RELEASE INVESTIGATION REPORT

AREAS OF CONCERN 67 and 68 (AOCs-67/68)
CAMP STANLEY STORAGE ACTIVITY

Prepared for:

Camp Stanley Storage Activity
Boerne, Texas

Prepared by:

PARSONS

Austin, Texas

July 2010

EXECUTIVE SUMMARY

Areas of Concern (AOC) 67 and 68 (AOCs-67/68) are located in an industrial area of the Inner Cantonment of Camp Stanley Storage Area (CSSA). AOC-67 consists of a concrete storage pad and drainage ditch immediately east of Building 90-1 (the former bluing shop) and AOC-68 is a drainage ditch along the north, east and west sides of Building 90-2 (the former abrasive cleaner [Wheelabrator] site). AOC-67 is approximately 20 feet north-northeast of AOC-68. Both sites are within the larger AOC-65, which includes the ordnance maintenance operations building, Building 90, and adjacent areas associated with solvent and metals releases. There were no trenches or any other signs of disposal at AOCs-67/68. This Release Investigation Report (RIR) requests No Further Action (NFA) at AOCs-67/68, with the understanding that investigation of the surrounding AOC-65 will continue.

In summary, previous activities at AOCs-67/68 showed the following results:

- Five rounds of excavation, removal and confirmation sampling were performed at AOC-67. In all, approximately 65 cubic yards (CY) of soil was removed from AOC-67.
- The only chemical of concern (COC) identified at AOC-67 was lead. The locations of lead contamination have been excavated and removed from the site; confirmation sampling has shown no remaining lead contamination.
- Four rounds of excavation, removal and confirmation sampling were conducted at AOC-68. In all, approximately 65 CY of soil was removed from AOC-68.
- Lead, cadmium, and in one sample, nickel, were the only COCs identified at AOC-68. These COCs have been excavated and removed from the site; confirmation sampling has shown no remaining lead, cadmium or nickel contamination.
- As part of the AOC-68 investigation, an air compressor line bedded with sand and bullet fragments from the Building 90 test fire room was uncovered. Samples from this area found elevated levels of lead and cadmium. However, because this trench is located at the southwest extent of the AOC-68 footprint and because the contamination is not related to the Wheelabrator operation, it is considered part of the overall Building 90/AOC-65 site and is not addressed as part of this closure request.

From the information summarized above and presented in this RIR, the results of the investigations at AOCs-67/68 meet the three criteria as described in TCEQ's (2003) guidance *Determining Which Releases are Subject to TRRP*. Thus, the following criteria were met:

- Concentrations of chemicals in soil samples do not exceed Tier 1 residential soil action levels. Soils that were found to have metal concentrations above their respective protective concentration levels (PCLs) (lead at AOC-67, and lead, cadmium, and at one location, nickel at AOC-68) have been excavated and removed from the site.
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOCs-67/68. Inorganic groundwater contamination has not been reported in the closest wells to AOCs-67/68. It is also unlikely that any drainage from AOCs-67/68 is discharged to any naturally occurring surface water body, because none are present downgradient or in any other direction of possible drainage

from AOCs-67/68. Additionally, since soils that were found to have concentrations of metals (lead, cadmium, and nickel) above their PCLs have been excavated and removed, there will be no impact to groundwater, surface water, or sediment from AOCs-67/68.

- AOCs-67/68 pass the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

Because these three criteria are met, AOCs-67/68 are not subject to TRRP. Therefore, this RIR has been prepared to document the results and an NFA decision is requested from the TCEQ.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

AOC	Area of concern
APPL	Agriculture & Priority Pollutants Laboratory, Inc.
AST	Aboveground storage tank
BCVI	Black-capped vireo
bgs	below ground surface
BOT	Bottom (sample)
BS	Bexar Shale
BTEX	Benzene, toluene, ethylbenzene, and xylene
CC	Cow Creek
CESWF	Corps of Engineers Fort Worth District
COC	Chemical of concern
CSSA	Camp Stanley Storage Activity
CY	cubic yard
DCE	Dichloroethene
DCM	Dichloromethane, also known as methylene chloride
DO	Delivery Order
DQO	Data Quality Objective
EE	Environmental Encyclopedia
FD	Field duplicate
FSP	Field Sampling Plan
GCWA	Golden-cheeked warbler
$^{GW}Soil_{Ing}$	Soil to groundwater ingestion pathway (PCL)
HEPA	High efficiency particulate air
IM	Interim Measures
LGR	Lower Glen Rose
mg/kg	milligrams per kilogram
MQL	Method quantitation limit
NFA	No further action
PCE	Tetrachloroethene
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
SW	Sidewall (sample)
SWMU	Solid waste management unit
TAC	Texas Administrative Code
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
TCLP	Toxicity characteristic leaching procedure
TO	Task Order
$^{Tot}Soil_{Comb}$	Combined soil (PCL)
TPH	Total petroleum hydrocarbon
TRRP	Texas Risk Reduction Program
UGR	Upper Glen Rose
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VC	Vinyl chloride
VOC	Volatile organic compound
WC	Waste characterization
WMI	Waste Management, Inc.

1.0 INTRODUCTION

Parsons is under contract with the U.S. Army Corps of Engineers (USACE), Fort Worth District (CESWF), Contract DACA87-02-D-0005, Task Order (TO) DY01, and Contract W9126G-07-D-0028, Delivery Order (DO) DO 0011, to provide investigations and environmental services for waste sites located at Camp Stanley Storage Activity (CSSA) in Boerne, Texas (Figure 1). These contracts include characterization of selected waste sites and preparation of appropriate documentation, including a combined Release Investigation Report (RIR) for Areas of Concern (AOC) 67 and 68 (AOCs-67/68). AOC-67 includes an aboveground storage tank (AST) pad and drainage ditches adjacent to a former bluing operation in Building 90-1. AOC-68 is the area surrounding Building 90-2, the location of a former Wheelabrator. This work has been 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 has been 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 AOCs-67/68. Work has included environmental sampling; excavation and removal of impacted soil; waste characterization and confirmatory sampling and analysis; and proper documentation of all activities, including preparation of a closure report such as 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 AOCs-67/68. Section 3 describes the objectives and rationale for preparing an RIR for AOCs-67/68 and the findings from environmental investigations for the site. The groundwater and surface water for CSSA and the area near AOCs-67/68 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 17 through 31). References cited in this report can be found in the CSSA Environmental Encyclopedia (EE) (Volume 1-1, Bibliography) www.stanley.army.mil.

As shown on Figure 2, AOC-67 and AOC-68 are located within the boundary of AOC-65. AOC-65 includes Building 90, where several past activities have resulted in environmental contamination. Building 90 formerly had a solvent vat which has been identified as an on-going source for volatile organic compound (VOC) contamination in groundwater in the area. Building 90 also houses a test fire room where lead bullets have been used for many years. In 2003, a bullet trap with a high efficiency particulate air (HEPA) filtration system to control airborne lead emissions was installed. Prior to 2003, bullets were fired into a sand trap and vented outside without filtration. In several areas adjacent to Building 90, lead-contaminated sand had been used for bedding of pipes leading to the building. Investigations, removal action,

and a treatability study are currently underway at AOC-65. The purpose of this RIR is to close AOC-67 and AOC-68 with TCEQ's approval, with the understanding that work at AOC-65 will continue.

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 (SWMU), AOCs, and range management units (RMU).

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 AOCs-67/68

2.2.1 Overview

AOC-67 and AOC-68 were identified in the Final DY01 and DO 0011 Work Plans for additional sampling, excavation and removal actions, and preparation of a combined RIR to request a no further action (NFA) decision from the TCEQ. This RIR has been prepared for both AOCs because these sites have similar characteristics and are located only 20 feet apart in the same industrial area of CSSA. Work at the sites was completed concurrently.

Information on past activities, potential contaminants, and sampling, excavation, and removal activities at the sites are summarized in Table 1. The analytical results for sample locations that remain at the site are provided in Table 2. A series of historical aerial photos of the sites are shown on Figure 4 and photographs showing investigation, excavation, and removal activities at the sites are provided in Appendix A (photos 1 through 20 show activities at

AOC-67 and photos 21 through 27 show activities at AOC-68). The history of the sites and previous investigations at the sites are discussed below.

2.2.2 Setting

AOCs-67/68 are located in an industrial area of the Inner Cantonment of CSSA (Figures 2 and 3). The sources of contamination at AOC-67 and AOC-68 include a gun bluing operation and a Wheelabrator, respectively. In addition, it is likely that both sites were impacted from air emissions from the Building 90 test fire room. However, due to the industrial nature of activities in this area of CSSA, there are several other sources of potential contamination nearby. These other sources are associated with past operations at Building 90, which are currently being investigated as part of AOC-65.

AOCs-67/68 are approximately 260 feet from the western boundary of CSSA and 2,470 feet from the southern boundary of CSSA. AOC-67 consists of a former concrete storage pad where an AST had been located and the drainage ditch immediately east of Building 90-1 (the former bluing shop). (As discussed in Section 2.3.2.2, the AST was reportedly used to collect and temporarily store floor cleaning rinsate and bluing operations residue from Building 90-1 and Building 90.) AOC-68 consists of adjacent areas along the north, east and west sides of Building 90-2 (the former abrasive cleaner [Wheelabrator] site). AOC-67 is approximately 20 feet north-northeast of AOC-68. Both sites are close to Building 90, which is used for ordnance maintenance operations. AOC-67 is approximately 75 feet east of Building 90 and AOC-68 is approximately 22 feet east of Building 90. AOCs-67/68 are also located within the designated AOC-65 area which is associated with the Building 90 operations (see Figure 2).

2.2.3 AOC-67

2.2.3.1 Size and Description

AOC-67 is approximately 0.047 acre in size and is directly east of the former location of Building 90-1 (the former ordnance materials bluing shop). Building 90-1 was damaged by fire in early 2004 and subsequently demolished. AOC-67 consisted of a north-south drainage ditch and a three-sided concrete storage area (open on one side with a concrete pad) that was built into the slope between the drainage ditch and Building 90-1. The concrete storage area and pad measured approximately 4 feet by 10 feet. The dimensions of the ditch were approximately 100 feet by 20 feet. The former location of Building 90-1 is shown on Figure 3. Photos 1 through 4 show former Building 90-1, the concrete storage area, and the drainage ditch.

