-87’ Sch 40		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" N Plastic Slotted 87’-97’ .016		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Map ID Direction Distance Elevation	Database	EDR ID Number
O70 **SSW** **1/2 - 1 Mile** **Lower**	**TX WELLS**	**TXDOL2000163753**

Database:	Well Report Database	Fid:	163752
Rec id:	163747	Edr site i:	65390
Owner:	DONALDO CARRASCOZA	Ownerwell:	No Data
Address:	HC 62 BOX 52, ELCAMPO , TX 77437	Grid:	66-54-9
Waddress:	160 YRDS. E. ON CR. 408 OFF HWY. 71, ELCAMPO , TX 77437		
Lat:	29 09 28 N	County:	Wharton
Long:	096 15 31 W	Elevation:	No Data
Gpsused:	GARMIN GPS III PLUS	Typeofwork:	New Well
Propuse:	Domestic	Sdate:	Not Reported
Completedd:	Not Reported	Diameter:	7 1/2 in From Surface To 110 ft
Dmethod:	Mud Rotary	Bcompletio:	Straight Wall
Packedfrom:	Not Reported	Packsize:	Not Reported
Finterval:	From +1 ft to 3 ft with 2 CEMENT (#sacks and material)		
Sinterval:	From 3 ft to 10 ft with 6 BENTONITE (#sacks and material)		
Tinterval:	No Data	Usedmethod:	HAND MIX
Cementedby:	CARLTON UTESEY	Contaminat:	NONE ft
Propertyli:	192 ft	Verrimetho:	MEASURING TAPE
Varriance:	No Data	Surface:	Surface Sleeve Installed
Staticleve:	36 ft. below land surface on 6/8/2005		
Flow:	No Data	Packers:	1 SHALE TRAP 20
Cementinwe:	No Data	Typepump:	Submersible
Pumpbowl:	77 ft	Welltests:	Jetted
Yield:	100 GPM with (No Data) ft drawdown after (No Data) hours		
Watertype:	No Data	Stratadept:	80 - 106 ft.
Chemicalma:	No	Undesirabl:	No
Companynam:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Companyadd:	1101 N. WELLS	Ccitystate:	EDNA , TX 77957
Licensenum:	4313	Wsignature:	CARLTON UTESEY
Dsignature:	No Data	Regnum:	No Data
Comments:	no data	Site id:	TXDOL2000163753

O71 **SSW** **1/2 - 1 Mile** **Lower**	**TX WELLS**	**TXMON5000064170**

Database:	Submitted Drillers Reports Database (Monitoring)		
Well Rpt #:	65390	Well Type:	New Well
Proposed Use:	Domestic	Borehole Depth (ft):	110
Injurious Water Quality:	no	Plugging Rpt #:	Not Reported

Submitted Date:	2005-08-18	Owner Name:	DONALDO CARRASCOZA
Well #:	Not Reported	# Wells Drilled:	Not Reported
Elevation:	Not Reported	Type of Work:	New Well
Work Type Desc:	Not Reported	Original Well Rpt Track #:	Not Reported
Proposed Use:	Domestic	Proposed Use Desc:	Not Reported
TCEQ Approved Plans:	Not Reported	PWS #:	Not Reported
Drill Start Date:	2005-06-07	Drill End Date:	2005-06-08
Seal Method:	Other - HAND MIX	Seal Method Desc:	HAND MIX
Dist to Septic/Other Contam:	NONE	Distance to Septic Tank:	Not Reported
Dist to Property Line:	192	Distance Verify Meth:	MEASURING TAPE
Approved by Variance:	Not Reported	Sealed by Driller:	Yes

Sealed by Name:	Not Reported	Surface Completion:	Surface Sleeve Installed
Surf Complete Desc:	Not Reported	Completed by Driller:	Not Reported
Pump Type:	Submersible	Pump Type Desc:	Not Reported
Pump Depth:	77.00	Chemical Analysis:	No
Injurious Water:	No		
Company Name:	C & S UTESEY WATER WELL SERVICE & DRILLING, L.L.C.		
Driller Name:	Carlton Utesey	Comments:	Not Reported
Plugged within 48 hrs:	No	Plugging Rpt Tracking #:	Not Reported
Driller License #:	4313	Apprentice Reg #:	Not Reported

Details Reports For:	Well Bore Hole	Diameter:	7.5
Top Depth:	0	Bottom Depth:	110

Details Reports For:	Well Drilling Method	Drill Method:	Mud (Hydraulic) Rotary

Details Reports For:	Well Completion	Borehole Completion:	Straight Wall

Details Reports For:	Well Seal Range	Top Depth:	-1
Bottom Depth:	3	Annular Seal:	2 CEMENT
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Seal Range	Top Depth:	3
Bottom Depth:	10	Annular Seal:	6 BENTONITE
Amount:	Not Reported	Unit:	Not Reported

Details Reports For:	Well Levels	Measurement:	36
Measurement Date:	2005-06-08	Artesian Flow:	Not Reported
Measurement Method:	Unknown		

Details Reports For:	Well Packers	Migrated Sort #:	1
Packers:	1 SHALE TRAP 20’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	2
Packers:	1 SHALE TRAP 62’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	3
Packers:	1 SHALE TRAP 69’	Depth:	Not Reported

Details Reports For:	Well Packers	Migrated Sort #:	4
Packers:	1 SHALE TRAP 79’	Depth:	Not Reported

Details Reports For:	Well Test	Test Type:	Jetted
Yield:	100	Drawdown:	Not Reported
Hours:	Not Reported		

Details Reports For:	Well Strata	Migrated Strata Depth:	80’ - 106’
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Water Type:	Not Reported		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	0	Bottom Depth:	7
Lithology:	TOPSOIL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	7	Bottom Depth:	14
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	14	Bottom Depth:	23
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	23	Bottom Depth:	54
Lithology:	C.BR. SAND & GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	54	Bottom Depth:	56
Lithology:	ROCK		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	56	Bottom Depth:	63
Lithology:	BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	63	Bottom Depth:	66
Lithology:	FINE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	66	Bottom Depth:	70
Lithology:	GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	70	Bottom Depth:	78
Lithology:	MED-COURSE BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	78	Bottom Depth:	80
Lithology:	GRAY & BROWN CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	80	Bottom Depth:	89
Lithology:	C-VC BROWN SAND		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	89	Bottom Depth:	90
Lithology:	SAND, CLAY & PEA GRAVEL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	90	Bottom Depth:	110

Lithology:	VC BROWN SAND & PEA GRAVEL		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	110
Lithology:	BROWN & GRAY CLAY		

Details Reports For:	Well Lithology	Migrated Sort #:	0
Top Depth:	110	Bottom Depth:	110
Lithology:	COURSE BROWN SAND		

Details Reports For:	Well Casing	Migrated Sort #:	1
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC CASING +2 - 80’		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

Details Reports For:	Well Casing	Migrated Sort #:	2
Top Depth:	Not Reported	Bottom Depth:	Not Reported
Migrated Casing Info:	4" NEW SCH. 40 PVC SLOTTED 80’ - 100’ .008		
Diameter:	Not Reported	Casing Status:	Not Reported
Casing Material:	Not Reported	Casing Type:	Not Reported
Schedule:	Not Reported	Gauge:	Not Reported

1
SE
1/4 - 1/2 Mile
OIL_GAS **TXOG70000225984**

Surface ID:	190204	Well ID:	Not Reported
Current Well #:	1	API #:	42481
Radioactive:	Not Reported	Side Track:	Not Reported
Well Type:	Dry Hole		

2
East
1/4 - 1/2 Mile
OIL_GAS **TXOG70000224560**

Surface ID:	187117	Well ID:	33065
Current Well #:	1	API #:	4248133065
Radioactive:	Not Reported	Side Track:	Not Reported
Well Type:	Dry Hole		

3
North
1/2 - 1 Mile
OIL_GAS **TXOG70000225899**

Surface ID:	1113052	Well ID:	34708
Current Well #:	1	API #:	4248134708
Radioactive:	Not Reported	Side Track:	Not Reported
Well Type:	Dry Hole		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: TX Radon

Radon Test Results

County	Mean	Total Sites	%>4 pCi/L	%>20 pCi/L	Min pCi/L	Max pCi/L
WHARTON	<.5	4	.0	.0	<.5	1.9

Federal EPA Radon Zone for WHARTON County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 77437

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.900 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5’ Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5’ Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Texas General Land Office
Telephone: 512-463-0745

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Public Water Supply Sources Databases
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6199
Locations of public drinking water sources maintained by the TCEQ.

Groundwater Database
Source: Texas Water Development Board
Telephone: 512-936-0837

Well Report Database
Source: Department of Licensing and Regulation
Telephone: 512-936-0833

Water Well Database
Source: Harris-Galveston Coastal Subsidence District
Telephone: 281-486-1105

Brackish Resources Aquifer Characterization System Database
Source: Texas Water Development Board
WDB’s Brackish Resources Aquifer Characterization System (BRACS) was designed to map and characterize the brackish aquifers of Texas in greater detail than previous studies. The information is contained in the BRACS Database and project data are summarized in a project report with companion geographic information system data files.

Submitted Driller’s Reports Database
Source: Texas Water Development Board
Telephone: 512-936-0833
The Submitted Driller’s Report Database is populated from the online Texas Well Report Submission and Retrieval System which is a cooperative Texas Department of Licensing and Regulation (TDLR) and Texas Water Development Board (TWDB) application that registered water-well drillers use to submit their required reports.

OTHER STATE DATABASE INFORMATION

Texas Oil and Gas Wells
Source: Texas Railroad Commission
Telephone: 512-463-6882
Oil and gas well locations.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

RADON

State Database: TX Radon
Source: Department of Health
Telephone: 512-834-6688
Rinal Report of the Texas Indoor Radon Survey

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR’s Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

STREET AND ADDRESS INFORMATION

El Campo Armory

1552 County Road 406

El Campo, TX 77437

Inquiry Number: 5685887.5

June 18, 2019

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

06/18/19

Site Name:

El Campo Armory
1552 County Road 406
El Campo, TX 77437
EDR Inquiry # 5685887.5

Client Name:

AECOM
12120 Shamrock Plaza
Omaha, NE 68154
Contact: Hans Sund

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2008	1"=500'	Flight Year: 2008	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1995	1"=500'	Acquisition Date: February 05, 1995	USGS/DOQQ
1981	1"=500'	Flight Date: December 02, 1981	USDA
1978	1"=500'	Flight Date: January 01, 1978	USGS
1972	1"=500'	Flight Date: January 01, 1972	ASCS
1962	1"=500'	Flight Date: January 01, 1962	ASCS
1953	1"=500'	Flight Date: January 01, 1953	USGS

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2019 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

INQUIRY #: 5685887.5

YEAR: 2016

= 500'

EDR

INQUIRY #: 5685887.5

YEAR: 2012

= 500'

N

EDR

INQUIRY #: 5685887.5

YEAR: 2008

= 500'

INQUIRY #: 5685887.5

YEAR: 2005

= 500'

INQUIRY #: 5685887.5

YEAR: 1995

= 500'

INQUIRY #: 5685887.5

YEAR: 1981

= 500'

INQUIRY #: 5685887.5

YEAR: 1978

= 500'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5685887.5

YEAR: 1972

= 500'

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5685887.5

YEAR: 1962

= 500'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5685887.5

YEAR: 1953

= 500'

N

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

CO A 4TH BN 112TH ARMOR
HC62 BOX 21
EL CAMPO, TX 77437-9106
979-543-3761
FAX: 409-541-5598

facsimile transmittal

To:	Ron	**Fax:**	512-782-5141
From:	SSG GARCIA	**Date:**	05/22/02
Re:		**Pages:**	6
CC:			

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Notes: WAter Analysis

Aluminum Company of America **ALCOA**

May 11, 2002

Sgt. Garcia
Armory
HC62 Box 21
El Campo, TX 77437

This letter is sent to you in order to provide information that has recently come to our attention. This information concerns the status of your well water as indicated on the enclosed Certificate of Analysis.

The chemical of concern in this matter is Trichloroethylene (TCE). The safe drinking water standard, known as the Maximum Contaminant Level (MCL) standard for TCE is 5 parts per billion (ppb). The levels found in your well water were ND ppb. In addition your well water was also analyzed for other contaminants, including Dichloroethene (DCE) and Vinyl Chloride. The MCL for DCE is 5 ppb. The DCE levels found in your well water were ND The MCL for Vinyl Chloride is 2 ppb. The Vinyl Chloride levels found in your well water were non-detect (ND). (See attached Certificate of Analysis.)

We understand that this letter alone will probably not answer all the questions and concerns that you might have. If you wish to seek more information, it is available for review at the TNRCC headquarters office in Austin in the file relating to the Voluntary Cleanup Program Site No. 538. Listed below are additional contact details:

- Ron Weddell, Alcoa, Project Manager (361) 987-6607
- Alcoa El Campo, Toll Free Information Number (866) 266-4477 or local number (979) 543-7272.
- Stuart Goldsmith, TNRCC Voluntary Cleanup Program (800) 633-9363
- Michael Honeycutt, TNRCC, Senior Toxicologist (512) 239-1000
- Dr. John Villanacci, PhD, Texas Department of Health, Environmental Epidemiology & Toxicology Division Co-Director (512) 458-7269
- Agency for Toxic Substances and Disease Registry
  Division of Toxicology
  1600 Clifton Road NE, Mailstop E-29
  Atlanta, GA 30333
  Phone: (888) 422-8737
  FAX: (404) 498-0057

Point Comfort, Texas 77978 USA

Alcoa has established a local office at 110 Merchant that will be open from 8:00 A.M. to 5:00 P.M. (Monday – Friday) to provide an additional avenue for sharing information with the community and discussing/addressing their concerns relating to this matter. Appointments will also be made for evenings or weekends. The main office telephone number is 979-543-7272.

We thought it useful to provide some background information to help you follow the developments that led to the discovery of the TCE in local well water.

Alcoa has been participating extensively in the State of Texas Voluntary Cleanup Program which is designed to identify and resolve cases of historical contamination of soil and groundwater.

At El Campo, Texas, Reynolds Metals Company and Bon LCampo began soil and groundwater monitoring in the immediate vicinity of the aluminum extrusion facility as part of the due diligence process leading up to the sale of the facility by Reynolds to Bon LCampo in 1997.

TNRCC approved a combined work plan put forward by Bon LCampo and Reynolds for further soil and ground water investigation at the site in January 1998, and Reynolds then began its investigation.

Alcoa has continued this monitoring since mid 2000. **Alcoa never owned nor operated the facility**. However, it acquired the responsibility to take the facility through the Texas Voluntary Cleanup Program and obtain a Certificate of Completion when it purchased Reynolds. The plant was built by May Aluminum in 1963, sold to Whittaker Metals in 1968 and then sold to Reynolds in late 1971, early 1972.

In late March, 2002, as part of an initiative to better understand the general groundwater characteristics at El Campo and in conjunction with the Texas Natural Resources Conservation Commission, and local residents, Alcoa voluntarily began sampling groundwater outside the area expected to be affected by any contamination caused by the facility.

This additional voluntary sampling initially revealed at least one contaminated well. Alcoa immediately initiated supply of clean water to affected well owners and accelerated identification and investigation of other wells in the area.

Despite the fact that the source or sources of this contamination are currently uncertain, Alcoa continues to provide alternate sources of clean water and has subsequently announced that it will provide carbon filtration for all affected wells in the area of concern. The area of investigation has included an area on the south/southwestern edge of the city limits of El Campo, Texas.

Maximum Concentration Levels have numerous safety factors incorporated into them and assume a repeated exposure for 70 years. To help put the Maximum

Concentration Level in context, if it was measuring time it would amount to 5 seconds in 31 years; as a measure of distance it would be 5 inches in about 16,000 miles; in money, 5 cents in $10,000,000.

TCE is considered an IARC group 2A, or EPA Group B2 substance. That means that there is limited evidence in humans for carcinogenicity. Concern about cancer is based on evidence of liver tumors and other sites caused by high doses of TCE in rats and mice. There is no evidence that TCE alone in drinking water can cause any type of cancer in humans. (see U.S Agency for Toxic Substances and Disease Registry web site http://www.atsdr.cdc.gov site for more detailed information)

The source for the TCE in the area of investigation is uncertain. TCE has been used widely in industry, agriculture and household products. In addition, the local natural underground water system is highly complex and perhaps interconnected by known and unknown wells that have been drilled in the area. Identifying the source or sources of contamination therefore requires significant technical investigation.

