

**FINAL
RELEASE INVESTIGATION REPORT**

**AREA OF CONCERN 72
CAMP STANLEY STORAGE ACTIVITY**



Prepared for:

**Camp Stanley Storage Activity
Boerne, Texas**

Prepared by:

PARSONS

Austin, Texas

March 2012

EXECUTIVE SUMMARY

Area of Concern (AOC) 72 is located in the southwestern portion of the Inner Cantonment Area, approximately 310 yards north of the southern Camp Stanley Storage Activity (CSSA) boundary. The site, which is approximately 0.1 acre in size, consists of a thickly vegetated embankment which is located downgradient of Building 305. The exact dates of use of the site are unknown, but it was likely used in the 1930s and 1940s as a construction debris landfill. Exploratory excavation to determine the extent of buried debris began at the site in November 2011. The excavation of buried debris at the site took place in January 2012. This Release Investigation Report (RIR) requests No Further Action (NFA) at AOC-72.

In summary, activities at AOC-72 as described in this RIR showed the following results:

- Excavation, removal, and confirmation sampling was performed at AOC-72.
- Visual and x-ray fluorescence (XRF) surveys were conducted in December 2010 to look for indications of waste disposal and evaluate the presence of metals contamination in soil.
- Results of surface soil sampling conducted in June 2011 showed no indication of metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), or explosives above Tier 1 protective concentration levels (PCLs).
- During exploratory excavations at the site in November 2011, the affected media to be removed was identified as soils intermixed with construction debris containing non-friable asbestos tiling. The results of confirmation samples collected from below the debris showed no indication of metals, VOCs, SVOCs, or asbestos above Tier 1 PCLs.
- Approximately 530 cubic yards (CY) of soils intermixed with construction debris containing non-friable asbestos tiling were excavated from the site and transported for disposal at Coval Gardens Landfill in San Antonio, Texas.

From the information summarized above and presented in this report, the results of the investigations at AOC-72 meet the three criteria as described in Texas Commission on Environmental Quality (TCEQ) (2003) guidance *Determining Which Releases are Subject to the Texas Risk Reduction Program (TRRP)*. Thus, the following criteria were met:

- Concentrations of chemicals in soil samples do not exceed Tier 1 residential soil PCLs.
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-72. Inorganic groundwater contamination has not been reported in the closest well to AOC-72 (well CS-MW10-LGR located approximately 880 feet downgradient of the site). Since soils were not found to have concentrations of VOCs, SVOCs, explosives, or metals above Tier 1 PCLs, there will be no impact to groundwater, surface water, or sediment from AOC-72.
- AOC-72 passes the Tier 1 Ecological Exclusion Criteria Checklist (**Appendix B**).

Because these three criteria are met, AOC-72 is not subject to TRRP. Therefore, this RIR was prepared to document the results and a NFA decision is requested from the TCEQ.

TABLE OF CONTENTS

EXECUTIVE SUMMARY I

LIST OF TABLES iii

LIST OF FIGURES iii

1.0 INTRODUCTION 1

2.0 HISTORICAL BACKGROUND 1

 2.1 Camp Stanley Storage Activity 1

 2.2 AOC-72 2

 2.2.1 Overview 2

 2.2.2 Setting, Size, and Description 2

 2.2.3 Potential Contaminant Sources, Chemicals of Concern, and Previous
 Investigations 2

3.0 OBJECTIVES OF RIR FOR AOC-72 3

 3.1 Field Activities and Investigations 4

 3.1.1 Sampling and Analytical Procedures 4

 3.1.2 Excavation, Removal, and Confirmation Sampling at AOC-72 4

 3.1.3 Waste Characterization and Off-Post Disposal Activities 5

 3.2 Site Geology/Hydrogeology 5

 3.2.1 CSSA Geology/Hydrogeology 5

 3.2.2 AOC-72 Groundwater and Surface Water 6

4.0 TIER 1 ECOLOGICAL EXCLUSION CRITERIA CHECKLIST 6

5.0 SUMMARY AND RECOMMENDATIONS 7

LIST OF TABLES

Table 1	Summary of Chemical Constituents Remaining in Soils at AOC-72.....	9
---------	--	---

LIST OF FIGURES

Figure 1	CSSA Location Map.....	10
Figure 2	AOC-72 Location Map.....	11
Figure 3	AOC-72 Aerial Photographs.....	12
Figure 4	AOC-72 XRF Sampling Results.....	13
Figure 5	AOC-72 Sample and Excavation Locations.....	14
Figure 6	AOC-72 Topography, Surface Water, and Floodplains.....	15

APPENDICES

Appendix A	Site Photographs
Appendix B	Tier 1 Ecological Exclusion Criteria Checklist
Appendix C	Confirmation Sample Results for All Analytes at AOC-72
Appendix D	Data Verification Summary Report
Appendix E	Waste Characterization Sampling Results for AOC-72

ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
APPL	Agriculture & Priority Pollutants Laboratory, Inc.
BS	Bexar Shale
BTOC	below top of casing
CC	Cow Creek
COC	contaminant of concern
CSSA	Camp Stanley Storage Activity
CY	cubic yard
DQO	Data Quality Objective
EE	Environmental Encyclopedia
FSP	Field Sampling Plan
ft	feet
^{GW} Soil _{Ing}	soil to groundwater ingestion pathway (PCL)
IM	Interim Measures
LGR	Lower Glen Rose
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
MQL	method quantification limit
NFA	No Further Action
PCL	protective concentration level
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RIR	Release Investigation Report
RL	reporting limit
RMU	Range Management Unit
SAP	Sampling and Analysis Plan
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TCLP	toxicity characteristic leaching procedure
^{Tot} Soil _{Comb}	total soil combined pathway (PCL)
TPH	total petroleum hydrocarbon
TRRP	Texas Risk Reduction Program
UGR	Upper Glen Rose
USEPA	U.S. Environmental Protection Agency

ACRONYMS AND ABBREVIATIONS (*continued*)

VOC	volatile organic compound
WMI	Waste Management, Inc.
WMP	Waste Management Plan
XRF	x-ray fluorescence

1.0 INTRODUCTION

Parsons is under contract to provide investigations and environmental services for waste sites located at Camp Stanley Storage Activity (CSSA) in Boerne, Texas (**Figure 1**). This contract includes characterization of selected waste disposal sites and preparation of appropriate documentation, including a Release Investigation Report (RIR) for Area of Concern (AOC) 72 (**Figure 2**). AOC-72 is located in the southwest portion of the Inner Cantonment area, approximately 310 yards north of the southern CSSA boundary. The site covers approximately 0.1 acre. This work was performed in accordance with requirements of the Resource Conservation and Recovery Act (RCRA) 3008(h) Order in effect for CSSA and in accordance with 30 Texas Administrative Code (TAC) §350, the Texas Risk Reduction Program (TRRP) of the Texas Commission on Environmental Quality (TCEQ). This RIR was prepared following TCEQ reporting and documentation requirements for releases that do not trigger applicability to the TRRP rule.

This report describes environmental investigation activities at AOC-72. Work included x-ray fluorescence (XRF) analysis of soil samples, environmental sampling, the removal and proper disposal of impacted soil, waste characterization and confirmatory sampling and analysis, and proper documentation of all activities, including preparation of this RIR. All work was performed according to applicable federal, state, and local rules and regulations.

For this report, Section 1 provides the introduction and the documentation to support this RIR. Section 2 provides historical background information for CSSA and for AOC-72. Section 3 describes the objectives and rationale for preparing an RIR for AOC-72 and the findings from environmental investigations for the site. The groundwater and surface water for CSSA and the area near AOC-72 are also described in Section 3. Section 4 summarizes the findings from completing the Tier 1 Ecological Exclusion Criteria Checklist, which is included as an appendix to this RIR. Section 5 summarizes the overall findings and recommendations for the site. All figures and tables are provided at the end of this RIR (pages 8 through 15). References cited in this report can be found in the CSSA Environmental Encyclopedia (EE) ([Volume 1-1, Bibliography](#)) at www.stanley.army.mil.

2.0 HISTORICAL BACKGROUND

2.1 CAMP STANLEY STORAGE ACTIVITY

Camp Stanley Storage Activity is located in northwestern Bexar County, about 19 miles northwest of downtown San Antonio. The installation consists of approximately 4,004 acres immediately east of Ralph Fair Road, and approximately 0.5 mile east of Interstate Highway 10 (Figure 1). Camp Bullis borders CSSA on the north, east, and south.

The land where CSSA is located was used for ranching and agriculture until the 1900s. During 1906 and 1907, six tracts of land were purchased by the U.S. Government and designated the Leon Springs Military Reservation. The land included campgrounds and cavalry shelters.

In October 1917, the installation was re-designated Camp Stanley. Extensive construction was started during World War I to provide housing for temporary cantonments and support facilities. In 1931, the installation was selected as an ammunition depot, and construction of standard magazines and igloo magazines began in 1938. Land was also used to test, fire and

overhaul ammunition components. As a result of these historic activities, CSSA has several historical waste sites, including Solid Waste Management Units (SWMUs), AOCs, and Range Management Units (RMUs).

The present mission of CSSA is the receipt, storage, issue, and maintenance of ordnance as well as quality assurance testing and maintenance of military weapons and ammunition. Because of its mission, CSSA has been designated a restricted access facility. No changes to the CSSA mission and/or military activities are expected in the future.

2.2 AOC-72

2.2.1 Overview

AOC-72 was identified as an AOC based on review of aerial photographs in which the site appeared as a disturbed area in a 1957 aerial photo and progressively less disturbed in photos from 1962 and later. AOC-72 was used as a disposal area for construction debris during the 1930s-40s. During a previous assessment of the site, construction rubble, bricks, wire, asphalt, and siding were identified in rubble piles on the embankment. The half-buried nature of the rubble piles, combined with the uneven nature of the slope, suggested that more waste was buried at the site. Due to the age of the construction debris, it was believed that regulated asbestos-containing material was potentially present at the site.

A series of historical aerial photos of the sites are shown on **Figure 3** and photographs showing investigation, excavation, and removal activities at the sites are provided in **Appendix A**. The history and previous investigations at the site is discussed below.

2.2.2 Setting, Size, and Description

AOC-72 is located in the southwestern portion of the Inner Cantonment Area, approximately 310 yards north of the southern CSSA boundary. AOC-72 covers approximately 0.1 acres. The site consists of a thickly vegetated embankment which is located downgradient of Building 305. The exact dates of use of the site are unknown, but it was likely used in the 1930's and 40's as a construction debris landfill. Additional background information on AOC-72 can be found in the CSSA EE ([Volume 3-2, AOC-72](#)).

2.2.3 Potential Contaminant Sources, Chemicals of Concern, and Previous Investigations

An XRF survey was conducted in December of 2010 to delineate metal levels within AOC-72 at 17 in-situ surface soil locations. Sample locations and results for the XRF survey are shown on **Figure 4**. The purpose of the XRF survey was to gather field screening data to assess the presence of metals above Tier 1 Protective Concentration Levels (PCLs) in surface soils. XRF analytical results showed that neither lead nor zinc was detected above their Tier 1 levels (84.5 milligrams per kilogram [mg/kg] and 120 mg/kg respectively).

In June 2011, three surface samples were collected from AOC-72 and analyzed for metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and explosives (**Figure 5**). All sample results were below Tier 1 PCLs (**Table 1**).

Tree-clearing activities at the site began on October 31, 2011 and concluded on November 3, 2011. Exploratory excavations performed in November 2011 showed construction materials and potentially non-friable asbestos mixed throughout the soil. Eight samples (WC01 – WC08) of the soil matrix were sent to the laboratory for waste and soil characterization. Analytical results showed that the soil matrix was nonhazardous and did not contain friable asbestos, VOCs, SVOCs, or metals above Tier 1 residential PCLs. Ten additional soil samples were collected and analyzed for metals, VOCs, and SVOCs in November 2011. All sample results were below Tier 1 PCLs.

3.0 OBJECTIVES OF RIR FOR AOC-72

In accordance with TCEQ (2003) guidance, *Determining Which Releases are Subject to TRRP* (www.tceq.state.tx.us/assets/public/remediation/trrp/releasesTRRPprev.pdf), an RIR can be performed for a site when results of an investigation lead to the following conclusions:

- Concentrations of chemicals detected at the site do not exceed Tier 1 residential PCLs;
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at the site; and
- The site passes the Tier 1 Ecological Exclusion Criteria Checklist (the completed checklist is provided in **Appendix B**).

When these three criteria are met for a site, the release is not subject to TRRP. For such sites, an RIR can be submitted to document the results and a No Further Action (NFA) decision can be requested from the TCEQ.

As referred to in the criteria listed above, the Tier 1 residential soil action levels are provided by TCEQ and were selected following TCEQ guidance (TCEQ, 2007). The most current action levels were used (March 2010). These action levels are referred to as PCLs and are selected for each chemical detected at the site (i.e., contaminants of concern [COCs]). The PCLs are based on the general size of the site, which is also referred to as the “source area” size. If the source area is less than 0.5 acre, then the source area is assumed to be 0.5 acres. Thus, the soil action levels for AOC-72 are based on a 0.5-acre source area. The PCL is then selected based on the lower of the two PCLs listed for either (1) the total soil combined pathway ($^{Tot}Soil_{Comb}$) (i.e., exposure to a COC from incidental ingestion, dermal contact, inhalation of volatiles and particulates, and vegetable consumption); or (2) the soil to groundwater pathway ($^{GW}Soil_{Ing}$) (i.e., soil-to-groundwater leaching of a COC to groundwater, where the PCL is the highest concentration of COC allowed in soil to be protective of Class 1 or Class 2 groundwater).