2.2.3.2 Potential Contaminant Sources and Chemicals of Concern

Building 90-1 was the location of an ordnance bluing shop. Bluing is a passivation process in which steel is partially protected against rust, and is named after the blue-black appearance of the resulting protective finish. The CSSA gun bluing facility utilized a chemical oxidation process to react with iron on the surface of the weapon selectively forming magnetite or the black oxide of iron. Bluing was applied by immersing the steel parts of the gun to be blued in a

solution of caustic and nickel penetrant with heated water baths. Potential chemicals of concern (COC) include metals, particularly chromium, nickel, and iron. A 1,250-gallon AST was located on the concrete pad until 1997, when it was removed. The tank was reportedly used to temporarily store floor cleaning rinsate and bluing operations residue from Building 90-1 and Building 90. Site personnel indicated that piping ran from Building 90-1 to the storage tank. When the fluid level was at capacity, the 1,250-gallon tank was moved to another storage area at CSSA and replaced with an empty tank. The tank contents were historically managed within the oxidation pond at CSSA. There are no records of spills or overfills at the tank or any other releases to the drainage area.

Chemicals investigated at AOC-67 include the nine metals that are common to the metallic nature of waste generated at CSSA (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc). TCEQ-approved background levels have been established for these nine metals at CSSA (see Section 3.0 of this RIR for more detail). Explosives were not evaluated at the site since no evidence of ammunition has been found at AOC-67. Other chemicals that have been investigated, but not detected, at AOC-67 included liquid solvents associated with materials and waste from ordnance maintenance operations at Building 90.

As described below in Section 3.1.2 and Table 1, samples collected at AOC-67 did not indicate solvent or other VOC or semivolatile organic compound (SVOC) contamination. The only analyte identified at AOC-67 was lead. As described above, lead is not an anticipated COC associated with the bluing operation, but it is a COC associated with neighboring Building 90/AOC-65, as described in Section 2.3 below. As discussed in more detail below, the locations of lead contamination have been excavated and removed from the site; confirmation sampling has shown no remaining lead contamination.

2.2.4 AOC-68

2.2.4.1 Size and Location

AOC-68 is approximately 0.043 acre in size and consisted of a drainage ditch along the east side and adjacent surface areas along the north and west sides of Building 90-2, the former Wheelabrator operations building (see Figure 3 and photos 21 through 27). AOC-68 was identified as an area where deposits of metal debris (dust from former Wheelabrator operations) had accumulated outside of Building 90-2. AOC-68 is bounded by Tompkins Road to the east and a drainage swale near Building 90 to the west.

2.2.4.2 Potential Contaminant Sources and Chemicals of Concern

CSSA utilized a Wheelabrator to clean metal parts for bluing and other processes. In the Wheelabrator or "wheel blast cleaning system," the abrasive is charged through the hub of the wheel and slides on the vanes where it is projected at high velocity towards the metal objects. Building 90-2 was the location of the Wheelabrator. COCs associated with this process are potential metal components of guns that were being prepared, including cadmium, chromium, and nickel. The waste from the Wheelabrator formed a "slag" type material.

Metal slag/debris accumulated outside of Building 90-2 (the former Wheelabrator site). AOC-68 sampling consisted of the nine CSSA metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc). Samples for explosives were not included since no evidence of ammunition has been found at the site. Lead, cadmium, and in one sample nickel were the only COCs identified during the site investigations. These COCs have been excavated and removed within the boundaries of the site. Confirmation sampling has shown no remaining lead, cadmium, or nickel contamination at the site.

2.3 AOC-65

Three sources of contaminants are associated with nearby Building 90, also known as AOC-65:

1. Indoor test firing room;
2. Solvent vat and associated piping and spills; and
3. Lead-contaminated sand used as bedding material for pipes leading to Building 90.

Because lead is not a COC commonly associated with a bluing operation (Building 90-1/AOC-67) or a Wheelabrator (Building 90-2/AOC-68), it is possible that lead contamination detected at AOCs-67/68 is related to past operations at the Building 90 test fire room and/or use of lead-contaminated sand as pipe bedding. The test fire room is about 150 feet from AOC-67 and about 60 feet from AOC-68 (see Figure 3).

Lead (dust and fine particles of sand containing lead) has possibly been distributed in the area due to past test firing practices at Building 90 (see Figure 3). The test fire room is used for weapon maintenance quality checks. Until 2004, guns, pistols, machine guns, *etc.,* were fired into a sand bank in the test fire room. The ventilation system, which was a roof vent, allowed the lead-contaminated dust and sand to escape from the room to the surrounding area. In 2003, the sand was removed from the test fire room and properly disposed. The sand bank was replaced with a projectile trap system consisting of steel plates. A HEPA filtration system designed for 99.99% removal efficiency was also installed. The projectiles and air pollution control dust are now collected and recycled.

Liquid solvents, such as trichloroethene (TCE) and tetrachloroethene (PCE), were used to clean weapons during historical operations at Building 90. These solvents were stored in a metal vat located inside Building 90. The metal vat and the sunken concrete-lined pit that housed the vat within Building 90 were identified as part of AOC-65. This former vat and pit area is approximately 223 feet southwest of AOC-67 (see Figure 3). The metal vat was reportedly installed prior to 1966 and had an approximate 500- to 750-gallon capacity. The vat was removed from operation in 1995. The use of chlorinated solvents was also discontinued in 1995 and an alternative citrus-based cleaner replaced PCE and TCE at CSSA. From the prior use of PCE and TCE, a chlorinated solvent plume has been identified below and near Building 90 and AOC-65 in soil, soil gas, and shallow monitoring wells. This area is referred to as the Plume 2 solvent release site discussed below in Section 3.2.2. The perimeter of the soil gas plume is

approximately 74 feet west of AOCs-67/68. This is discussed in more detail in Section 3.2.2 of this RIR and in the CSSA EE (Volume 3-2, Soil Gas Survey Results; AOC-65 RFI Investigation Report).

The southwest corner of AOC-68 is bounded by a former underground compressed air line (see photo 27) associated with AOC-65. The sand bedding for the former compressed air line is considered to be inside the boundary of AOC-65. Some of the sand that was previously used in the Building 90 test fire room operations, as discussed above, was used as sand bedding for underground piping in some areas. The sand bedding in the area southwest of AOC-68 was sampled in September 2009 and contained elevated levels of lead and cadmium. This area and the sample are considered to be a part of the investigation of AOC-65 and the Building 90 test fire room operations. The soil sample immediately north of the sand bedding (AOC68-BOT04) is the sample that represents the southwest extent of AOC-68 (see Figure 5).

3.0 OBJECTIVES OF RIR FOR AOCs-67/68

In accordance with TCEQ (2003) guidance, *Determining Which Releases are Subject to TRRP* (www.tceq.state.tx.us/assets/public/remediation/trrp/releasesTRRPrev.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 soil action levels;
- 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 an 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 (2010) and were selected following TCEQ guidance (TCEQ, 2007). These action levels are referred to as protective concentration levels (PCL) and are selected for each chemical detected at the site (*i.e.*, COC). The PCLs are based on the general size of the site, which is also referred to as the "source area" size. The source area is either 0.5 acre or less in size, or assumed to be 30 acres if the site is larger than 0.5 acre in size. Thus, the soil action levels for AOCs-67/68 are based on a 0.5-acre source area, since the combined size of the sites is approximately 0.09 acre. 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 quantitation 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) (Parsons, 2002). The statistically calculated and TCEQ-approved background metal concentrations are shown in the analytical summary table (which is Table 2 in this RIR) and are also available in the CSSA EE (Volume 2, Background Metals Levels). It is noted that the action levels/PCLs for four of the nine metals are based on the background concentrations (these four metals are arsenic, cadmium, lead, and mercury).

3.1 FIELD ACTIVITIES AND INVESTIGATIONS

Soil sampling and excavation activities that have been performed at AOCs-67/68 are summarized in Table 1. A summary of the cleanup confirmation results at the sites are shown in Table 2 and the confirmation soil sampling locations are shown on Figure 5. As shown on Figure 5, excavation at the sites occurred within the boundaries of AOCs-67/68. (All tables and figures are presented at the end of this RIR.)

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 at http://www.stanley.army.mil/Volume1-4/Quality-Assurance-Project-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 (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 at http://www.stanley.army.mil/Volume1-1/Correspondence/Index.htm#TCEQ.

Following the CSSA-specific plans, the investigative soil analyses for AOCs-67/68 were performed using U.S. Environmental Protection Agency (USEPA) *Test Methods for Evaluating Solid Waste* (SW-846): Method 8260B (VOCs); Method 8270C (SVOCs); Method 6020 (arsenic, barium, cadmium, chromium, copper, lead, nickel, and zinc); and Method 7471A (mercury). 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 AOCs-67/68 Sampling, Excavation, and Removal Activities

As stated above, all of the sampling, excavation and removal activities described in this section are summarized in Table 1. The list of the analytical results for soils remaining at the site is provided in Table 2. Sample locations for soils remaining at the site are shown on Figure 5. The clearance areas where soils were excavated and removed are also shown on Figure 5. Waste characterization (WC) sampling and off-post removal activities are described in Section 3.1.2.3. Additional information about past activities and investigations at the sites can be found in the CSSA EE (Volume 3, AOC-67; AOC-68). Photos 5 through 26 show the excavation, removal, and confirmation sampling activities for AOCs-67/68.