TNRCC and Alcoa are working together to actively respond to the groundwater contamination issue. Alcoa began working with TNRCC immediately because of the possibility that the aluminum extrusion facility could be one of the sources of contamination in the area. Upon discovery of contamination in the first private water well, Alcoa immediately advised the State and the residents using the well.

Although the source of the contamination is currently unknown, Alcoa began providing alternate supplies of drinking and bathing water until that source or sources can be identified and the problem resolved. Alcoa continues to work closely with TNRCC and provides TNRCC daily oral or written progress reports on the matter.

Alcoa has also been working to identify and personally contact all residents in the affected area to determine the presence of any other, previously unknown, water wells and has initiated sampling of those wells. In addition, Alcoa continues to dedicate technical resources to the investigation of the source of this contamination.

In closing, I encourage you to contact me directly if you'd prefer, or any of the contacts listed in this letter.

Sincerely,

Ron Weddell, l

Ronald W. Weddell
Remediation Business Unit Manager
Alcoa, Inc.

Cc: TNRCC
TEXAS DEPARTMENT OF HEALTH (TDH)

[redacted]

Certificate of Analysis

STL Austin
14046 Summit Drive
Austin, Texas 78728

Tel: 512 244 0855
Fax: 512 244 0160
www.stl-inc.com

SEVERN
TRENT
SERVICES
STL Austin

Single Sample report for HSN:
2020410816

Customer Sample ID: **Sgt. Garcia Well**

Report Date: **25-APR-2002 14:20**

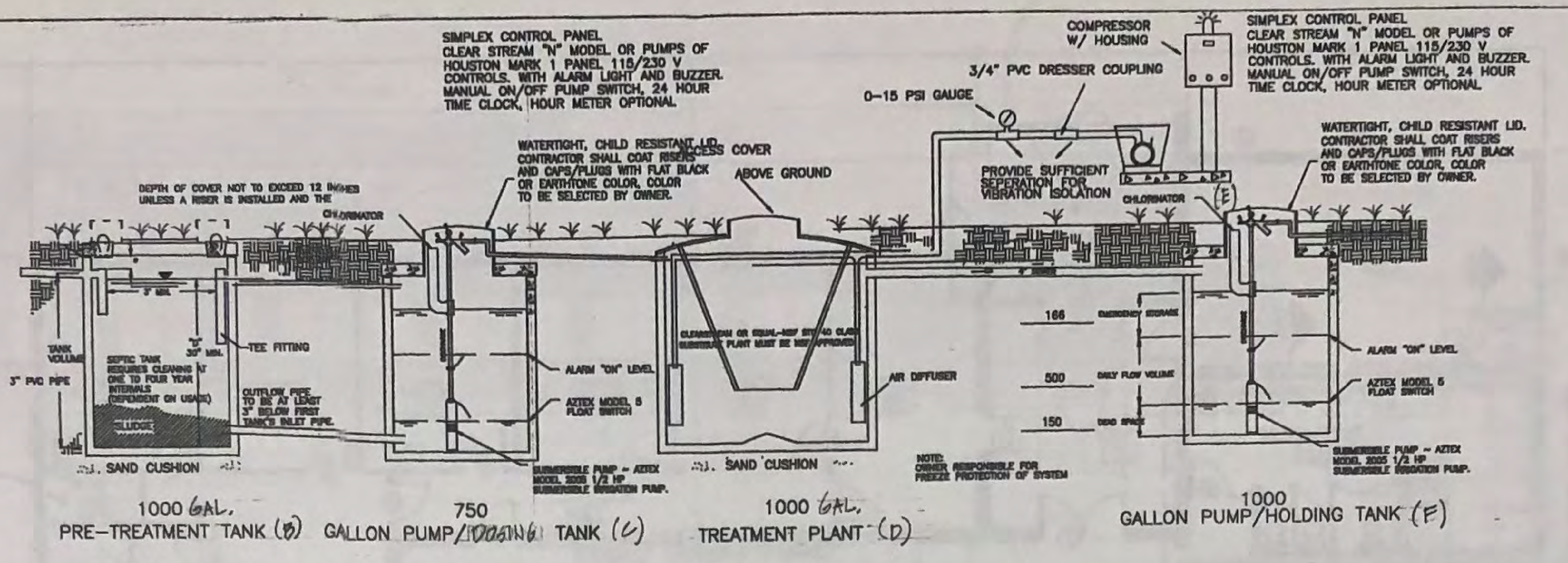
Compound Name	Result	RL	Units	Flags	Dilution	Collected	Analyzed
1,1,1,2-Tetrachloroethane	ND	0.0578	ug/L		1	04/19/2002	04/22/2002
1,1,1-Trichloroethane	ND	0.0511	ug/L		1	04/19/2002	04/22/2002
1,1,2,2-Tetrachloroethane	ND	0.109	ug/L		1	04/19/2002	04/22/2002
1,1,2-Trichloroethane	ND	0.0489	ug/L		1	04/19/2002	04/22/2002
1,1-Dichloroethane	ND	0.0445	ug/L		1	04/19/2002	04/22/2002
1,1-Dichloroethene	ND	0.0492	ug/L		1	04/19/2002	04/22/2002
1,1-Dichloropropene	ND	0.0374	ug/L		1	04/19/2002	04/22/2002
1,2,3-Trichlorobenzene	ND	0.110	ug/L		1	04/19/2002	04/22/2002
1,2,3-Trichloropropane	ND	0.117	ug/L		1	04/19/2002	04/22/2002
1,2,4-Trichlorobenzene	ND	0.140	ug/L		1	04/19/2002	04/22/2002
1,2,4-Trimethylbenzene	ND	0.0744	ug/L		1	04/19/2002	04/22/2002
1,2-Dibromo-3-chloropropane	ND	0.777	ug/L		1	04/19/2002	04/22/2002
1,2-Dibromoethane	ND	0.0895	ug/L		1	04/19/2002	04/22/2002
1,2-Dichlorobenzene	ND	0.0596	ug/L		1	04/19/2002	04/22/2002
1,2-Dichloroethane	ND	0.0632	ug/L		1	04/19/2002	04/22/2002
1,2-Dichloropropane	ND	0.0519	ug/L		1	04/19/2002	04/22/2002
1,3,5-Trimethylbenzene	ND	0.0616	ug/L		1	04/19/2002	04/22/2002
1,3-Dichlorobenzene	ND	0.0591	ug/L		1	04/19/2002	04/22/2002
1,3-Dichloropropane	ND	0.0401	ug/L		1	04/19/2002	04/22/2002
1,4-Dichlorobenzene	ND	0.0495	ug/L		1	04/19/2002	04/22/2002
2,2-Dichloropropane	ND	0.0492	ug/L		1	04/19/2002	04/22/2002
2-Chlorotoluene	ND	0.0359	ug/L		1	04/19/2002	04/22/2002
4-Chlorotoluene	ND	0.0684	ug/L		1	04/19/2002	04/22/2002
4-Isopropyltoluene	ND	0.0899	ug/L		1	04/19/2002	04/22/2002
Benzene	ND	0.0465	ug/L		1	04/19/2002	04/22/2002
Bromobenzene	ND	0.0643	ug/L		1	04/19/2002	04/22/2002
Bromochloromethane	ND	0.0449	ug/L		1	04/19/2002	04/22/2002
Bromodichloromethane	ND	0.0528	ug/L		1	04/19/2002	04/22/2002
Bromoform	ND	0.106	ug/L		1	04/19/2002	04/22/2002
Bromomethane	ND	0.0454	ug/L		1	04/19/2002	04/22/2002
Carbon tetrachloride	ND	0.0553	ug/L		1	04/19/2002	04/22/2002
Chlorobenzene	ND	0.0404	ug/L		1	04/19/2002	04/22/2002
Chloroethane	ND	0.0755	ug/L		1	04/19/2002	04/22/2002
Chloroform	ND	0.0338	ug/L		1	04/19/2002	04/22/2002
Chloromethane	ND	0.0509	ug/L		1	04/19/2002	04/22/2002
Dibromochloromethane	ND	0.0946	ug/L		1	04/19/2002	04/22/2002
Dibromomethane	ND	0.0550	ug/L		1	04/19/2002	04/22/2002
Dichlorodifluoromethane	ND	0.0930	ug/L		1	04/19/2002	04/22/2002
Ethylbenzene	ND	0.0469	ug/L		1	04/19/2002	04/22/2002
Hexachloro-1,3-butadiene	ND	0.155	ug/L		1	04/19/2002	04/22/2002
Isopropylbenzene	ND	0.0769	ug/L		1	04/19/2002	04/22/2002
Methylene chloride	ND	0.0210	ug/L		1	04/19/2002	04/22/2002
Naphthalene	ND	0.0708	ug/L		1	04/19/2002	04/22/2002
Styrene	ND	0.0295	ug/L		1	04/19/2002	04/22/2002

Single Sample report for HSN:
2020410816

Compound Name	Result	RL	Units	Flags	Dilution	Collected	Analyzed
Tetrachloroethene	ND	0.103	ug/L		1	04/19/2002	04/22/2002
Toluene	ND	0.0236	ug/L		1	04/19/2002	04/22/2002
Trichloroethene	ND	0.0506	ug/L		1	04/19/2002	04/22/2002
Trichlorofluoromethane	ND	0.0495	ug/L		1	04/19/2002	04/22/2002
Vinyl chloride	ND	0.0501	ug/L		1	04/19/2002	04/22/2002
cis-1,2-Dichloroethene	ND	0.0353	ug/L		1	04/19/2002	04/22/2002
n-Butylbenzene	ND	0.0888	ug/L		1	04/19/2002	04/22/2002
n-Propylbenzene	ND	0.0698	ug/L		1	04/19/2002	04/22/2002
o-Xylene	ND	0.0409	ug/L		1	04/19/2002	04/22/2002
p-Xylene/m-Xylene	ND	0.0869	ug/L		1	04/19/2002	04/22/2002
sec-Butylbenzene	ND	0.104	ug/L		1	04/19/2002	04/22/2002
tert-Butylbenzene	ND	0.0934	ug/L		1	04/19/2002	04/22/2002
trans-1,2-Dichloroethene	ND	0.0430	ug/L		1	04/19/2002	04/22/2002

NOTE:

THE SPRAYFIELD MUST BE CROWNED AND SHEET FLOW INTO A SWALE THAT PROVIDES POSITIVE DRAINAGE FOR EXCESS SPRAYFIELD WATER RUNOFF.
AS INSTALLATION OF THE SEPTIC IS COMPLETED PROPER VEGETATION SUCH AS ST. AUGUSTINE GRASS MUST BE PROVIDED AND IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO SEE THAT IT IS DONE.

