

RELEASE INVESTIGATION REPORT
AREA OF CONCERN 76
CAMP STANLEY STORAGE ACTIVITY



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EXECUTIVE SUMMARY

Area of Concern (AOC) 76 is an approximately 629-square-foot site located in the western portion of Camp Stanley Storage Activity's (CSSA) Inner Cantonment Area approximately 340 feet east of the western CSSA boundary. AOC-76 was identified in August 2017 by CSSA public works employees who observed small arms projectiles on the surface near CSSA's residential area. Work performed at the site included environmental sampling, the removal and proper management of soil containing contaminants above the identified Texas Risk Reduction Program (TRRP) Tier 1 based action levels, and proper documentation of all activities, including preparation of this Release Investigation Report (RIR). This RIR requests No Further Action (NFA) at AOC-76.

In summary, activities at AOC-76 as described in this RIR showed the following results:

- Excavation, removal, and confirmation sampling were performed at AOC-76.
- The contaminant of concern (COC) identified at AOC-76 was lead. Areas of soil contamination exceeding identified TRRP action levels have been either excavated and removed from the site, or were used to calculate a 95% upper confidence limit (UCL) per Texas Administrative Code (TAC) §350.79(2)(A) which does not exceed the TRRP action level/critical Protective Concentration Limit (PCL).

From information presented in this report, the results of the investigation at AOC-76 meet the three criteria as described in the Texas Commission on Environmental Quality (TCEQ) (2003) guidance *Determining Which Releases are Subject to TRRP*. Thus, the following three criteria were met:

- Soil found to have COC concentrations above the TRRP action levels were either excavated from the site or used to calculate a 95% UCL per TAC §350.79(2)(A) that does not exceed the TRRP action level/critical PCL.
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-76. Soils found to have concentrations of metals above TRRP action levels were excavated and removed or used to calculate a 95% UCL, so there will be no future impact to groundwater, surface water, or sediment from AOC-76.
- AOC-76 passes the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

Because these three criteria are met, AOC-76 is not subject to TRRP. Therefore, this RIR has been prepared to document the results and to request an NFA decision from TCEQ.

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
APPL	Agriculture & Priority Pollutants Laboratory, Inc.
bgs	below ground surface
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
mg/kg	milligrams per kilogram
MCL	maximum contaminant level
MLQ	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
RMU	Range Management Unit
SAP	Sampling and Analysis Plan
SW	solid waste
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)
TRRP	Texas Risk Reduction Program
UCL	upper confidence limit

ACRONYMS AND ABBREVIATIONS (*continued*)

UGR	Upper Glen Rose
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WMP	Waste Management Plan

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 suspected waste disposal sites and preparation of appropriate documentation, including a Release Investigation Report (RIR) for Area of Concern (AOC) 76 (**Figure 2**). AOC-76 is located in the western portion of CSSA's Inner Cantonment. This site covers approximately 629 square feet. 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 performed at AOC-76 including environmental sampling; excavation and removal of impacted soil; waste characterization and confirmatory sampling and analysis; and proper documentation of all activities, including preparation of this closure report. 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-76. Section 3 describes the objectives and rationale for preparing an RIR for AOC-76 and the findings from environmental investigations for the site. The groundwater and surface water for CSSA and the area near AOC-76 are also described in Section 3. Section 4 summarizes the findings from completing the Tier 1 Ecological Exclusion Criteria Checklist, which is included as Appendix B. Section 5 summarizes the overall findings and recommendations for the site. All figures and tables are provided at the end of this RIR (pages 10 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

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 (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 AREA OF CONCERN 76

2.2.1 Overview

AOC-76 is a 629-square-foot site located in the western portion of CSSA's Inner Cantonment (Figure 1). The site was discovered in August 2017 by CSSA public works employees who observed small arms projectiles on the surface near CSSA's residential area. The lead-projectile-impacted sand was not present along the existing or former communication line, neither as a marker sand nor as a bedding sand. The analytical results for contaminants of concern (COCs) detected at the site are discussed in Section 3.1. A series of historical aerial photos of the site are shown on **Figure 3** and photographs showing investigation and excavation activities at the site are provided in **Appendix A**.

2.2.2 Setting, Size, and Description

The approximately 629-square-foot site located in the western portion of Camp Stanley Storage Activity's (CSSA) Inner Cantonment Area approximately 340 feet east of the western CSSA boundary (Figure 2).

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

Review of historic aerial photographs did not reveal any specific disturbed areas of concern (Figure 3). Soil contamination at AOC-76 may be related to historical waste management activities from the former test fire room in Building 90. No previous investigations or sampling efforts have taken place at AOC-76, however based on historical waste activities, lead was anticipated to be the only COC at the site.

3.0 OBJECTIVES OF RELEASE INVESTIGATION REPORT

In accordance with TCEQ (2010) guidance, *Determining Which Releases are Subject to TRRP* (www.tceq.state.tx.us/assets/public/remediation/trrp/releasesTRRPrev.pdf), an RIR can be prepared for a site when results of an investigation lead to the following conclusions:

- Concentrations of chemicals detected at the site do not exceed TRRP action levels;
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at the site. Soils found to have concentrations of metals above TRRP action levels were excavated and removed or used to calculate a 95% UCL, so there will be no future impact to groundwater, surface water, or sediment from AOC-76; 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 a site, an RIR can be submitted to the TCEQ and a NFA decision can be requested.

As referred to in the criteria listed above, the TRRP action levels were selected following TCEQ guidance (TCEQ, 2010). The TRRP action level identified for each chemical detected during this investigation (i.e., COC) is defined as the lowest value among the following: 1) the TRRP Tier 1 Residential <0.5-acre PCL for total soil combined ($^{Tot}Soil_{Comb}$); 2) the TRRP Tier 1 Residential <0.5-acre PCL for groundwater protection ($^{GW}Soil_{Ing}$); and 3) the TCEQ Ecological Benchmark for Soil.

Also based on the TCEQ guidance, if the background level or the method quantification limit (MQL) is a higher concentration than the TRRP action level, then the higher of the background or MQL is used as the TRRP action level. Based on the metals that are most common to past activities at CSSA, TCEQ has approved background concentrations for nine CSSA metals (*Evaluation of Background Metals Concentrations in Soils and Bedrock*, Parsons, 2002). The statistically calculated and TCEQ-approved background metal concentrations are shown in the analytical summary table (**Table 1**) and are also available in the CSSA EE (Volume 2, Background Metals Levels). It is noted that the TRRP action levels for five of the nine metals are based on the CSSA background concentrations (these five metals are arsenic, barium, cadmium, lead, and mercury). The identified TRRP action levels for this investigation are included in **Appendix C**.

3.1 FIELD ACTIVITIES AND INVESTIGATIONS

Investigations were initiated in August 2017 to delineate the presence and extent of lead-contaminated soils at AOC-76. Delineation samples were collected for laboratory analysis on October 10, 2017.

A summary of the cleanup confirmation results at the site are shown in Table 1 (detected compounds only) and Appendix C (all analytes), and the confirmation soil sampling locations are shown on **Figure 4**. The data verification summary report for the sampling and analytical results is provided in **Appendix D**. Waste characterization results for samples collected from stockpiled soil excavated as part of this effort are shown in **Appendix E**. The clearance areas where soils were excavated and removed, and the sample locations for soils remaining at the site are shown on Figure 4. Waste characterization sampling is described in Section 3.1.3.