3.1.2.1 Soil Survey in Vicinity of AOCs-67/68

In January and February 2001, soil gas surveys were performed to assess the potential for VOC contamination in soil gas at various sites at CSSA. The sites included Building 90 and AOC-65, near AOCs-67/68. For detailed results, see CSSA EE (Volume 3-2, Soil Gas Survey Results). The sampling was performed on a grid, with spacing ranging from 25 to 100 feet depending on detection of VOCs within the area of the survey. A total of 203 samples were collected from soils around the exterior of Building 90, with sampling depths ranging from 0.5 feet to refusal (the maximum depth was 4.5 feet below ground surface [bgs]). Forty samples were collected inside Building 90, including areas near the former vat and associated drain lines. The survey was performed to determine soil gas concentrations of TCE, PCE, *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-DCE, vinyl chloride (VC), and benzene, toluene, ethylbenzene, and xylenes (BTEX) within AOC-65. Because of AOCs-67/68 close proximity to Building 90 and AOC-65, a large number of samples were collected within a 200-foot radius of AOCs-67/68. See CSSA EE (Volume 3-2, Soil Gas Survey Results, Figure AOC65-1, Fig. 2.2). No chlorinated VOC or BTEX contamination was indicated in any of the soil gas samples collected near AOCs-67/68 (refer to Figure 6 of this RIR).

3.1.2.2 Soil Investigations, Excavation, Removal, and Confirmation Sampling at AOC-67

Initial Soil Sampling. Initial soil sampling was performed at AOC-67 on April 3 and April 4, 2001. This sampling included two surface samples (0 to a maximum of 1 foot bgs), four subsurface samples (to a maximum depth of 30.5 feet bgs), and one field duplicate (FD) sample. Samples were analyzed for the nine CSSA metals, VOCs, and SVOCs. Both of the surface soil sample locations had lead concentrations above the default PCL/action level *(i.e.*, the TCEQ-approved CSSA background concentration for lead). No other sample results exceeded PCLs.

1st Excavation and Removal. The first excavation and removal actions at AOC-67 took place on February 26, 2004. The areas near the two April 2001 sample locations where lead exceeded the PCL were excavated and removed from the site. Also, in order to further investigate the site, the three-sided concrete structure and pad were demolished and removed, and confirmation soil samples (see next discussion) were collected from the surrounding soils. Excavated material included approximately 160 cubic yards (CY) of soil and 40 CY of concrete. The excavated material, including the concrete debris, was loaded and moved to a temporary stockpile at SWMU B-29. SWMU B-29 was being used as a staging area for WMI, Covel Gardens Landfill for on-going soil media removal at CSSA. The material was hauled off post on March 9, 2004. Site activities are shown on photos 2 through 8 (Appendix A). See Table 1 for a summary of actions at the site, and Section 3.1.2.3 for more detail on WC sampling and off-post removal.

1st Confirmation Sampling. The first round of confirmation sampling at AOC-67 was performed on March 8, 2004, and included four sidewall (SW) samples, one bottom (BOT) sample, and one FD sample collected from the excavated area. Samples were analyzed for metals (barium, chromium, copper, lead, and zinc) and VOCs. From this sampling, three of the four sidewall sample locations had lead above the PCL/action level (*i.e.*, the TCEQ-approved background level for lead at CSSA). Methylene chloride, also known as dichloromethane (DCM) also exceeded its PCL in one sample. It is noted that the presence of DCM in this sample is attributed to laboratory contamination. DCM is a common laboratory contaminant and there is no known usage of DCM at CSSA. It is also noted that the sample location with DCM was excavated and removed based on the location of lead contamination at the site.

2nd Excavation. Second excavation activities were performed at AOC-67 on April 27, 2004 (see photos 11 and 12 in Appendix A). These activities involved excavation and scraping of the soil down to bedrock in some places. Excavated material was moved from AOC-67 on May 5, 2004 to a staging area at SWMU B-29 for transportation to an off-post landfill on May 25, 2004 (see Table 1 and 3rd excavation and staging transportation paragraphs below).

2nd Confirmation Sampling. On April 28, 2004, a second round of confirmation samples was collected at three locations. Three SW samples were collected from the excavated area. Samples were analyzed for metals, including lead at all locations, plus chromium, and zinc at one location. One sample location had a lead concentration above the PCL/action level (*i.e.*, background). See Table 1.

3rd Excavation. Additional excavation took place at AOC-67 on May 5, 2004 (see photos 16 through 20 in Appendix A). The area was over-excavated and re-scraped. Soils were further removed down to bedrock in some places. This excavated material was also moved from AOC-67 on May 5, 2004 to the staging area at SWMU B-29 for transportation to an off-post landfill on May 25, 2004 (see Table 1 and staging transportation paragraph below).

3rd Confirmation Sampling. On May 11, 2004, an additional SW confirmation sample was collected and analyzed for lead. Results showed a lead concentration above the PCL action level (*i.e.*, background).

Staging Transportation of Excavated Material from 2nd and 3rd Excavations to Off-post Landfill. The excavated material temporarily stored at SWMU B-29 from the 2nd and 3rd excavation activities was taken to the off-post landfill on May 25, 2004. A total of approximately 90 CY of excavated material was taken off post for disposal (see Section 3.1.2.4 for further description of off-post removal activities).

4th Excavation. Between December 4 and December 6 additional excavation activities were performed at AOC-67. The removal work was combined with the 5th (final) excavation activities at AOC-67 (see February 27, 2008 below) and the initial excavation and removal activities at AOC-68 (see below).

4th Confirmation Sampling. On December 6, 2007, additional confirmation sampling was performed at nine locations at AOC-67. Samples were analyzed for lead and included five SW samples, four BOT samples, and one FD sample. This sampling showed lead detected above the PCL at two locations.

5th (Final) Excavation. On February 27, 2008, approximately 2 CY of material was further excavated. Excavated material from this event was taken off post with material generated from the December 4 through December 6, 2007 excavation event at AOC-67 and with the initial excavation and removal activities at AOC-68. From these excavation events, approximately 50 to 60 CY of soil/waste material was placed in three roll-offs for off-post removal on February 27, 2008. See Section 3.1.2.4 for further description of off-post removal activities.

Final Subsurface Confirmation Sampling. The final confirmation sampling at AOC-67 was performed on April 10, 2008. Two BOT samples were collected from the excavated area and analyzed for lead. Sample results were below the lead PCL.

From the above excavation, removal, and confirmation sampling actions at AOC-67, lead was the only COC detected at the site. No other metals or other chemicals were above their respective PCLs. The area was over-excavated and re-scraped to remove lead contaminated soils. Concentrations of chemicals in sampling locations remaining at the site are provided in Table 2. The locations of the sample locations remaining at the site are provided in Figure 5. The clearance areas where lead was removed are also shown on Figure 5.

3.1.2.3 Soil Investigations, Excavation, Removal, and Confirmation Sampling at AOC-68

Initial Excavation and Removal Actions. Initial excavation and removal actions were performed at AOC-68 between December 4 and December 6, 2007. The excavation/removal actions were based on visible inspection of the site. Visible metal slag/debris and associated surface soil were excavated and removed. This work was combined with excavation and removal actions at AOC-67 (approximately 50 to 60 CY of soil/waste material was placed in three roll-offs for off-post removal on February 27, 2008). See Section 3.1.2.4 for further description of off-post removal activities.

1st Confirmation Sampling. The first round of confirmation sampling at AOC-68 was performed on December 6, 2007, and included four SW samples, two BOT samples, and one FD sample collected from the excavated area. Samples were analyzed for the nine CSSA metals, VOCs, and SVOCs. From this sampling, four sample locations had lead above the PCL/action level (*i.e.*, the TCEQ-approved background level for lead at CSSA); two locations had cadmium above the PCL/action level *(i.e.*, the TCEQ-approved background level for cadmium at CSSA); and one location had nickel above the PCL (based on the $^{GW}Soil_{Ing}$ PCL for nickel). See a summary of these results in Table 1.

Investigation Sampling. Investigation samples were collected at AOC-68 on April 10, 2008. Four BOT samples were collected. Samples were analyzed for metals, including lead at all locations, plus cadmium at three locations, and nickel at one location. Cadmium was above the PCL/action level at one location. No other sample results exceed PCLs.

2nd Excavation/Removal and Confirmation/Site Delineation Sampling. A second round of excavation and removal activities was performed on November 17, 2008, followed by confirmation and site delineation sampling. Approximately 15 CY of material was excavated and placed in a roll-off container for transport to an off-post landfill. Two BOT samples were collected and analyzed for lead and cadmium. Lead and cadmium were above the PCL in the sample collected for site delineation purposes. This sample location was at the southwest corner of the site where the sand bedding used for the underground compressed air line is located.

WC Sample Collection. One waste characterization sample was collected on February 19, 2009. Approximately 3 CY of material associated with the sand bedding in the southwest corner of the site was identified for removal.

3rd (Final) Excavation and Removal and Final Site Delineation Sampling. An additional 3 CY (approximate) of material in the southwest corner of the site was excavated/removed on September 2nd and 3rd 2009 for transport to an off-post landfill. Soils in this area of AOC-68 were removed all the way to the sand bedding associated with the air compressor line which bounds the southwest corner of AOC-68. A final sample was collected on September 2, 2009. This sample was collected for site delineation purposes and is also associated with the sand bedding that bounds the southwest corner of the site. This sample contained elevated levels of lead and cadmium and is considered to be a part of the investigation and cleanup of AOC-65 and the Building 90 test fire room operations. AOC68-BOT04 is the sample that represents the southwest and vertical extent of AOC-68. See Section 2.2.2 for additional discussion.

Photos of AOC-68 are provided in Appendix A (see photos 21 through 27).

3.1.2.4 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 – Revised, dated May 2006 (approved by TCEQ in August 2006). Results of waste characterization showed that the impacted media from both AOCs-67/68 met State of Texas

Class 2 non-hazardous criteria (30 TAC §335 Subchapter R). Waste from these two sites was transported and disposed of 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 AOCs-67/68. 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 feet 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 feet 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 feet (Ashworth, 1983). 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. A shallow intermittent "perched" aquifer has been identified in the AOCs-67/68 area. Water is present in this aquifer after significant rain events and ranges in depth from 15 to 25 feet.

3.2.2 AOCs-67/68 Groundwater

AOCs-67/68 are flanked by numerous wells associated with investigation of the area around AOC-65 and Building 90 (also referred to as the Plume 2 solvent release site). Wells in the vicinity of this area include Middle Trinity Aquifer groundwater monitoring wells, and shallow piezometers and vapor extraction wells associated with the solvent plume originating from former practices in the AOC-65 and Building 90 area.