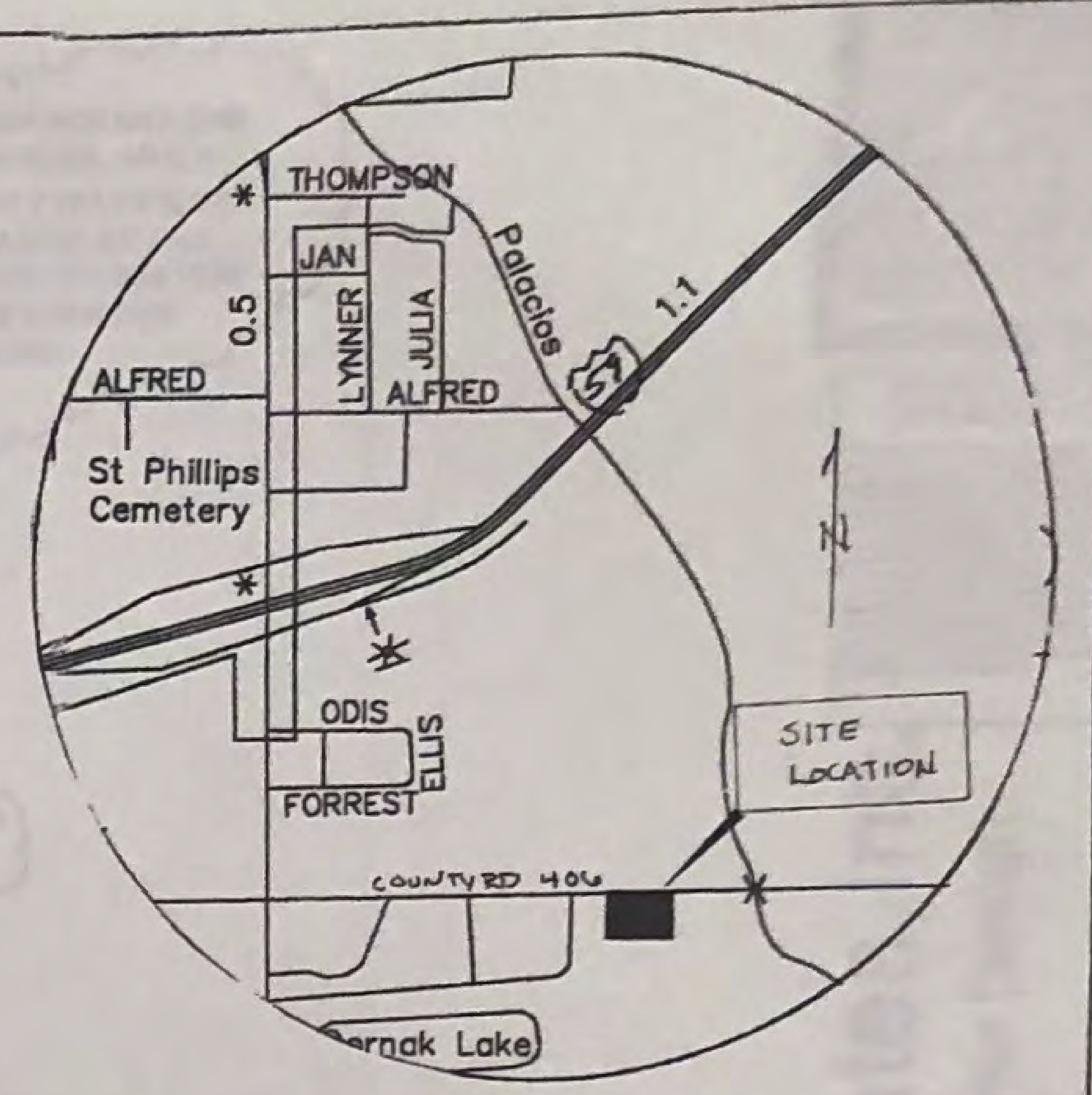


1000 GAL. PRE-TREATMENT TANK (B)

750 GALLON PUMP/DOSING TANK (C)

1000 GAL. TREATMENT PLANT (D)

1000 GALLON PUMP/HOLDING TANK (F)



SITE MAP

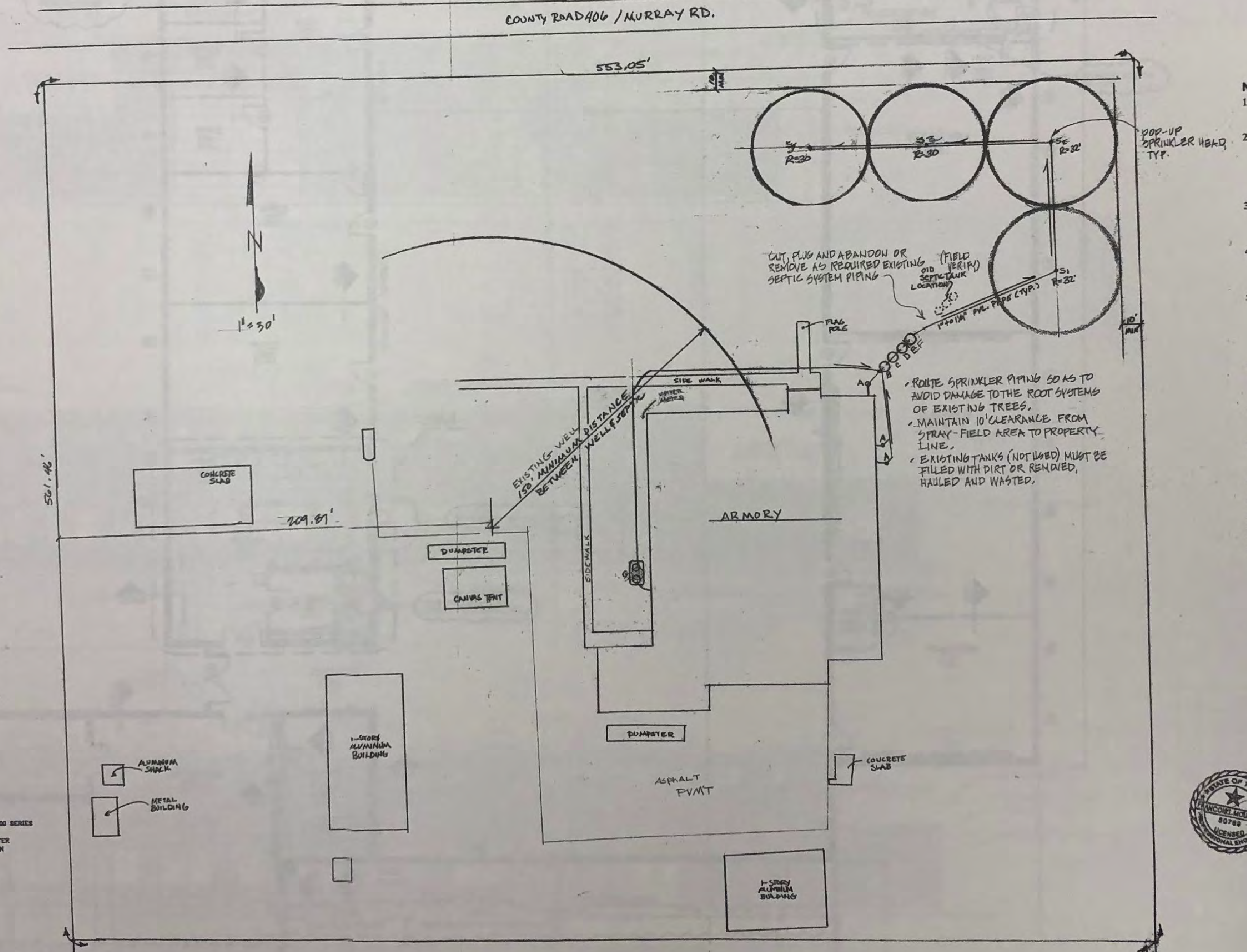
SPRAYFIELD DESIGN FOR TREATED SEWAGE

1. Design Parameters

1.1	Average daily wastewater usage	500 g.
1.2	Soil Cassification	IV
1.3	Area Required	11111
1.5	Area Provided	12086
2.0	Holding tank required	1000 gallons
2.2	Dozing Pump tank	750 gallons
2.4	Treatment Tank	CS 1000N or Equal
2.4	Irrigation Pump Tank	1000 Gallons tank
2.5	Number of Sprinklers	4
2.6	Sprinklers Area	12086 sq. ft.
2,5	Pump specs	P-30
2.6	Horsepower	1/2
2.7	Design PUMP Q	16
2.8	Pump Voltage	110 Volts
2.9	Chlorinator	CS 128Tab. Chlr.
2.10	System Piping	Schedule 40
2.11	Sprinklers	Large Type
2.12	Automatic Timer	Mark II as built by Control of Houston

Average daily flow : 256gallons
BOD Equivqlent Flow:

Assume BOD strength = 500mg/liter
Assume BOD Multipltier = 500 / 240 = 2.08 (std. Bench Mark)
BOD Equivalent Flow =500ED x 2.08 = 1040 gallons/day
Less 10% -104 gall0ns/day BOD REDUCTION FOR PRE TREATMENT
Treatment Plant Loading 936 gpd PLANT CAPACITY BASED ON 200 M MG/LITER BOD
HYDRAULIC AVG FLOW 500 gpd BASEDON ULTRA LOW FLUSH FIXTURE
Sprayfield Area Required 500/.045 = 11111 ft sq..
Holding tank 1000 gallons /day
Dosing pump tank 750 gallons per day
Treatment Plant 1000 gallons / day Use 1- 1000 gpd treatment
plant Pump Tank 1000 gallons tank Based on 2 days maximum Flow



CUT, PLUG AND ABANDON OR REMOVE AS REQUIRED EXISTING SEPTIC SYSTEM PIPING

OLD SEPTIC TANK LOCATION? (FIELD VERIFY)

- ROUTE SPRINKLER PIPING SO AS TO AVOID DAMAGE TO THE ROOT SYSTEMS OF EXISTING TREES.
- MAINTAIN 10' CLEARANCE FROM SPRAY-FIELD AREA TO PROPERTY LINE.
- EXISTING TANKS (NOT USED) MUST BE FILLED WITH DIRT OR REMOVED, HAULED AND WASTED.

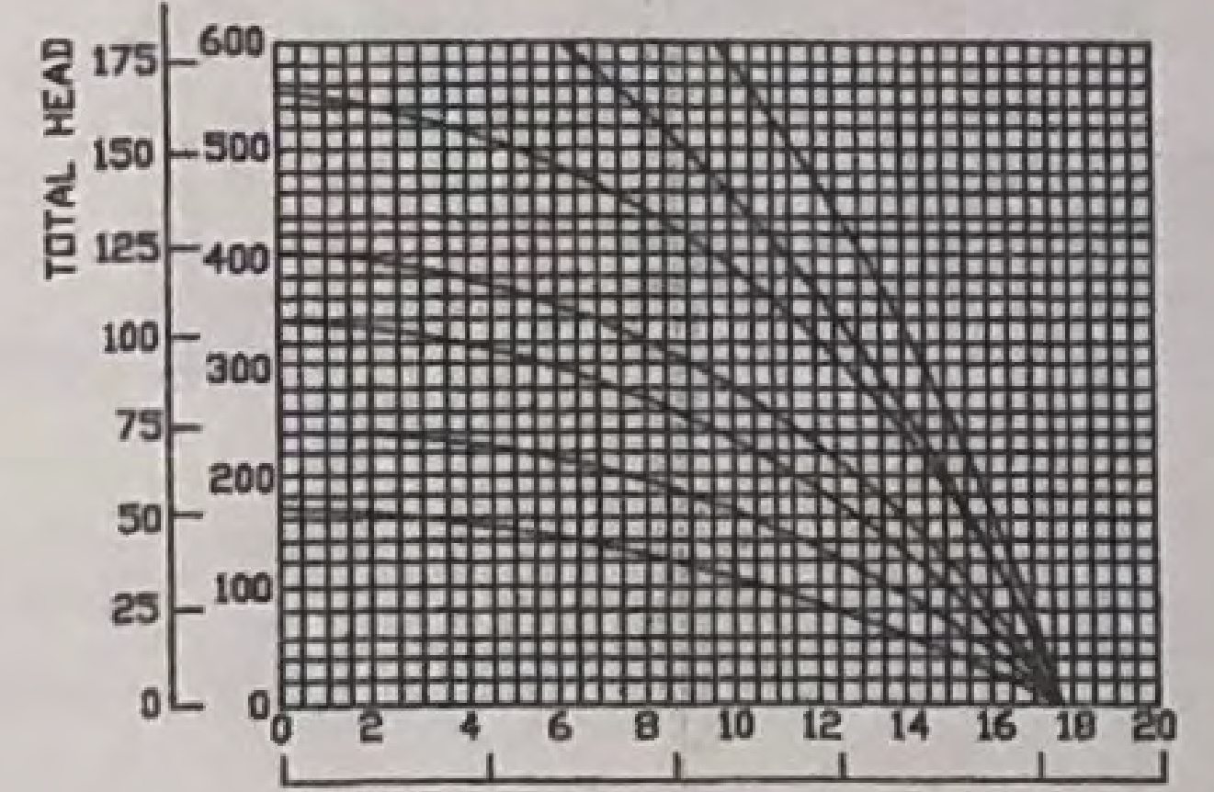
NOTES:

1. An on-site sewage license must be obtained from WHARTON CO. prior to installing this wastewater disposal system.
2. System installation must be by a registered installer of on-site sewage facilities as required by Article 4477-7E of Vernons Civil Statutes or by the owner of the property under license. No component of this system shall be covered up without County's written approval.
3. If any discrepancies exist between this design and actual field conditions it is the installers responsibility to immediately notify the designer and COUNTY prior to start of any work.
4. All construction methods and materials must be in accordance with county and state rules and polices unless specifically noted on this drawing and approved by WHARTON COUNTY
5. Site shall be carefully finished graded after completion of system installation to provide positive storm water runoff. Absorption area shall be crowned. Drainage swales shall be constructed to adequately convey storm water away from the absorption area.
6. This system, it installed and operated in accordance with this plan should not present a hazard to public health of threaten proposed or adjacent water wells.
7. Sewage Disposal system characteristics:
SOIL CLASS IV LONG TERM LOADING RATE 0.1

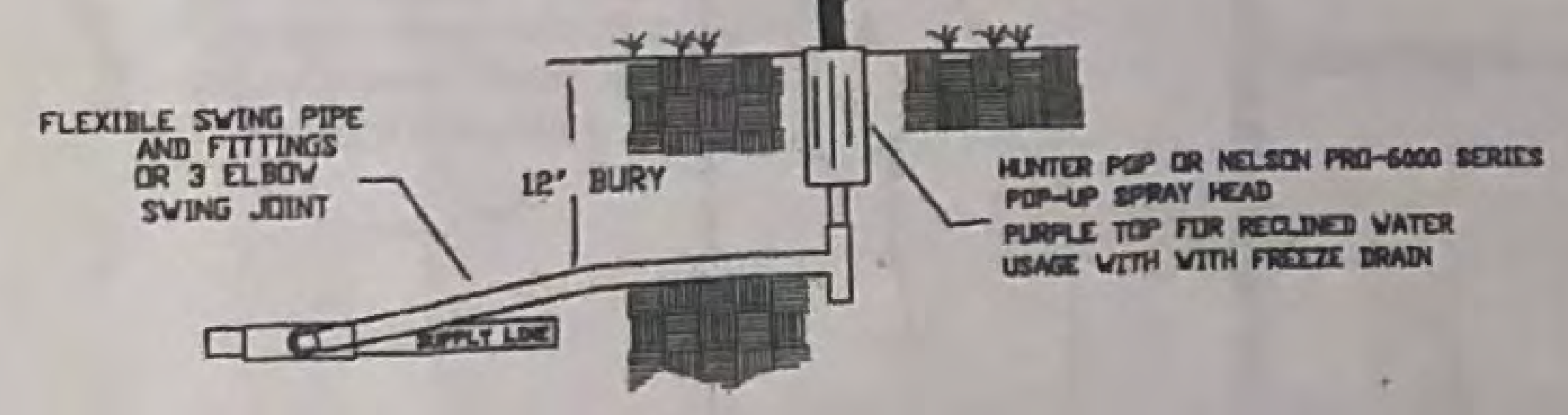
Type of improvments:______ Area:______ Ft2

ADDENDUM:

Whenever ultra low flush (ULF) toilets are indicated and low flush shower heads and faucets are used (1.6 GPF toilet) owner must comply with these requirements to get the 20 % reduction in the septic field.



PUMP SPECS
P-30



POP-UP SPRINKLER HEAD

LEGEND

A= 2 WAY CLEAN OUT
B= 1000 GALLON PRE-TREATMENT TANK
C=750 GALLON DOSING TANK
D=CS1000-N TREATMENT PLANT
F=1000 GALLON PUMP TANK
G= 750 GALLON GREASE INTERCEPTOR(PARK)
E= CS128 TAB CLORINATOR

FRANCOIS T. MOUAWAD 80769

Mouawad
8/6/02

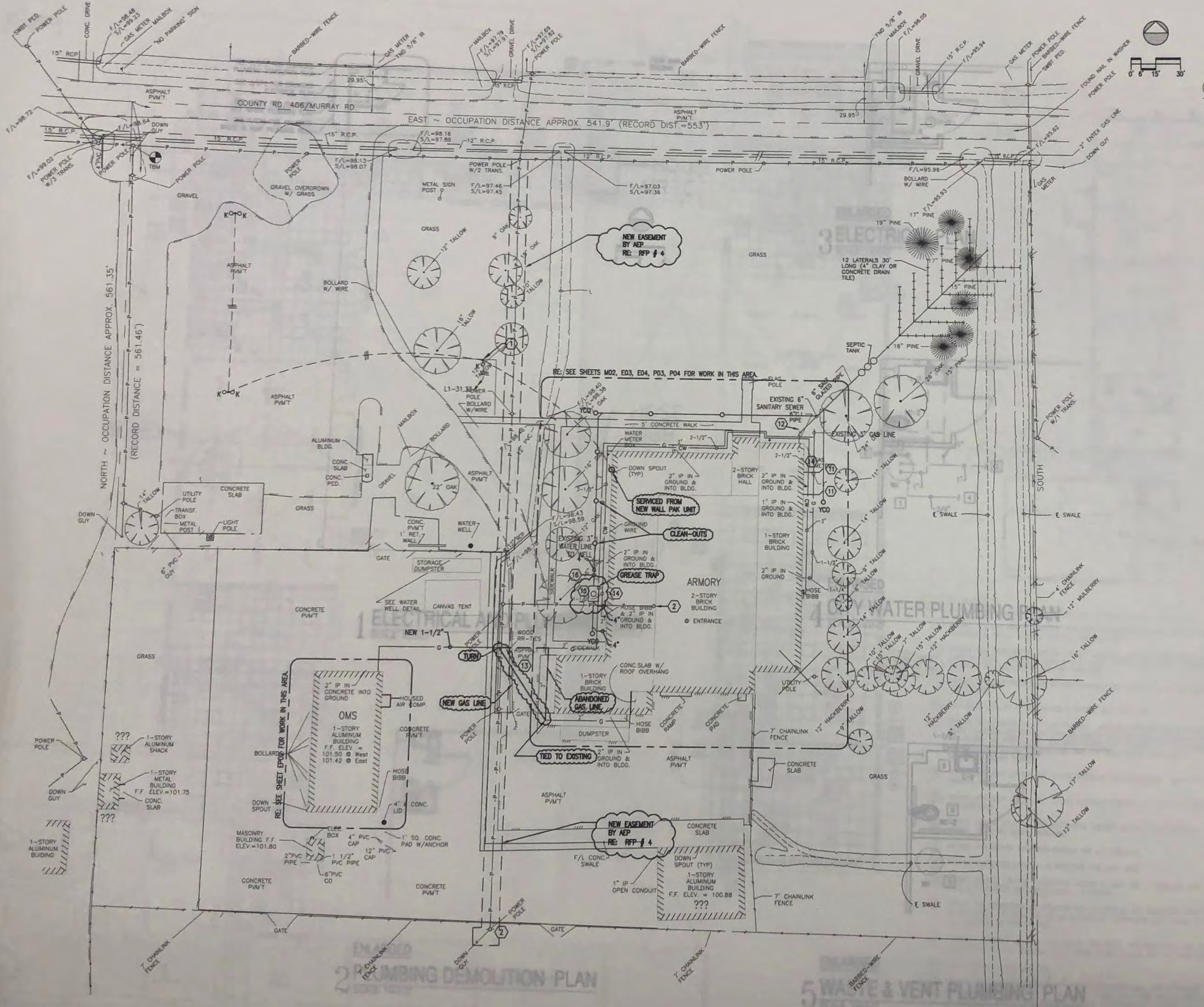
SP4
SHEET 4 OF 4

PROFESSIONAL ENGINEERING SERVICES

Scale:
Date: 8-2-02
APP'D: FT. MOUAWAD,P.E.
3716 FM 1960 E. Suite 17
Humble, TX 77338
(713) 852-8852
Drawn By:
Revision:

SEPTIC SYSTEM DESIGN

NATIONAL GUARD ARMORY
EL CAMPO, TEXAS



1 MEP SITE PLAN

SCALE: 1:30-0"

GENERAL NOTES:

A. FIELD VERIFY EXACT LOCATION AND EXISTING CONDITIONS OF EXISTING PLUMBING, MECHANICAL, AND ELECTRICAL. IT IS THE INTENT OF THESE PLANS TO PROVIDE A COMPLETE AND WORKABLE SYSTEM OF PLUMBING, MECHANICAL, AND ELECTRICAL. SHOULD A BIDDER FIND OMISSIONS OR DISCREPANCIES IN THE PLANS, HE/SHE SHALL NOTIFY THE ENGINEER PRIOR TO THE BID DATE AND A WRITTEN CLARIFICATION WILL BE ISSUED. ALL MATERIALS AND LABOR, WHETHER SPECIFICALLY INDICATED ON PLANS OR NOT, WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND FUNCTION OF THE SYSTEM SHALL BE FURNISHED BY THIS CONTRACTOR. INCLUDE ALL COSTS OF CHANGES, IF/AS REQUIRED IN BID PROPOSAL.

B. COORDINATE PLUMBING, MECHANICAL, ELECTRICAL, AND GENERAL CONSTRUCTION.

C. GENERAL CONTRACTOR SHALL OBTAIN THE SERVICES OF A UTILITY LOCATOR COMPANY TO FIND ALL EXISTING UNDERGROUND UTILITIES. INCLUDE ALL COSTS IN BID PROPOSAL.