3.1.1 Excavation, Removal, and Confirmation Sampling

In October 2017, Parsons conducted soil sampling at several locations across AOC-76 to delineate the horizontal extent of contamination (AOC76-SS00 through AOC76-SS11). A vertical delineation sample (i.e., bottom sample) was collected at AOC76-SS09 at a depth of 6 inches to 12 inches below ground surface (bgs) in October 2017. To further define AOC-76 horizontal extent, additional samples were collected in November 2017 at AOC76-SS07A and AOC76-SS07B. In December 2017, Parsons performed interim removal actions of the impacted soils at AOC-76 and removed approximately 40 cubic yards lead impacted soil for proper waste management as described in Section 3.1.3. A bottom confirmation sample, AOC76-09A, was collected after soil removal in December 2017 located the bottom of excavation approximately 2 feet bgs. In February 2018, one additional soil sample (AOC76-SB09B) was collected at a depth of 24 to 30 inches bgs to help delineate the vertical extent of contamination at the site. All metals concentrations in AOC76-SB09B were below their respective critical PCLs. Samples were collected from varying depths, as shown on Table 1, and analyzed for the nine CSSA metals. As described in Section 3.1.3, one sample was also collected for waste characterization purposes and analyzed for TCLP metals (Appendix E).

All but two sample locations with lead concentrations above the TRRP action level were excavated (Table 1). Samples AOC76-SS09A and AOC76-SS11 had lead concentrations of 91 milligrams per kilogram (mg/kg) and 260 mg/kg, respectively, which exceeded the critical PCL for lead of 84.5 mg/kg. Per TAC §350.79(2)(A), a 95% UCL may be calculated to determine if there is a statistical basis for no further action on a particular COC. A 95% UCL of 71.4 mg/kg was calculated for the lead concentrations remaining in site soils, which does not exceed the critical PCL/TRRP action level (**Appendix G**).

3.1.2 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, Sampling and Analysis Plan). 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, 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) constitutes 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 (Volume1-1, Correspondence).

Following the CSSA-specific plans, the investigative soil analyses for AOC-76 were performed using U.S. Environmental Protection Agency (USEPA) *Test Methods for Evaluating Solid Waste* (SW-846): Method 6010 (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc). Prior to soil/waste management, waste characterization samples were collected from the excavated material and analyzed for toxicity characteristic leaching procedure (TCLP) metals (Methods SW1311/6010B and SW1311/7470A). All samples were sent to Agriculture & Priority Pollutants Laboratory, Inc. (APPL) for analysis.

3.1.3 Waste Characterization and On-Post Management 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-76, dated August 2017.

Excavated soil material was treated with Enviroblend® 90/10 stabilizing reagent and stockpiled for waste characterization. One waste characterization sample (WC01) was collected on December 12, 2018 and analyzed for TCLP metals. Based on these results, all 40 CY of soil were transported for management at the East Pasture berm. TCLP results from the stockpiled soil indicated all 40 CY met non-hazardous Class 2 like criteria and were transported to the East Pasture Berm for reuse, as per TCEQ approval December 20, 2010 (Appendix G). Results of the waste characterization samples are included in Appendix E.

3.2 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-76. 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 Area of Concern 76 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, have ranged from 34.8 ft below top of casing (BTOC) (December 2004) to 315.2 ft BTOC (September 2006). Low concentrations of volatile organic compounds (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-76 is an unnamed tributary approximately 2,234 ft from the site. The tributary drains to the W-Tank, located approximately 4,445 ft to the south of AOC-76. 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-76 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-76.

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-76. Thus, based on the absence of any complete or significant ecological exposure pathways, AOC-76 may be excluded from further ecological assessment.

5.0 SUMMARY AND RECOMMENDATIONS

AOC-76 is located in the western portion of the Inner Cantonment Area, approximately 340 yards east of the western CSSA boundary. AOC-76 covers approximately 629 square feet, and was identified as a potential AOC based on observed small arms projectiles on the surface near CSSA's residential area.

In summary, activities at AOC-76 as described in this RIR showed the following results:

- Excavation, removal, and confirmation sampling were performed at AOC-76.
- Soils found to have COC concentrations above the TRRP action levels were either excavated from the site or were used to calculate a 95% UCL per TAC §350.79(2)(A) that does not exceed the TRRP action level.
- A total volume of 40 CY of soil were removed from the site and managed at the East Pasture berm.
- Confirmation samples were collected from trench bottoms and sidewalls to confirm all waste had been removed.

From information presented in this report, the results of the investigation at AOC-75 meet the three criteria as described in TCEQ's (2003) guidance *Determining Which Releases are Subject to TRRP*. Thus, the following three criteria were met:

- Soils found to have COC concentrations above TRRP action levels were either excavated from the site or were used to calculate a 95% UCL per TAC §350.79(2)(A) that does not exceed the TRRP action level/critical PCL;
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at the site. Soils found to have concentrations of metals above TRRP action levels were excavated and removed or used to calculate a 95% UCL, so there will be no future impact to groundwater, surface water, or sediment from AOC-76; and
- AOC-76 passes the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

Because these three criteria are met, AOC-76 is not subject to TRRP. Therefore, this RIR has been prepared to document the results and to request an NFA decision from the TCEQ.

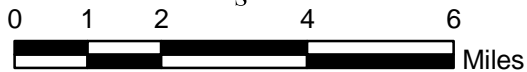
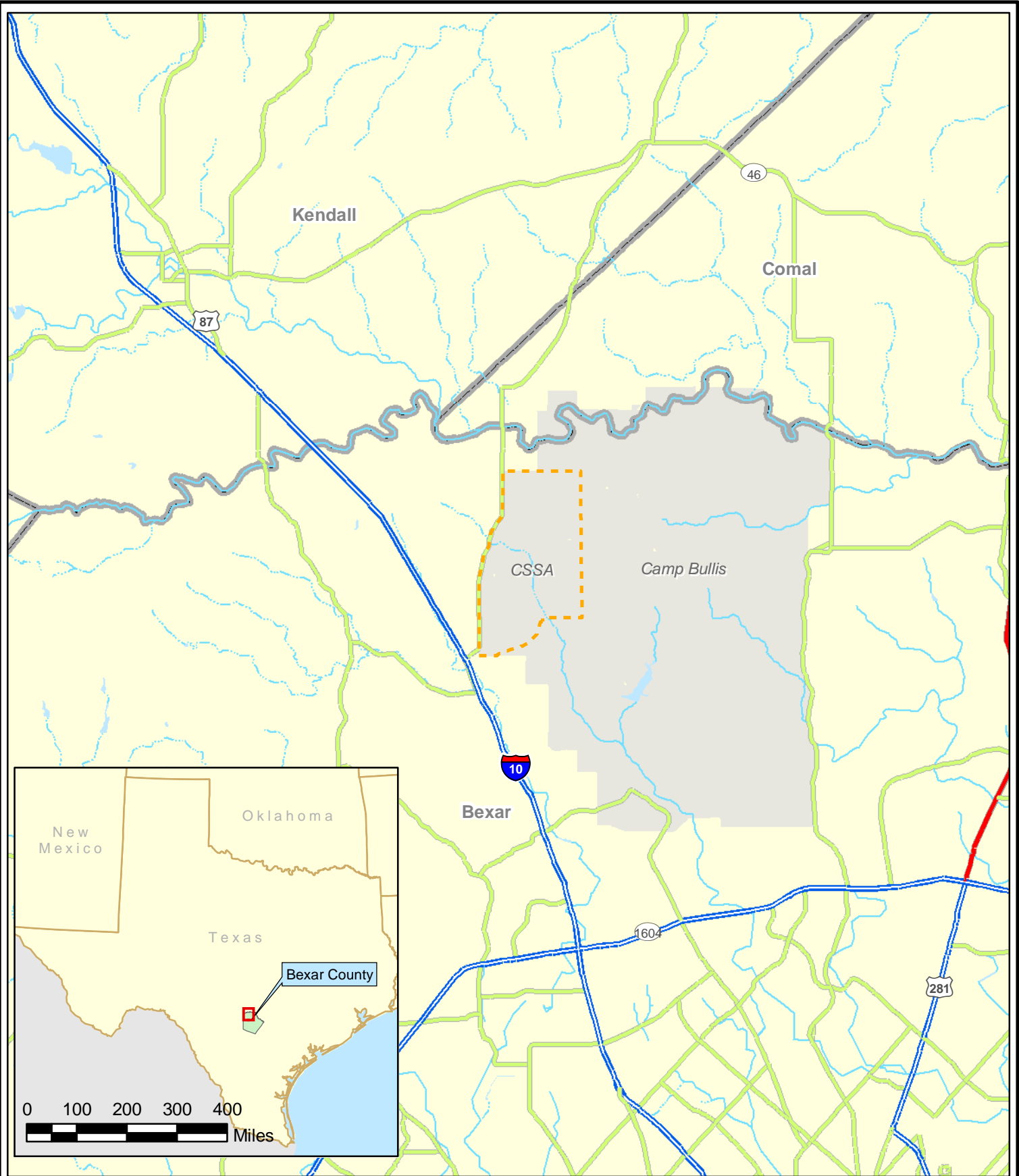
TABLES AND FIGURES