Also based on the TCEQ guidance, if the background level or the method quantification limit (MQL) is a higher concentration than the PCL, then the higher of the background or MQL is used as the action level. Based on the metals that are most common to past activities at CSSA, TCEQ has approved background concentrations for nine metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc). The statistically calculated and TCEQ-approved background metal concentrations are shown in Table 1, and are also available in the CSSA EE ([Volume 2, Background Metals Levels](#)). It is noted that the action levels/PCLs for five of the nine metals are based on the background concentrations (these five metals are arsenic, barium, cadmium, lead, and mercury).

3.1 FIELD ACTIVITIES AND INVESTIGATIONS

A summary of the cleanup confirmation results at the sites are shown in Table 1 (detected compounds only) and **Appendix C** (all analytes), and the confirmation soil sampling locations are shown on **Figure 5**. Analytical results for samples collected during the exploratory excavations are shown in **Appendix E**. The data verification summary report for the sampling and analytical results is provided in **Appendix D**. As shown on Figure 5, excavation at the site occurred within the boundaries of AOC-72. Waste characterization sampling and off-post removal activities are described in Section 3.1.3. Additional information about past activities and investigations at the site can be found in the CSSA EE ([Volume 1-3, AOC-72](#)).

3.1.1 Sampling and Analytical Procedures

For all sampling and analytical activities at CSSA, Parsons follows TCEQ-approved Quality Assurance (QA) and Quality Control (QC) procedures as described in the post-wide CSSA Quality Assurance Project Plan (QAPP) which can be found in the CSSA EE ([Volume 1-4, QAPP](#)). The detailed CSSA QAPP presents specific policies, organization, functions, and QA/QC requirements for environmental programs at CSSA, including TCEQ-approved analytical methods, reporting limits (RL), and QA/QC procedures.

The CSSA QAPP (1) was prepared for use by contractors that perform environmental services at CSSA to ensure that the data are scientifically valid and defensible; (2) establishes the analytical protocols and documentation requirements to ensure that the samples are collected and analyzed, and that the data are reviewed and validated in a specified manner; and (3) provides detailed guidance for using the Data Quality Objective (DQO) process for specific investigations. The CSSA QAPP and delivery/task order specific Field Sampling Plans (FSP) constitute the CSSA Sampling and Analysis Plan (SAP). The SAP defines data quality for a specific project. Information regarding post-wide and site-specific plans and TCEQ correspondence can be found in the CSSA EE ([Volume 1-1, Correspondence](#)).

Following the CSSA-specific plans, the investigative soil analyses for AOC-72 were performed using U.S. Environmental Protection Agency (USEPA) *Test Methods for Evaluating Solid Waste* (SW-846): Method 8260B (VOCs); Method 8270C (SVOCs); Method 6010 (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc); Method 8330B (explosives); and Method 600/M4-82-020 (asbestos). Prior to soil/waste disposal, waste characterization samples were collected from the excavated material and analyzed for toxicity characteristic leaching procedure (TCLP) metals (Methods SW1311/6010B and SW1311/7470A) and total petroleum hydrocarbons (TPH) (Method TX1005). All samples were sent to Agriculture & Priority Pollutants Laboratory, Inc. (APPL) for analyses.

3.1.2 Excavation, Removal, and Confirmation Sampling at AOC-72

Eight exploratory trenches were excavated at the site in November 2011 to characterize the contaminated soil media and associated debris present at the site. Samples were collected from the soil media and analyzed for waste characterization purposes. Confirmation samples from the bottoms and sidewalls of the area to be excavated were also collected at this time. These results are shown in Table 1. All sample results were below Tier 1 PCLs.

To address contaminated soils at AOC-72, excavation of debris and surrounding soils took place between January 23, 2012 and February 16, 2012. During this period, approximately 530 CY of construction debris and soil media were excavated from the site. All excavation activities were conducted by USA Environment, under the supervision of a Parsons Construction Manager. The southern excavated area was approximately 0.06 acre in size, approximately 120 ft long (north to south), and about 20 ft wide, as shown on Figure 5. The northern excavated area was approximately 10 ft long (north to south), and about 10 ft wide, as shown on Figure 5. Additionally, an area around Trench 8, approximately 15 ft long (north to south) and about 20 ft wide, was hand-picked for waste debris (Figure 5).

3.1.3 Waste Characterization and Off-Post Disposal Activities

Waste characterization efforts were performed in accordance with requirements of CSSA's *RCRA Facility Investigation (RFI) and Interim Measures (IM) Waste Management Plan (WMP) – Revised*, dated May 2006 (approved by TCEQ in August 2006) and the RFI/IM WMP Addendum for AOC-72, dated June 2011. Waste characterization sample results for excavated soils are included in Appendix E.

Results of waste characterization showed that the impacted media from AOC-72 met State of Texas Class 1 non-hazardous criteria (30 TAC §335 Subchapter R). Approximately 530 CY of Class 1 non-hazardous waste debris and soil media were transported and disposed off-post at Waste Management, Inc. (WMI), Covel Gardens Landfill in San Antonio, Texas. The waste manifests and profile data, including the waste analytical results, are kept on file at the CSSA Environmental Office.

3.2 SITE GEOLOGY/HYDROGEOLOGY

Based on the sampling results and the geological and hydrogeological characteristics of the site, surface water and groundwater have not been affected by historical activities at AOC-72. A description of the geology and hydrogeology of the area is provided below. Additional information on geology, hydrology and physiography at CSSA are also available in the [CSSA EE \(Volume 1-1, Background Information Report\)](#).

3.2.1 CSSA Geology/Hydrogeology

The Lower Glen Rose (LGR) is the uppermost geologic stratum in the CSSA area. The LGR is a massive, fossiliferous, vuggy limestone that grades upward into thin beds of limestone, marl, and shale. The LGR is approximately 300-330 ft thick in the CSSA area and is underlain by the Bexar Shale (BS) facies of the Hensell Sand, which is estimated to be from 60 to 150 ft thick under the CSSA area. The BS consists of silty dolomite, marl, calcareous shale, and shaley limestone. The geologic strata dip approximately 1 to 2 degrees to the south-southeast at CSSA.

The uppermost hydrogeologic layer at CSSA is the unconfined Upper Trinity aquifer, which consists of the Upper Glen Rose (UGR) Limestone. Locally at CSSA, very low-yielding perched zones of groundwater can exist in the UGR; however, it is very sporadic and seasonal. Transmissivity values are not available for the UGR. Regionally, groundwater flow is thought to be enhanced along the bedding contacts between marl and limestone; however, the hydraulic conductivity between beds is thought to be poor. This interpretation is based on the observation

of discordant static water levels in adjacent wells completed in different beds. Principal development of solution channels is limited to evaporite layers in the UGR Limestone.

The Middle Trinity aquifer functions as the primary source of groundwater at CSSA. It consists of the LGR Limestone, the BS, and the Cow Creek (CC) Limestone. The LGR Limestone outcrops north of CSSA, along Cibolo Creek, and within the central and southwestern portions of CSSA. As such, principal recharge into the Middle Trinity aquifer is via precipitation infiltration at outcrops and along creek beds during flood events. At CSSA, the BS is interpreted as a confining layer, except where it is fractured and faulted, allowing vertical flow from the up-dip CC Limestone into the overlying, down-dip LGR. Fractures and faults within the BS may allow hydraulic communication between the LGR and CC Limestones. Regional groundwater flow within the Middle Trinity aquifer is toward the south and southeast and the average transmissivity coefficient is 1,700 gallons per day per ft (CSSA EE, [Volume 5, Hydrogeologic Report](#)). In general, groundwater at CSSA flows in a northeast to southwest direction. However, local flow gradient may vary depending on rainfall, recharge, and possibly well pumping.

3.2.2 AOC-72 Groundwater and Surface Water

No site-specific information regarding groundwater is available. However, between December 2001 and March 2011, measured water levels at Well CS-MW10-LGR, which is located approximately 880 ft downgradient of the site (Figure 2), have ranged from 34.8 ft below top of casing (BTOC) (December 2004) to 315.2 ft BTOC (September 2006). Low concentrations of VOCs detected in CS-MW10-LGR (below their respective maximum contaminant levels [MCLs]) are attributed to contaminated groundwater from Plume 2.

The closest surface water body to AOC-72 is the “W-Tank,” a pond located approximately 50 ft north (upgradient) of the site (Figure 2). The W-Tank, which is fed by precipitation, is located along the westernmost unnamed tributary of Upper Leon Creek. At this point along the unnamed tributary, the distance to Upper Leon Creek is 4,375 ft.

There is a dam along the southern boundary of the W-Tank. A small intermittent unnamed stream is below the dam. The creek bed runs to the south, approximately 175 ft to the east of AOC-75. The unnamed stream drains to the Upper Leon Creek.

The nearest classified creek downgradient from AOC-72 is Upper Leon Creek. The creek is classified as a perennial stream. Upper Leon Creek is classified under Texas Surface Water Quality Standards as Segment 1907 from a point 330 ft upstream of State Highway 16, northwest of San Antonio in Bexar County to a point 5.6 miles upstream of Scenic Loop Road, north of Helotes in Bexar County. The designated uses of Segment 1907 are high aquatic life, contact recreation, public water supply, and aquifer protection. No significant degradation of high quality receiving waters is anticipated from AOC-72.

4.0 TIER 1 ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

In accordance with TCEQ (2003) guidance, an RIR is submitted when the results of an investigation lead to a conclusion that COCs do not exceed Tier 1 residential soil action levels and there is no evidence of other affected media. The site must also pass the Tier 1 Ecological Exclusion Criteria Checklist. The checklist must be completed as part of the RIR for a site. The completed checklist is provided in Appendix B. Results show that the site passes the checklist

and that there are no ecological exposure pathways of concern at AOC-72. Thus, based on the absence of any complete or significant ecological exposure pathways, AOC-72 may be excluded from further ecological assessment.

5.0 SUMMARY AND RECOMMENDATIONS

AOC-72 is located in the southwestern portion of the Inner Cantonment Area, approximately 310 yards north of the southern CSSA boundary. AOC-72 covers approximately 0.1 acre. The site consists of a flat grassy area that drops off into a ditch with thick vegetation. The exact dates of use of the site are unknown, but it was likely used in the 1930's and 40's as a construction debris landfill.

In summary, activities at AOC-72 as described in this RIR showed the following results:

- Excavation, removal, and confirmation sampling was performed at AOC-72.
- Visual and XRF surveys were conducted in December 2010 to look for indications of waste disposal and evaluate the presence of metals contamination in soil.
- Results of surface soil sampling conducted in June 2011 showed no indication of metals, VOCs, SVOCs, or explosives above Tier 1 PCLs.
- Exploratory excavations conducted at the site in November 2011 helped characterize the affected media to be removed as soils intermixed with construction debris containing non-friable asbestos tiling. The results of confirmation samples collected at the same time from below the debris showed no indication of metals, VOCs, SVOCs, or asbestos above Tier 1 PCLs.
- Approximately 530 CY of soils intermixed with construction debris containing non-friable asbestos tiling were excavated from the site and transported for disposal at Covell Gardens Landfill in San Antonio, Texas.

From the information summarized above and presented in this report, the results of the investigations at AOC-72 meet the three criteria as described in TCEQ (2003) guidance *Determining Which Releases are Subject to the TRRP*. Thus, the following criteria were met:

- Concentrations of chemicals in soil samples do not exceed Tier 1 PCLs;
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-72; and
- AOC-72 passes the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

Because these three criteria are met, AOC-72 is not subject to TRRP. Therefore, this RIR was prepared to document the results and a NFA decision is requested from the TCEQ.

TABLES AND FIGURES

Table 1. Summary of Chemical Constituents Remaining in Soils at AOC-72

	Semi-Volatile Organics						Metals																								
	Fluoranthene CAS: 206-44-0	Qualifier	Dilution	Pyrene CAS: 129-00-0	Qualifier	Dilution	Arsenic CAS: 7440-38-2	Qualifier	Dilution	Barium CAS: 7440-39-3	Qualifier	Dilution	Chromium CAS: 7440-47-3	Qualifier	Dilution	Copper CAS: 7440-50-8	Qualifier	Dilution	Lead CAS: 7439-92-1	Qualifier	Dilution	Mercury CAS: 7439-97-6	Qualifier	Dilution	Nickel CAS: 7440-02-0	Qualifier	Dilution	Zinc CAS: 7440-66-6	Qualifier	Dilution	
Tier 1 Soil PCLs - 30 acre[†]																															
Residential Combined Exposure ^[1]	2.30E+03	n		1.70E+03	n		2.40E+01	n		8.10E+03	n		2.70E+04	n		5.50E+02	n		5.00E+02	n		2.10E+00	n		8.30E+02	n		9.90E+03	n		
Residential Groundwater Exposure ^[2]	9.60E+02	n	>S	5.60E+02	n	>S	2.50E+00	m	>S	2.20E+02	m	>S	1.20E+03	m	>S	5.20E+02	a	>S	1.50E+00	a	>S	3.90E-03	m		7.90E+01	n	>S	1.20E+03	n	>S	
TCEQ-Approved Background Values																															
CSSA 9 Metals Background Concentration ^[3]	na			na			19.6 ^{††}			300 ^{†††}			40.2 ^{††}			23.2 ^{††}			84.5 ^{††}			0.77 ^{††}			35.5 ^{††}			73.2 ^{††}			
Sample Locations (Date Collected)																															
AOC72-BOT01 (08-Nov-2011)	0.040	U	1	0.050	U	1	4.5	F	1	10	J	1	6.4	F	1	2.1		1	2.4	F	1	0.020	F	1	4.9		1	4.7	F	1	
AOC72-BOT02 (08-Nov-2011)	0.040	U	1	0.050	U	1	4.1	F	1	13	J	1	6.2	F	1	2.4		1	0.51	F	1	0.030	F	1	5.1		1	5.4	J	1	
AOC72-BOT03 (08-Nov-2011)	0.040	U	1	0.050	U	1	6.5	F	1	49	J	1	17	F	1	7.8		1	6.2	F	1	0.040	F	1	12		1	19	J	1	
AOC72-SS01 (23-Jun-2011)	--			--			2.6	F	1	28		1	8.7	F	1	9.0		1	14		1	0.030	F	1	4.3		1	34	J	1	
AOC72-SS02 (23-Jun-2011)	--			--			3.4	F	1	23		1	8.2	F	1	6.8		1	9.3	F	1	0.040	F	1	5.6		1	19	J	1	
AOC72-SS03 (23-Jun-2011)	0.050	F	1	0.060	F	1	3.3	F	1	33		1	9.2	F	1	14		1	45		1	0.14		1	6.5		1	48	J	1	
AOC72-SS04 (08-Nov-2011)	0.040	U	1	0.050	U	1	3.0	F	1	24	J	1	5.9	F	1	3.8	J	1	12		1	0.060	F	1	4.4	M	1	16	M	1	
AOC72-SS04-DUP (08-Nov-2011)	0.040	U	1	0.050	U	1	2.7	F	1	31	J	1	6.6	F	1	5.3	J	1	13		1	0.060	F	1	4.4		1	21	J	1	
AOC72-SW01 (08-Nov-2011)	0.040	U	1	0.050	U	1	2.7	F	1	13	J	1	5.3	F	1	2.4		1	5.4	F	1	0.030	F	1	4.5		1	5.4	J	1	
AOC72-SW02 (08-Nov-2011)	0.040	U	1	0.050	U	1	3.4	F	1	17	J	1	6.1	F	1	2.4		1	11		1	0.030	F	1	4.4		1	9.0	J	1	
AOC72-SW03 (08-Nov-2011)	0.040	U	1	0.050	U	1	4.9	F	1	48	J	1	14	F	1	4.4		1	18		1	0.060	F	1	9.4		1	35	J	1	