D. FIELD VERIFY EXISTING CONDITIONS AND ELEVATIONS PRIOR TO COMMENCING ANY WORK.

E. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASING AND SEQUENCE OF CONSTRUCTION OF WORK. COORDINATE WITH GENERAL CONTRACTOR.

F. DO NOT SPLICE WIRING BELOW GRADE.

G. CUT AND PATCH EXISTING ASPHALT DRIVEWAYS AND PARKING LOTS.

H. BORE EXISTING CONCRETE SIDEWALKS (U.N.O.).

I. CONTRACTOR SHALL VERIFY ELEVATIONS AND AVAILABLE FALL FROM BUILDING SEWER DRAINS TO SEPTIC LINE CONNECTION POINT PRIOR TO BEGINNING CONSTRUCTION. PROVIDE ENGINEER WITH WRITTEN REPORT OF FINDINGS.

ELECTRICAL KEYED NOTES:

(1) SEE POLE FOUNDATION DETAIL 3/E05.

(2) EXISTING SERVICE TO BUILDING. SEE SHEET E06 FOR MODIFICATIONS TO EXISTING SERVICES.

(3) 3/4" - 2#6 & #12G. VIA CONTACTOR "C-3" & TIMECLOCK.

PLUMBING KEYED NOTES:

(11) PROVIDE NEW 4" SANITARY SEWER LINE EXISTING FROM EXISTING BUILDING TO MAIN SANITARY SEWER LINE.

(12) EXISTING MAIN SANITARY SEWER LINE AT THIS APPROXIMATE LOCATION.

(13) PROVIDE NEW GAS LINE TO REPLACE EXISTING AND RECONNECT TO EXISTING GAS LINE. FIELD VERIFY EXACT LOCATION AND PIPE SIZE. INFORM ENGINEER IF PIPE SIZE IS LARGER THAN 1.5", BUT IN NO CASE PROVIDE SMALLER THAN 1.5" PIPE. PROVIDE PE GAS PIPE UNDERGROUND.

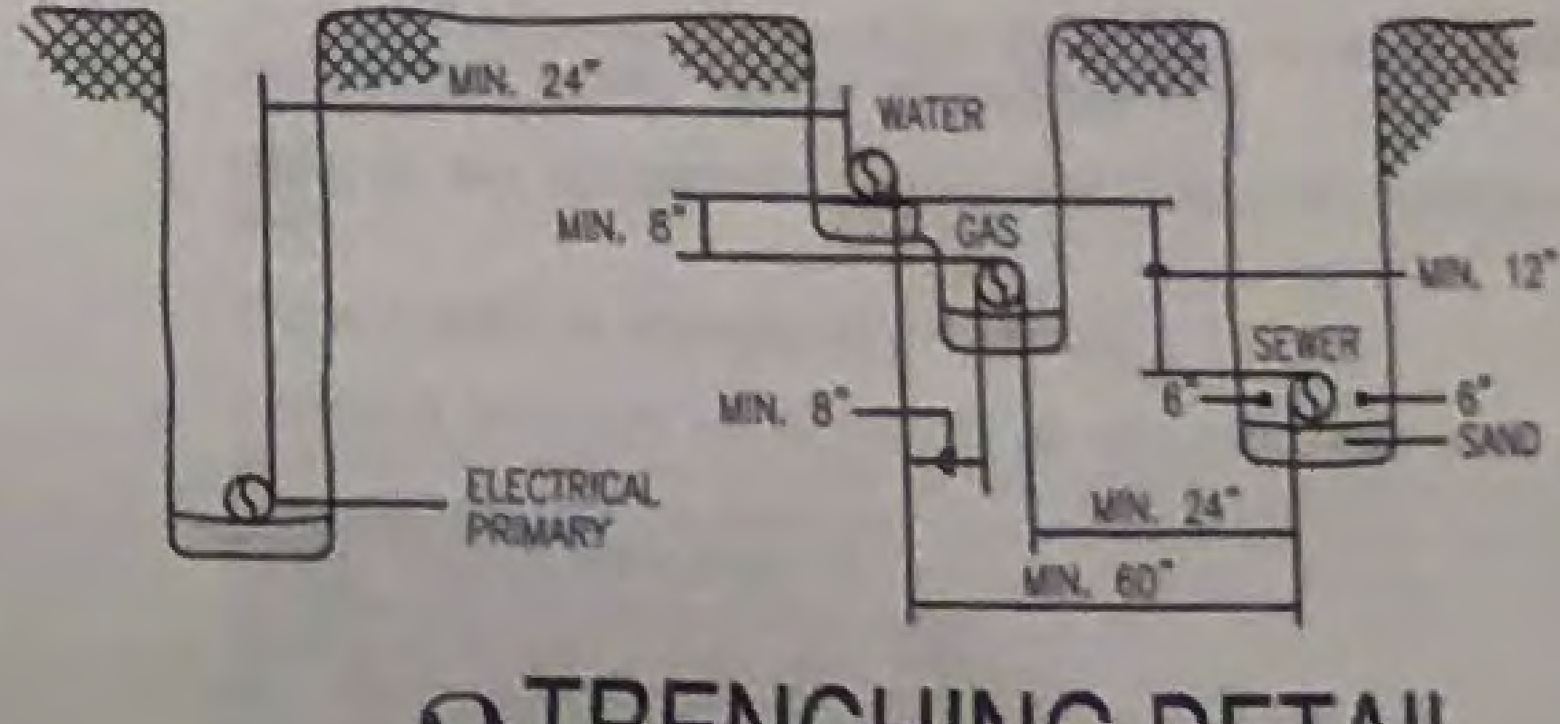
(14) PROVIDE NEW 2" DOMESTIC WATER LINE AND CONNECT TO EXISTING DOMESTIC WATER LINE. SEE SHEET P04 FOR ADDITIONAL INFORMATION.

(15) PROVIDE NEW GREASE TRAP. SEE SHEET P06 FOR ADDITIONAL INFORMATION.

(16) PROVIDE NEW 4" SANITARY SEWER LINE, EXTEND, AND CONNECT TO EXISTING MAIN SEWER LINE.

NOTES:

1. CLEAR TRENCH OF ALL ROCKS AND DEBRIS BEFORE ADDING SAND CUSHION.
2. COMPACT TRENCH FILL TO 95% PROCTOR DENSITY.
3. MAINTAIN A MINIMUM OF 60 INCHES UNDISTURBED EARTH BETWEEN PARALLEL WATER AND SEWER LINES OR SUPPORT WATER LINE ON SEPARATE SHELF A MINIMUM OF 12" ABOVE SEWER LINE.
4. MAINTAIN A MINIMUM OF 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND SEWER. MAINTAIN A MINIMUM OF 12" VERTICALLY OR 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND WATER LINES, GAS LINES, TELEPHONE RACEWAYS AND CABLE RACEWAYS.



2 TRENCHING DETAIL

SCALE: NONE

RD RECORD DRAWINGS
THESE RECORD DOCUMENTS HAVE BEEN BASED ON INFORMATION PROVIDED BY OTHERS. THE DESIGN PROFESSIONAL HAS NOT VERIFIED THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HERIN AS A RESULT.

ELECTRONIC DRAWING FILE

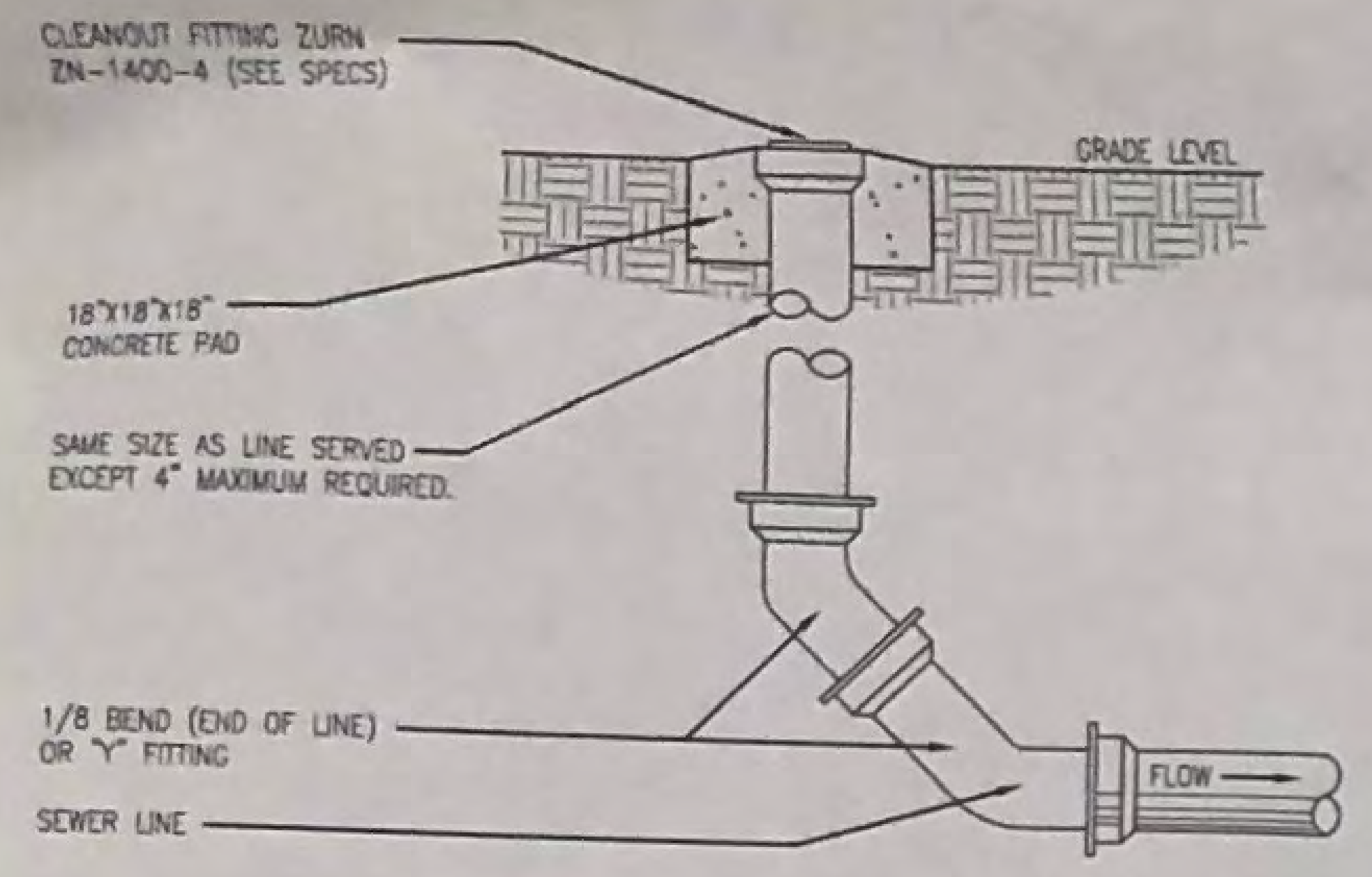
Holster & Associates, Inc.
Architecture, Planning and Interior Design
7607 EastMark Drive, Suite 200
College Station, Texas 77840 (979) 693-3179

RENOVATIONS & MAINTENANCE
TO
TEXAS NATIONAL GUARD
READINESS CENTER
EL CAMPO, TEXAS

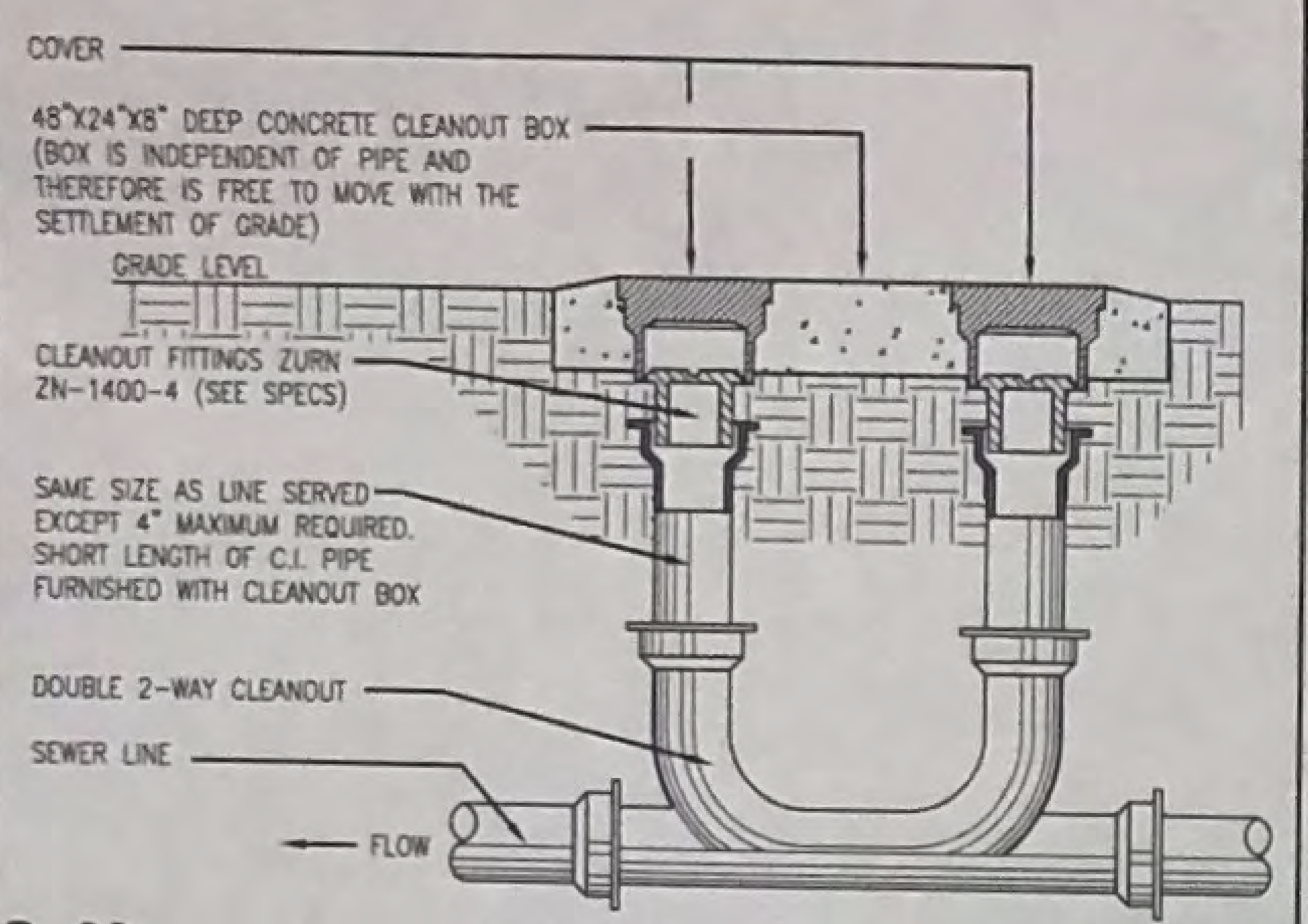
ISSUE DATE 07-25-02
PROJECT NO.
DRAWN BY WMRNP
CHECKED BY CKMW
REVISION
△
△
△
△
△
△