Table 1. Summary of Chemical Constituents Detected in Soils at AOC-76

	Metals																						
	Arsenic CAS: 7440-38-2		Barium CAS: 7440-39-3		Chromium CAS: 7440-47-3		Copper CAS: 7440-50-8		Lead CAS: 7439-92-1		Mercury CAS: 7439-97-6		Nickel CAS: 7440-02-0		Zinc CAS: 7440-66-6								
	Concentration	Qualifier	Concentration	Qualifier	Concentration	Qualifier	Concentration	Qualifier	Concentration	Qualifier	Concentration	Qualifier	Concentration	Qualifier	Concentration	Qualifier							
Tier 1 Soil PCLs - 30 acre[†]																							
Residential Combined Exposure ^[1]	2.40E+01	n	8.10E+03	n	2.70E+04	n	1.30E+03	n	5.00E+02	e	2.10E+00	n	8.40E+02	n	9.90E+03	n							
Residential Groundwater Exposure ^[2]	2.50E+00	m>S	2.20E+02	m>S	1.20E+03	m>S	5.20E+02	e>S	1.50E+00	e>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]	19.6 ^{††}		300 ^{†††}		40.2 ^{††}		23.2 ^{††}		84.5 ^{††}		0.77 ^{††}		35.5 ^{††}		73.2 ^{††}								
Sample Locations (Date Collected)/(Depth-ft bgs)																							
AOC76-SS00 (10-Oct-2017)/(8-8.5)	0.20	U	1	19	1	3.0	F	1	3.3	1	16	1	0.040	F	1	2.2	1	12	1				
AOC76-SS01 (10-Oct-2017)/(6-6.5)	0.20	U	1	24	1	5.2	F	1	0.19	U	1	0.18	U	1	0.030	F	1	3.3	1	0.60	U	1	
AOC76-SS01 (10-Oct-2017)/(16-16.5)	0.20	U	1	13	1	2.3	F	1	0.19	U	1	0.18	U	1	0.010	U	1	1.9	F	1	0.60	U	1
AOC76-SS02 (10-Oct-2017)/(6-6.5)	0.20	U	1	32	1	6.1	F	1	0.19	U	1	0.18	U	1	0.030	F	1	2.9	1	0.60	U	1	
AOC76-SS02 (10-Oct-2017)/(16-16.5)	0.20	U	1	34	1	9.1	F	1	0.19	U	1	5.2	F	1	0.020	F	1	4.5	1	5.9	1	1	
AOC76-SS03 (10-Oct-2017)/(6-6.5)	0.20	U	1	37	1	11	F	1	0.19	U	1	0.18	U	1	0.030	F	1	5.5	1	3.6	F	1	
AOC76-SS03 (10-Oct-2017)/(12-12.5)	0.20	U	1	21	1	3.1	F	1	0.19	U	1	0.18	U	1	0.010	U	1	2.4	1	0.60	U	1	
AOC76-SS04 (10-Oct-2017)/(6-6.5)	0.20	U	1	19	1	3.3	F	1	2.1	1	0.18	U	1	0.020	F	1	3.7	1	0.60	U	1		
AOC76-SS04 (10-Oct-2017)/(12-12.5)	0.20	U	1	25	1	3.0	F	1	0.19	U	1	0.18	U	1	0.010	U	1	1.4	F	1	0.60	U	1
AOC76-SS05 (10-Oct-2017)/(6-6.5)	0.20	U	1	31	1	3.1	F	1	0.19	U	1	0.18	U	1	0.020	F	1	1.5	F	1	0.60	U	1
AOC76-SS05 (10-Oct-2017)/(12-12.5)	0.20	U	1	29	1	3.7	F	1	2.3	1	4.3	F	1	0.020	F	1	3.0	1	1.5	F	1	1	
AOC76-SS06 (10-Oct-2017)/(7-7.5)	0.20	U	1	17	1	3.2	F	1	0.19	U	1	0.18	U	1	0.010	U	1	2.8	1	0.60	U	1	
AOC76-SS06 (10-Oct-2017)/(17-17.5)	0.20	U	1	20	1	1.1	F	1	0.59	F	1	0.18	U	1	0.020	F	1	4.2	1	0.80	F	1	
AOC76-SS07 (16-Nov-2017)/(0-6)**	0.20	U	1	8.5	1	1.8	F	1	7.6	1	230	10	0.17	1	4.1	1	2.6	F	1	1	1		
AOC76-SS07A (28-Nov-2017)/(0-8)	2.2	F	1	48	1	12	F	1	5.1	1	26	1	0.070	F	1	7.0	1	25	1	1	1		
AOC76-SS07B (28-Nov-2017)/(0-8)	3.2	F	1	53	1	13	F	1	7.3	1	40	1	0.43	1	7.7	1	36	1	1	1			
AOC76-SS08 (16-Nov-2017)/(0-6)	0.20	U	1	30	1	7.1	F	1	0.51	F	1	7.3	F	1	0.11	1	4.5	1	0.60	U	1		
AOC76-SS09 (16-Nov-2017)/(6-12)**	0.40	F	1	37	1	10	F	1	32	1	150	10	0.090	F	1	5.2	1	11	1	1	1		
AOC76-SS09A (12-Dec-2017)/(18-24)	2.6	F	1	31	1	9.3	F	1	14	1	260	5	0.020	F	1	4.8	1	8.3	1	1	1		
AOC76-SS09B (23-Feb-2018)/(24-36)	0.09	U	1	31	1	8.6	F		0.09	U	1	0.09	U	1	0.010	U	1	4.7	1	39.5	1	1	
AOC76-SS10 (10-Oct-2017)/(4-4.5)	0.20	U	1	34	1	4.7	F	1	0.19	U	1	0.18	U	1	0.030	F	1	3.2	1	0.60	U	1	
AOC76-SS10 (10-Oct-2017)/(12-12.5)	0.20	U	1	18	1	5.6	F	1	2.6	1	0.18	U	1	0.010	U	1	4.6	1	0.60	U	1		
AOC76-SS11 (10-Oct-2017)/(4-4.5)	0.20	U	1	30	1	6.5	F	1	2.8	1	91	1	0.020	F	1	5.7	1	5.0	1	1	1		
AOC76-SS11 (10-Oct-2017)/(12-12.5)	0.20	U	1	21	1	1.1	F	1	0.83	F	1	0.18	U	1	0.010	U	1	3.6	1	0.60	U	1	

NOTES:

- † TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: March 31, 2017).
 - †† 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] ^{†††}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] ^{†††}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; e = EPA Action Level-based.
 >S = solubility limit exceeded during calculation.
 ft bgs = feet below ground surface
- 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).
 Values shown in **BOLD** indicate detections above the MDL.
 Values **HIGHLIGHTED** indicate detections above the TRRP Action Level.
- ** Sample locations AOC76-SS07 and AOC76-SS09 were excavated from the site.