The AOC-65 area includes Building 90 and the former solvent vat and sunken concrete-lined pit that housed the vat (discussed in Section 2.2.1). A soil gas survey was performed as part of the investigations of AOC-65 and Building 90. Results of this investigation are shown on Figure 6. No VOC contamination was indicated in any of the soil gas samples collected near or within the boundaries of AOCs-67/68. A map of the soil gas sampling locations is shown in the CSSA EE (Volume 3-2, Soil Gas Survey Results, Figure AOC65-1, Fig. 2.2).

The vapor extraction system for the AOC-65/Building 90 area consists of 29 wells that range in depth from 5 feet to 150 feet below grade, and are exclusively used for removing contaminated soil gas from the subsurface. Ten shallow monitoring wells/piezometers have also been drilled as part of the AOC-65/Building 90 investigation since 2001. These wells range in depth from 9 feet to 134 feet, and are generally used for monitoring solvent contamination. Because these wells are perched above the main aquifer body, they are typically dry except during recharge events. In 2001, during the RFI for AOC-65, one round of inorganic samples was collected from two perched monitoring wells. See CSSA EE (Volume 3.2, AOC-65 RFI). No regulatory exceedances for lead, barium, chromium, copper, nickel, or zinc were reported during that activity.

Historical data for CSSA suggest that the Middle Trinity Aquifer groundwater gradient is generally to the southeast, but can seasonally vary to more southerly or easterly gradients. Based on these potential groundwater gradients, the nearest Middle Trinity Aquifer wells to AOCs-67/68 are the upgradient MW6 wells (CS-MW6-LGR, CS-MW6-BS, and CS-MW6-CC), which are approximately 330 feet north-northwest of the sites. The closest downgradient wells to AOCs-67/68 are the CS-MW7-LGR/CC cluster (720 feet southeast) and the CS-MW8-LGR/CC cluster (715 feet south-southwest). These well locations are shown on Figure 2. Water levels in these wells (CS-MW6, -MW7, and -MW8 clusters) have been monitored on a quarterly basis since June 2001. Based on these historical monitoring data, water levels in the vicinity of AOCs-67/68 are expected to vary from approximately 30 to 310 feet bgs, depending on whether it is a wet or dry season. Based on mapping by the U.S. Geological Survey (USGS), AOCs-67/68 fall within the Southern Fault Zone. In fact, a USGS-mapped fault bisects AOCs-67/68.

Inorganic groundwater contamination above regulatory limits has not been reported in the Middle Trinity Aquifer wells closest to AOCs-67/68 (CS-MW6, -MW7, and -MW8 clusters). For additional information on groundwater data collected at CSSA, refer to the CSSA EE (Volume 5, Groundwater Monitoring).

3.2.3 AOCs-67/68 Surface Water

Salado, Leon and Cibolo Creeks drain surface water from CSSA (Figure 7). All creeks at CSSA are intermittent and only contain water during and immediately following rain events.

As shown on Figure 7, the closest creek to AOCs-67/68 is an unnamed tributary located approximately 380 feet to the east-southeast of the sites. This tributary is not a State classified segment under Texas Surface Water Quality Standards (§§307.1 - 307.10). This creek joins another unnamed tributary at a confluence approximately 2,540 feet from AOCs-67/68. These intermittent unnamed creeks are tributaries to Upper Leon Creek. It is unlikely that any drainage from AOCs-67/68 is discharged to this tributary, or any other naturally occurring surface water body, because none are present downgradient or in any other direction of possible drainage from AOCs-67/68.

The closest perennial surface water body to AOCs-67/68 is the W-Tank which is located approximately 1,250 feet to the south-southeast of the sites (Figure 7). 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 feet. W-tank is fed by precipitation.

The nearest classified creek that is downgradient from AOCs-67/68 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 feet 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 AOCs-67/68.

Additional information on surface water in the area is described in the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

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 AOCs-67/68. Thus, based on the absence of any complete or significant ecological exposure pathways, AOCs-67/68 may be excluded from further ecological assessment.

5.0 SUMMARY AND RECOMMENDATIONS

AOCs-67/68 are located in a developed industrial area of CSSA.

AOC-67 is approximately 0.047 acre in size and is directly east of the former location of Building 90-1 (the former ordnance materials bluing shop). The site consisted of a north-south drainage ditch and a three-sided concrete storage area (open on one side with a concrete pad) that was built into the slope between the drainage ditch and Building 90-1. A 1,250-gallon AST was located on the concrete pad until 1997, when it was removed. The tank was reportedly used to temporarily store floor cleaning rinsate and bluing operations residue from Building 90-1 and Building 90. There are no records of spills or overfills at the tank or any other releases to the drainage area.

AOC-68 is approximately 0.043 acre in size and consisted of a drainage ditch along the east side and adjacent surface areas along the north and west sides of Building 90-2, the former Wheelabrator operations building. AOC-68 was identified as an area where deposits of metal debris (metal oxide dust) had accumulated outside of Building 90-2.

There were no trenches or any other signs of disposal at the sites. No ammunition or ash were found at the sites.

In summary, the previous activities at AOCs-67/68 showed the following results:

- Several rounds of excavation, removal and confirmation sampling were performed at AOCs-67/68.
- The only COC identified at AOC-67 was lead. The locations of lead contamination have been excavated and removed from the site; confirmation sampling has shown no remaining lead contamination.
- Lead, cadmium, and in one sample, nickel, were the only COCs identified at AOC-68. These COCs have been excavated and removed from the site; confirmation sampling has shown no remaining lead, cadmium or nickel contamination.

From the information summarized above and presented in this report, the results of the investigations at AOCs-67/68 meet the three criteria as described in TCEQ's (2003) guidance *Determining Which Releases are Subject to TRRP*. Thus, the following criteria were met:

- Concentrations of chemicals in soil samples do not exceed Tier 1 residential soil action levels. Soils that were found to have metal concentrations above their respective PCLs (lead at AOC-67, and lead, cadmium, and at one location, nickel at AOC-68) have been excavated and removed from the site.
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOCs-67/68. Inorganic groundwater contamination has not been reported in the closest wells to AOCs-67/68. It is also unlikely that any drainage from AOCs-67/68 is discharged to any naturally occurring surface water body, because none are present downgradient or in any other direction of possible drainage from AOCs-67/68. Additionally, since soils that were found to have concentrations of metals (lead, cadmium, and nickel) above their PCLs have

been excavated and removed, there will be no impact to groundwater, surface water, or sediment from AOCs-67/68.

- AOCs-67/68 pass the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

Because these three criteria are met, AOCs-67/68 are not subject to TRRP. Therefore, this RIR has been prepared to document the results and a NFA decision will be requested from the TCEQ. Contamination associated with adjacent AOC-65 (Building 90) will continue to be investigated and removed.

TABLES AND FIGURES

Table 1 Summary of Investigations and Results at AOCs-67/68

Date	Investigation Description	Type of Analyses	Results †
Jan – Feb, 2001 (Vicinity of AOCs-67/68)	Soil gas survey performed in vicinity of AOCs-67/68. Survey investigated potential VOC contamination in soils around Building 90 and AOC-65. A large number of samples were collected within a 200-foot radius of AOCs-67/68 because of their close proximity to Building 90 and AOC-65.	VOCs (TCE, PCE, *cis*-1,2-DCE, *trans*-1,2-DCE, BTEX, VC).	No VOC contamination was indicated in any of the soil gas samples collected near or within the boundaries of AOCs-67/68. See Section 3.1.2.1 of RIR for more detail.
April 3– 4, 2001 (AOC-67)	Soil borings completed and six samples (surface & subsurface), plus one FD, collected. AOC67-SB1_0_1 AOC67-SB1_20.5_21 AOC67-SB2_2_3 AOC67-SB2_22_23 AOC67-SB3_0_0.6 and FD AOC67-SB3_30_30.5	Nine CSSA metals, VOCs, SVOCs.	Lead above PCL at two surface locations. No other sample results exceeded PCLs. AOC67-SB1_0_1 (lead) AOC67-SB3_0_0.6 and FD (lead) These two sample locations and the areas near these locations were excavated (see below, February 26, 2004).
Feb 26, 2004 (AOC-67) See Photos 2 – 8.	1st excavation and removal activities. The three-sided concrete structure and pad were also demolished and removed and soil samples were collected from the surrounding soils. WC sample collected. AOC67-WC01	Waste characterization showed the material met Class 2 non-hazardous criteria (30 TAC §335 Subchapter R).	Excavated material, including concrete debris, was loaded and moved to a temporary stockpile in the SWMU B-29 area. Excavated material included approximately 160 CY of soil and 40 CY of concrete. Material was hauled off post on March 9, 2004.
March 8, 2004 (AOC-67)	1st confirmation sampling at five locations (four SW samples, one BOT sample, and one FD sample). AOC67-SW01 AOC67-BOT01 AOC67-SW02 AOC67-SW03 AOC67-SW04 and FD	Metals (barium, chromium, copper, lead, zinc), VOCs.	Lead above PCL at three locations. DCM also above PCL at BOT01, but concentration related to lab contamination and sample location was excavated and removed based on the location of lead at the site. See Section 3.1.2.2 of RIR for more detail. No other sample results exceeded PCLs. AOC67-SW01 (lead) AOC67-BOT01 (DCM as lab contaminant) AOC67-SW02 (lead) AOC67-SW04 and FD (lead) These four sample locations and the area near these locations were further excavated (see below, April 27, 2004).