MEP1

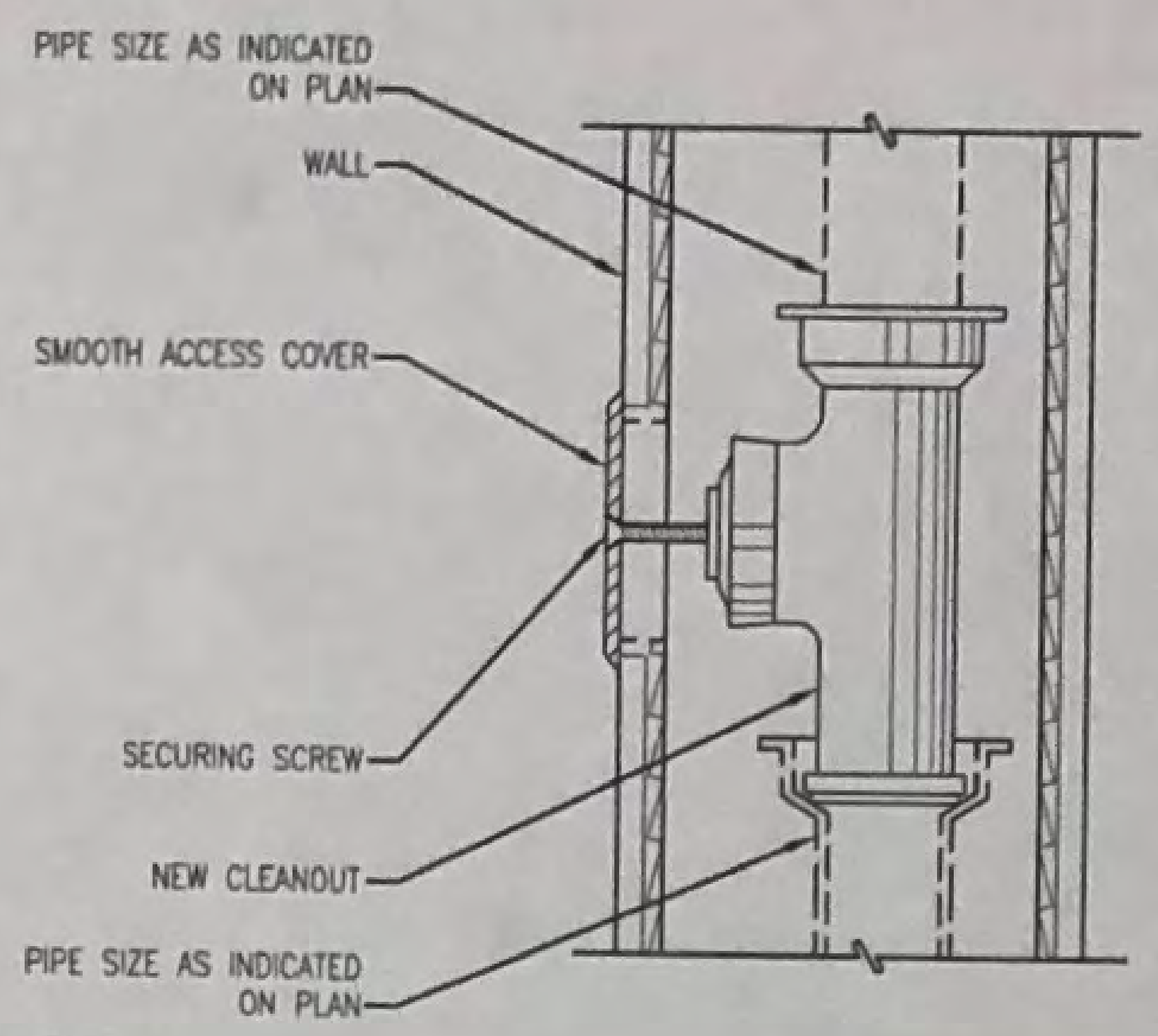
EL CAMPO ARMORY - MAIN BUILDING



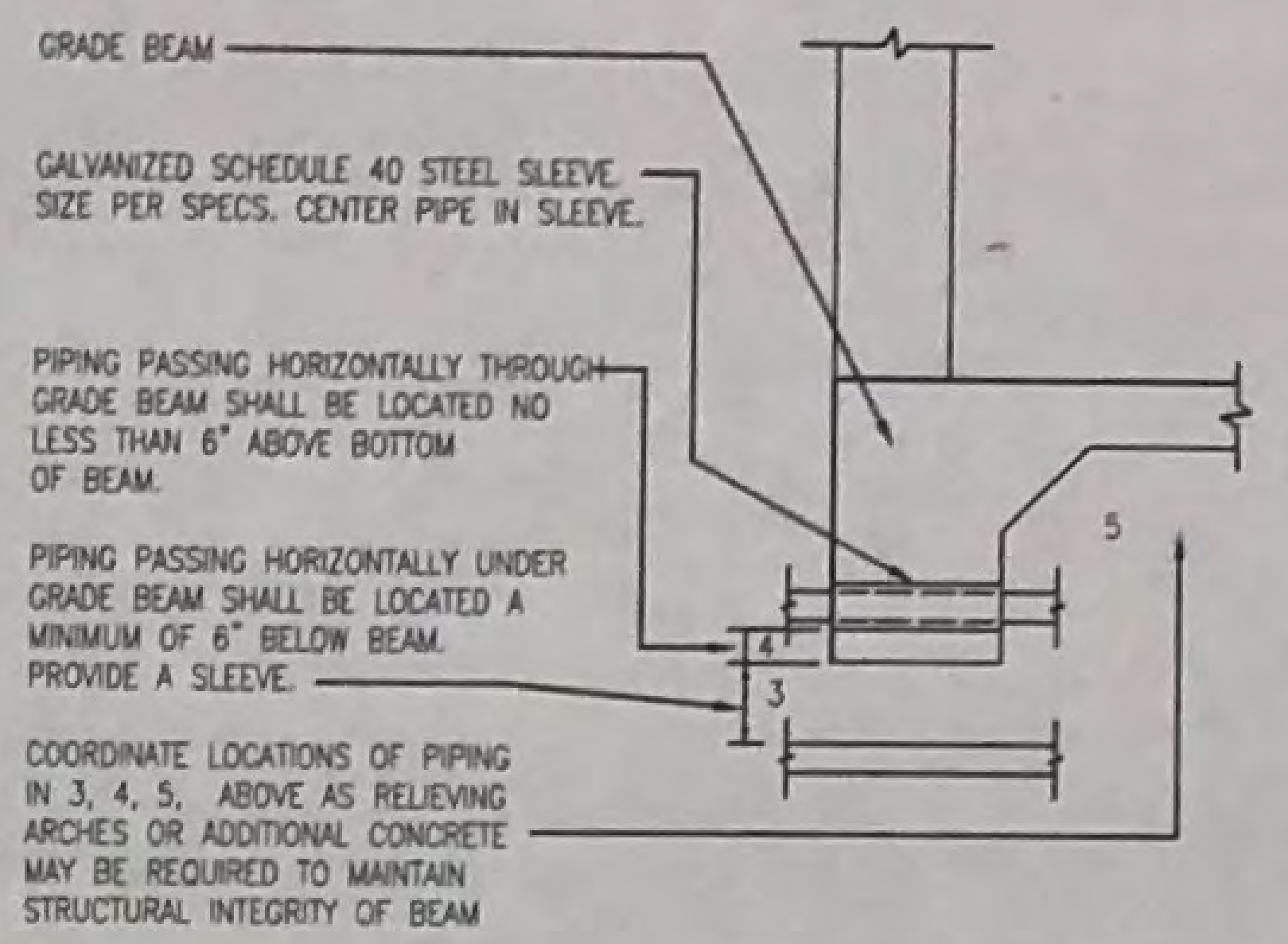
P-01
YARD CLEANOUT DETAIL
NO SCALE



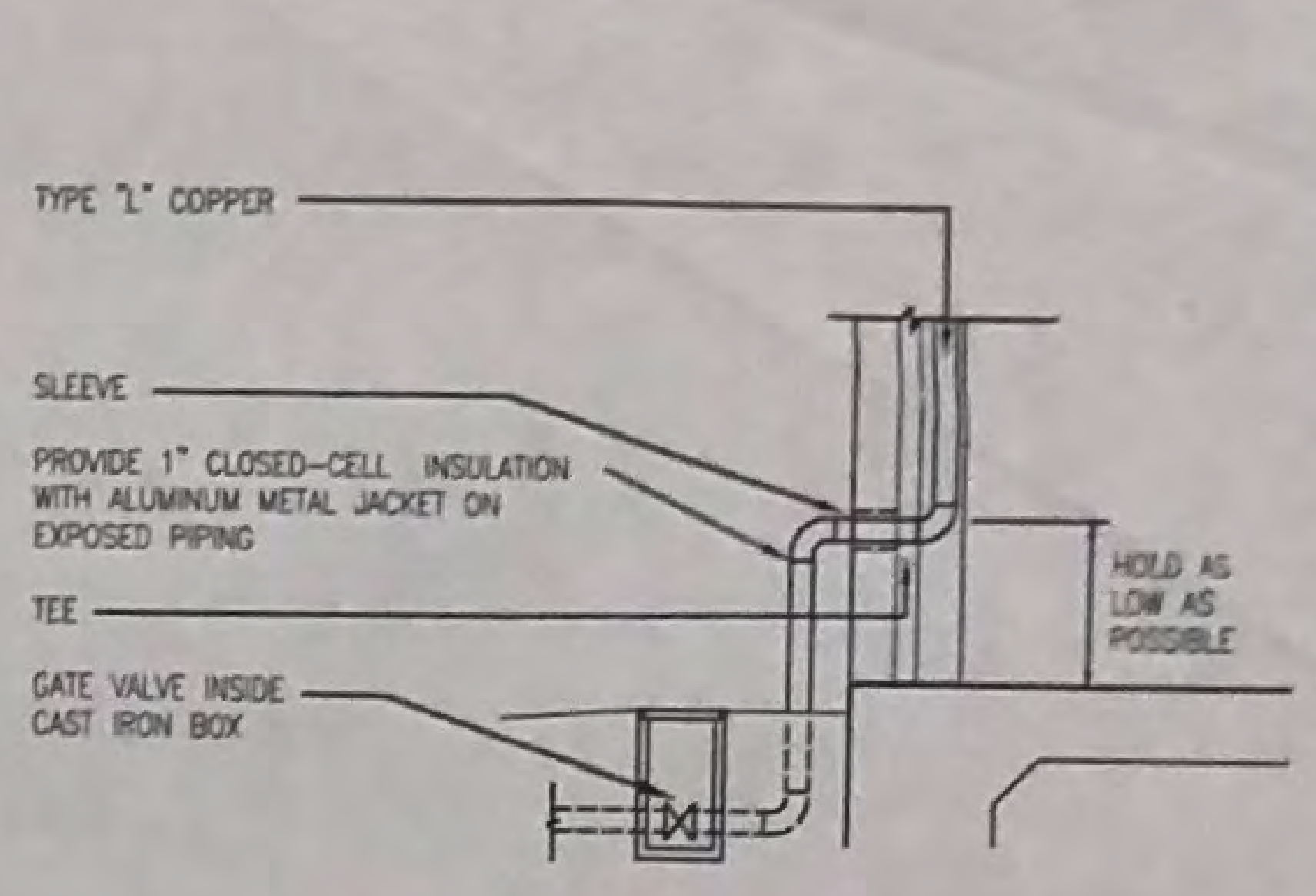
P-02
2 WAY YARD CLEANOUT DETAIL
NO SCALE