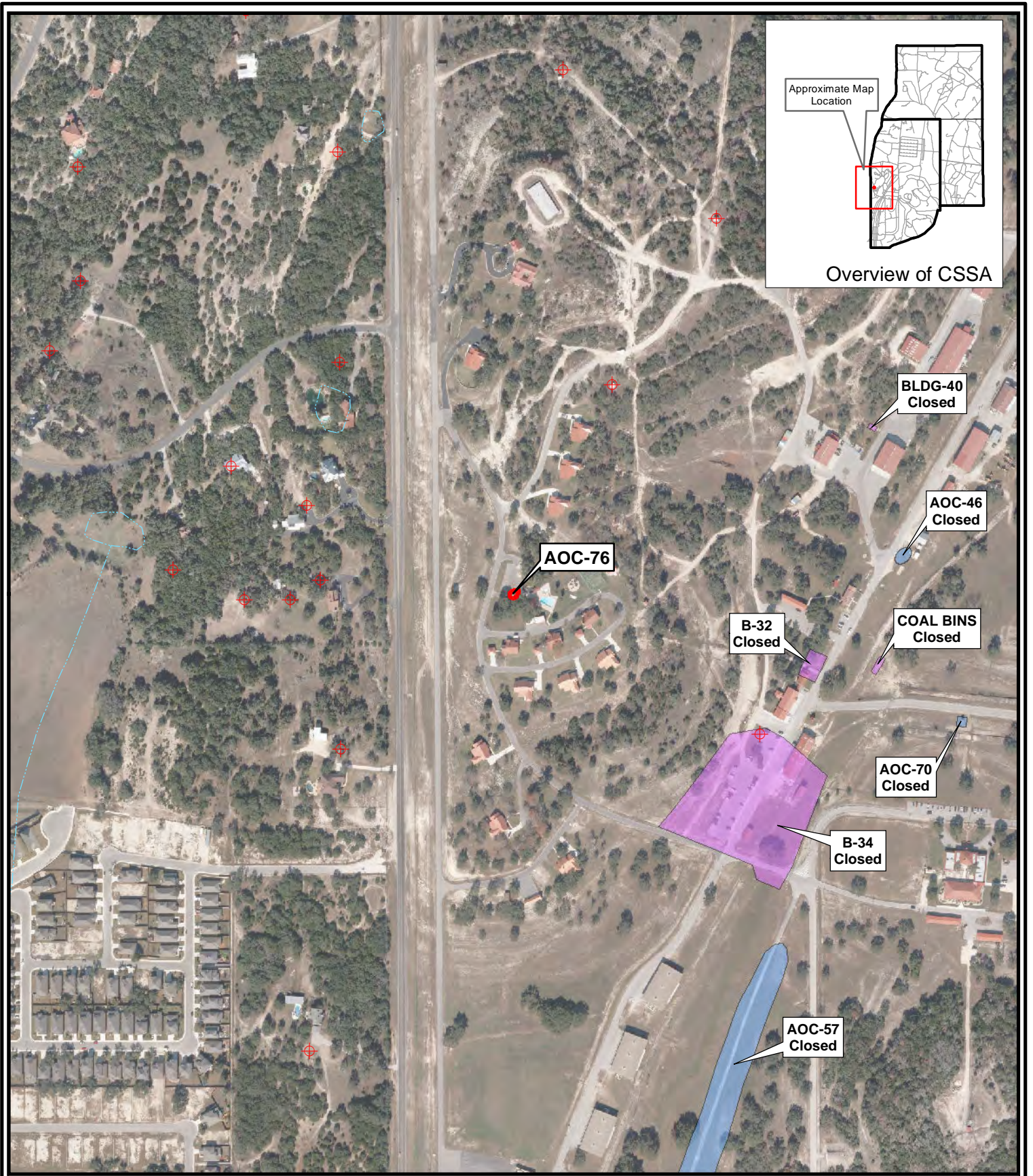
-  CSSA
-  Freeway
-  Highway
-  Major Road
-  County Boundary
-  Military Installation

Figure 1

CSSA Location Map
Camp Stanley Storage Activity

PARSONS



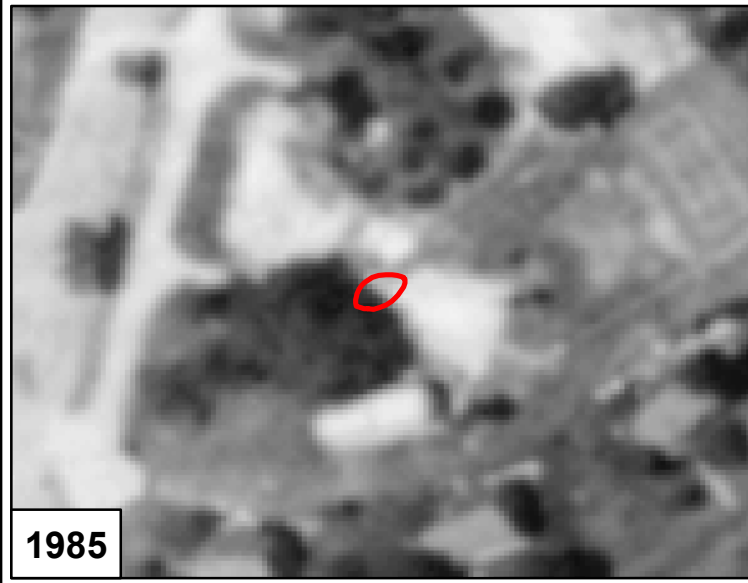
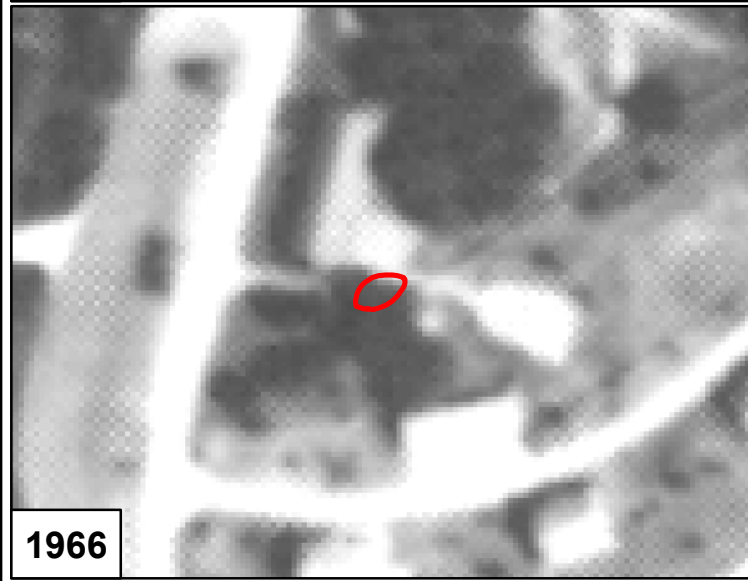
Aerial Photo Date: 2013