NOTES:

- † TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: May 24, 2011).
 - †† CSSA Soil Background Concentrations. Second Revision, Evaluation of Background Metals Concentrations in Soils and Bedrock at CSSA. February 2002. Values from Table 3.3.
 - ††† Texas-Specific median background concentration.
 - PCLs and CSSA background values coded in this table as [1, 2, 3].
 - [1] ^{Tot}Soil_{Comb} = PCL for COPC in soil for a 30 acre source area and a potential future resident (combined exposure for ingestion, dermal contact, inhalation of volatiles and particulates, and ingestion of above-ground and below-ground vegetables).
 - [2] ^{GW}Soil_{Ing} = PCL for COPC in soil for a 30 acre source area and a potential future resident (soil-to-groundwater leaching of COPC to Class 1 and 2 groundwater).
 - [3] CSSA Soil Background Concentrations.
- PCLs are shown in **blue** font.
 All values are measured in milligrams per kilogram (mg/Kg) unless otherwise noted.

- c = carcinogenic.
- n = noncarcinogenic.
- m = primary MCL-based.
- a = EPA Action Level-based.
- >S = solubility limit exceeded during calculation.
- na = not applicable.

QA NOTES AND DATA QUALIFIERS:

- (NO CODE) - Confirmed identification.
- U - Analyte was not detected above the indicated Method Detection Limit (MDL).
- F - Analyte was positively identified, but the quantitation is an estimation above the MDL and below the Reporting Limit (RL).
- J - Analyte was positively identified, but the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
- M = Concentration is estimated due to a matrix effect.
- Values shown in **BOLD** indicate detections above the MDL.
- Values **HIGHLIGHTED** indicate detections above the PCL.

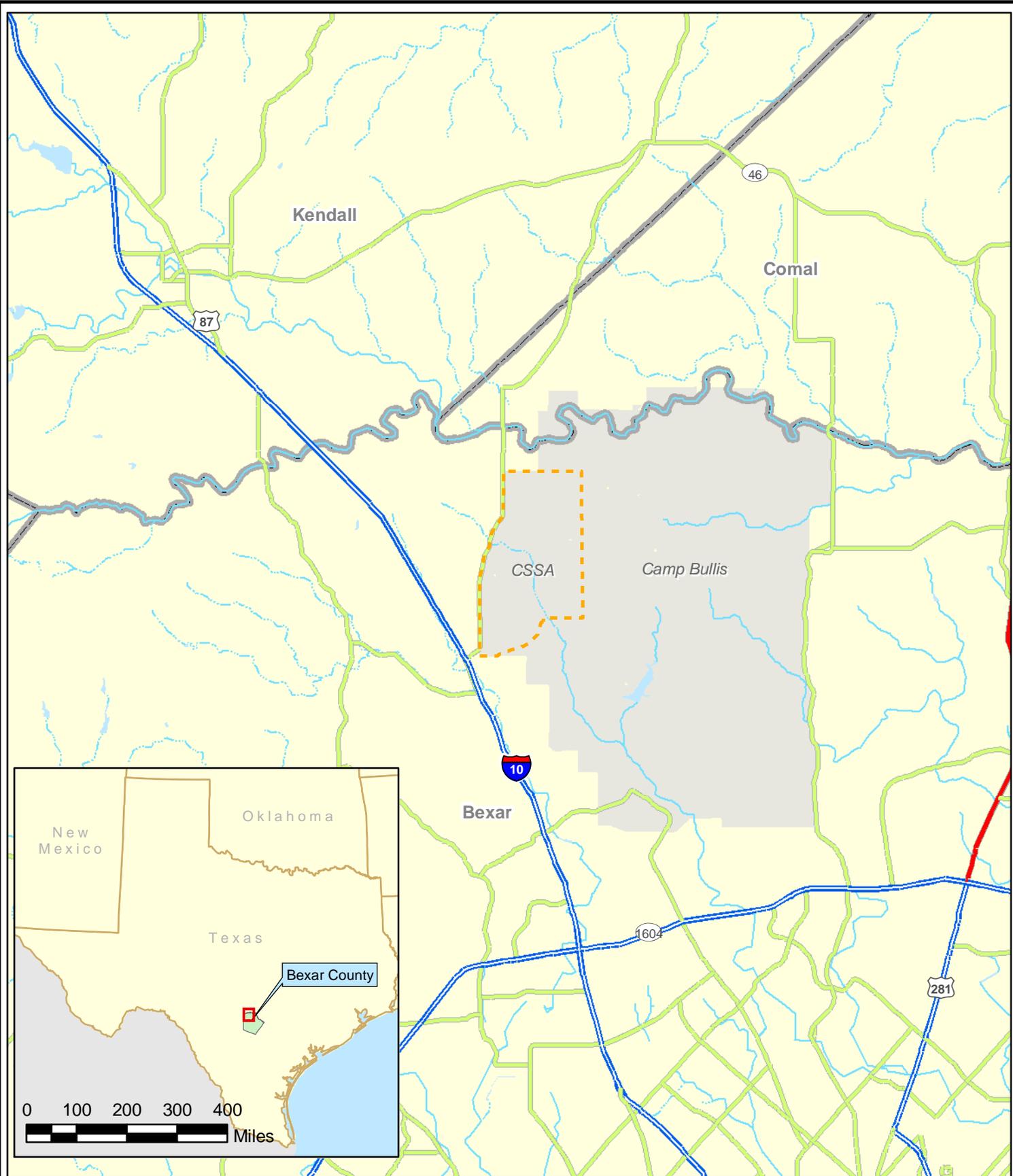
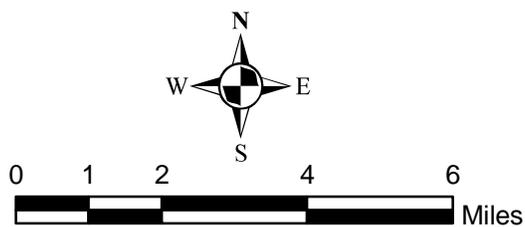


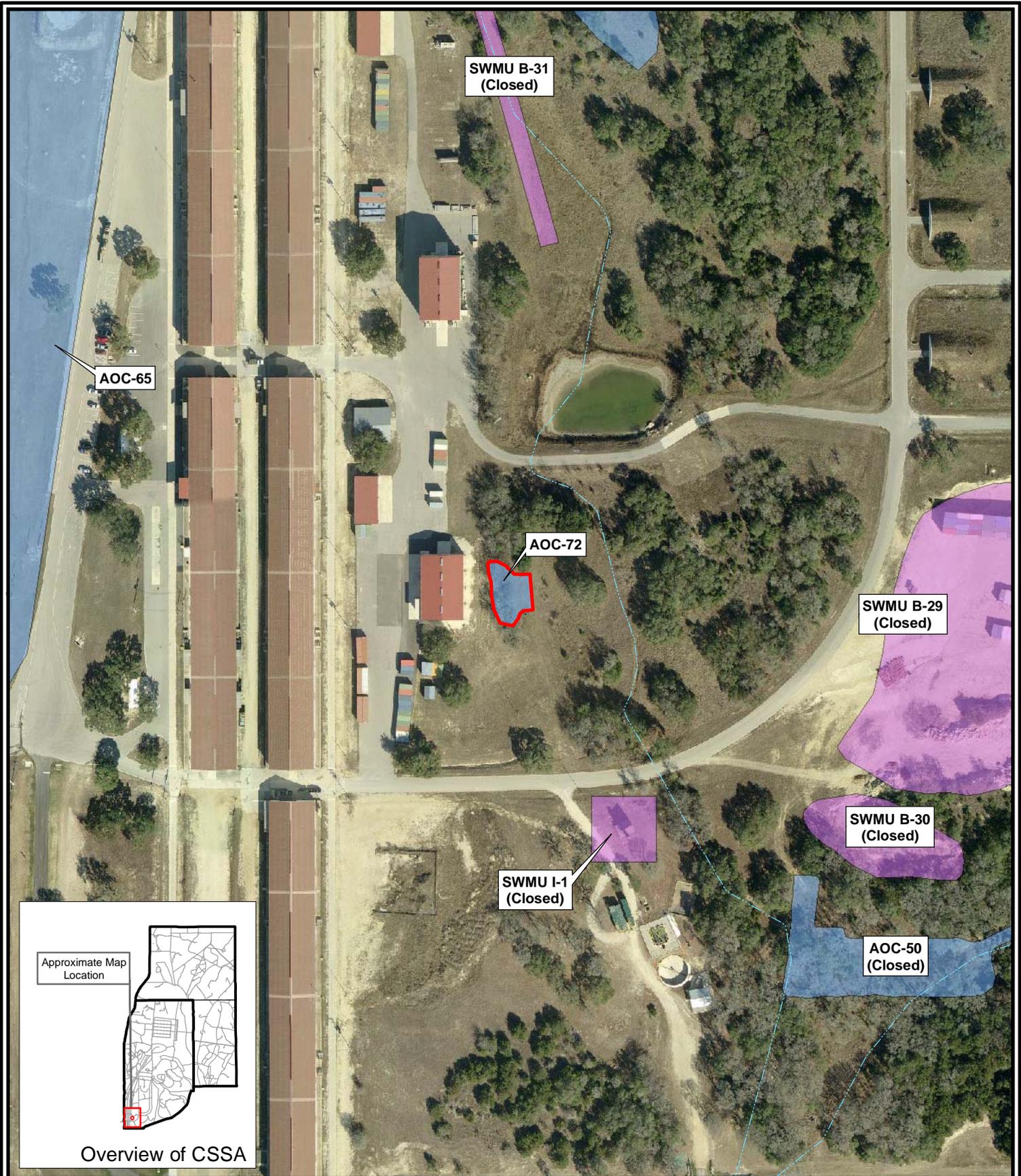
Figure 1

CSSA Location Map
Camp Stanley Storage Activity

PARSONS

- CSSA
- Freeway
- Highway
- Major Road
- County Boundary
- Military Installation