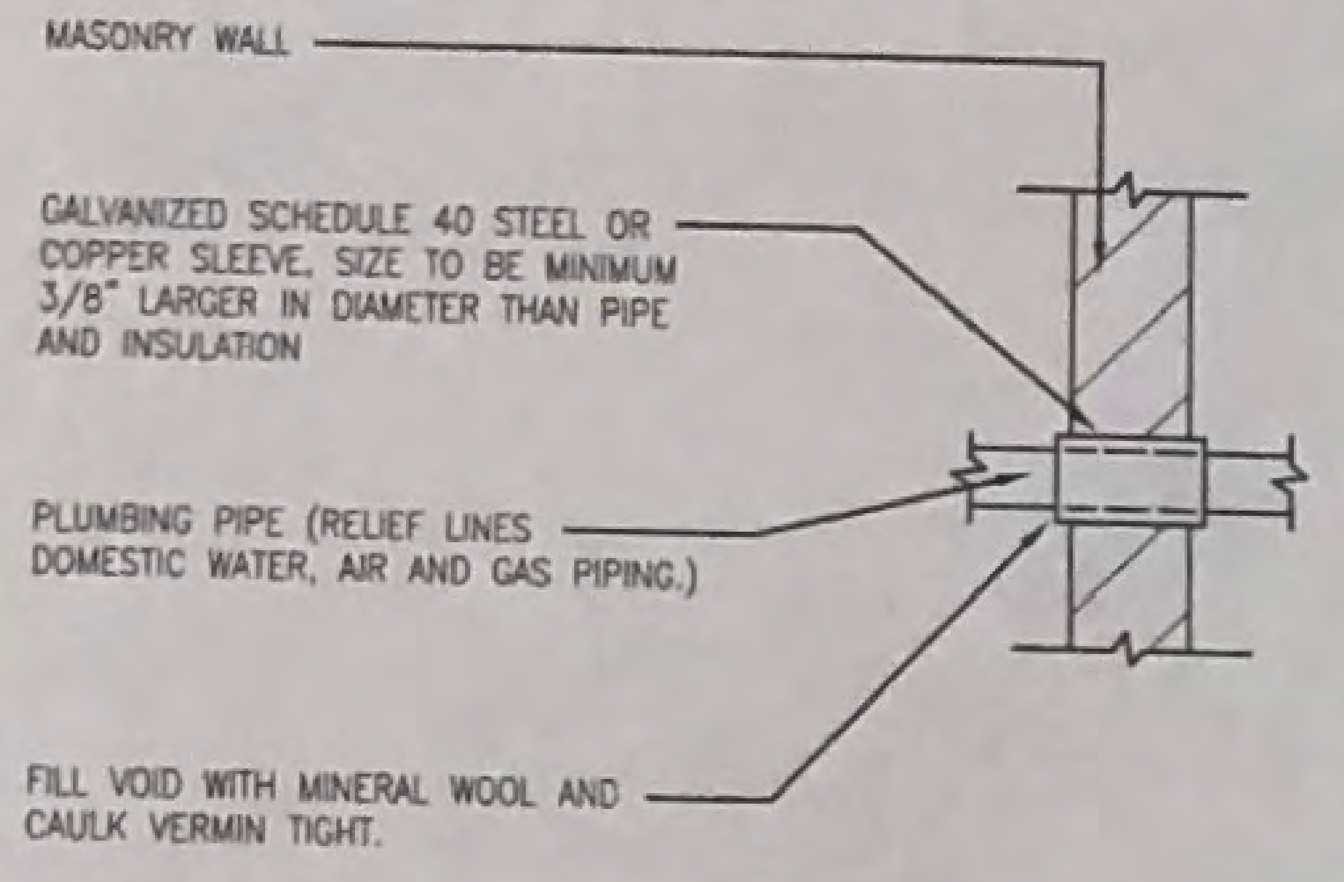
P-03
WALL CLEANOUT DETAIL
NO SCALE



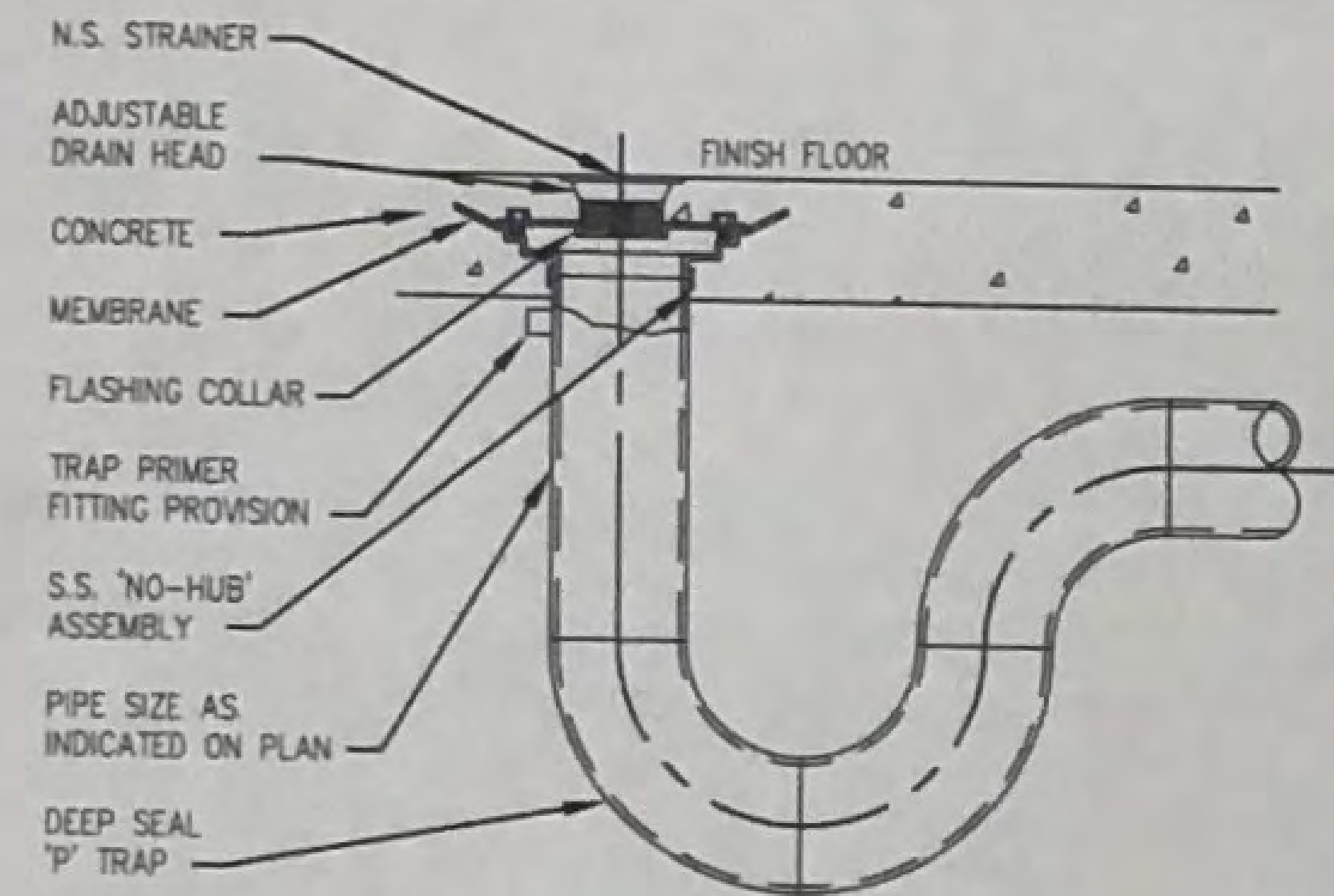
P-05
GRADE BEAM SLEEVE DETAIL
NO SCALE



P-06
WATER ENTRANCE DETAIL
NO SCALE

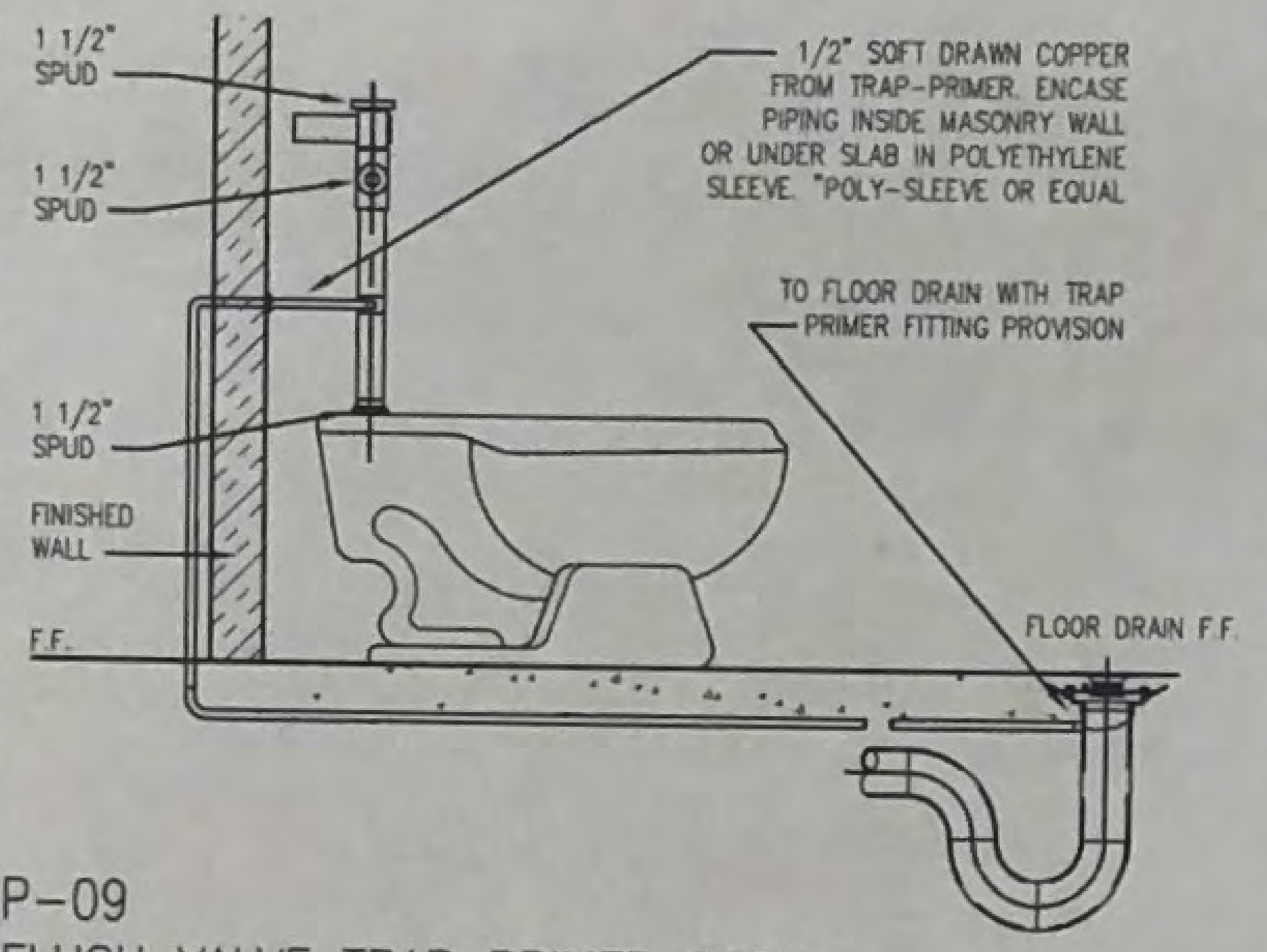


P-07
WALL SLEEVE DETAIL
NO SCALE

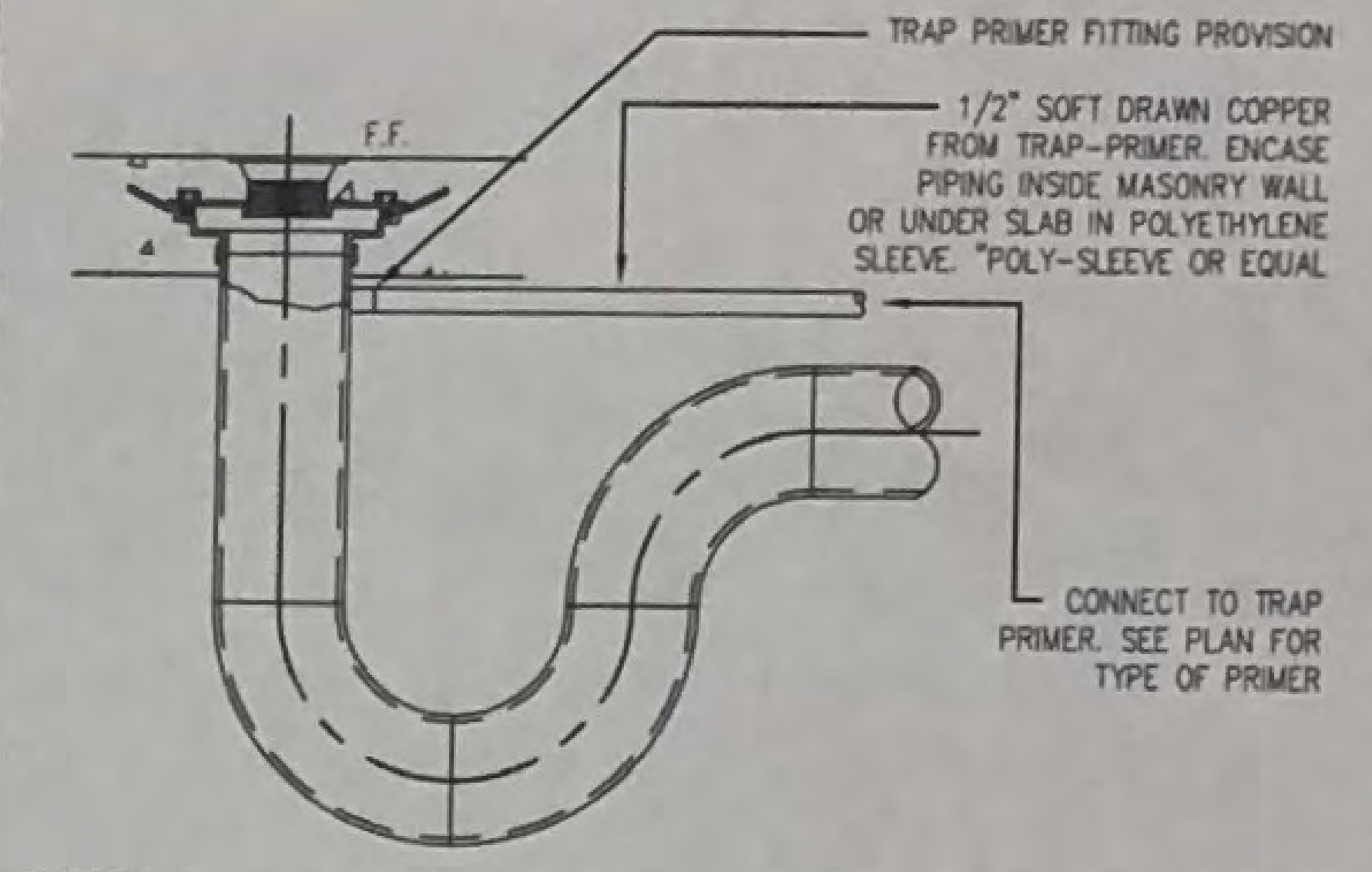


NOTE:
PROVIDE T.S.P. CONNECTION WHERE INDICATED.

P-08
FLOOR DRAIN DETAIL
NO SCALE

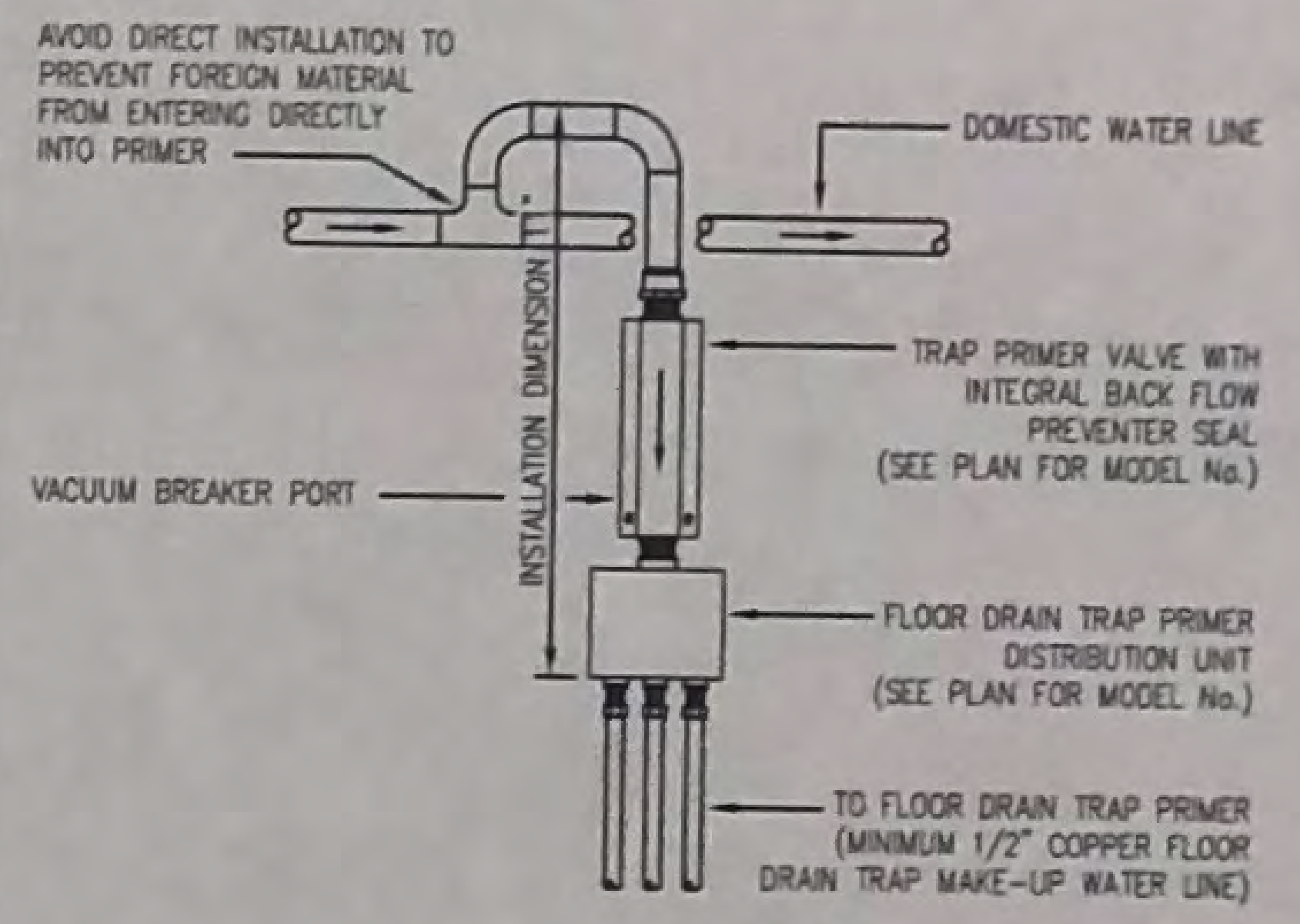


P-09
FLUSH VALVE TRAP PRIMER DETAIL
NO SCALE

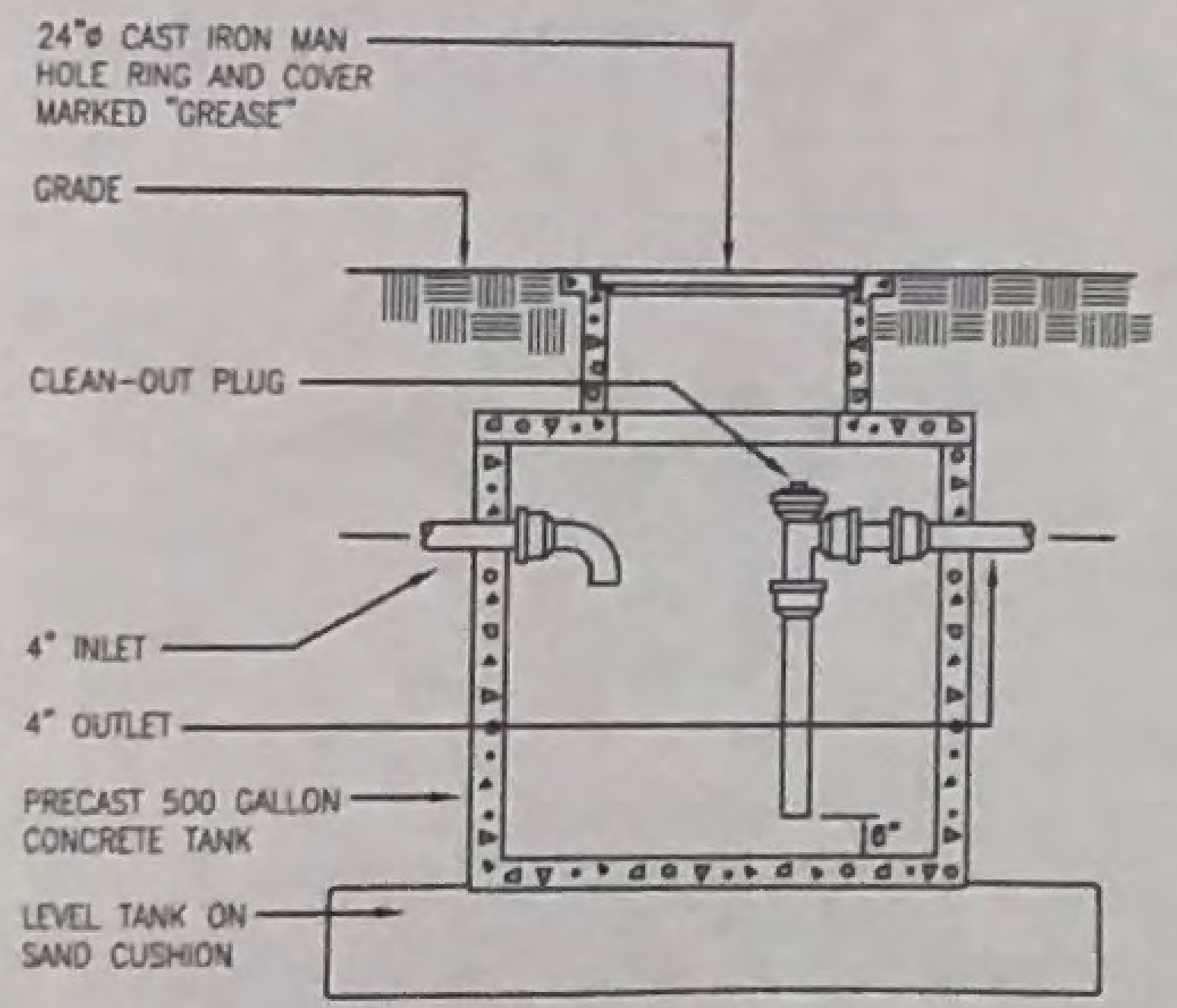


NOTE:
PROVIDE T.S.P. CONNECTION WHERE INDICATED.