- Well Location
- AOC-76 Boundary
- AOC Boundary
- SWMU Boundary



Figure 2
AOC-76
Site Location Map
Camp Stanley Storage Activity
PARSONS



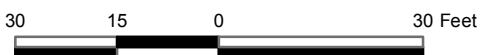
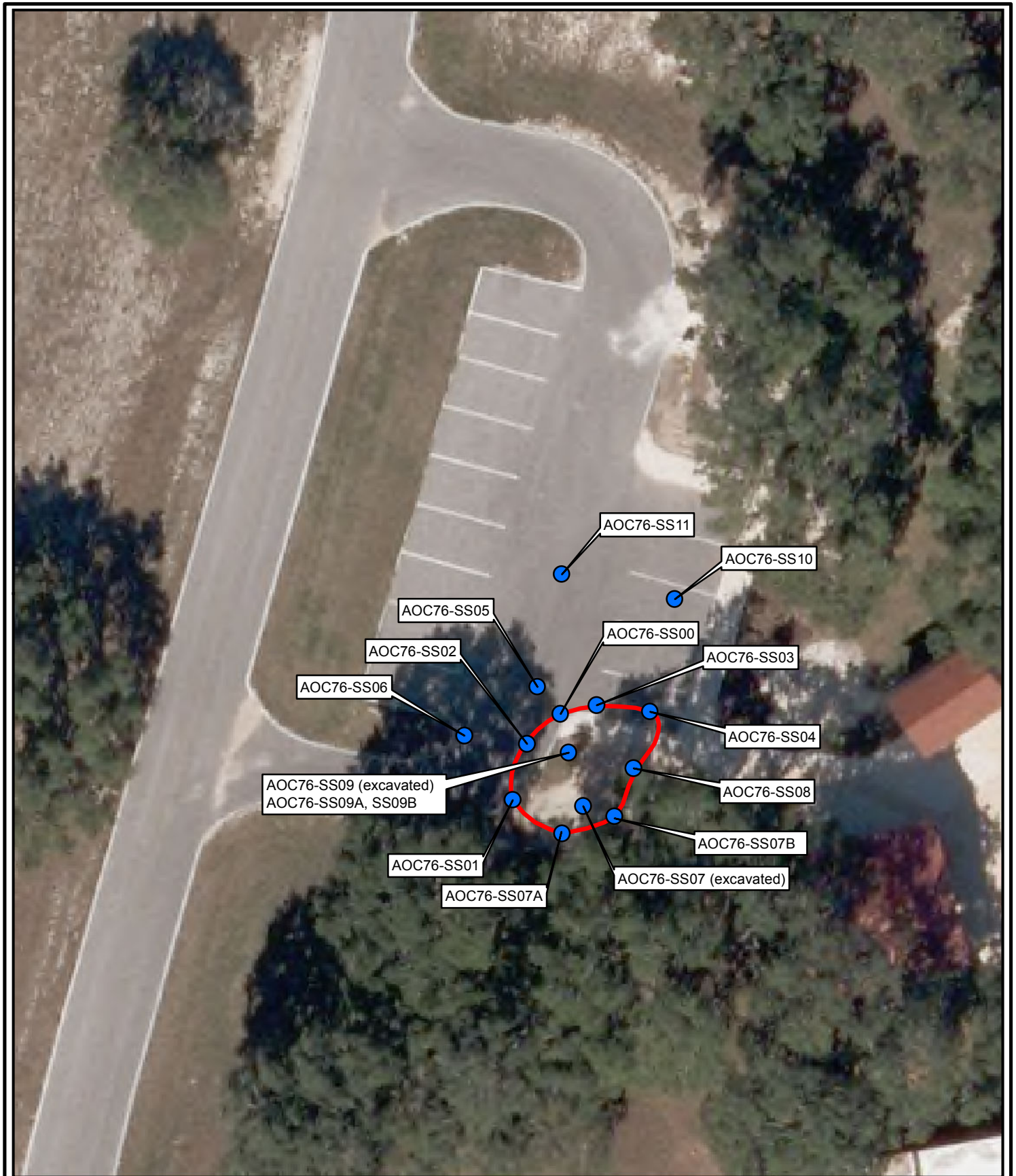
 AOC-76 Boundary

0 100 200 400 Feet

Figure 3

AOC-76
Historical Aerial Photographs
Camp Stanley Storage Activity

PARSONS



- Legend**
- Sample Location
 - Excavation Boundary

Figure 4
AOC-76
Sample and Excavation Locations
Camp Stanley Storage Activity

PARSONS

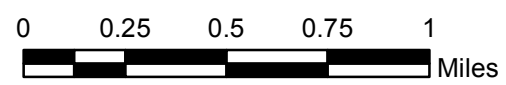
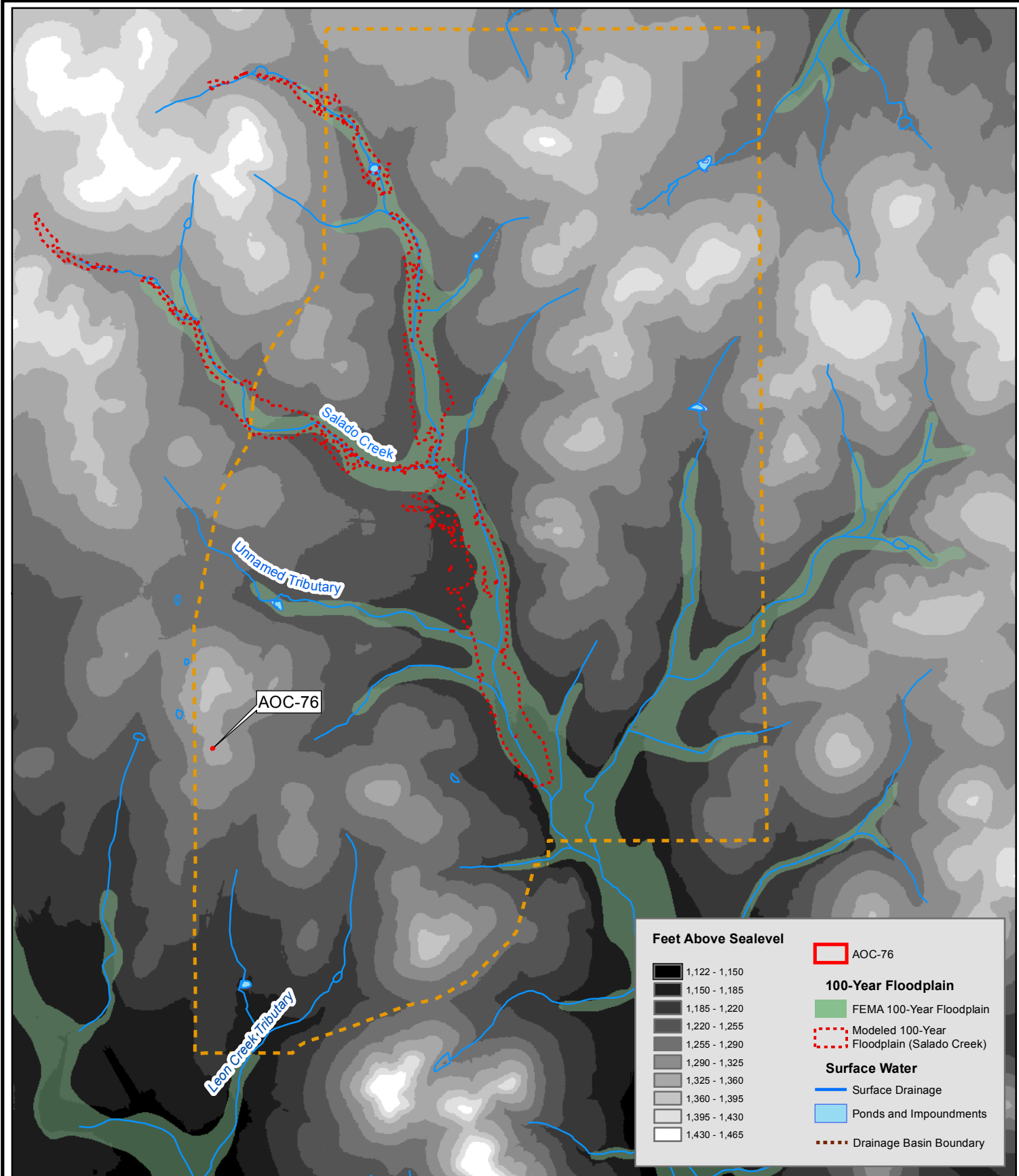


Figure 5

**AOC-76 Topography,
Surface Water, and Floodplains
Camp Stanley Storage Activity**

PARSONS

APPENDIX A
Site Photographs



Photo 1. Excavation of soil material at AOC-76, looking east.