Aerial Photo Date: 2009

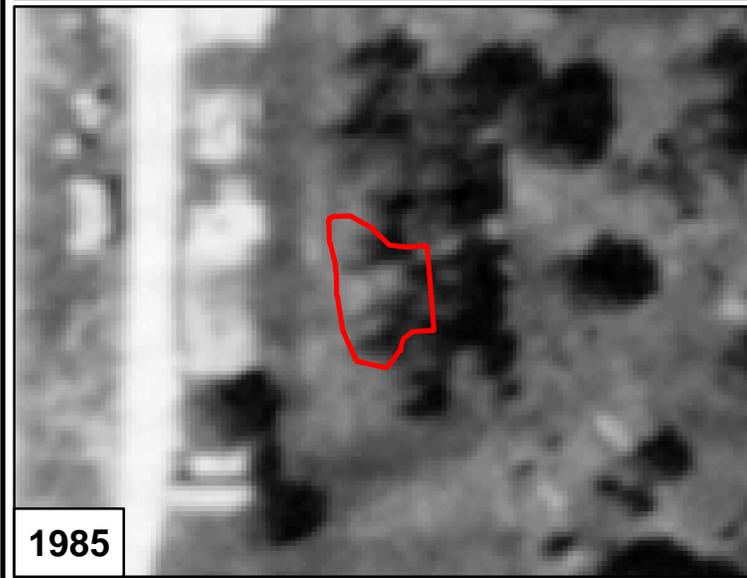
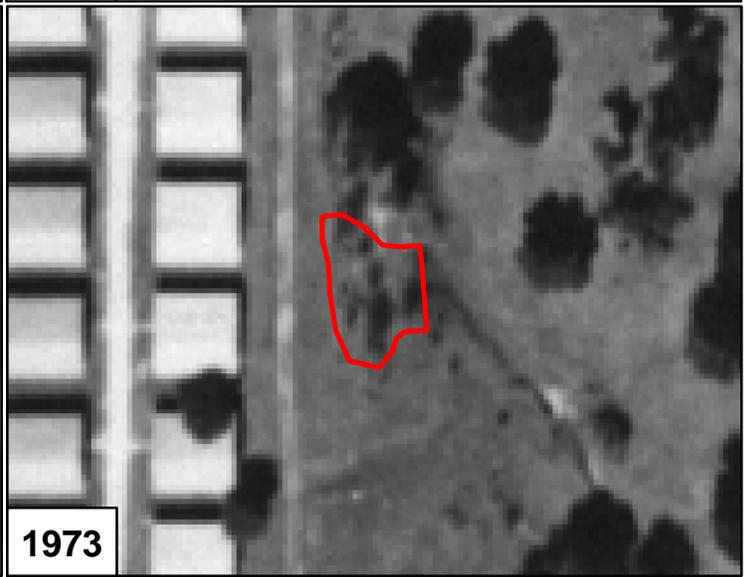
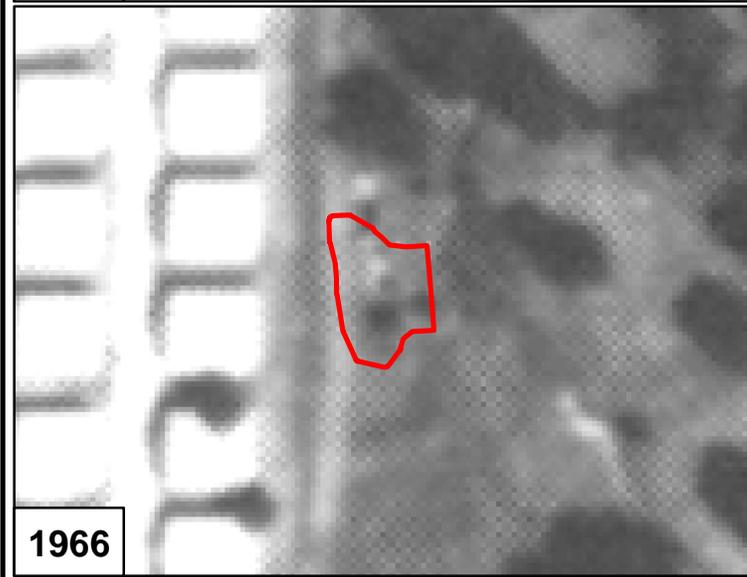
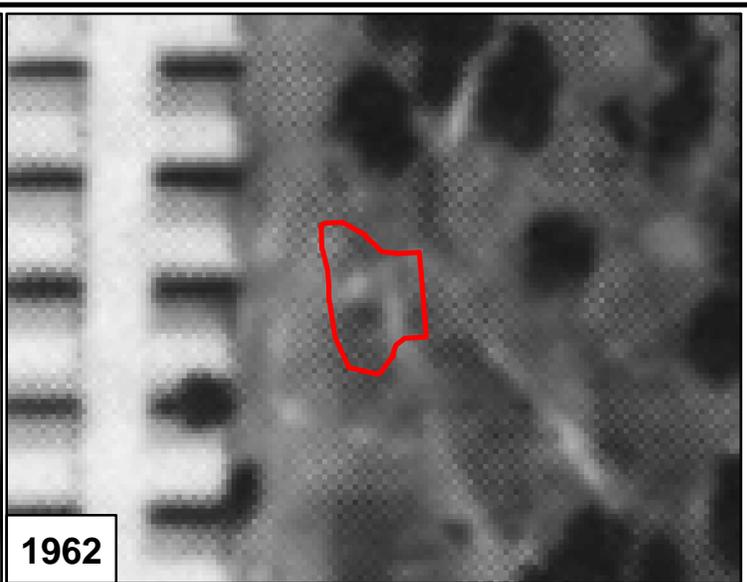
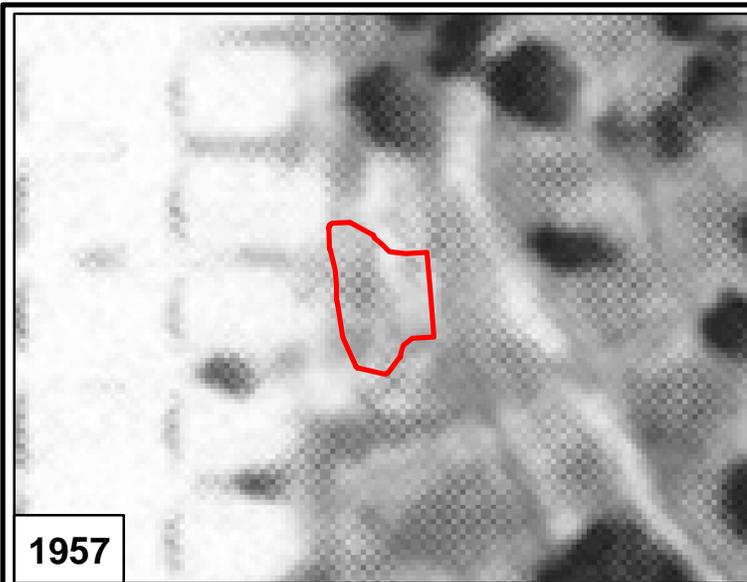


200 100 0 200 Feet



- AOC-72
- AOC Boundary
- SWMU Boundary
- Stream

Figure 2
AOC-72
Site Location Map
Camp Stanley Storage Activity
PARSONS



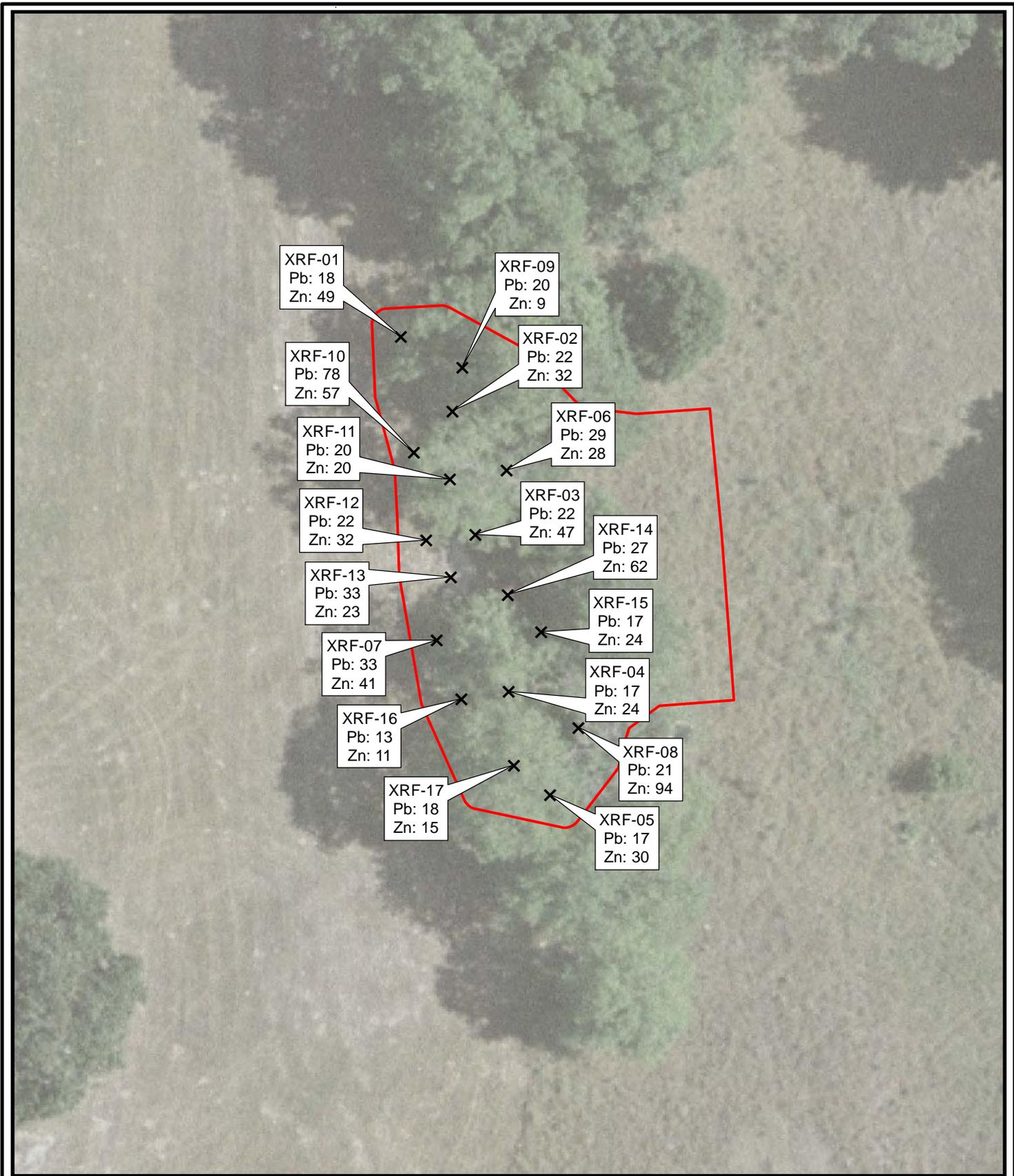
 AOC-72

0 62.5 125 250
Feet

Figure 3

AOC-72
Aerial Photographs
Camp Stanley Storage Activity

PARSONS



x XRF Sample Location (results in mg/kg)
 AOC-72 Boundary



Figure 4
AOC-72
XRF Sampling Results
Camp Stanley Storage Activity
PARSONS



Aerial Photo Date: 2009



0 20 40 80 Feet

- Soil Sample
- Intermittent Stream
- Site Boundary
- Slit Trench for Waste Characterization
- Excavated Area
- Hand Picked Area

Figure 5
AOC-72
Sample and Excavation Locations
Camp Stanley Storage Activity
PARSONS

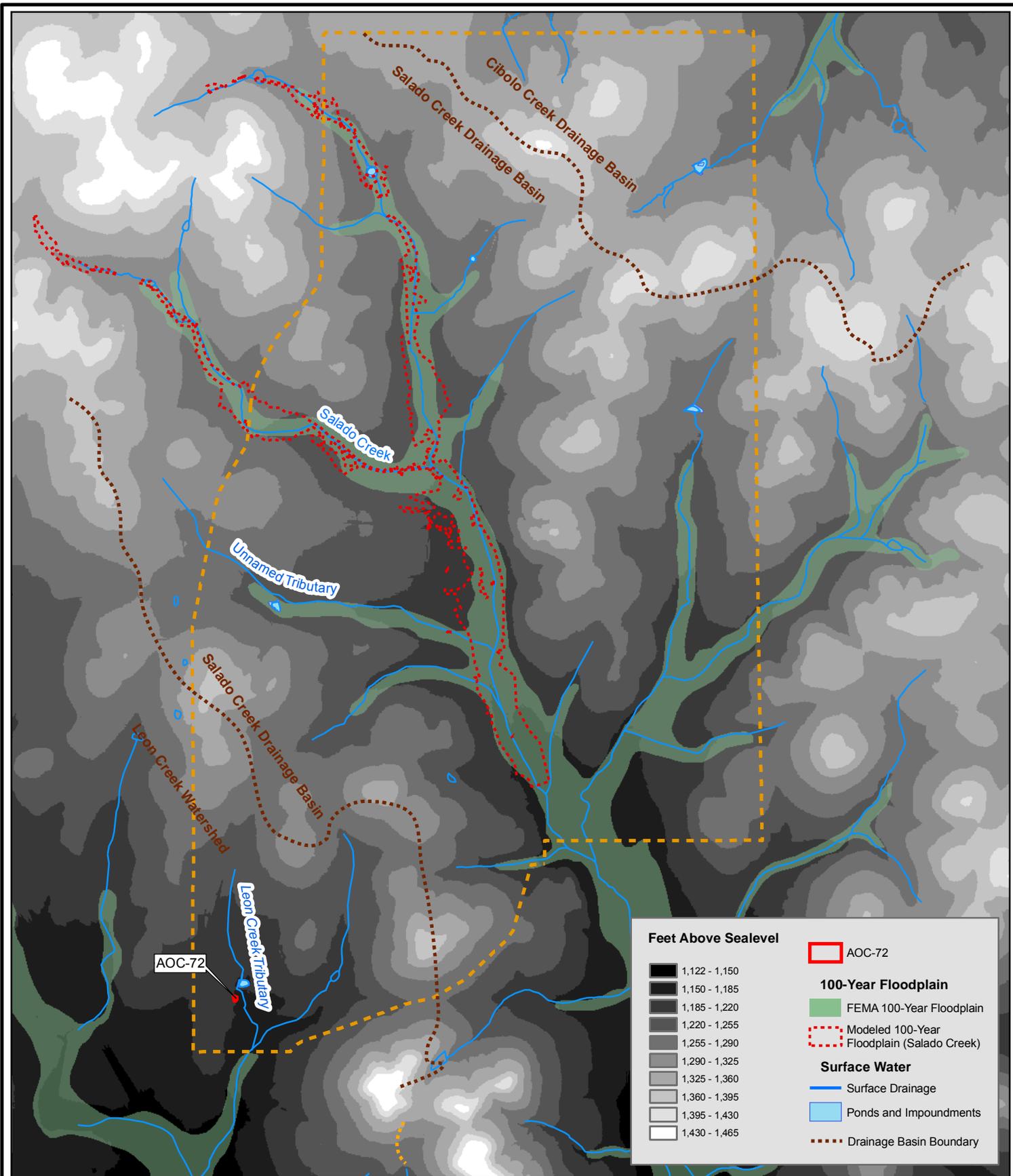


Figure 6

AOC-72 Topography,
Surface Water, and Floodplains
Camp Stanley Storage Activity

PARSONS



APPENDIX A
Site Photographs



Photo 1. AOC-72 prior to excavation, looking west (December 2001).



Photo 2. Construction debris at AOC-72 prior to excavation (April 2011).



Photo 3. Construction debris pile at AOC-72, looking west (November 2011).



Photo 4. Exploratory Trench 8 (November 2011).



Photo 5. Excavation of AOC-72, looking south (January 2012).



Photo 6. Excavation of soils at AOC-72, looking north (January 2012).