Table 1 Continued

Date	Investigation Description	Type of Analyses	Results †
April 27, 2004 (AOC-67) See Photos 11 & 12.	2nd excavation activities. Involved excavating and scraping area down to bedrock in some places	---	Photos 11 & 12 show excavation taking place. Approximately 88 CY of excavated material was moved from AOC-67 on May 5, 2004 to a staging area at SWMU B-29 for transportation to off-post landfill on May 25, 2004 (see 3rd excavation and staging transportation descriptions below).
April 28, 2004 (AOC-67)	2nd confirmation sampling at three locations (three SW samples). AOC67-SW05 AOC67-SW06 AOC67-SW07	Metals (lead at all locations, plus chromium, and zinc at SW06).	Lead above PCL at one location. No other sample results exceeded PCLs. AOC67-SW05 (lead) This sample location and the area near this location was further excavated (see below, May 5, 2004).
May 5, 2004 (AOC-67) See photos 16 – 20.	3rd excavation activities. The area was over-excavated and re-scraped. Soils were further removed down to bedrock in some places.	---	Approximately 1.5 CY of excavated material was moved from AOC-67 on May 5, 2004 to a staging area at SWMU B-29 for transportation to off-post landfill on May 25, 2004 (see below).
May 11, 2004 (AOC-67)	3rd confirmation sampling at one location (SW sample). AOC67-SW08	Lead.	Lead above PCL at the sample location. AOC67-SW08 (lead) This sample location and the area near this location was further excavated (see below, May 25, 2004).
May 25, 2004 (AOC-67)	Staging transportation of excavated material from 2nd and 3rd excavations to off-post landfill.	Waste characterization showed the material met Class 2 non-hazardous criteria (30 TAC §335 Subchapter R).	A total of approximately 90 CY of excavated material taken off post for disposal at WMI, Covel Gardens Landfill in San Antonio, Texas.
Dec 4 – 6, 2007 (AOCs-67/68)	4th excavation activities. (Excavation and removal combined with AOC-68 activities.) WC sample collected. AOC67/68-WC01	Waste characterization showed the material met Class 2 non-hazardous criteria (30 TAC §335 Subchapter R).	The removal work between December 4 and December 6, 2007 was combined with the 5th (final) excavation activities at AOC-67 (see February 27, 2008 below) and the initial excavation and removal activities at AOC-68 (see below).

Table 1 Continued

Date	Investigation Description	Type of Analyses	Results †
Dec 6, 2007 (AOC-67)	4th confirmation sampling at ten locations (five SW samples, four BOT samples, and one FD sample). AOC67-SW08 AOC67-SW09 AOC67-SW10 AOC67-SW11 AOC67-SW12 AOC67-BOT02 AOC67-BOT03 AOC67-BOT04 and FD AOC67-BOT05	Lead.	Lead above PCL at two locations. No other sample results exceeded PCLs. AOC67-BOT03 (lead) AOC67-BOT05 (lead) These two sample locations and the area near these locations were further excavated (see below, February 27, 2008).
February 27, 2008 (AOC-67)	5th (final) excavation activities	Waste characterization showed the material met Class 2 non-hazardous criteria (30 TAC §335 Subchapter R).	Approximately 2 CY of material was excavated during this event. Excavated material from this event was taken off post with material generated from the December 4 through December 6, 2007 excavation event at AOC-67 (above) and with the initial excavation and removal activities at AOC-68 (below). From these excavation events, approximately 50 to 60 CY of soil/waste material was placed in three roll-offs for off-post removal, which took place on February 27, 2008.
April 10, 2008 (AOC-67)	Final subsurface confirmation sampling at two locations (two BOT samples, and one FD sample). AOC67-BOT03 and FD * AOC67-BOT05 * * Samples at these locations are the same as above, but at different depths.	Lead.	Sample results below PCL.

Table 1 Continued

Date	Investigation Description	Type of Analyses	Results †
Dec 4 – 6, 2007 (AOCs-67/68)	Initial soil scraping including excavation of soil/wheelabrator waste around Bldg. 90-2. (Excavation and removal combined with AOC-67 activities.) WC sample collected. AOC67/68-WC01	Waste characterization showed the material met Class 2 non-hazardous criteria (30 TAC §335 Subchapter R).	Approximately 50-60 CY of excavated material placed in three roll-offs for off-post removal which took place on February 27, 2008 (combined with excavated material at AOC-67; see AOC-67 above).
Dec 6, 2007 (AOC-68)	1st confirmation sampling at six locations (four SW samples, two BOT samples, and one FD sample). AOC68-SW01 AOC68-SW02 AOC68-SW03 and FD AOC68-SW04 AOC68-BOT01 AOC68-BOT02	Nine CSSA metals, VOCs, SVOCs.	Lead above PCL at four locations, cadmium above PCL at two locations, and nickel above PCL at one location. No other sample results exceeded PCLs. AOC68-SW02 (lead & cadmium) AOC68-SW04 (lead) AOC68-BOT01 (lead) AOC68-BOT02 (lead, cadmium, nickel) These four sample locations and the area near these locations were further excavated (see below, November 17, 2008).
April 10, 2008 (AOC-68)	Investigation sampling at four locations (four BOT samples). AOC68-BOT01 AOC68-BOT02 AOC68-BOT03 AOC68-BOT04 (considered as extent of AOC-68)	Metals (lead at all locations, plus cadmium at three locations, and nickel at one location).	Cadmium above PCL at one location. No other sample results exceeded PCLs. AOC68-BOT03 (cadmium) This sample location and the area near this location was further excavated (see below, November 17, 2008). Sample location AOC68-BOT03 was excavated and replaced by sample location AOC68-BOT05 (below).
Nov 17, 2008 (AOC-68)	2nd excavation/removal and confirmation/site delineation sampling at two locations (two BOT samples). AOC68-BOT05 AOC68-BOT06 (considered part of AOC-65/Building 90 operations)	Lead and cadmium.	Approximately 15 CY of excavated material placed in roll-off container for transport to off-post landfill. Lead and cadmium above PCLs at one location. AOC68-BOT06 (lead and cadmium) This sample was collected in the sand bedding that borders the southwest corner of the site. See Section 2.2.2 of RIR for more detail.

Table 1 Continued

Date	Investigation Description	Type of Analyses	Results †
Feb 19, 2009 (AOC-65 and Building 90)	WC sample collected. AOC68-WC01	Waste characterization showed the material met Class 2 non-hazardous criteria (30 TAC §335 Subchapter R).	Approximately 3 CY of material near the southwest corner of the site was identified for removal.
Sep 2 – 3, 2009 (AOC-65 and Building 90)	3rd excavation/removal and site delineation sampling at one location (one BOT sample). AOC68-BOT06 (considered part of AOC-65/Building 90 operations)	Lead and cadmium.	Approximately 3 CY of material near the southwest corner of the site was removed for transport to off-post landfill. Lead and cadmium above PCLs. AOC68-BOT06 (lead and cadmium) This sample was collected from the sand bedding that borders the southwest corner of the site. The sample location is considered to be a part of the investigation of AOC-65 and the Building 90 test fire room operations. See Section 2.2.2 of RIR for more detail.

† Table 2 and Figure 5 show results and locations of soils remaining at the site. Clearance areas are also shown on Figure 5.

Table 2. Summary of Chemical Constituents Detected in Soils at AOC-67 and AOC-68

Detected Chemical	CAS Number	Tier 1 Soil PCLs Residential Source Area 0.5 acre Soil mg/kg [1]		Tier 1 Soil PCLs Residential Source Area 0.5 acre Soil mg/kg [2]			CSSA Background Metal Concentrations mg/kg [3]	Sample Locations AOC67-SB1_20.5_21 03-Apr-2001 mg/kg	Qual	DF	AOC67-SB2_2_3 03-Apr-2001 mg/kg	Qual	DF	AOC67-SB2_22_23 03-Apr-2001 mg/kg	Qual	DF	AOC67-SB3_30_30.5 04-Apr-2001 mg/kg	Qual	DF	AOC67-SW03 08-Mar-2004 mg/kg	Qual	DF	AOC67-BOT01 08-Mar-2004 mg/kg	Qual	DF	AOC67-SW06 28-Apr-2004 mg/kg	Qual	DF	AOC67-SW07 28-Apr-2004 mg/kg	Qual	DF
Volatile Organic Compounds																														
m,p-Xylene †	1330-20-7	1.5E+03	n	**1.1E+02**	m		na	0.0008	U	1	0.0008	U	1	0.0008	U	1	0.0008	U	1	0.0018	U	1	0.0018	U	1						
Methylene chloride	75-09-2	3.9E+02	c	**1.3E-02**	m		na	0.002	F	1	0.0007	U	1	0.0017	F	1	0.0093	J	1	0.0013	U	1	0.0237 (lab contaminant)*		1						
Naphthalene	91-20-3	2.2E+02	n	**3.1E+01**	n		na	0.001	U	1	0.001	U	1	0.001	U	1	0.002	F	1	0.0010	U	1	0.0046	F	1						
o-Xylene	95-47-6	4.8E+04	n	**7.1E+01**	m		na	0.0004	U	1	0.0004	U	1	0.0004	U	1	0.0004	U	1	0.0007	U	1	0.0007	U	1						
Toluene	108-88-3	5.9E+03	n	**8.2E+00**	m		na	0.0003	U	1	0.0003	U	1	0.0003	U	1	0.0005	F	1	0.0010	U	1	0.0010	U	1						
Semivolatile Organic Compounds																														
bis(2-Ethylhexyl) phthalate	117-81-7	**4.3E+01**	c	1.6E+02	m		na	0.64	F	1	0.15	F	1	0.10	F	1	0.24	F	1												
Chrysene	218-01-9	**5.6E+02**	c	1.5E+03	c	>S	na	0.04	U	1	0.04	U	1	0.04	U	1	0.04	U	1												
Di-n-butyl phthalate	84-74-2	5.1E+03	n	**3.3E+03**	n		na	0.04	U	1	0.04	U	1	0.04	U	1	0.04	U	1												
Fluoranthene	206-44-0	2.3E+03	n	**1.9E+03**	n	>S	na	0.04	U	1	0.04	U	1	0.04	U	1	0.04	U	1												
Pyrene	129-00-0	1.7E+03	n	**1.1E+03**	n	>S	na	0.05	U	1	0.05	U	1	0.05	U	1	0.05	U	1												
Inorganic Metals																														
Arsenic	7440-38-2	2.4E+01	n	5.0E+00	m	>S	**19.6**	0.04	U	1	0.20	F	1	1.06		1	3.57	J	1												
Barium	7440-39-3	8.0E+03	n	**4.4E+02**	m	>S	186	4.59	J	1	4.73	J	1	3.8	J	1	9.6	J	1	19.86	M	1	28.68	M	1						
Cadmium	7440-43-9	5.2E+01	n	1.5E+00	m	>S	**3.00**	0.06	F	1	0.04	F	1	0.08	F	1	0.05	F	1												
Chromium	7440-47-3	3.0E+04	n	**2.4E+03**	m	>S	40.2	4.6	F	1	3.9	F	1	3.6	F	1	8.8	F	1	11.7	M	1	21.3	M	1	12.4	F	1			
Copper	7440-50-8	**5.5E+02**	n	1.0E+03	a	>S	23.2	1.79	F	1	2.27	J	1	2.55	J	1	8.84		1	2.94		1	4.30		1						
Lead	7439-92-1	5.0E+02	n	3.0E+00	a	>S	**84.5**	1.98		1	1.8		1	2.83		1	3.85	J	1	65.23	J	20	77.21	J	20	13.32	M	5	32.22	M	10
Mercury ††	7439-97-6	3.6E+00	n	7.8E-03	m		**0.77**	0.01	U	1	0.01	U	1	0.01	U	1	0.01	U	1												
Nickel	7440-02-0	8.4E+02	n	**1.6E+02**	n	>S	35.50	2.11		1	2.04		1	5.58		1	11.28	J	1												
Zinc	7440-66-6	9.9E+03	n	**2.4E+03**	n	>S	73.2	4.43	F	1	3.92	F	1	4.54	F	1	6.61	J	1	15.85	M	1	39.05	M	1	13.96		1			