Photo 2. Sand material noted under parking lot asphalt.



Photo 3. Treating excavated soil for reuse at East Pasture Berm.



Photo 4. Treated soil spread at East Pasture Berm.



Photo 5. Backfilling excavation with clean soil.



Photo 6. View of backfilled and regraded excavation, looking west.

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:

Area of Concern (AOC) 76 (AOC-76) is located in the northeastern portion of the Inner Cantonment Area, approximately 340 feet east of the western CSSA boundary (see Figure 2 of the RIR). The site covers approximately 629 square feet.

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)

Definitions¹

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

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.

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).

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 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.

AOC-76: AOC-76 is located in the western portion of the Inner Cantonment Area, approximately 340 yards east of the western CSSA boundary (see Figure 2 of the RIR). The site covers approximately 629 square feet.

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-76.

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):

The closest monitoring well to the site is Well CS-MW10 (880 feet downgradient). 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 volatile organic compounds (VOCs) detected in CS-MW10-LGR (below their respective MCLs) are attributed to contaminated groundwater from Plume 2.

The closest surface water body to AOC-76 is an unnamed tributary approximately 2,234 ft from the site. The tributary drains to the W-Tank, located approximately 4,445 ft to the south of AOC-76. 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.

Soils with lead concentrations exceeding the Tier 1 PCL at the site were excavated and removed or used to calculate a 95% UCL per TAC §350.79(2)(A) that does not exceed the Tier 1 PCL. There is no

evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-76.

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, **an unnamed tributary that drains to the W-Tank and then to Leon Creek**, is **approximately 2,234 feet** from the affected property. 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) [**only has water during and immediately after rain events**]
_____ intermittent with perennial pools
- freshwater swamp/marsh/wetland
- saltwater or brackish marsh/swamp/wetland
- reservoir, lake, or pond; approximate surface acres: _____
- drainage ditch
- tidal stream bay estuary
- other; specify _____

Is the water body listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 - 307.10?

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-76.

All creeks at CSSA are intermittent and only have water during and immediately following rain events. Refer to Section 3.2.3 of the RIR.

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

The closest surface water body to AOC-76 is an unnamed tributary approximately 2,234 ft from the site. The tributary drains to the W-Tank, located approximately 4,445 ft to the south of AOC-76. 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-76 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-76.

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-76. Since soils that were found to have concentrations of metals above their PCLs were removed or used to calculate a 95% upper confidence limit (UCL) that does not exceed the Tier 1 PCL, there will be no impact to groundwater, surface water, or sediment from AOC-76.

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:

AOC-76 is an approximately 629-square-foot site located in the northeastern portion of the Inner Cantonment Area at CSSA. Figure 2 of the RIR shows the location of AOC-76 and the surrounding area.

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:

Soils at the site found to have lead concentrations above the critical PCL were excavated and removed from the site or used to calculate a 95% UCL per TAC §350.79(2)(A) that does not exceed the Tier 1 critical PCL.

There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOC-76. Since soils found to have concentrations of COCs above their critical PCLs were excavated and removed or used to calculate a 95% UCL, there will be no impact to groundwater, surface water, or sediment in the area.

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area **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)

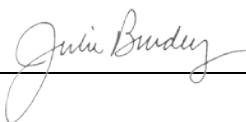
Principal Geologist (Title)

February 23, 2018 (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)

February 26, 2018 (Date Signed)

APPENDIX C

Confirmation Sample Results for All Analytes at AOC-76

Appendix C. Summary of Chemical Constituents Remaining in Soils at AOC-76

	Metals																											
	Arsenic CAS: 7440-38-2	Qualifier	Dilution	Barium CAS: 7440-39-3	Qualifier	Dilution	Cadmium CAS: 7440-43-9	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]	2.40E+01	n		8.10E+03	n		5.10E+01	n		2.70E+04	n		1.30E+03	n		5.00E+02	e		2.10E+00	n		8.40E+02	n		9.90E+03	n		
Residential Groundwater Exposure ^[2]	2.50E+00	m>S		2.20E+02	m>S		7.50E-01	m>S		1.20E+03	m>S		5.20E+02	e>S		1.50E+00	e>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]	19.6	**		300	***		3	**		40.2	**		23.2	**		84.5	**		0.77	**		35.5	**		73.2	**		
Sample Locations (Date Collected)/(Depth-in bgs)																												
AOC76-SS00 (10-Oct-2017)/(8-8.5)	0.20	U	1	19	1	0.030	U	1	3.0	F	1	3.3	1	16	1	0.040	F	1	2.2	1	12	1						
AOC76-SS01 (10-Oct-2017)/(6-6.5)	0.20	U	1	24	1	0.030	U	1	5.2	F	1	0.19	U	1	0.18	U	1	0.030	F	1	3.3	1	1	0.60	U	1		
AOC76-SS01 (10-Oct-2017)/(16-16.5)	0.20	U	1	13	1	0.030	U	1	2.3	F	1	0.19	U	1	0.18	U	1	0.010	U	1	1.9	F	1	0.60	U	1		
AOC76-SS02 (10-Oct-2017)/(6-6.5)	0.20	U	1	32	1	0.030	U	1	6.1	F	1	0.19	U	1	0.18	U	1	0.030	F	1	2.9	1	1	0.60	U	1		
AOC76-SS02 (10-Oct-2017)/(16-16.5)	0.20	U	1	34	1	0.030	U	1	9.1	F	1	0.19	U	1	5.2	F	1	0.020	F	1	4.5	1	1	5.9	1			
AOC76-SS03 (10-Oct-2017)/(6-6.5)	0.20	U	1	37	1	0.030	U	1	11	F	1	0.19	U	1	0.18	U	1	0.030	F	1	5.5	1	1	3.6	F	1		
AOC76-SS03 (10-Oct-2017)/(12-12.5)	0.20	U	1	21	1	0.030	U	1	3.1	F	1	0.19	U	1	0.18	U	1	0.010	U	1	2.4	1	1	0.60	U	1		
AOC76-SS04 (10-Oct-2017)/(6-6.5)	0.20	U	1	19	1	0.030	U	1	3.3	F	1	2.1	1	0.18	U	1	0.020	F	1	3.7	1	1	0.60	U	1			
AOC76-SS04 (10-Oct-2017)/(12-12.5)	0.20	U	1	25	1	0.030	U	1	3.0	F	1	0.19	U	1	0.18	U	1	0.010	U	1	1.4	F	1	0.60	U	1		
AOC76-SS05 (10-Oct-2017)/(6-6.5)	0.20	U	1	31	1	0.030	U	1	3.1	F	1	0.19	U	1	0.18	U	1	0.020	F	1	1.5	F	1	0.60	U	1		
AOC76-SS05 (10-Oct-2017)/(12-12.5)	0.20	U	1	29	1	0.030	U	1	3.7	F	1	2.3	1	4.3	F	1	0.020	F	1	3.0	1	1	1.5	F	1			
AOC76-SS06 (10-Oct-2017)/(7-7.5)	0.20	U	1	17	1	0.030	U	1	3.2	F	1	0.19	U	1	0.18	U	1	0.010	U	1	2.8	1	1	0.60	U	1		
AOC76-SS06 (10-Oct-2017)/(17-17.5)	0.20	U	1	20	1	0.030	U	1	1.1	F	1	0.59	F	1	0.18	U	1	0.020	F	1	4.2	1	1	0.80	F	1		
AOC76-SS07 (16-Nov-2017)/(0-6)**	0.20	U	1	8.5	1	0.030	U	1	1.8	F	1	7.6	1	230	10	0.17	1	1	4.1	1	2.6	F	1					
AOC76-SS07A (28-Nov-2017)/(0-8)	2.2	F	1	48	1	0.030	U	1	12	F	1	5.1	1	26	1	0.070	F	1	7.0	1	25	1						
AOC76-SS07B (28-Nov-2017)/(0-8)	3.2	F	1	53	1	0.030	U	1	13	F	1	7.3	1	40	1	0.43	1	1	7.7	1	36	1						
AOC76-SS08 (16-Nov-2017)/(0-6)	0.20	U	1	30	1	0.030	U	1	7.1	F	1	0.51	F	1	7.3	F	1	0.11	1	4.5	1	0.60	U	1				
AOC76-SS09 (16-Nov-2017)/(6-12)**	0.40	F	1	37	1	0.030	U	1	10	F	1	32	1	150	10	0.090	F	1	5.2	1	11	1						
AOC76-SS09A (12-Dec-2017)/(18-24)	2.6	F	1	31	1	0.030	U	1	9.3	F	1	14	1	260	5	0.020	F	1	4.8	1	8.3	1						
AOC76-SS09B (23-Feb-2018)/(24-36)	0.09	U	1	31	1	0.030	U	1	8.6	F	1	0.09	U	1	0.09	U	1	0.010	U	1	4.7	1	1	39.5	1			
AOC76-SS10 (10-Oct-2017)/(4-4.5)	0.20	U	1	34	1	0.030	U	1	4.7	F	1	0.19	U	1	0.18	U	1	0.030	F	1	3.2	1	1	0.60	U	1		
AOC76-SS10 (10-Oct-2017)/(12-12.5)	0.20	U	1	18	1	0.030	U	1	5.6	F	1	2.6	1	0.18	U	1	0.010	U	1	4.6	1	1	0.60	U	1			
AOC76-SS11 (10-Oct-2017)/(4-4.5)	0.20	U	1	30	1	0.030	U	1	6.5	F	1	2.8	1	91	1	0.020	F	1	5.7	1	5.0	1						
AOC76-SS11 (10-Oct-2017)/(12-12.5)	0.20	U	1	21	1	0.030	U	1	1.1	F	1	0.83	F	1	0.18	U	1	0.010	U	1	3.6	1	1	0.60	U	1		