APPENDIX B
Tier 1 Ecological Exclusion Criteria Checklist

Figure: 30 TAC §350.77(b)

TIER 1: Exclusion Criteria Checklist

This exclusion criteria checklist is intended to aid the person and the TNRCC in determining whether or not further ecological evaluation is necessary at an affected property where a response action is being pursued under the Texas Risk Reduction Program (TRRP). Exclusion criteria refer to those conditions at an affected property which preclude the need for a formal ecological risk assessment (ERA) because there are **incomplete or insignificant ecological exposure pathways** due to the nature of the affected property setting and/or the condition of the affected property media. This checklist (and/or a Tier 2 or 3 ERA or the equivalent) must be completed by the person for all affected property subject to the TRRP. The person should be familiar with the affected property but need not be a professional scientist in order to respond, although some questions will likely require contacting a wildlife management agency (i.e., Texas Parks and Wildlife Department or U.S. Fish and Wildlife Service). The checklist is designed for general applicability to all affected property; however, there may be unusual circumstances which require professional judgement in order to determine the need for further ecological evaluation (e.g., cave-dwelling receptors). In these cases, the person is strongly encouraged to contact TNRCC before proceeding.

Besides some preliminary information, the checklist consists of three major parts, **each of which must be completed unless otherwise instructed**. PART I requests affected property identification and background information. PART II contains the actual exclusion criteria and supportive information. PART III is a qualitative summary statement and a certification of the information provided by the person. **Answers should reflect existing conditions and should not consider future remedial actions at the affected property**. Completion of the checklist should lead to a logical conclusion as to whether further evaluation is warranted. Definitions of terms used in the checklist have been provided and users are strongly encouraged to familiarize themselves with these definitions before beginning the checklist.

Name of Facility:

Camp Stanley Storage Activity (CSSA), Boerne, Texas.

Affected Property Location:

AOC-72 is located in the southwest portion of the Inner Cantonment area (see Figure 2 of this RIR). The site lies approximately 310 yards north of the southern CSSA boundary and is approximately 0.1 acre in size.

Mailing Address:

**Camp Stanley Storage Activity
25800 Ralph Fair Road
Boerne, TX 78015**

TNRCC Case Tracking #s:

**Water Customer No.: CN602728206.
Air Customer No.: CN600126262.**

Solid Waste Registration #s:

Texas Solid Waste Registration No.: 69026.

Voluntary Cleanup Program #: **Not applicable.**

EPA I.D. #s:

USEPA Identification No.: TX2210020739.

Figure: 30 TAC §350.77(b)

¹
Definitions

Affected property - The entire area (i.e., on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

Assessment level - A critical protective concentration level for a chemical of concern used for affected property assessments where the human health protective concentration level is established under a Tier 1 evaluation as described in §350.75(b) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation), except for the protective concentration level for the soil-to-groundwater exposure pathway which may be established under Tier 1, 2, or 3 as described in §350.75(i)(7) of this title, and ecological protective concentration levels which are developed, when necessary, under Tier 2 and/or 3 in accordance with §350.77(c) and/or (d), respectively, of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

Bedrock - The solid rock (i.e., consolidated, coherent, and relatively hard naturally formed material that cannot normally be excavated by manual methods alone) that underlies gravel, soil or other surficial material.

Chemical of concern - Any chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity. Depending on the program area, chemicals of concern may include the following: solid waste, industrial solid waste, municipal solid waste, and hazardous waste as defined in Texas Health and Safety Code, §361.003, as amended; hazardous constituents as listed in 40 Code of Federal Regulations Part 261, Appendix VIII, as amended; constituents on the groundwater monitoring list in 40 Code of Federal Regulations Part 264, Appendix IX, as amended; constituents as listed in 40 CFR Part 258 Appendices I and II, as amended; pollutant as defined in Texas Water Code, §26.001, as amended; hazardous substance as defined in Texas Health and Safety Code, §361.003, as amended, and the Texas Water Code §26.263, as amended; regulated substance as defined in Texas Water Code §26.342, as amended and §334.2 of this title (relating to Definitions), as amended; petroleum product as defined in Texas Water Code §26.342, as amended and §334.122(b)(12) of this title (relating to Definitions for ASTs), as amended; other substances as defined in Texas Water Code §26.039(a), as amended; and daughter products of the aforementioned constituents.

Community - An assemblage of plant and animal populations occupying the same habitat in which the various species interact via spatial and trophic relationships (e.g., a desert community or a pond community).

Complete exposure pathway - An exposure pathway where a human or ecological receptor is exposed to a chemical of concern via an exposure route (e.g., incidental soil ingestion, inhalation of volatiles and particulates, consumption of prey, etc).

De minimus - The description of an area of affected property comprised of one acre or less where the ecological risk is considered to be insignificant because of the small extent of contamination, the absence of protected species, the availability of similar unimpacted habitat nearby, and the lack of adjacent sensitive environmental areas.

Ecological protective concentration level - The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, groundwater, or surface water) which is determined in accordance with §350.77(c) or (d) of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels) to be protective for ecological receptors. These concentration levels are primarily intended to be protective for more mobile or wide-ranging ecological receptors and, where appropriate, benthic invertebrate communities within the waters in the state. These concentration levels are not intended to be directly protective of receptors with limited mobility or range (e.g., plants, soil invertebrates, and small rodents), particularly those residing within active areas of a facility, unless these receptors are threatened/endangered species or unless impacts to these receptors result in disruption of the ecosystem or other unacceptable consequences for the more mobile or wide-ranging receptors (e.g., impacts to an off-site grassland habitat eliminate rodents which causes a desirable owl population to leave the area).

¹These definitions were taken from 30 TAC §350.4 and may have both ecological and human health applications. For the purposes of this checklist, it is understood that only the ecological applications are of concern.

Ecological risk assessment - The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors; however, as used in this context, only chemical stressors (i.e., COCs) are evaluated.

Environmental medium - A material found in the natural environment such as soil (including non-waste fill materials), groundwater, air, surface water, and sediments, or a mixture of such materials with liquids, sludges, gases, or solids, including hazardous waste which is inseparable by simple mechanical removal processes, and is made up primarily of natural environmental material.

Exclusion criteria - Those conditions at an affected property which preclude the need to establish a protective concentration level for an ecological exposure pathway because the exposure pathway between the chemical of concern and the ecological receptors is not complete or is insignificant.

Exposure medium - The environmental medium or biologic tissue in which or by which exposure to chemicals of concern by ecological or human receptors occurs.

Facility - The installation associated with the affected property where the release of chemicals of concern occurred.

Functioning cap - A low permeability layer or other approved cover meeting its design specifications to minimize water infiltration and chemical of concern migration, and prevent ecological or human receptor exposure to chemicals of concern, and whose design requirements are routinely maintained.

Landscaped area - An area of ornamental, or introduced, or commercially installed, or manicured vegetation which is routinely maintained.

Off-site property (off-site) - All environmental media which is outside of the legal boundaries of the on-site property.

On-site property (on-site) - All environmental media within the legal boundaries of a property owned or leased by a person who has filed a self-implementation notice or a response action plan for that property or who has become subject to such action through one of the agency's program areas for that property.

Physical barrier - Any structure or system, natural or manmade, that prevents exposure or prevents migration of chemicals of concern to the points of exposure.

Point of exposure - The location within an environmental medium where a receptor will be assumed to have a reasonable potential to come into contact with chemicals of concern. The point of exposure may be a discrete point, plane, or an area within or beyond some location.

Protective concentration level - The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, with the exception of:

- (A) A release that results in an exposure to a person solely within a workplace, concerning a claim that the person may assert against the person's employer;
- (B) An emission from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;
- (C) A release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 et seq.), if the release is subject to requirements concerning financial protection established by the Nuclear Regulatory Commission under §170 of that Act;
- (D) For the purposes of the environmental response law §104, as amended, or other response action, a release of source, by-product, or special nuclear material from a processing site designated under §102(a)(1) or §302(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. §7912 and §7942), as amended; and

(E) The normal application of fertilizer.

Sediment - Non-suspended particulate material lying below surface waters such as bays, the ocean, rivers, streams, lakes, ponds, or other similar surface water body (including intermittent streams). Dredged sediments which have been removed from below surface water bodies and placed on land shall be considered soils.

Sensitive environmental areas - Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young, and overwintering. Examples include critical habitat for threatened and endangered species, wilderness areas, parks, and wildlife refuges.

Source medium - An environmental medium containing chemicals of concern which must be removed, decontaminated and/or controlled in order to protect human health and the environment. The source medium may be the exposure medium for some exposure pathways.

Stressor - Any physical, chemical, or biological entity that can induce an adverse response; however, as used in this context, only chemical entities apply.

Subsurface soil - For human health exposure pathways, the portion of the soil zone between the base of surface soil and the top of the groundwater-bearing unit(s). For ecological exposure pathways, the portion of the soil zone between 0.5 feet and 5 feet in depth.

Surface cover - A layer of artificially placed utility material (e.g., shell, gravel).

Surface soil - For human health exposure pathways, the soil zone extending from ground surface to 15 feet in depth for residential land use and from ground surface to 5 feet in depth for commercial/industrial land use; or to the top of the uppermost groundwater-bearing unit or bedrock, whichever is less in depth. For ecological exposure pathways, the soil zone extending from ground surface to 0.5 feet in depth.

Surface water - Any water meeting the definition of surface water in the state as defined in §307.3 of this title (relating to Abbreviations and Definitions), as amended.

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.

Camp Stanley Storage Activity: CSSA is located in northwestern Bexar County, about 19 miles northwest of downtown San Antonio. The installation consists of approximately 4,004 acres immediately east of Ralph Fair Road, and approximately 0.5 mile east of Interstate Highway 10 (see Figure 1 of the RIR). CSSA has several historical waste sites, including SWMUs, AOCs, and RMUs. The present mission of CSSA is the receipt, storage, issue, and maintenance of ordnance as well as quality assurance testing and maintenance of military weapons and ammunition. Because of its mission, CSSA has been designated a restricted access facility. No changes to the CSSA mission and/or military activities are expected in the future.

AOC-72 is located in the southwest portion of the Inner Cantonment area. The site lies approximately 310 yards north of the southern CSSA boundary and covers approximately 0.1 acres. Prior to the excavation activities described herein, the area was open and covered by grass. Some low brush, oak, and juniper trees had grown up in areas around the site.

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:

- Topo map Aerial photo Other

Aerial photos of the site and land adjacent to the site are shown on Figure 3 of the RIR. Figure 2 of the RIR shows the general location of AOC-72.

2) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

<u>Known/Suspected COC Location</u>	<u>Based on sampling data?</u>	
<input type="checkbox"/> NO – Soil ≤ 5 ft below ground surface	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> NO – Soil >5 ft below ground surface	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> NO – Groundwater	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> NO – Surface Water/Sediments	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Explain (previously submitted information may be referenced):

Based on soil samples collected at AOC-72, there are there are no VOCs, SVOCs, explosives or metals at the site that exceed their respective PCL (see Appendix C of this RIR). There is also no asbestos remaining in the soils. There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-72. Over the past 10 years, there have been samples collected from the closest well to AOC-72 (well CS-MW10-LGR located approximately 880 ft downgradient of the site). Low concentrations of VOCs detected in CS-MW10-LGR (below their respective MCLs) are attributed to contaminated groundwater from Plume 2. Additionally, since the soil mixed with non-friable asbestos tiling was excavated, there will be no impact to groundwater, surface water, or sediment from AOC-72.

3) 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 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
- b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

The nearest surface water body, **the W-Tank that drains to Leon Creek**, is **approximately 50 feet** from the affected property (**north of AOC-72**). The water body is best described as a:

- freshwater stream: _____ 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: **0.52 acres**
- drainage ditch
- tidal stream bay estuary
- other; specify

As shown on Figure 2, the nearest perennial surface water body is the “W-Tank,” a pond located approximately 50 feet north (upgradient) of the site. The pond is approximately 0.52 acre in size. There is a dam along the southern boundary of the pond. A small intermittent stream is below the dam. The creek bed runs to the south, approximately 175 feet to the east of AOC-72.

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?

- Yes Segment # _____ Use Classification:
- No**

If the water body is not a State classified segment, identify the first downstream classified segment.

Name:

Upper Leon Creek

Segment #:

Segment 1907 – from a point 100 meters (330 feet) upstream of State Highway 16 northwest of San Antonio in Bexar County to a point 9.0 kilometers (5.6 miles) upstream of Scenic Loop Road north of Helotes in Bexar County.

Use Classification:

Upper Leon Creek is classified as a perennial stream. The designated uses of Segment 1907 are high aquatic life, contact recreation, public water supply, and aquifer protection. No significant degradation of high quality receiving waters is anticipated from AOC-72.

All creeks at CSSA are intermittent and only have water during and immediately following rain events. Refer to Section 3.3 of the RIR.

As necessary, provide further description of surface waters in the vicinity of the affected property:

The closest perennial surface water body to AOC-72 is the “W-Tank,” a pond located approximately 50 feet north (upgradient) of the site. The pond is approximately 0.52 acre in size. There is a dam along the southern boundary of the pond. A small intermittent stream is below the dam. The creek bed runs to the south, approximately 175 feet to the east of AOC-72. The W-Tank is located along the westernmost

unnamed tributary of Upper Leon Creek. At this point along the unnamed tributary, the distance to Upper Leon Creek is 4,375 ft. The W-Tank is fed by precipitation.

The nearest classified creek that is downgradient from AOC-72 is Upper Leon Creek. The creek is classified as a perennial stream. Upper Leon Creek is classified under Texas Surface Water Quality Standards as Segment 1907 from a point 330 ft upstream of State Highway 16 northwest of San Antonio in Bexar County to a point 5.6 miles upstream of Scenic Loop Road north of Helotes in Bexar County. The designated uses of Segment 1907 are high aquatic life, contact recreation, public water supply, and aquifer protection. No significant degradation of high quality receiving waters is anticipated from AOC-72.