*See text

Detected Chemical	CAS Number	Tier 1 Soil PCLs Residential Source Area 0.5 acre Soil mg/kg [1]		Tier 1 Soil PCLs Residential Source Area 0.5 acre Soil mg/kg [2]			CSSA Background Metal Concentrations mg/kg [3]	Sample Locations AOC67-BOT02 06-Dec-2007 mg/kg	Qual	DF	AOC67-BOT04 06-Dec-2007 mg/kg	Qual	DF	AOC67-BOT04 DUP 06-Dec-2007 mg/kg	Qual	DF	AOC67-SW08 06-Dec-2007 mg/kg	Qual	DF	AOC67-SW09 06-Dec-2007 mg/kg	Qual	DF	AOC67-SW10 06-Dec-2007 mg/kg	Qual	DF	AOC67-SW11 06-Dec-2007 mg/kg	Qual	DF	AOC67-SW12 06-Dec-2007 mg/kg	Qual	DF	AOC67-BOT03 10-Apr-2008 mg/kg	Qual	DF	AOC67-BOT03 DUP 10-Apr-2008 mg/kg	Qual	DF	AOC67-BOT05 10-Apr-2008 mg/kg	Qual	DF
Volatile Organic Compounds																																								
m,p-Xylene †	1330-20-7	1.5E+03	n	**1.1E+02**	m		na																																	
Methylene chloride	75-09-2	3.9E+02	c	**1.3E-02**	m		na																																	
Naphthalene	91-20-3	2.2E+02	n	**3.1E+01**	n		na																																	
o-Xylene	95-47-6	4.8E+04	n	**7.1E+01**	m		na																																	
Toluene	108-88-3	5.9E+03	n	**8.2E+00**	m		na																																	
Semivolatile Organic Compounds																																							
bis(2-Ethylhexyl) phthalate	117-81-7	**4.3E+01**	c	1.6E+02	m		na																																	
Chrysene	218-01-9	**5.6E+02**	c	1.5E+03	c	>S	na																																	
Di-n-butyl phthalate	84-74-2	5.1E+03	n	**3.3E+03**	n		na																																	
Fluoranthene	206-44-0	2.3E+03	n	**1.9E+03**	n	>S	na																																	
Pyrene	129-00-0	1.7E+03	n	**1.1E+03**	n	>S	na																																	
Inorganic Metals																																							
Arsenic	7440-38-2	2.4E+01	n	5.0E+00	m	>S	**19.6**																																	
Barium	7440-39-3	8.0E+03	n	**4.4E+02**	m	>S	186																																	
Cadmium	7440-43-9	5.2E+01	n	1.5E+00	m	>S	**3.00**																																	
Chromium	7440-47-3	3.0E+04	n	**2.4E+03**	m	>S	40.2																																	
Copper	7440-50-8	**5.5E+02**	n	1.0E+03	a	>S	23.2																																	
Lead	7439-92-1	5.0E+02	n	3.0E+00	a	>S	**84.5**	56.42		1	7.78		1	7.50		1	20.14		1	39.37		1	80.14		1	12.29		1	32.51		1	1.78		1	1.37		1	4.94		1
Mercury ††	7439-97-6	3.6E+00	n	7.8E-03	m		**0.77**																																	
Nickel	7440-02-0	8.4E+02	n	**1.6E+02**	n	>S	35.50																																	
Zinc	7440-66-6	9.9E+03	n	**2.4E+03**	n	>S	73.2																																	

continued

Table 2 Continued

Detected Chemical	CAS Number	Tier 1 Soil PCLs Residential Source Area 0.5 acre Soil mg/kg [1]		Tier 1 Soil PCLs Residential Source Area 0.5 acre Soil mg/kg [2]			CSSA Background Metal Concentrations mg/kg [3]	Sample Locations AOC68-SW01 06-Dec-2007 mg/kg	Qual	DF	AOC68-SW03 06-Dec-2007 mg/kg	Qual	DF	AOC68-SW03 DUP 06-Dec-2007 mg/kg	Qual	DF	AOC68-BOT01 10-Apr-2008 mg/kg	Qual	DF	AOC68-BOT02 10-Apr-2008 mg/kg	Qual	DF	AOC68-BOT04 10-Apr-2008 mg/kg	Qual	DF	AOC68-BOT05 17-Nov-2008 mg/kg	Qual	DF
Volatile Organic Compounds																												
m,p-Xylene †	1330-20-7	1.5E+03	n	**1.1E+02**	m		na	0.0018	U	1	0.0018	U	1	0.0018	U	1												
Methylene chloride	75-09-2	3.9E+02	c	**1.3E-02**	m		na	0.0089		1	0.0065		1	0.0114		1												
Naphthalene	91-20-3	2.2E+02	n	**3.1E+01**	n		na	0.0010	U	1	0.0010	U	1	0.0010	U	1												
o-Xylene	95-47-6	4.8E+04	n	**7.1E+01**	m		na	0.0007	U	1	0.0007	U	1	0.0007	U	1												
Toluene	108-88-3	5.9E+03	n	**8.2E+00**	m		na	0.0025	F	1	0.0013	F	1	0.0033	F	1												
Semivolatile Organic Compounds																												
bis(2-Ethylhexyl) phthalate	117-81-7	**4.3E+01**	c	1.6E+02	m		na	0.03	U	1	0.03	U	1	0.03	U	1												
Chrysene	218-01-9	**5.6E+02**	c	1.5E+03	c	>S	na	0.04	U	1	0.04	U	1	0.04	U	1												
Di-n-butyl phthalate	84-74-2	5.1E+03	n	**3.3E+03**	n		na	0.04	U	1	0.04	U	1	0.04	U	1												
Fluoranthene	206-44-0	2.3E+03	n	**1.9E+03**	n	>S	na	0.04	U	1	0.04	U	1	0.04	U	1												
Pyrene	129-00-0	1.7E+03	n	**1.1E+03**	n	>S	na	0.05	U	1	0.05	U	1	0.05	U	1												
Inorganic Metals																												
Arsenic	7440-38-2	2.4E+01	n	5.0E+00	m	>S	**19.6**	0.74	F	1	5.68		1	4.61		1												
Barium	7440-39-3	8.0E+03	n	**4.4E+02**	m	>S	186	11.83	M	1	61.50		1	68.12		1												
Cadmium	7440-43-9	5.2E+01	n	1.5E+00	m	>S	**3.00**	0.16	F	1	0.83		1	0.84		1				0.26		1				0.15	F	1
Chromium	7440-47-3	3.0E+04	n	**2.4E+03**	m	>S	40.2	5.81	F	1	24.52		1	18.65		1												
Copper	7440-50-8	**5.5E+02**	n	1.0E+03	a	>S	23.2	1.90	F	1	12.71		1	10.56		1												
Lead	7439-92-1	5.0E+02	n	3.0E+00	a	>S	**84.5**	2.75		1	16.07		1	14.15		1	1.80		1	2.12		1	11.79		1	64.06	J	1
Mercury ††	7439-97-6	3.6E+00	n	7.8E-03	m		**0.77**	0.02	F	1	0.02	F	1	0.02	F	1												
Nickel	7440-02-0	8.4E+02	n	**1.6E+02**	n	>S	35.50	4.96		1	16.68		1	17.06		1				15.70		1						
Zinc	7440-66-6	9.9E+03	n	**2.4E+03**	n	>S	73.2	4.73	F	1	41.95		1	26.97		1												

QA NOTES AND DATA QUALIFIERS:

TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: March 25, 2009).

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

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

[1] $^{Tot}Soil_{comb}$ = PCL for COPC in soil for a 0.5 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 0.5 acre source area and a potential future resident (soil-to-groundwater leaching of COPC to Class 1 or 2 groundwater).

[3] CSSA Soil Background Concentrations (TCEQ-approved).

Final PCL is shown in blue font.

If background value is highlighted blue, the background value is used for comparison because the PCL is lower than background.

† If Tier 1 PCL values for *m* -xylene and *p* -xylene differ, the most conservative value is used.

† † Note that much higher PCLs for mercury may be obtained using a pH-dependent K_d based on site-specific information (see Figure:30 TAC §350.73(e)(1)(C)).

If a chemical concentration is not provided, the chemical was not analyzed for in that sample.

SB Soil boring.

SW Sidewall sample.

BOT bottom sample.

mg/kg = milligrams per kilogram.

c = carcinogenic.

n = noncarcinogenic.

m = primary MCL-based.

a = EPA Action Level-based.

>S = solubility limit exceeded during calculation.

na = not applicable.

U Analyte was not detected. The value reported is the method detection limit (MDL).

F AFCEE qualifier indicating that the detected concentration is an estimated value between the MDL and the PQL. The "F" qualifier in the table indicates that the results are usable as detected values.

J The analyte was positively identified but the associated concentration is estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

M AFCEE qualifier indicating that a matrix effect was present. The "M" qualifier in the table indicates that the result is usable as a detected value.