NOTES:

† TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: March 31, 2017).
 †† 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] ^{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] ^{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. e = EPA Action Level-based.
 n = noncarcinogenic. >S = solubility limit exceeded during calculation.

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).
 Values shown in **BOLD** indicate detections above the MDL.
Values HIGHLIGHTED indicate detections above the TRRP Action Level.
 ** Sample locations AOC76-SS07 and AOC76-SS09 were excavated from the site.

APPENDIX D
Data Verification Summary Report

DATA VERIFICATION SUMMARY REPORT
for seventeen soil samples collected from AOC-76
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers seventeen soil samples collected from AOC-76 of Camp Stanley Storage Activity (CSSA) on October 10, 2017. The samples were assigned to the following Sample Delivery Group (SDG). All samples were analyzed for metals including arsenic, barium, cadmium, chromium, copper, nickel, lead, zinc and mercury:

83975

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 cooler was received by the laboratory at a temperature of 3.0°C, which was within the 2-6°C range recommended by the CSSA QAPP.

Sample collection beginning and ending depths were added to the end of field sample ID listed on the original Chain-of-Custody (COC).

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; laboratory quality control samples; calibrations; case narratives; raw data; COC form 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.

METALS

General

The metal portion of this data package consisted of seventeen (17) soil samples collected on October 10, 2017 and analyzed for arsenic, barium, cadmium, chromium, copper, nickel, lead, and zinc.

The metal analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 6010B. The samples were analyzed in one analytical batch, #223007 under one set of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All sample analyses were performed with undiluted digestate.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample.

All LCS %Rs were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses.

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

- All initial calibration criteria were met.
- All initial calibration verification (ICV) criteria were met. The ICV was prepared using a secondary source standard. All second source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All ICP Interference Check Samples had compliant results.

There was one method blank and it was non-detect for all target metals.

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 metal 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%.

MERCURY

General

The metal portion of this data package consisted of seventeen (17) soil samples collected on October 10, 2017 and analyzed for mercury.

The metal analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 7471B. The samples were analyzed in one analytical batch, #223011 under one set of ICAL. All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All sample analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS sample.

The LCS %R was within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses.

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

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

There was one method blank and it was non-detect for mercury.

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 mercury 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-76

**Appendix E. Analytical Results for AOC-76
Soil Waste Characterization Sample**

SAMPLE ID:		AOC76-WC01	
DATE SAMPLED:		12/12/2017	
LAB SAMPLE ID:		AZ65780	
	Units		
Metals - SW6010B/SW7471A			
Arsenic	mg/kg	8.2	F
Barium	mg/kg	41.1	
Cadmium	mg/kg	0.030	U
Chromium	mg/kg	13.1	F
Copper	mg/kg	24.32	
Lead	mg/kg	1,510	
Mercury	mg/kg	0.050	F
Nickel	mg/kg	7.44	
Zinc	mg/kg	28.2	
TCLP Metals - SW6010B			
Lead	mg/L	0.0012	U

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.

APPENDIX F

ProUCL Calculation Summaries for Lead in AOC-76 Soils

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation		ProUCL 5.11/10/2018 12:39:15 PM									
5	From File		UCL data lead.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Number of Bootstrap Operations		2000									
9												
10	Lead											
11												
12	General Statistics											
13	Total Number of Observations				13		Number of Distinct Observations				7	
14	Number of Detects				6		Number of Non-Detects				7	
15	Number of Distinct Detects				6		Number of Distinct Non-Detects				1	
16	Minimum Detect				7.31		Minimum Non-Detect				0.18	
17	Maximum Detect				258.1		Maximum Non-Detect				0.18	
18	Variance Detects				9084		Percent Non-Detects				53.85%	
19	Mean Detects				73.03		SD Detects				95.31	
20	Median Detects				32.78		CV Detects				1.305	
21	Skewness Detects				1.986		Kurtosis Detects				3.991	
22	Mean of Logged Detects				3.63		SD of Logged Detects				1.266	
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic				0.741		Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value				0.788		Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic				0.302		Lilliefors GOF Test					
28	5% Lilliefors Critical Value				0.325		Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Approximate Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean		33.8		KM Standard Error of Mean				21.08			
33	KM SD		69.37		95% KM (BCA) UCL				69.87			
34	95% KM (t) UCL		71.37		95% KM (Percentile Bootstrap) UCL				69.4			
35	95% KM (z) UCL		68.47		95% KM Bootstrap t UCL				169.5			
36	90% KM Chebyshev UCL		97.04		95% KM Chebyshev UCL				125.7			
37	97.5% KM Chebyshev UCL		165.4		99% KM Chebyshev UCL				243.5			
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic		0.306		Anderson-Darling GOF Test							
41	5% A-D Critical Value		0.718		Detected data appear Gamma Distributed at 5% Significance Level							
42	K-S Test Statistic		0.224		Kolmogorov-Smirnov GOF							
43	5% K-S Critical Value		0.342		Detected data appear Gamma Distributed at 5% Significance Level							
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)		0.886		k star (bias corrected MLE)				0.554			
48	Theta hat (MLE)		82.4		Theta star (bias corrected MLE)				131.8			
49	nu hat (MLE)		10.64		nu star (bias corrected)				6.651			
50	Mean (detects)		73.03									