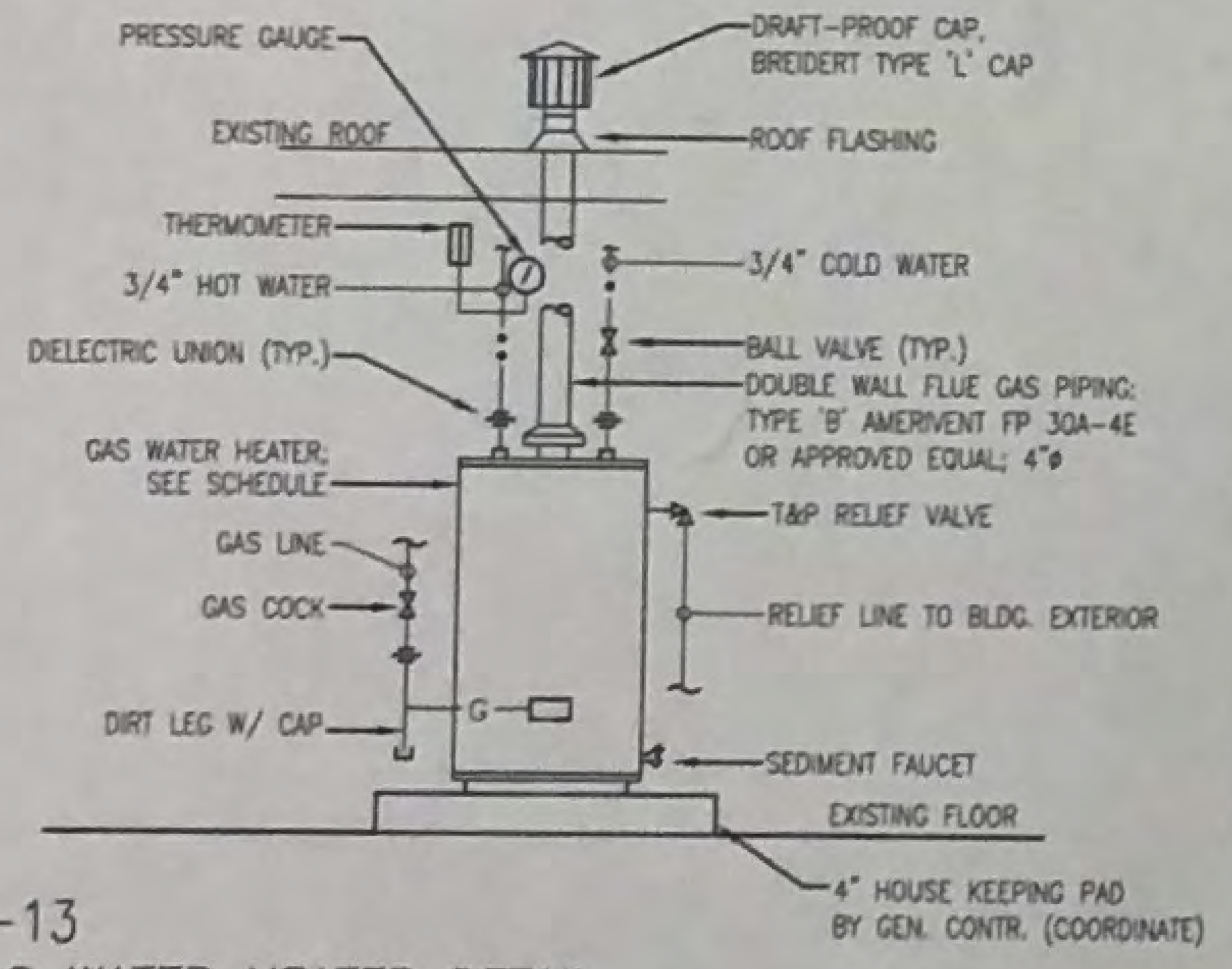
P-10
FLOOR DRAIN WITH TRAP PRIMER DETAIL
NO SCALE



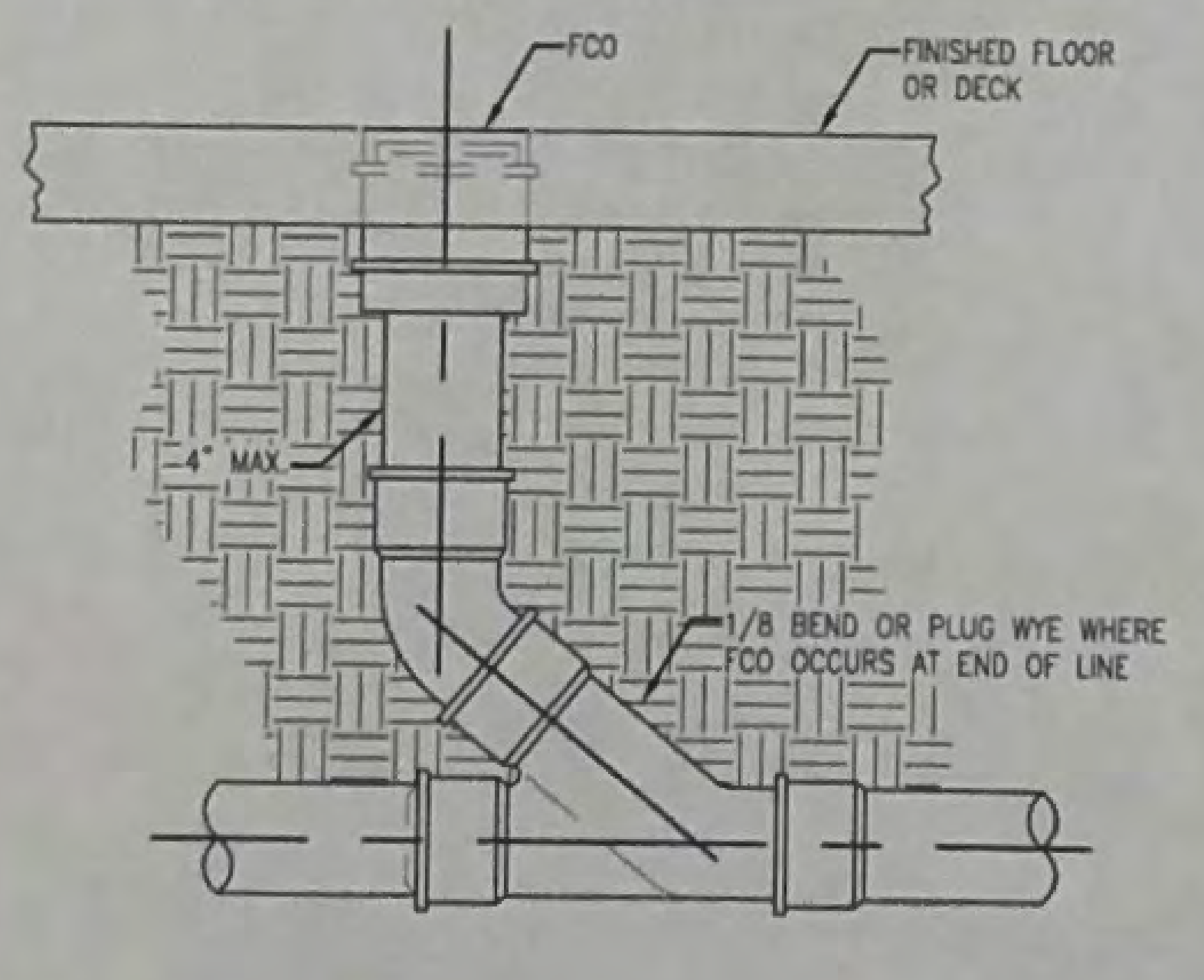
P-11
TRAP PRIMER CONNECTION DETAIL – ABOVE CEILING
NO SCALE



P-12
GREASE TRAP DETAIL
NO SCALE

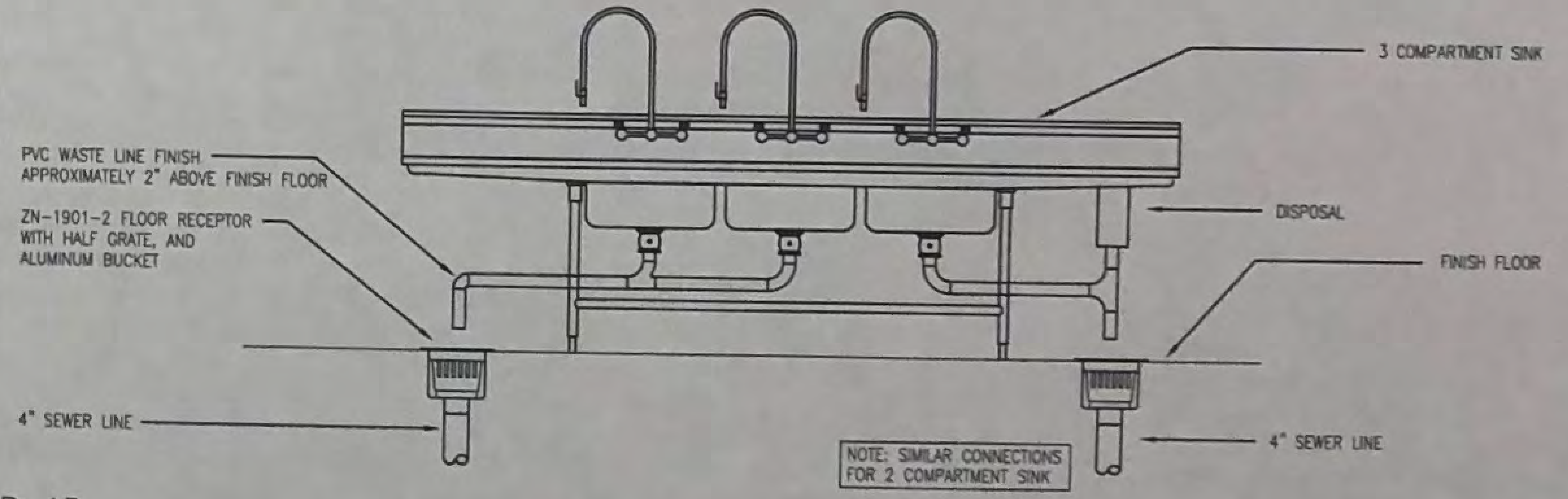


P-13
GAS WATER HEATER DETAIL
NO SCALE



P-14
SHOWER DETAIL
NO SCALE

NOTE:
PROVIDE VANDAL PROOF SCREWS



P-15
3 COMPARTMENT SINK – FLOOR DRAIN CONNECTION
NO SCALE

Holster & Associates, Inc.
Architecture, Planning and Interior Design
7607 EastMark Drive, Suite 200
College Station, Texas 77840 (979) 693-3179

RENOVATIONS & MAINTENANCE
TO
TEXAS NATIONAL GUARD
READINESS CENTER
EL CAMPO, TEXAS

ISSUE DATE 07-25-02
PROJECT NO.
DRAWN BY VV/MR/NP
CHECKED BY CK/MW
REVISION
△ ______
△ ______
△ ______
△ ______
△ ______
△ ______

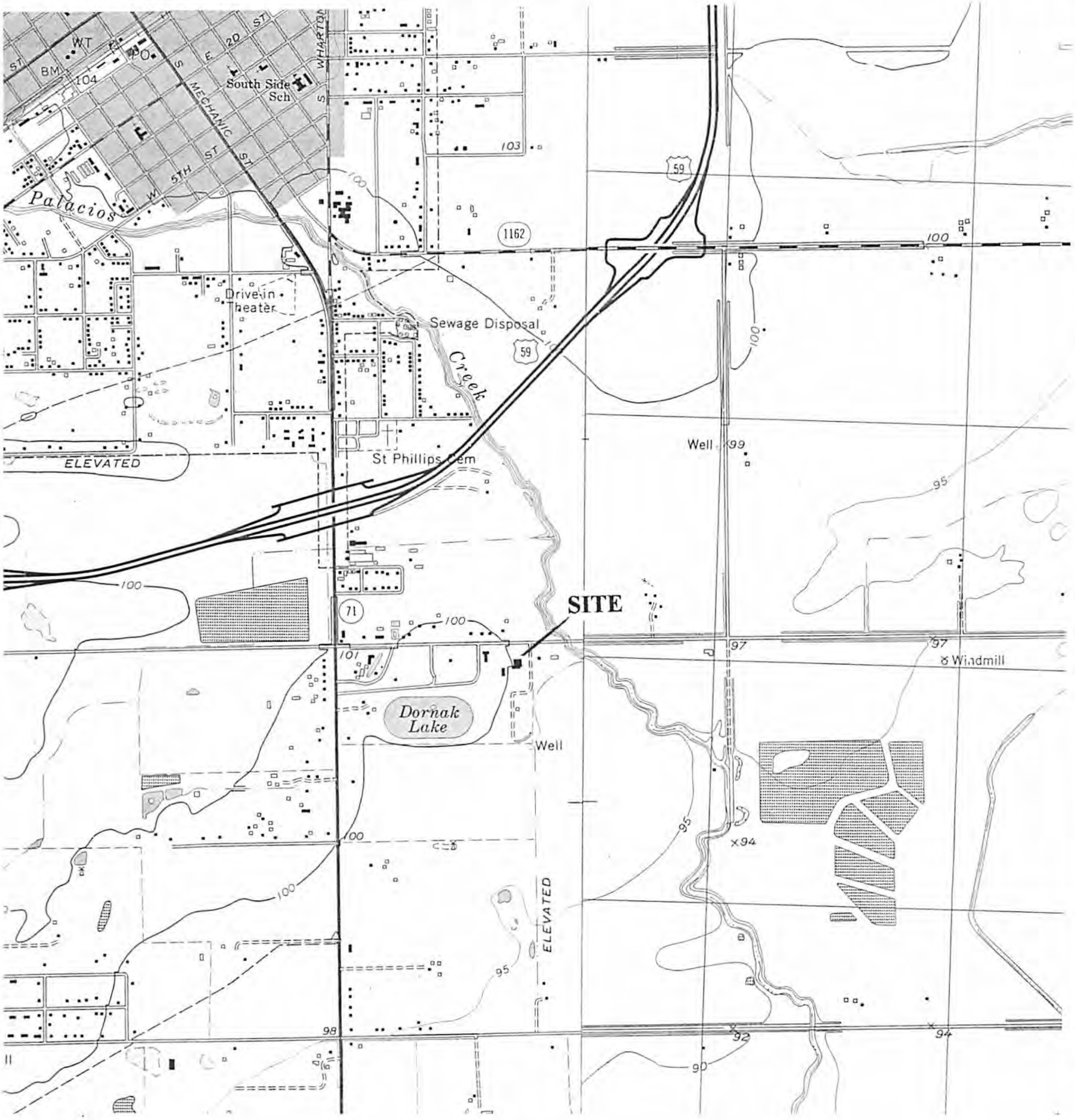
EL CAMPO ARMORY - MAIN BUILDING

2s07p06
P06
SHEET _ OF _

TABLE 1. Registered Water Wells in Area of OMS #12

MAP ID (Figure 3)	WELL NO.	OWNER	DISTANCE FROM OMS	DEPTH (FT)	AQUIFER	USE
1	66-54-6L	Butch Skow	0.7 mi.	104	Sand	Domestic
2	66-54-6P	Bob Furch	1.7 mi.	105	Sand/Grvl	Domestic
3	66-54-6I	R. Bender	2.0 mi.	115	Sand/Grvl	Domestic
4	66-54-6T	M. Adamcik	0.9 mi.	105	Sand	Domestic
5	66-54-6I (D)	Pat Fass	2.0 mi.	105	Sand/Grvl	Domestic
6	66-54-6SS	David Cormier	0.3 mi.	105	Sand/Grvl	Domestic
7	66-54-6PP	Joe Vallejo	1.2 mi.	105	Sand/Grvl	Domestic
8	66-54-6WW	Stanley Blake	1.7 mi.	104	Sand	Domestic
9	66-54-6A	Lupe Araguz	1.6 mi.	115	Sand	Domestic
10	66-54-6	L. Berglund	1.8 mi.	100	Sand	Domestic
11	66-54-6	Resource Drilling	1.4 mi.	200	Sand/Grvl	Supply
12	66-54-6	E. Schoenberg	0.7 mi.	105	Sand	Domestic
13	66-54-6N	BDK Drilling	0.8 mi.	210	Sand/Grvl	Supply
14	66-54-6P (D)	Wm. Sheppard	1.8 mi.	105	Sand	Domestic
15	66-54-6H	L. Mitchell	0.2 mi.	105	Gravel	Domestic
16	66-54-6	McCoys	0.2 mi.	130	Gravel	Domestic
17	66-54-6SS	Jere Jones	0.6 mi.	110	Sand	Domestic
18	66-54-6	Leonard Cerny	0.8 mi.	90	Sand	Domestic
19	66-54-6	El Campo Little League	0.1 mi.	115	Sand	Irrigation
20	66-54-6U	Joe Filips	0.3 mi.	100	Sand/Grvl	Domestic
21	66-54-6	Jimmy Kainer	2.2 mi.	175	Sand	Domestic
22	66-54-6SS	El Campo Livestck Com.	0.3 mi.	120	Sand	Domestic
23	66-54-6H (D)	Gert Connor	0.3 mi.	105	Sand	Domestic

(D) - Indicates a duplicate well number as listed by State.