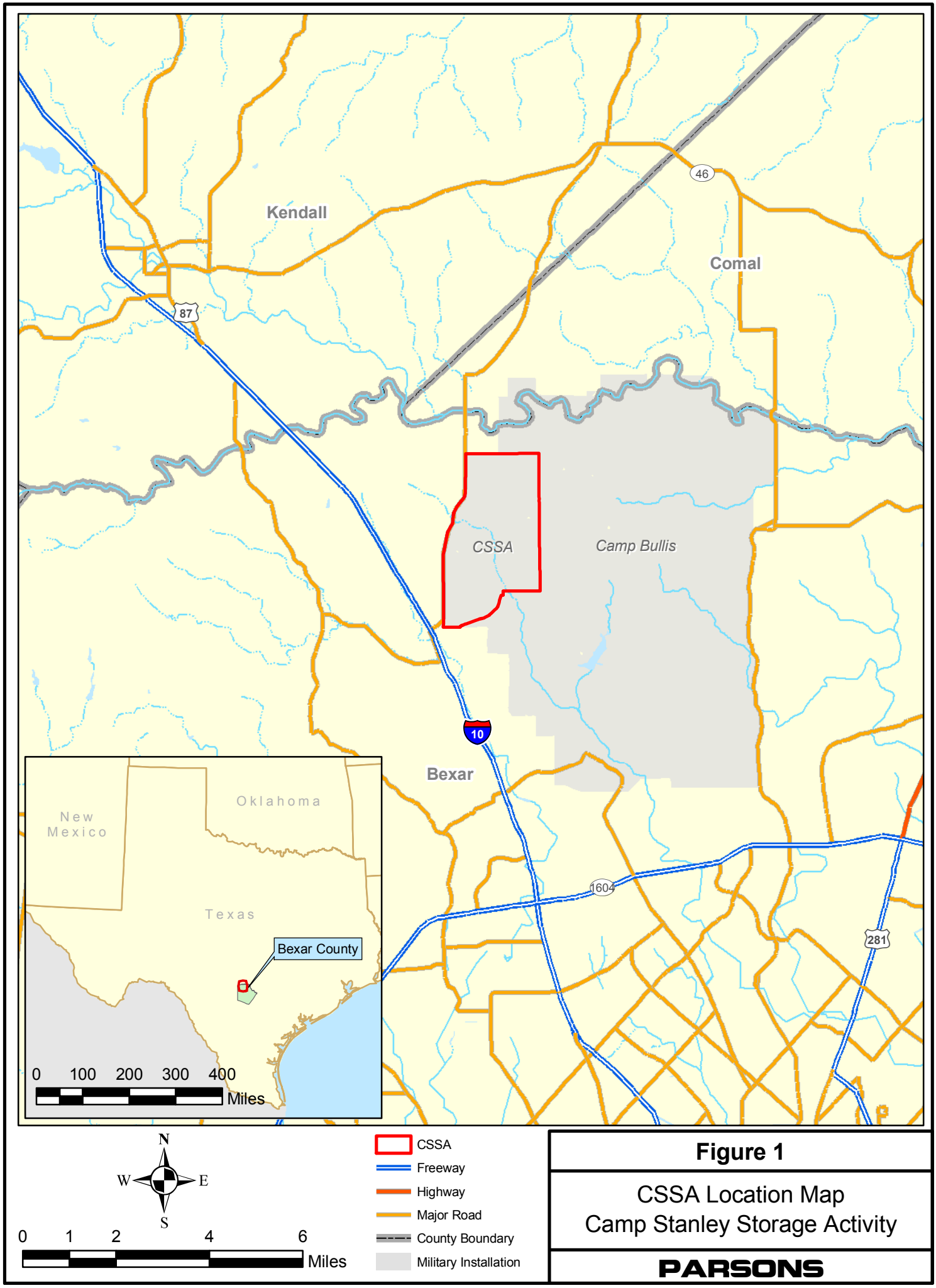


Figure 1

CSSA Location Map
Camp Stanley Storage Activity

PARSONS

J:\CSSA\environmental_files\gisdata\mxd\cssa_site_location_zoom.mxd - 3/24/2009 @ 2:42:21 PM