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
- b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

Yes No

Explain:

There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-72. Since soils were not found to have concentrations of VOCs, SVOCs, explosives, or metals above Tier 1 PCLs, and the remaining soils do not contain asbestos, there will be no impact to groundwater, surface water, or sediment from AOC-72.

The closest surface water body to AOC-72 is the "W-Tank," a pond located approximately 50 feet north (upgradient) of the site. The pond is approximately 0.52 acre in size. There is a dam along the southern boundary of the pond. A small stream is below the dam. The creek bed runs to the south, approximately 175 feet to the east of AOC-72. This stream, and all other streams at CSSA, are intermittent and only contain water during and immediately following rain events.

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 No

Explain:

Concentrations of chemicals detected in soil samples at AOC-72 do not exceed Tier 1 residential soil action levels. Soil media removed contained non-friable asbestos tiling. The results from confirmation samples from the remaining soils do not contain asbestos.

There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-72. Since the soil media contained non-friable asbestos tiling was excavated from the site, there will be no impact to groundwater, surface water, or sediment in the area. Inorganic groundwater contamination has not been reported in the closest well to AOC-72 (well CS-MW10-LGR located approximately 880 feet southwest of the site).

Additionally, several surveys have been conducted at CSSA for threatened and endangered (T&E) species. The only T&E species that have been documented at CSSA are the black-capped vireo (*Vireo atricapillus*) [BCVI] and golden-cheeked warbler (*Dendroica chrysoparia*) [GCWA]. AOC-72 is not located within BCVI or GCWA habitat. The nearest potential habitats for local endangered species are approximately 3,600 ft east. Additional information can be found in the following references:

- **Parsons, 2007. *Final Integrated Natural Resource Management Plan*. Prepared for Camp Stanley Storage Activity, Boerne, Texas. October 2007. Available online: [CSSA EE \(Volume 1.6, Other Plans and Approaches\)](#)**
- **Parsons, 2009. *Final Species and Habitat Distributions of Black-Capped Vireos and Golden-Cheeked Warblers, 2009 Breeding/Nesting Season*. Prepared for Camp Stanley Storage Activity, Boerne, Texas. September 2009. Available online: [CSSA EE \(Volume 1.6, Other Plans and Approaches\)](#)**

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 [See explanation](#) No

Explain:

Based on Table 1 of this RIR there are no longer any COCs at the site. What contaminated soil horizon that was present at the site was removed during excavation activities.

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 Minimis* Land Area Subpart D skipped based on answers to Subparts A and C.

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 and does it meet all of the conditions above?

Yes No

Explain how conditions are met/not met:

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, TNRCC 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: Laura Marbury, P.G. (Typed/Printed Name)

Principal Geologist (Title)

March 1, 2012 (Date)

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

Julie Burdey, P.G. (Typed/Printed Name of Person)

Project Manager (Title of Person)



(Signature of Person)

March 1, 2012 (Date Signed)

APPENDIX C
Confirmation Sample Results for All Analytes at AOC-72

Appendix C. Confirmation Sample Results for All Analytes at AOC-72

		Volatile Organics																																		
		1,1,1,2-Tetrachloroethane CAS: 630-20-6		1,1,1-Trichloroethane CAS: 71-55-6		1,1,2-Tetrachloroethane CAS: 79-34-5		1,1,2-Trichloroethane CAS: 79-00-5		1,1-Dichloroethane CAS: 75-34-3		1,1-Dichloroethene CAS: 75-35-4		1,1-Dichloropropene CAS: 563-58-6		1,2,3-Trichlorobenzene CAS: 87-61-6		1,2,3-Trichloropropane CAS: 96-18-4		1,2,4-Trichlorobenzene CAS: 120-82-1		1,2,4-Trimethylbenzene CAS: 95-63-6		1,2-Dibromo-3-chloropropane CAS: 96-12-8												
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution									
Tier 1 Soil PCLs - 30 acre[†]																																				
Residential Combined Exposure ^[1]	3.90E+01	c		3.20E+04	n	3.00E+01	c	1.00E+01	c	8.80E+03	n	1.60E+03	n	2.60E+01	c	8.70E+01	n	2.00E-01	c	7.00E+01	n	7.90E+01	n	8.00E-02	c											
Residential Groundwater Exposure ^[2]	7.10E-01	c		8.10E-01	m	1.20E-02	c	1.00E-02	m	9.20E+00	n	2.50E-02	m	6.70E-02	c	1.30E+01	n	2.70E-04	c	2.40E+00	m	2.40E+01	n	8.70E-04	m											
TCEQ-Approved Background Values																																				
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na										
Sample Locations (Date Collected)																																				
AOC72-BOT01 (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-BOT02 (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-BOT03 (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--										
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--										
AOC72-SS03 (23-Jun-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-SS04 (08-Nov-2011)	0.00080	M	1	0.00090	U	1	0.00090	M	1	0.00090	M	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	M	1	0.0010	M	1	0.0010	M	1	0.0011	M	1	0.0020	M	1
AOC72-SS04-DUP (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-SW01 (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-SW02 (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1
AOC72-SW03 (08-Nov-2011)	0.00080	U	1	0.00090	U	1	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0011	U	1	0.0012	U	1	0.0010	U	1	0.0010	U	1	0.0010	U	1	0.0011	U	1	0.0020	U	1

		Volatile Organics																																		
		1,2-Dibromoethane (EDB) CAS: 106-93-4		1,2-Dichlorobenzene CAS: 95-50-1		1,2-Dichloroethane CAS: 107-06-2		1,2-Dichloropropane CAS: 78-87-5		1,3,5-Trimethylbenzene (Mesitylene) CAS: 108-67-8		1,3-Dichlorobenzene CAS: 541-73-1		1,3-Dichloropropane CAS: 142-28-9		1,4-Dichlorobenzene CAS: 106-46-7		1-Chlorohexane CAS: 544-10-5		2,2-Dichloropropane CAS: 594-20-7		2-Chlorotoluene CAS: 95-49-8		4-Chlorotoluene CAS: 106-43-4												
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution									
Tier 1 Soil PCLs - 30 acre[†]																																				
Residential Combined Exposure ^[1]	4.30E-01	c		3.90E+02	n	6.40E+00	c	3.10E+01	n	5.90E+01	n	6.20E+01	n	2.60E+01	c	2.50E+02	c	2.30E+03	n	3.10E+01	n	1.10E+03	n	1.60E+03	n											
Residential Groundwater Exposure ^[2]	1.00E-04	m		8.90E+00	m	6.90E-03	m	1.10E-02	m	2.70E+01	n	3.40E+00	n	3.20E-02	c	1.10E+00	m	2.00E+01	n	6.00E-02	c	4.50E+00	n	5.40E+00	n											
TCEQ-Approved Background Values																																				
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na										
Sample Locations (Date Collected)																																				
AOC72-BOT01 (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-BOT02 (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-BOT03 (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--										
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--										
AOC72-SS03 (23-Jun-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-SS04 (08-Nov-2011)	0.0013	M	1	0.0010	M	1	0.0010	U	1	0.00070	U	1	0.0011	M	1	0.0011	M	1	0.00070	M	1	0.00080	M	1	0.00090	M	1	0.0010	U	1	0.0013	M	1	0.0011	M	1
AOC72-SS04-DUP (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-SW01 (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-SW02 (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1
AOC72-SW03 (08-Nov-2011)	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.00070	U	1	0.0011	U	1	0.0011	U	1	0.00070	U	1	0.00080	U	1	0.00090	U	1	0.0010	U	1	0.0013	U	1	0.0011	U	1

Appendix C. Confirmation Sample Results for All Analytes at AOC-72

		Volatile Organics																															
		Benzene CAS: 71-43-2		Bromobenzene CAS: 108-86-1		Bromochloromethane CAS: 74-97-5		Bromodichloromethane CAS: 75-27-4		Bromoform CAS: 75-25-2		Bromomethane CAS: 74-83-9		Carbon tetrachloride CAS: 56-23-5		Chlorobenzene CAS: 108-90-7		Chloroethane CAS: 75-00-3		Chloroform CAS: 67-66-3		Chloromethane CAS: 74-87-3		cis-1,2-Dichloroethene CAS: 156-59-2									
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution						
Tier 1 Soil PCLs - 30 acre[†]																																	
Residential Combined Exposure ^[1]	6.90E+01	c		2.80E+02	n	3.30E+03	n	9.80E+01	c	2.80E+02	c	2.90E+01	n	2.30E+01	c	3.20E+02	n	2.30E+04	n	8.00E+00	c	8.40E+01	c	1.20E+02	n								
Residential Groundwater Exposure ^[2]	1.30E-02	m		1.20E+00	n	1.50E+00	n	3.30E-02	c	3.20E-01	c	6.50E-02	n	3.10E-02	m	5.50E-01	m	1.50E+01	n	5.10E-01	n	2.00E-01	c	1.20E-01	m								
TCEQ-Approved Background Values																																	
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na							
Sample Locations (Date Collected)																																	
AOC72-BOT01 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-BOT02 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-BOT03 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS03 (23-Jun-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-SS04 (08-Nov-2011)	0.00090	U	1	0.00090	M	1	0.00080	U	1	0.0011	M	1	0.00070	M	1	0.0010	U	1	0.00070	M	1	0.0015	U	1	0.00070	U	1	0.0015	M	1	0.00080	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-SW01 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-SW02 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1
AOC72-SW03 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.00080	U	1	0.0011	U	1	0.00070	U	1	0.0010	U	1	0.00070	U	1	0.0015	U	1	0.00070	U	1	0.0015	U	1	0.00080	U	1

		Volatile Organics																															
		cis-1,3-Dichloropropene CAS: 10061-01-5		Dibromochloromethane CAS: 124-48-1		Dibromomethane CAS: 74-95-3		Dichlorodifluoromethane CAS: 75-71-8		Ethylbenzene CAS: 100-41-4		Hexachlorobutadiene CAS: 87-68-3		Isopropylbenzene CAS: 98-82-8		m,p-Xylene CAS: 179601-23-1		Methylene chloride CAS: 75-09-2		Naphthalene CAS: 91-20-3		n-Butylbenzene CAS: 104-51-8		n-Propylbenzene CAS: 103-65-1									
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution						
Tier 1 Soil PCLs - 30 acre[†]																																	
Residential Combined Exposure ^[1]	7.80E+00	n		7.20E+01	c	4.20E+01	n	7.50E+02	n	5.30E+03	n	1.20E+01	c	3.00E+03	n	na		2.60E+02	c	1.20E+02	n	3.30E+03	n	1.60E+03	n								
Residential Groundwater Exposure ^[2]	3.30E-03	c		2.50E-02	c	5.60E-01	c	1.20E+02	n	3.80E+00	m	1.60E+00	c	1.70E+02	n	na		6.50E-03	m	1.60E+01	n	7.60E+01	n	2.20E+01	n								
TCEQ-Approved Background Values																																	
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na							
Sample Locations (Date Collected)																																	
AOC72-BOT01 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-BOT02 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-BOT03 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS03 (23-Jun-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-SS04 (08-Nov-2011)	0.00090	M	1	0.00090	M	1	0.0010	U	1	0.0018	M	1	0.0011	M	1	0.0010	M	1	0.0018	M	1	0.0013	U	1	0.0010	M	1	0.0010	M	1	0.0012	M	1
AOC72-SS04-DUP (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-SW01 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-SW02 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1
AOC72-SW03 (08-Nov-2011)	0.00090	U	1	0.00090	U	1	0.0010	U	1	0.0018	U	1	0.0011	U	1	0.0010	U	1	0.0018	U	1	0.0013	U	1	0.0010	U	1	0.0010	U	1	0.0012	U	1

Appendix C. Confirmation Sample Results for All Analytes at AOC-72

		Volatile Organics																															
		p-Xylene CAS: 95-47-6		p-Cymene (p-Isopropyltoluene) CAS: 99-87-6		sec-Butylbenzene CAS: 135-98-8		Styrene CAS: 100-42-5		tert-Butylbenzene CAS: 98-06-6		Tetrachloroethene (PCE) CAS: 127-18-4		Toluene CAS: 108-88-3		trans-1,2-Dichloroethene CAS: 156-60-5		trans-1,3-Dichloropropene CAS: 10061-02-6		Trichloroethene (TCE) CAS: 79-01-6		Trichlorofluoromethane CAS: 75-69-4		Vinyl chloride CAS: 75-01-4									
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution						
Tier 1 Soil PCLs - 30 acre[†]																																	
Residential Combined Exposure ^[1]	2.90E+04	n		8.20E+03	n	3.30E+03	n	4.30E+03	n	3.30E+03	n	9.40E+01	c	5.40E+03	n	3.70E+02	n	2.60E+01	c	6.80E+01	n	2.50E+04	n	3.40E+00	c								
Residential Groundwater Exposure ^[2]	3.50E+01	m		1.20E+02	n	4.20E+01	n	1.60E+00	m	5.00E+01	n	2.50E-02	m	4.10E+00	m	2.50E-01	m	1.80E-02	c	1.70E-02	m	6.40E+01	n	1.10E-02	m								
TCEQ-Approved Background Values																																	
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na							
Sample Locations (Date Collected)																																	
AOC72-BOT01 (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-BOT02 (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-BOT03 (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS03 (23-Jun-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-SS04 (08-Nov-2011)	0.00070	M	1	0.0012	M	1	0.0011	M	1	0.00090	M	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	M	1	0.0012	U	1	0.0013	M	1	0.0013	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-SW01 (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-SW02 (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1
AOC72-SW03 (08-Nov-2011)	0.00070	U	1	0.0012	U	1	0.0011	U	1	0.00090	U	1	0.00080	U	1	0.0010	U	1	0.00080	U	1	0.00090	U	1	0.0012	U	1	0.0013	U	1	0.0013	U	1