SCALE: 1 IN = 2000 FT

CONTOUR INTERVAL = 5 FT

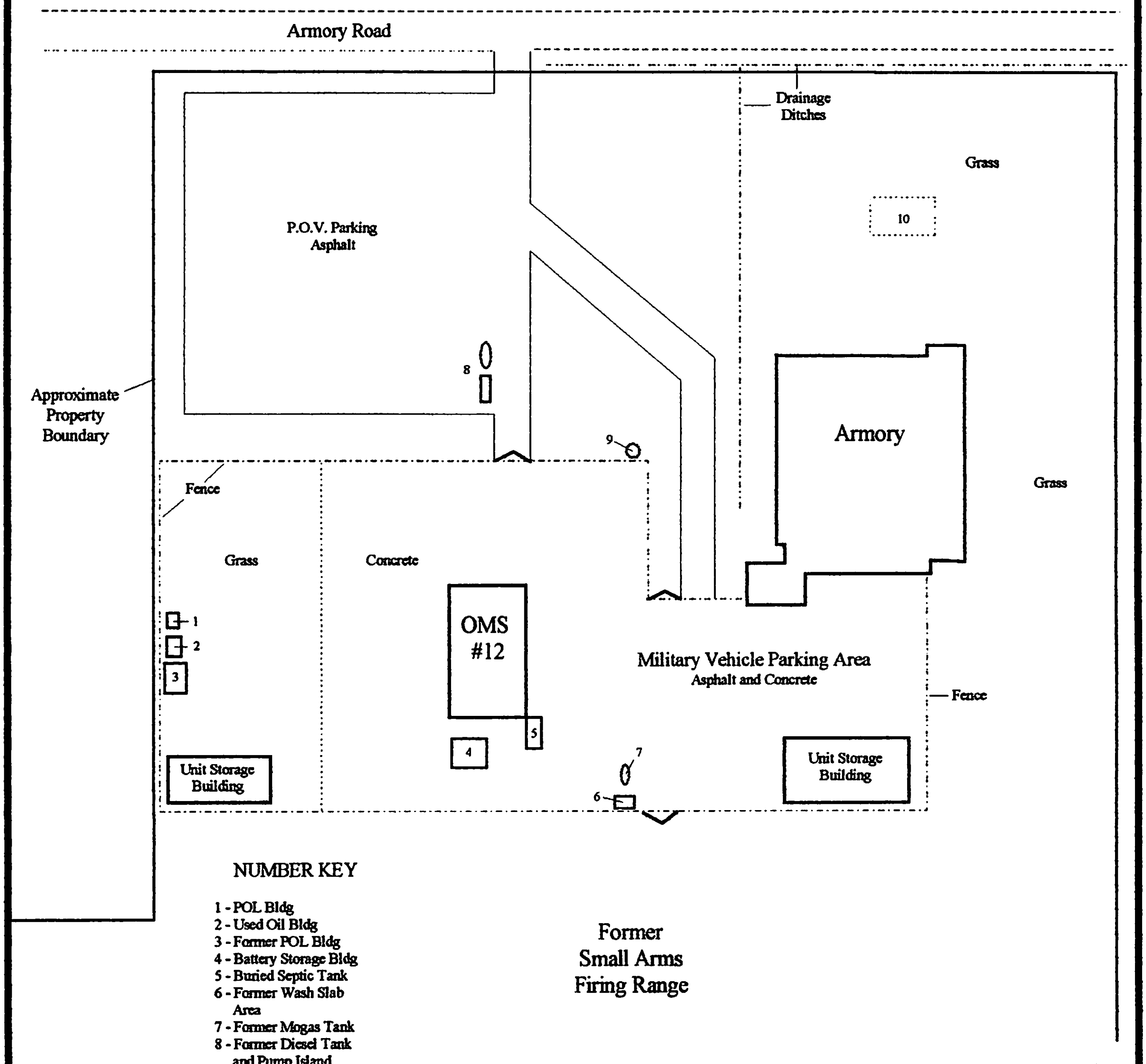
N

SOURCE: EL CAMPO (1965) AND PIERCE (1952), TEXAS
7.5' USGS TOPOGRAPHIC QUADRANGLE MAPS

FIGURE 1
SITE LOCATION AND TOPOGRAPHY

EL CAMPO OMS #12
WHARTON COUNTY, TEXAS

CER	DATE: 11-01	PROJECT: 0920-01	FILE ID:	REV #:



NUMBER KEY

1 - POL Bldg
2 - Used Oil Bldg
3 - Former POL Bldg
4 - Battery Storage Bldg
5 - Buried Septic Tank
6 - Former Wash Slab Area
7 - Former Mogas Tank
8 - Former Diesel Tank and Pump Island
9 - Water Well
10 - Septic Tank and Drain Field (Approx)
︿ - Gate

FIGURE NOT TO SCALE

FIGURE 2
SITE LAYOUT

EL CAMPO OMS #12
WHARTON COUNTY, TEXAS

CER	DATE: 11-01	PROJECT: 0920-01	FILE ID:	REV #:

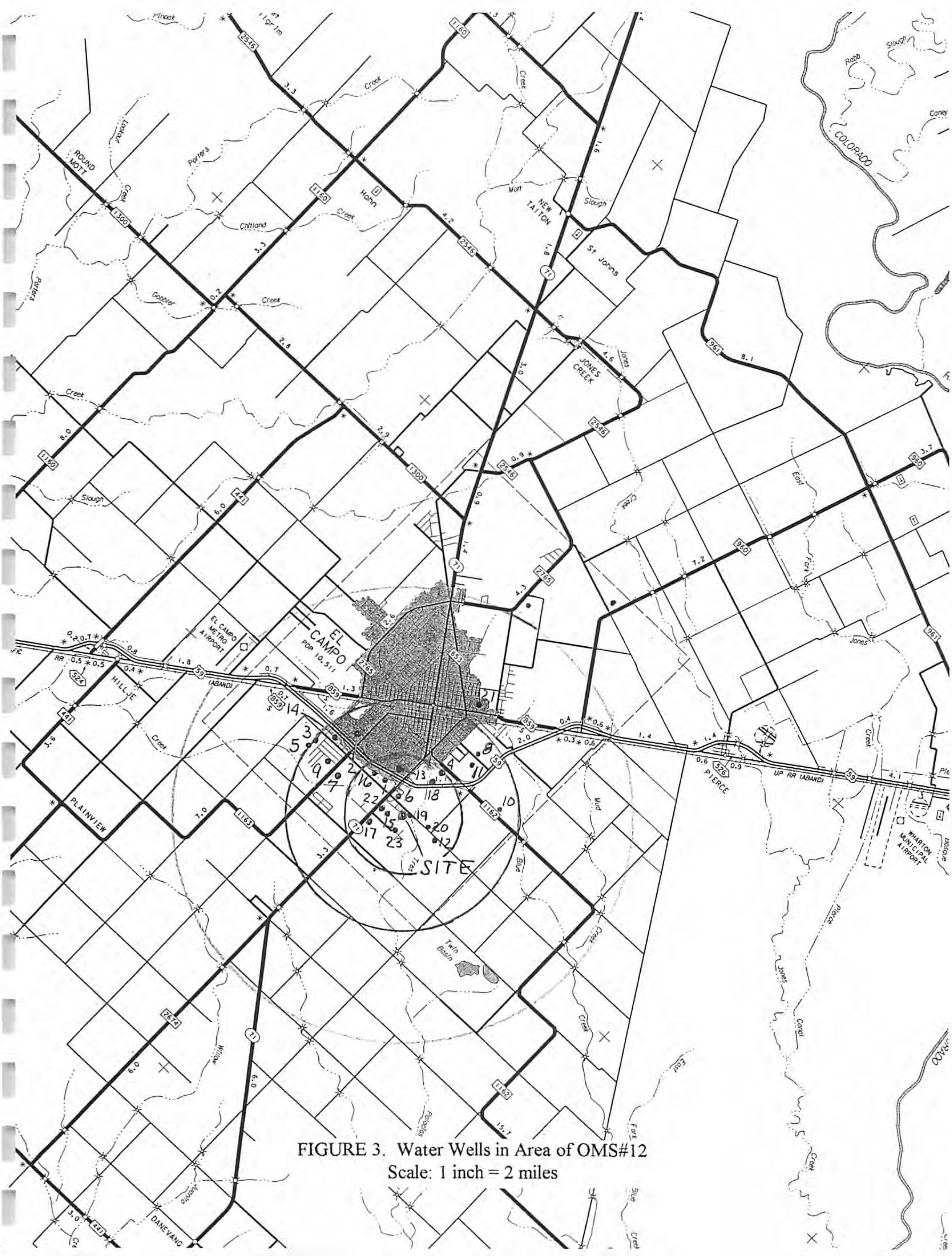


FIGURE 3. Water Wells in Area of OMS#12
Scale: 1 inch = 2 miles

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

Roy P. Benavidez Army National Guard Armory

PA Interview Questionnaire - Other

Facility: El Campo
Interviewer: [redacted]
Date/Time: 4/25/19 @ 10 am

Interviewee: [redacted] **Title:** RNCO **Phone Number:** [redacted] **Email:** NA	Can your name/role be used in the PA Report? Y or [✓ N] Can you recommend anyone we can interview? Y or N ______

Roles or activities with the Facility/Years working at the Facility:

1 year at facility.

Houses bridging specific engineering company.

2004 used to be cavalry with tanks (Armory)
Maintained vehicles, muster troops, practice on range with small arms.
Weapons cleaning (CLP) - minor quantities.

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

Drinking water well on-site had high levels of PFCs.

ALCOA is responsible for TCE contamination in groundwater. ALCOA is a manufacturer located north of site.

The facility was designed in 1950 and built in 1964. Has always been on septic system and use well water for the facility.

All surrounding residences are on well water/septic.

No fires aware of in last 5 years.

County fire department provides fire protection.

Adjacent properties are fertilizer and feed company.

Known Uses
- Use
- Procurement
- Disposition
- Storage (Mixed)
- Storage (Solution)
- Inventory, Off-Spec
- Containment
- SOP on Filling
- Leaking Vehicles
- Nozzle and Suppression System Testing
- Dining Facilities
- Vehicle Washing
- Ramp Washing
- Fuel Spill Washing and Fueling Stations
- Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

Facility:
Interviewer:
Date/Time:

Have allowed cattle on site to keep down grass.

Livestock in surrounding properties

[redacted] had GAC unit installed in 2018 to treat PFCs. GAC unit is effectively reducing PFC levels to ND.

Local fire department provides fire protection.

PA Interview Questionnaire - Other

Facility: El Campo Armory
Interviewer: [redacted]
Date/Time: 6/17/2019 @ 09:00

Interviewee: [redacted]
Title: Fire Chief
Phone Number: [redacted]
Email: N/A

Can your name/role be used in the PA Report? Y or N

Can you recommend anyone we can interview?

Y or N ____________________

Roles or activities with the Facility/Years working at the Facility:

Has worked with the El Campo Fire Department for 35 yrs

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

Training programs use fire fighting foam Class A	**Known Uses**
	Use
Don't typically use AFFF (too expensive)	Procurement
Don't use AFFF at training field	Disposition
Only use AFFF when putting out fires (emergency	Storage (Mixed)
situations)	Storage (Solution)
	Inventory, Off-Spec
No recollection of fire at El Campo Armory	Containment
	SOP on Filling
	Leaking Vehicles
	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
	Ramp Washing
	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

Appendix B.2

Visual Site Inspection Checklists

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact:
Date: 4/25/19

Site Name / Area Name / Unique ID: Roy P Benavidez Army National Guard Armory
Site / Area Acreage: ~21 acres
Historic Site Use (Brief Description): Armory - maintained vehicles, mustered troops, practiced with small arms on range.
Current Site Use (Brief Description): Bridging specific engineering company.

1. Was AFFF used at the site/area? Y [✓ N]
3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014)*

2. Has usage been documented? Y [✓ N]
2a. If yes, keep a record (place electronic files on a disk)

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y [✓ N]
1a. If so, please describe change: (*ex. Structures structures longer exist.)*

2. Is the site/area vegetated? [✓ Y] N
2a. If not vegetated, briefly describe the site/area composition: Site consists of mostly grass land.

3. Does the site or area exhibit evidence of erosion? Y [✓ N]
3a. If yes, describe the location and extent of the erosion :

4. Does the site/area exhibit any areas of ponding or standing water? [✓ Y] N
4a. If yes, describe the location and extent of the ponding : Ponding occurs near main building.

Migration Potential:

1. Does site/area drainage flow off installation? Y [✓ N]
1a. If so, please note observation and location: Relatively flat

2. Is there standing water or drainage issues within the site/area? [✓ Y] N
2a. If so, please note observation and location: Storm water collects on NW corner of main building

3. Is there channelized flow within the site/area? Y [✓ N]
3a. If so, please note observation and location:

4. Have man-made drainage channels been constructed within the site/area? Y [✓ N]
4a. If so, please note the location of the channel:

Additional Notes

Appendix B.3

Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: El Campo Armory

Why has this location been identified as a site?
Elevated PFCs detected in on-site drinking water.

Are there any other activities nearby that could also impact this location?
ALCOA manufacturing facility to north of site. Known TCE contamination from ALCOA.

Training Events

Have any training events with AFFF occurred at this site? No

If so, how often? NA

How much material was used? Is it documented? NA

Identify Potential Pathways: Do we have enough information to fully understand over land surface water flow, groundwater flow, and geological formations on and around the facility? Any direct pathways to larger water bodies?

Surface Water:

Surface water flow direction? Unknown

Average rainfall? 46 inches/year

Any flooding during rainy season? Occassionally

Direct or indirect pathway to ditches? ~~No ditches~~ Ditch runs near pond.

Direct or indirect pathway to larger bodies of water? Palacios River runs near east side of site

Does surface water pond any place on site? ~~No~~ Pond at SE corner of site.

Any impoundment areas or retention ponds? No

Any NPDES location points near the site? No

How does surface water drain on and around the flight line? No flight line

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Unknown

Depth to groundwater? ~~~80 ft~~ ~60 ft Chicot Aquifer; Shallow GW ~15-20 ft bgs

Uses (agricultural, drinking water, irrigation)? Domestic, Irrigation, Livestock

Any groundwater treatment systems? GAC system for removing PFCs

Any groundwater monitoring well locations near the site? Plugged MW west of site

Is groundwater used for drinking water? Yes

Are there drinking water supply wells on installation? Yes

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient No known GW gradient, but there are many surrounding drinking water wells.

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? No

If so, do we understand the process and which water is/was treated at the plant? NA

Do we understand the fate of sludge waste? NA

Is surface water from potential contaminated sites treated? NA

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go?

NA

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles?

NA

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker Yes

Construction Worker Yes

Recreational User No

Residential No

Child No

Ecological Yes

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?

Livestock, recreation, residential

Documentation

Ask for Engineering drawings (if applicable). None

Has there been a reconstruction or changes to the drainage system? When did that occur? No

Appendix C
Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Roy P. Benavidez National Guard Armory	El Campo, Texas

Photograph No. 1

Description:

Picture of groundwater treatment unit, facing south. Well water is pumped into tank on right and then pumped through the granular activated carbon (GAC) on the left in order to remove perfluorinated compounds (PFCs).

Photograph No. 2

Description:

Fire extinguisher in kitchen is a Class K fire extinguisher. Does not contain AFFF.