	A	B	C	D	E	F	G	H	I	J	K	L
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58		Minimum	0.01							Mean	33.71	
59		Maximum	258.1							Median	0.01	
60		SD	72.25							CV	2.143	
61		k hat (MLE)	0.174							k star (bias corrected MLE)	0.185	
62		Theta hat (MLE)	193.8							Theta star (bias corrected MLE)	182.1	
63		nu hat (MLE)	4.523							nu star (bias corrected)	4.812	
64		Adjusted Level of Significance (β)	0.0301									
65		Approximate Chi Square Value (4.81, α)	1.067							Adjusted Chi Square Value (4.81, β)	0.841	
66		95% Gamma Approximate UCL (use when $n \geq 50$)	152.1							95% Gamma Adjusted UCL (use when $n < 50$)	193	
67												
68	Estimates of Gamma Parameters using KM Estimates											
69		Mean (KM)	33.8							SD (KM)	69.37	
70		Variance (KM)	4813							SE of Mean (KM)	21.08	
71		k hat (KM)	0.237							k star (KM)	0.234	
72		nu hat (KM)	6.173							nu star (KM)	6.082	
73		theta hat (KM)	142.4							theta star (KM)	144.5	
74		80% gamma percentile (KM)	47.88							90% gamma percentile (KM)	101.9	
75		95% gamma percentile (KM)	166.8							99% gamma percentile (KM)	341.4	
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78		Approximate Chi Square Value (6.08, α)	1.682							Adjusted Chi Square Value (6.08, β)	1.375	
79		95% Gamma Approximate KM-UCL (use when $n \geq 50$)	122.2							95% Gamma Adjusted KM-UCL (use when $n < 50$)	149.5	
80												
81	Lognormal GOF Test on Detected Observations Only											
82		Shapiro Wilk Test Statistic	0.987							Shapiro Wilk GOF Test		
83		5% Shapiro Wilk Critical Value	0.788							Detected Data appear Lognormal at 5% Significance Level		
84		Lilliefors Test Statistic	0.148							Lilliefors GOF Test		
85		5% Lilliefors Critical Value	0.325							Detected Data appear Lognormal at 5% Significance Level		
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89		Mean in Original Scale	34.34							Mean in Log Scale	1.426	
90		SD in Original Scale	71.94							SD in Log Scale	2.476	
91		95% t UCL (assumes normality of ROS data)	69.9							95% Percentile Bootstrap UCL	70.22	
92		95% BCA Bootstrap UCL	89.18							95% Bootstrap t UCL	204.6	
93		95% H-UCL (Log ROS)	5700									
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96		KM Mean (logged)	0.752							KM Geo Mean	2.121	
97		KM SD (logged)	2.778							95% Critical H Value (KM-Log)	6.464	
98		KM Standard Error of Mean (logged)	0.844							95% H-UCL (KM -Log)	17908	
99		KM SD (logged)	2.778							95% Critical H Value (KM-Log)	6.464	
100		KM Standard Error of Mean (logged)	0.844									

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					33.76	Mean in Log Scale					0.379
105	SD in Original Scale					72.23	SD in Log Scale					3.238
106	95% t UCL (Assumes normality)					69.46	95% H-Stat UCL					295729
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Approximate Normal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					71.37						
114												
115	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
116	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
117												
118	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
119	Recommendations are based upon data size, data distribution, and skewness.											
120	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
121	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
122												

	Lead	D_Lead
AOC76-SS09A	258.05	1
AOC76-SS07A	25.57	1
AOC76-SS07B	39.99	1
AOC76-SS08	7.31	1
AOC76-SS00-8-8.5	16.42	1
AOC76-SS05-6-6.5	0.18	0
AOC76-SS05-12-12.5	4.27	1
AOC76-SS02-6-6.5	0.18	0
AOC76-SS02-16-16.5	5.15	1
AOC76-SS01-6-6.5	0.18	0
AOC76-SS01-16-16.5	0.18	0
AOC76-SS03-6-6.5	0.18	0
AOC76-SS03-12-12.5	0.18	0
AOC76-SS04-6-6.5	0.18	0
AOC76-SS04-12-12.5	0.18	0
AOC76-SS10-4-4.5	0.18	0
AOC76-SS10-12-12.5	0.18	0
AOC76-SS11-4-4.5	90.85	1
AOC76-SS11-12-12.5	0.18	0
AOC76-SS06-7-7.5	0.18	0
AOC76-SS06-17-17.5	0.18	0

APPENDIX G

TCEQ Approval for Non-Hazardous Soils Reuse, December 20, 2010



DEPARTMENT OF THE ARMY
CAMP STANLEY STORAGE ACTIVITY, RRAD
25800 RALPH FAIR ROAD, BOERNE, TX 78015-4800

December 3, 2010

U-029-10

Mr. Kirk Coulter, P.G., Project Manager
Texas Commission on Environmental Quality
Corrective Action Team 1, VCP-CA Section
Remediation Division
PO Box 13087 (MC-127)
Austin, TX 78711-3087

SUBJECT: Movement of Non-Hazardous Metals Impacted Soils from SWMU/AOC Closure Efforts to East Pasture Firing Range, Camp Stanley Storage Activity, Boerne, Texas
TCEQ Industrial Solid Waste Registration #69026, EPA Identification Number TX2210020739

Dear Mr. Coulter:

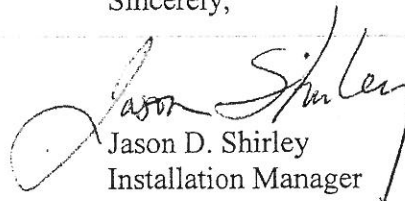
The Camp Stanley Storage Activity (CSSA), McAlester Army Ammunition Plant, U.S. Army Field Support Command, Army Material Command, U.S. Army, is providing this letter to notify the TCEQ of CSSA's plan to move and manage non-hazardous metals-impacted soils generated during remedial actions at CSSA's Solid Waste Management Units (SWMU) and Area of Concerns (AOC) to CSSA's East Pasture Firing Range Berm located in Range Management Unit 1 (RMU-1).

CSSA currently has a need for additional soils on the small arms firing range berm in the east pasture. In recent years, this berm has been modified with non-hazardous soils generated from various SWMUs and AOCs remedial actions. The non-hazardous soil movement and management within the east pasture RMU-1 was authorized by TCEQ and USEPA during a Technical Interchange Meeting held on April 19, 2006 and subsequent letter by Mr. Sonny Rayos, TCEQ Project Manager, dated May 7, 2008. This letter is provided to TCEQ to reaffirm regulatory agreement with this practice.

To verify the generated remediation soils are non-hazardous prior to movement to the east pasture, soil samples will be collected and analyzed for TCLP metals in accordance with CSSA's approved RFI/IM Waste Management Plan dated May 2006. Movement of the non-hazardous metals-impacted soils from CSSA SWMUs and AOCs to the East Pasture Firing Range Berm is expected to occur on an as needed basis as determined by CSSA.

If you have any questions regarding this notification, please contact Gabriel Moreno-Fergusson at (210) 698-5208 or Mr. Ken Rice, Parsons, at (512) 719-6050.

Sincerely,


Jason D. Shirley
Installation Manager

cc: Mr. Greg Lyssy, EPA Region 6
Mr. Jorge Salazar, TCEQ Region 13
Ms. Julie Burdey, Parsons