		Semi-Volatile Organics																															
		1,2,4-Trichlorobenzene CAS: 120-82-1		1,2-Dichlorobenzene CAS: 95-50-1		1,3-Dichlorobenzene CAS: 541-73-1		1,4-Dichlorobenzene CAS: 106-46-7		2,4,5-Trichlorophenol CAS: 95-95-4		2,4,6-Trichlorophenol CAS: 88-06-2		2,4-Dichlorophenol CAS: 120-83-2		2,4-Dimethylphenol CAS: 105-67-9		2,4-Dinitrophenol CAS: 51-28-5		2,4-Dinitrotoluene CAS: 121-14-2		2,6-Dinitrotoluene CAS: 606-20-2		2-Chloronaphthalene CAS: 91-58-7									
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution						
Tier 1 Soil PCLs - 30 acre[†]																																	
Residential Combined Exposure ^[1]	7.00E+01	n		3.90E+02	n	6.20E+01	n	2.50E+02	c	6.70E+03	n	6.70E+01	n	2.00E+02	n	1.30E+03	n	1.30E+02	n	6.90E+00	c	6.90E+00	c	5.00E+03	n								
Residential Groundwater Exposure ^[2]	2.40E+00	m		8.90E+00	m	3.40E+00	n	1.10E+00	m	1.70E+01	n	8.70E-02	n	1.80E-01	n	1.60E+00	n	4.70E-02	n	2.70E-03	c	2.40E-03	c	3.30E+02	n								
TCEQ-Approved Background Values																																	
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na							
Sample Locations (Date Collected)																																	
AOC72-BOT01 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-BOT02 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-BOT03 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
AOC72-SS03 (23-Jun-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-SS04 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	M	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-SW01 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-SW02 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1
AOC72-SW03 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.080	U	1	0.030	U	1	0.050	U	1	0.040	U	1	0.040	U	1

Appendix C. Confirmation Sample Results for All Analytes at AOC-72

		Semi-Volatile Organics																															
		2-Chlorophenol CAS: 95-57-8		2-Methyl-4,6-dinitrophenol CAS: 534-52-1		2-Methylnaphthalene CAS: 91-57-6		2-Methylphenol CAS: 95-48-7		2-Nitroaniline CAS: 88-74-4		2-Nitrophenol CAS: 88-75-5		3,3'-Dichlorobenzidine CAS: 91-94-1		3-Nitroaniline CAS: 99-09-2		4-Bromophenyl phenyl ether CAS: 101-55-3		4-Chloro-3-methyl phenol CAS: 59-50-7		4-Chloroaniline CAS: 106-47-8		4-Chlorophenyl phenyl ether CAS: 7005-72-3									
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution						
Tier 1 Soil PCLs - 30 acre[†]																																	
Residential Combined Exposure ^[1]	4.10E+02	n		6.70E+00	n	2.50E+02	n	3.30E+03	n	1.10E+01	n	1.30E+02	n	1.00E+01	c	1.20E+01	n	2.70E-01	c	3.30E+02	n	2.30E+01	c	1.50E-01	c								
Residential Groundwater Exposure ^[2]	8.20E-01	n		2.30E-03	n	8.50E+00	n	3.60E+00	n	1.10E-02	n	6.70E-02	n	3.10E-02	c	1.30E-02	n	1.80E-01	c	2.30E+00	n	1.00E-02	c	1.60E-02	c								
TCEQ-Approved Background Values																																	
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na							
Sample Locations (Date Collected)																																	
AOC72-BOT01 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-BOT02 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-BOT03 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--							
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--							
AOC72-SS03 (23-Jun-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-SS04 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	M	1	0.040	U	1	0.020	M	1	0.010	M	1	0.050	U	1	0.040	U	1	0.040	M	1	0.040	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-SW01 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-SW02 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1
AOC72-SW03 (08-Nov-2011)	0.030	U	1	0.030	U	1	0.050	U	1	0.020	U	1	0.040	U	1	0.020	U	1	0.010	U	1	0.050	U	1	0.040	U	1	0.040	U	1	0.040	U	1

		Semi-Volatile Organics																															
		4-Methylphenol (p-cresol) CAS: 106-44-5		4-Nitroaniline CAS: 100-01-6		4-Nitrophenol CAS: 100-02-7		Acenaphthene CAS: 83-32-9		Acenaphthylene CAS: 208-96-8		Anthracene CAS: 120-12-7		Benzo(a)anthracene CAS: 56-55-3		Benzo(a)pyrene CAS: 50-32-8		Benzo(b)fluoranthene CAS: 205-99-2		Benzo(g,h,i)perylene CAS: 191-24-2		Benzoic acid CAS: 65-85-0		Benzyl alcohol CAS: 100-51-6									
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution						
Tier 1 Soil PCLs - 30 acre[†]																																	
Residential Combined Exposure ^[1]	3.30E+02	n		1.90E+02	n	1.30E+02	n	3.00E+03	n	3.80E+03	n	1.80E+04	n	5.60E+00	c	5.60E-01	c	5.70E+00	c	1.80E+03	n	2.70E+05	n	6.70E+03	n								
Residential Groundwater Exposure ^[2]	3.20E-01	n		5.40E-02	c	5.00E-02	n	1.20E+02	n	2.00E+02	n	3.40E+03	n	8.90E+00	c	3.80E+00	m	3.00E+01	c	2.30E+04	n	>S	9.50E+01	n	2.90E+00	n							
TCEQ-Approved Background Values																																	
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na							
Sample Locations (Date Collected)																																	
AOC72-BOT01 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-BOT02 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-BOT03 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--							
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--							
AOC72-SS03 (23-Jun-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-SS04 (08-Nov-2011)	0.040	M	1	0.030	M	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	M	1	0.12	U	1	0.12	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-SW01 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-SW02 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1
AOC72-SW03 (08-Nov-2011)	0.040	U	1	0.030	U	1	0.040	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.060	U	1	0.040	U	1	0.020	U	1	0.12	U	1	0.12	U	1

Appendix C. Confirmation Sample Results for All Analytes at AOC-72

		Semi-Volatile Organics																												
		Benzyl butyl phthalate CAS: 85-68-7		bis(2-Chloroethoxy)methane CAS: 111-91-1		bis(2-Chloroethyl)ether CAS: 111-44-4		bis(2-Chloroisopropyl)ether CAS: 108-60-1		bis(2-Ethylhexyl) phthalate CAS: 117-81-7		Chrysene CAS: 218-01-9		Dibenz(a,h)anthracene CAS: 53-70-3		Dibenzofuran CAS: 132-64-9		Diethyl phthalate CAS: 84-66-2		Dimethyl phthalate CAS: 131-11-3		Di-n-butyl phthalate CAS: 84-74-2		Di-n-octyl phthalate CAS: 117-84-0						
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution			
Tier 1 Soil PCLs - 30 acre[†]																														
Residential Combined Exposure ^[1]	1.60E+03	c		2.50E+00	c	1.40E+00	c	4.10E+01	c	4.30E+01	c	5.60E+02	c	5.50E-01	c	2.70E+02	n	5.30E+04	n	5.30E+04	n	6.20E+03	n	2.60E+03	n					
Residential Groundwater Exposure ^[2]	1.30E+02	c		5.90E-03	c	1.10E-03	c	9.50E-02	c	8.20E+01	m	7.70E+02	c	>S		7.60E+00	c	1.70E+01	n	7.80E+01	n	3.10E+01	n	1.70E+03	n	1.00E+06	n	>S		
TCEQ-Approved Background Values																														
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na				
Sample Locations (Date Collected)																														
AOC72-BOT01 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-BOT02 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-BOT03 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		
AOC72-SS03 (23-Jun-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-SS04 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-SW01 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-SW02 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1
AOC72-SW03 (08-Nov-2011)	0.040	U	1	0.060	U	1	0.040	U	1	0.050	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.040	U	1	0.030	U	1

		Semi-Volatile Organics																												
		Fluoranthene CAS: 206-44-0		Fluorene CAS: 86-73-7		Hexachlorobenzene CAS: 118-74-1		Hexachlorobutadiene CAS: 87-68-3		Hexachlorocyclopentadiene CAS: 77-47-4		Hexachloroethane CAS: 67-72-1		Indeno(1,2,3-cd)pyrene CAS: 193-39-5		Isophorone CAS: 78-59-1		Naphthalene CAS: 91-20-3		Nitrobenzene CAS: 98-95-3		n-Nitrosodi-n-propylamine CAS: 621-64-7		n-Nitrosodiphenylamine CAS: 86-30-6						
		Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution	Qualifier	Dilution			
Tier 1 Soil PCLs - 30 acre[†]																														
Residential Combined Exposure ^[1]	2.30E+03	n		2.30E+03	n	1.00E+00	c	1.20E+01	c	7.20E+00	n	6.70E+01	n	5.70E+00	c	4.90E+03	c	1.20E+02	n	3.40E+01	c	4.00E-01	c	5.70E+02	c					
Residential Groundwater Exposure ^[2]	9.60E+02	n	>S	1.50E+02	n	5.60E-01	m	1.60E+00	c	9.60E+00	m	9.20E-01	n	8.70E+01	c	1.50E+00	c	1.60E+01	n	1.80E-01	n	1.80E-04	c	1.40E+00	c					
TCEQ-Approved Background Values																														
CSSA 9 Metals Background Concentration ^[3]	na			na		na		na		na		na		na		na		na		na		na		na		na				
Sample Locations (Date Collected)																														
AOC72-BOT01 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-BOT02 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-BOT03 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-SS01 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		
AOC72-SS02 (23-Jun-2011)	--			--		--		--		--		--		--		--		--		--		--		--		--		--		
AOC72-SS03 (23-Jun-2011)	0.050	F	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-SS04 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	M	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-SS04-DUP (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-SW01 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-SW02 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1
AOC72-SW03 (08-Nov-2011)	0.040	U	1	0.040	U	1	0.050	U	1	0.060	U	1	0.030	U	1	0.040	U	1	0.040	U	1	0.050	U	1	0.040	U	1	0.050	U	1

Appendix C. Confirmation Sample Results for All Analytes at AOC-72

	Metals		Asbestos	
	Zinc CAS: 7440-66-6	Qualifier Dilution	Asbestos CAS: 1332-21-4	Qualifier Dilution
Tier 1 Soil PCLs - 30 acre[†]				
Residential Combined Exposure ^[1]	9.90E+03	n	na	
Residential Groundwater Exposure ^[2]	1.20E+03	n >S	na	
TCEQ-Approved Background Values				
CSSA 9 Metals Background Concentration ^[3]	73.2	††		
Sample Locations (Date Collected)				
AOC72-BOT01 (08-Nov-2011)	4.7	F 1	ND	1
AOC72-BOT02 (08-Nov-2011)	5.4	J 1	ND	1
AOC72-BOT03 (08-Nov-2011)	19	J 1	ND	1
AOC72-SS01 (23-Jun-2011)	34	J 1	--	
AOC72-SS02 (23-Jun-2011)	19	J 1	--	
AOC72-SS03 (23-Jun-2011)	48	J 1	--	
AOC72-SS04 (08-Nov-2011)	16	M 1	ND	1
AOC72-SS04-DUP (08-Nov-2011)	21	J 1	ND	1
AOC72-SW01 (08-Nov-2011)	5.4	J 1	ND	1
AOC72-SW02 (08-Nov-2011)	9.0	J 1	ND	1
AOC72-SW03 (08-Nov-2011)	35	J 1	ND	1

NOTES:

† TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: May 24, 2011).

†† CSSA Soil Background Concentrations. Second Revision, Evaluation of Background Metals Concentrations in Soils and Bedrock at CSSA. February 2002. Values from Table 3.3.

††† Texas-Specific median background concentration.

PCLs and CSSA background values coded in this table as [1, 2, 3].

[1] ^{Tot}Soil_{Comb} = PCL for COPC in soil for a 30 acre source area and a potential future resident (combined exposure for ingestion, dermal contact, inhalation of volatiles and particulates, and ingestion of above-ground and below-ground vegetables).

[2] ^{GW}Soil_{Ing} = PCL for COPC in soil for a 30 acre source area and a potential future resident (soil-to-groundwater leaching of COPC to Class 1 and 2 groundwater).

[3] CSSA Soil Background Concentrations.

PCLs are shown in **blue** font.

All values are measured in milligrams per kilogram (mg/Kg) unless otherwise noted.

c = carcinogenic.

n = noncarcinogenic.

m = primary MCL-based.

a = EPA Action Level-based.

>S = solubility limit exceeded during calculation.

na = not applicable.

QA NOTES AND DATA QUALIFIERS:

(NO CODE) - Confirmed identification.

U - Analyte was not detected above the indicated Method Detection Limit (MDL).

F - Analyte was positively identified, but the quantitation is an estimation above the MDL and below the Reporting Limit (RL).

J - Analyte was positively identified, but the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

M = Concentration is estimated due to a matrix effect.

Values shown in **BOLD** indicate detections above the MDL.

Values **HIGHLIGHTED** indicate detections above the PCL.

APPENDIX D
Data Verification Summary Report

DATA VERIFICATION SUMMARY REPORT
for samples collected from AOC72
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples and the associated field quality control (QC) samples collected from Camp Stanley Storage Activity (CSSA) under Environmental Protection Support, Investigations, and Treatability Studies on June 23rd, 2011. The samples in the following Sample Delivery Group (SDG) included samples collected from RMU4:

64983

Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), explosives, and metals. Not all samples were analyzed for all parameters.

Field QC samples collected in association with this SDG included one trip blank (TB) and one equipment blank (EB). The trip blank was analyzed for VOC analysis only.

All samples were collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.5°C which was within the recommended range is 2-6° C.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

ICP METALS

General

The ICP metals portion of this SDG consisted of three (3) soil samples and one EB. All samples were collected on June 23rd, 2011 and were analyzed for arsenic, barium, cadmium, chromium, copper, lead, nickel and zinc.

The ICP metals analyses were performed using USEPA SW846 Method 6010B. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

All ICP metals samples were digested in two batches, one for soil and one for the EB.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the two laboratory control samples (LCS).

All LCS recoveries were within acceptance criteria.

Precision

Precision is normally evaluated based on the relative percent difference (%RPD) of duplicate analyses.

Due to the lack of duplicate analysis, the precision of this SDG can't be evaluated.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks and EB for possible cross contamination of samples during sample collection and analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria (ICV) were met.
- All continuing calibration verification (CCV) criteria were met.
- The two ICVs were prepared using a secondary source. All second source verification criteria were met.
- All interference check criteria were met.
- All internal standard criteria were met.

There were two method blanks (MBs), one EB, and several calibration blanks associated with the ICP analyses in this SDG. All blanks were free of any target metals at or above the RL. Barium and zinc were detected in the EB with relatively small concentration comparing to the concentration in the associated three soil samples. No flags were applied.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP results for the samples in this SDG were considered usable. The completeness for the ICP portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERCURY

General

The mercury portion of this SDG consisted of three (3) soil samples and one (1) EB. Those samples were collected on June 23rd, 2011 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in two analytical batches, one for soil and one for EB.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the two LCS.

Both LCS recoveries were within acceptance criteria.

Precision

Precision is normally evaluated based on the relative percent difference (%RPD) of duplicate analyses.

Due to the lack of duplicate analysis, the precision of this SDG can't be evaluated.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks and EB for possible cross contamination of samples during sample collection and analysis.

All samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. Both ICV were prepared using a secondary source.

There were two MBs, one EB, and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

VOLATILES

General

This data package consisted of one (1) soil sample, one TB and one EB. These samples were collected on June 23rd, 2011 and were analyzed for a full list of VOCs.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. These samples were analyzed under two sets of ICAL. All samples were analyzed undiluted following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two LCSs and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision is normally evaluated based on the relative percent difference (%RPD) of duplicate analyses.

Due to the lack of duplicate analysis, the precision of this SDG can't be evaluated.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks, TB, and EB for possible cross contamination of samples during sample collection, transportation, and analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- The two LCSs were prepared with a secondary source standard. All second source verification criteria were met.
- All ICV criteria were met.
- All CCV criteria were met.

There were two MBs, one TB, one EB and few calibration blanks associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs at RLs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

SEMI-VOLATILES

General

This data package consisted of one (1) soil sample and one (1) EB which were collected on June 23rd 2011 and were analyzed for a full list of SVOCs.

The SVOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8270C. These two samples were analyzed under two sets of ICAL. Both samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed undiluted within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two LCSs and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision is normally evaluated based on the relative percent difference (%RPD) of duplicate analyses.

Due to the lack of duplicate analysis, the precision of this SDG can't be evaluated.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;

- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks and EB for cross contamination of samples during sample collection and analysis.

Both samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- Both LCSs were prepared with a secondary source. All second source verification criteria were met.
- All ICV criteria were met.
- All CCV criteria were met.
- All internal standard criteria were met.

There were two MBs and few calibration blanks associated with the SVOC analyses in this SDG. All blanks were non-detect for all target SVOCs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All SVOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

EXPLOSIVES

General

This data package consisted of one (1) soil sample and one (1) EB which were collected on June 23rd, 2011 and were analyzed for a full list of explosives by SW8330B.

The explosive analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8330B. These two samples were analyzed under two sets of ICAL curves. Both samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed undiluted within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two LCSs and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision is normally evaluated based on the relative percent difference (%RPD) of duplicate analyses.

Due to the lack of duplicate analysis, the precision of this SDG can't be evaluated.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks and EB for cross contamination of samples during sample collection and analysis.

The samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. Both samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- Both LCSs were prepared with a secondary source. All second source verification criteria were met.
- All ICV criteria were met.
- All CCV criteria were met.

There were two MBs and few calibration blanks associated with the explosive analyses in this SDG. All blanks were non-detect for all target explosives.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All explosive results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA VERIFICATION SUMMARY REPORT
for samples collected from AOC 72
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers seven soil samples and two field quality control (QC) samples collected from AOC 72 at Camp Stanley Storage Activity (CSSA) under Environmental Protection Support, Investigations, and Treatability Studies on November 8, 2011. The samples were assigned to the following Sample Delivery Group (SDG):

66245

The samples in this SDG were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), and metals including arsenic, barium, cadmium, chromium, copper, nickel, lead, zinc, and mercury. There was one set of parent and field duplicate (FD) samples and one trip blank (TB) collected as field QC samples.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.0°C, which was within the 2-6°C range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

ICP-AES Metals

General

The ICP-AES metal portion of this SDG consisted of eight (8) soil samples, one FD, one set of matrix spike/matrix spike duplicate (MS/MSD). The samples were collected on November 8, 2011 and were analyzed for arsenic, barium, cadmium, chromium, copper, nickel, lead, and zinc.

The metal analyses were performed using USEPA SW846 Method 6010B. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples were digested in one batch (#161514). The samples were analyzed in one batch under a single ICAL. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the laboratory control sample (LCS), MS and MSD. Sample AOC72-SS04 was designated as the parent sample for the MS/MSD analyses.

The LCS recoveries for all target metals were within acceptance criteria.

AOC72-SS04

Metals	MS, %R	MSD, %	Criteria, %R
Arsenic	83	85	75 - 125
Barium	82	89	
Cadmium	71	69	
Chromium	79	80	
Copper	81	83	
Lead	79	82	
Nickel	74	76	
Zinc	71	74	

“M” flags were applied to the cadmium, nickel and zinc results of the parent sample.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the MS/MSD results and parent and FD results. Sample AOC72-SS04 was collected in duplicate. %RPD calculation is only applicable when both concentrations are greater than reporting limit.

All %RPDs of the MS/MSD were compliant, less than 20%RPD.

AOC72-SS04

Metals	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
Barium	24.0	30.7	24	≤20
Copper	3.77	5.26	33	
Lead	12.13	12.89	6.1	
Nickel	4.39	4.38	0.2	
Zinc	15.9	21.0	28	

“J” flags were applied to the barium, copper and zinc results of parent and FD samples.

However, based on the hierarchy of data qualifiers, if the data has already been flagged with “M”, “J” flag won’t be applied. This applies to zinc result of sample AOC72-SS04.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument initial calibration criteria were met.
- Lead met criteria in the low-level check standard.
- All second source criteria were met. The ICV sample was prepared using a secondary source.
- All CCV criteria were met except the CCV which bracketed the method blank and LCS had zinc recovered at 110.8% with control limit of 110%. This is not significant to flag any associated data.
- All interference check (ICSA/ICSAB) criteria were met.
- The dilution test (DT) was performed on sample AOC72-SS04. This test was only applicable to barium, chromium, and lead:

Metal	%D	Criteria
Barium	22	%D ≤ 10
Chromium	18	
Lead	8.8	

- The post digestion spike (PDS) was performed on the same sample as the DT. It was applicable for all metals other than lead:

Metal	%R	Criteria
Arsenic	86	75 – 125%
Barium	74	
Cadmium	70	
Chromium	78	
Copper	84	
Nickel	76	
Zinc	72	

“J” flags were applied to all barium, cadmium, and zinc results of this data package, unless the result has already been flagged with “M”.

There was one method blank and several calibration blanks associated with the lead analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metal results for the samples in this SDG were considered usable. Therefore, the completeness for the lead portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERURY

General

The mercury portion of this SDG consisted of seven (7) soil samples, one FD and one pair of MS/MSD. The samples were collected on November 8, 2011. All samples were prepared and analyzed for mercury using USEPA Method SW7471B.

All samples were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The samples for mercury were digested in one batch (#161350). The samples were analyzed in a one batch under a single ICAL. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD.

The LCS, MS, and MSD recoveries for mercury were within acceptance criteria.

Precision

Precision was measured based on the %RPD of MS/MSD and parent/FD sample results.

%RPD of MS/MSD was compliant.

Mercury was not detected in the parent and FD samples, therefore, the %RPD calculation was not applicable.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The sample in this SDG was analyzed following the COC and the analytical procedures described in the CSSA QAPP. The sample was prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

VOLATILES

General

This data package consisted of seven (7) soil samples, one (1) set of MS/MSD, one (1) pair of parent/FD and one TB. The samples were collected on November 8, 2011 and were analyzed for a full list of VOCs.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in four analytical batches under three sets of initial calibration (ICAL) curves. All samples were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method. All samples were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the four LCSs, MS/MSD, and the surrogate spikes. MS/MSD were performed with sample AOC72-SS04.

All LCSs and surrogate spike recoveries were within acceptance criteria for all four batches except all surrogates were recovered higher than the control limit in the LCS of batch 161538. An isolated auto-sampler addition error (double spiking) might be the cause of the unusually high %Rs. No flags were applied since all %Rs of the target VOCs were compliant.

There were 39 VOCs with non-compliant MS and/or MSD %R. "M" flags were applied to the parent sample results.

Precision

Precision was evaluated with the %RPD of the MS/MSD and parent and field duplicate sample results. Sample AOC72-SS04 was collected in duplicate.

There were twenty compounds with %RPD greater than 30% of the MS/MSD analyses. "M" flags have already been applied to the parent sample results due to accuracy issues, therefore, no additional flags were needed.

None of the target compounds were detected above the RLs in both parent and FD samples, therefore, the %RPD calculation is not applicable,

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining TB and laboratory blanks for cross contamination of samples during analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- All four LCS samples were prepared with a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- Sample AOC72-SS04FD was reanalyzed for naphthalene due to the hit in the blank and original sample injection. Analyst felt this might be a carry-over problem and re-injected the sample for naphthalene only. The re-injection showed no naphthalene responses in the sample and blank. The reanalysis result and associated quality control runs were reported in the final data package.

There were four MBs and few calibration blanks associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs at RLs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

SEMI-VOLATILES

General

This data package consisted of seven (7) soil samples, one pair of MS/MSD and one FD. The samples were collected on November 8, 2011 and were analyzed for a full list of SVOCs.

The SVOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8270C. The samples were analyzed in one analytical batch under one set of initial calibration (ICAL) curves. All samples were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method. All samples were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS, MS/MSD, and the surrogate spikes.

All LCSs and surrogate spike recoveries were within acceptance criteria.

There were nine compounds with non-compliant %Rs for the MS and/or MSD. "M" flag was applied to the parent sample results of those nine SVOCs.

Precision

Precision was evaluated with the %RPD of the MS/MSD and parent and field duplicate sample results. Sample AOC72-SS04 was collected in duplicate.

There were two SVOC had non-compliant %RPD for the MS/MSD analyses. "M" flags have already been applied to the parent sample result due to accuracy issue. No further action is needed.

None of the target SVOCs were detected in both parent and FD at RLs.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.

- Both LCS samples were prepared with a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one MB and few calibration blanks associated with the SVOC analyses in this SDG. All blanks were non-detect for all target SVOCs.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All SVOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

APPENDIX E
Waste Characterization Sampling Results for AOC-72

Appendix E. Waste Characterization Sampling Results for AOC-72

SAMPLE ID: DATE SAMPLED: LAB SAMPLE ID: Units	AOC72-WC01 11/8/2011 AY50412/AY50420	AOC72-WC02 11/8/2011 AY50413/AY50421	AOC72-WC03 11/8/2011 AY50414/AY50422	AOC72-WC04 11/8/2011 AY50415/AY50423	AOC72-WC05 11/8/2011 AY50416/AY50424	AOC72-WC06 11/8/2011 AY50417/AY50425	AOC72-WC07 11/8/2011 AY50418/AY50426	AOC72-WC08 11/8/2011 AY50419/AY50427
Petroleum Hydrocarbons - TX1005								
Petroleum Hydrocarbons C6 - C28	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Petroleum Hydrocarbons C28 - C36	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
TCLP (SW1311) Metals - SW6010B/SW7470A								
Antimony	0.0020	0.0030	0.0020	0.0020	0.0020	0.0020	0.0030	0.0020
Arsenic	0.010	0.012	0.011	0.011	0.010	0.010	0.0080	0.0090
Barium	0.30	0.21	0.22	0.31	0.23	0.28	0.30	0.29
Beryllium	0.00080	0.00080	0.00080	0.00080	0.00070	0.00080	0.00080	0.00080
Cadmium	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
Chromium	0.0010	0.0020	0.0020	0.0010	0.0010	0.0010	0.014	0.0010
Lead	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
Mercury	0.00020	0.00010	0.00010	0.00010	0.00010	0.00010	0.00020	0.00020
Nickel	0.0030	0.0030	0.0030	0.0020	0.0020	0.0020	0.0030	0.0020
Selenium	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Silver	0.018	0.018	0.018	0.018	0.017	0.019	0.018	0.018
Distilled Water Leachate (T30S335.521[d]) Metals - SW6010B/SW7470A								
Antimony	0.0030	0.0050	0.0030	0.0010	0.0010	0.0030	0.0020	0.0030
Arsenic	0.0020	0.0020	0.0030	0.0020	0.0020	0.0020	0.0020	0.0020
Barium	0.010	0.010	0.017	0.018	0.013	0.017	0.012	0.011
Beryllium	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020
Cadmium	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
Chromium	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Lead	0.025	0.043	0.028	0.021	0.023	0.025	0.023	0.023
Mercury	0.00020							
Nickel	0.0010	0.0010	0.0010	0.0010	0.0050	0.0070	0.0010	0.0010
Selenium	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020
Silver	0.00060	0.00090	0.00090	0.00070	0.00060	0.0014	0.0012	0.0012
Total Dissolved Solids								
Total Dissolved Solids	80	85	135	139	114	126	96	76

QA NOTES AND DATA QUALIFIERS:

(NO CODE) - Confirmed identification.

U - Analyte was not detected above the indicated Method Detection Limit (MDL).

F - Analyte was positively identified, but the quantitation is an estimation above the MDL and below the Reporting Limit (RL).

Detections are **bolded**.