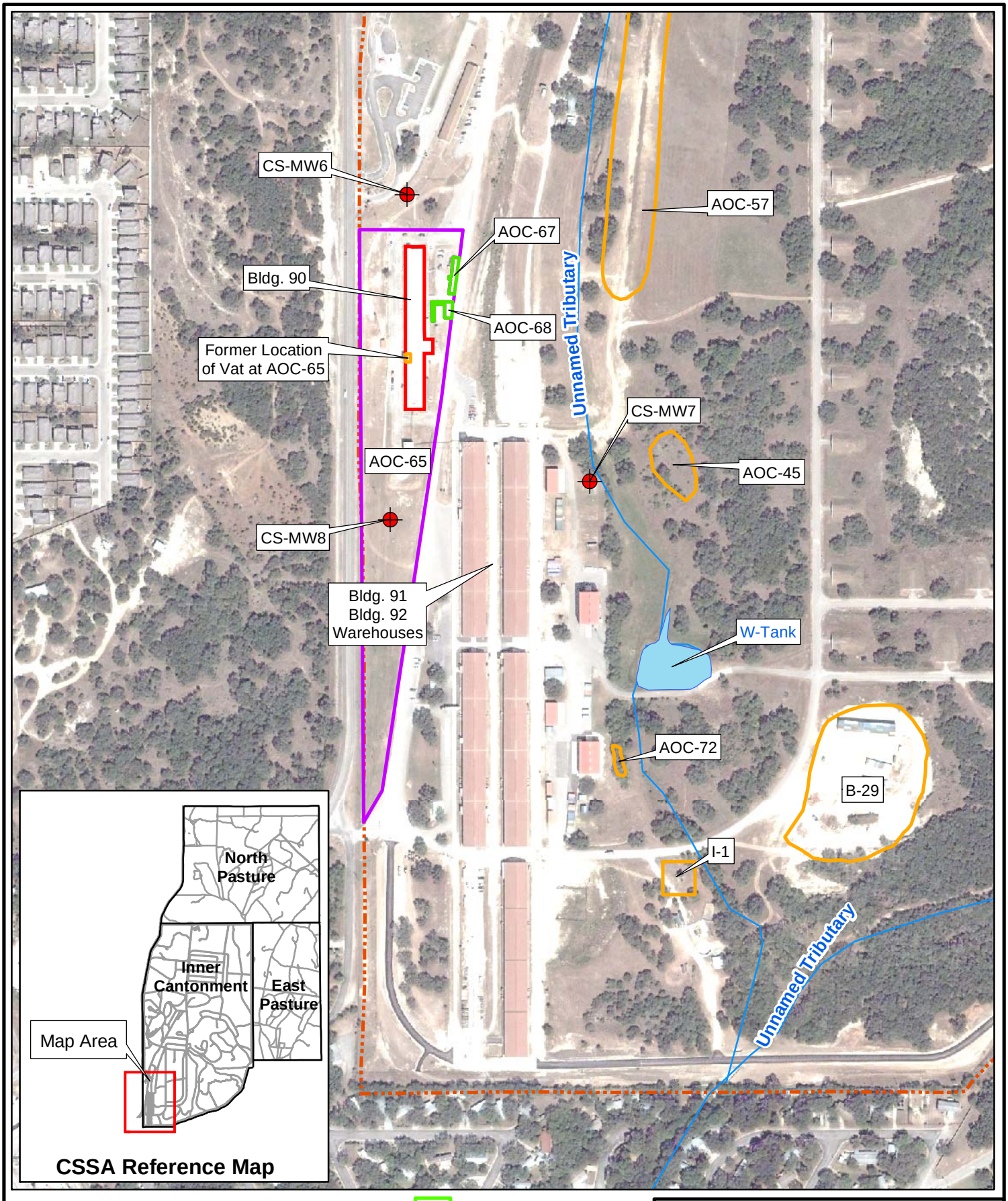


Figure 2

AOCs-67/68 Location Map
Camp Stanley Storage Activity

PARSONS

J:\745\745428 CSSA TRRP\GIS\aoc67_68_location_v2.mxd - 1/29/2010 @ 9:33:47 AM

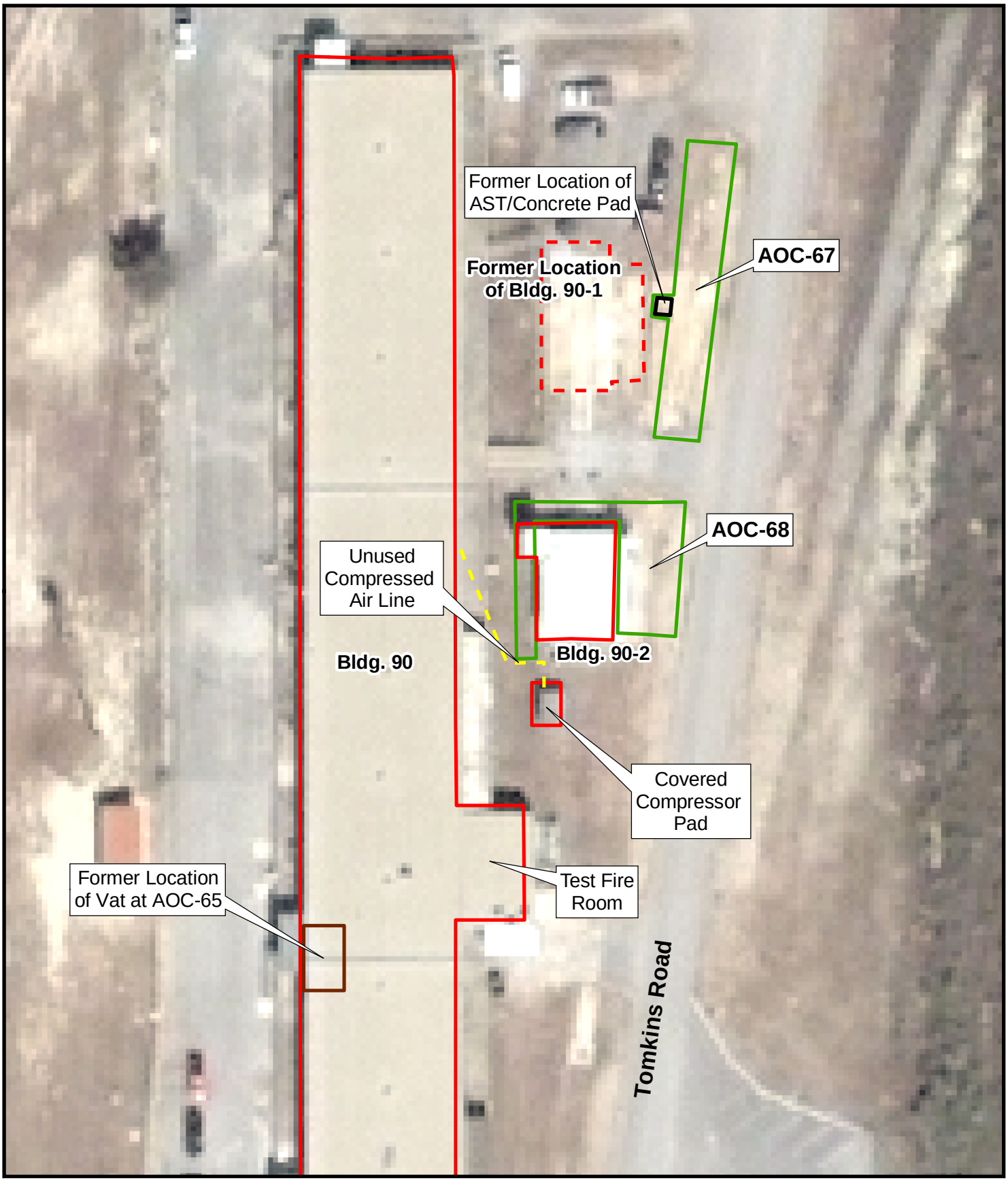
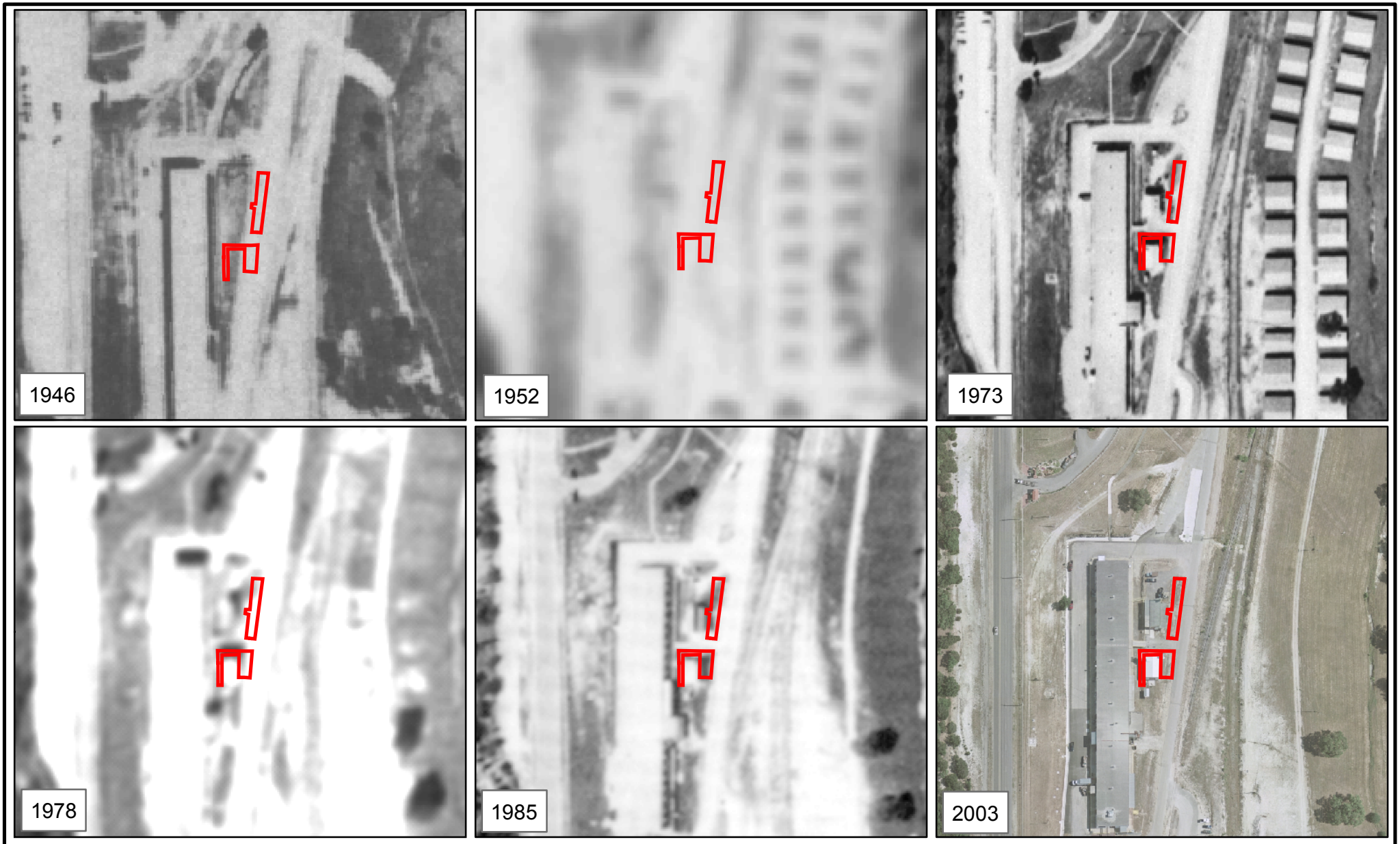


Figure 3

AOCs-67/68
Site Vicinity Map
Camp Stanley Storage Activity

PARSONS

J:\745\745428 CSSA TRRP\GIS\aoc67_68_vicinity_map_v2.mxd - 6/30/2010 @ 2:33:32 PM



Scalebar for Aerial Photographs.

Figure 4

AOCs-67/68
Aerial Photographs
Camp Stanley Storage Activity

PARSONS

J:\745\745428 CSSA TRRP\GIS\aoc67_68_historical.mxd - 5/14/2009 @ 2:53:54 PM

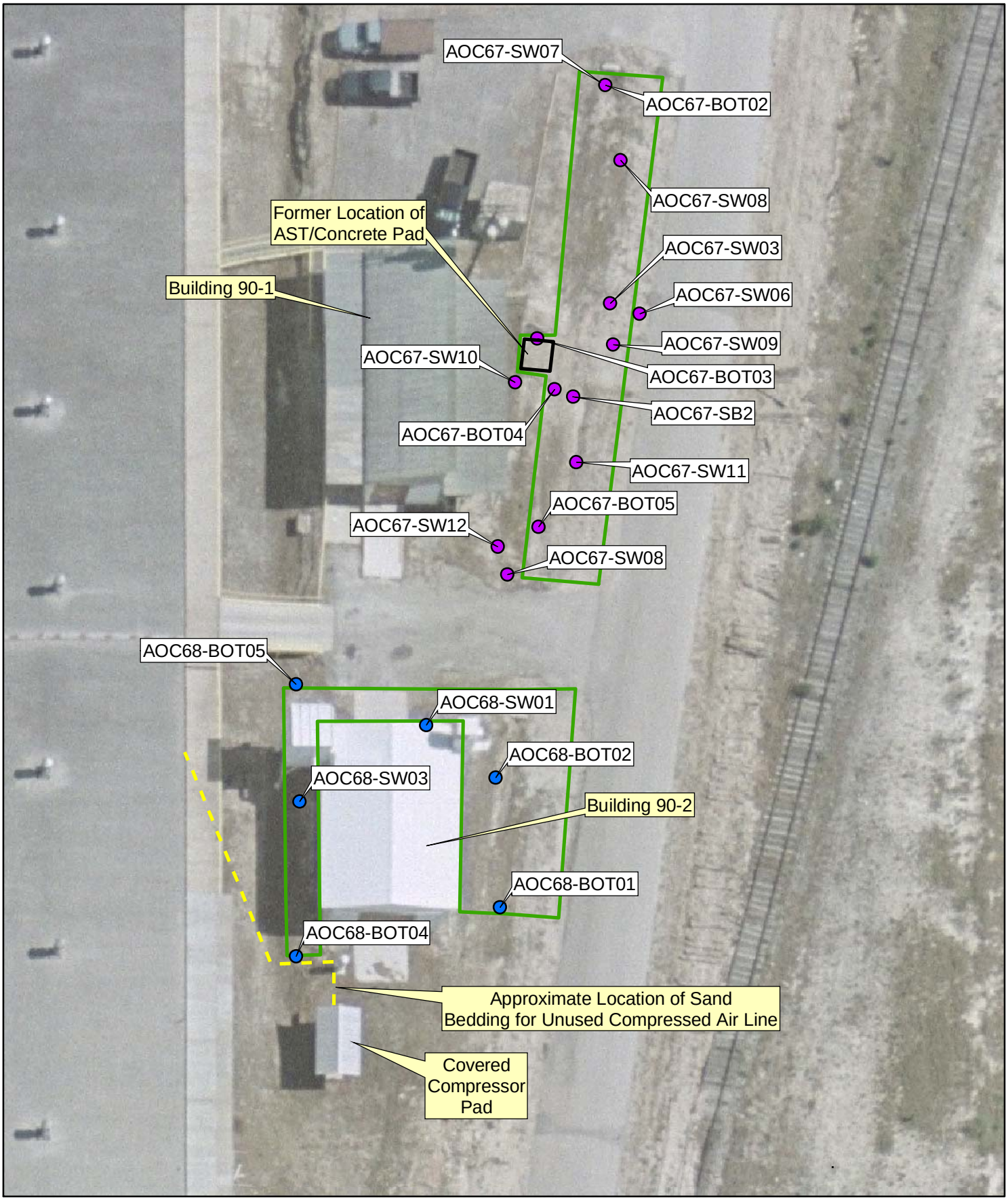


Figure 5

AOCs-67/68 Sample Locations
Camp Stanley Storage Activity

PARSONS

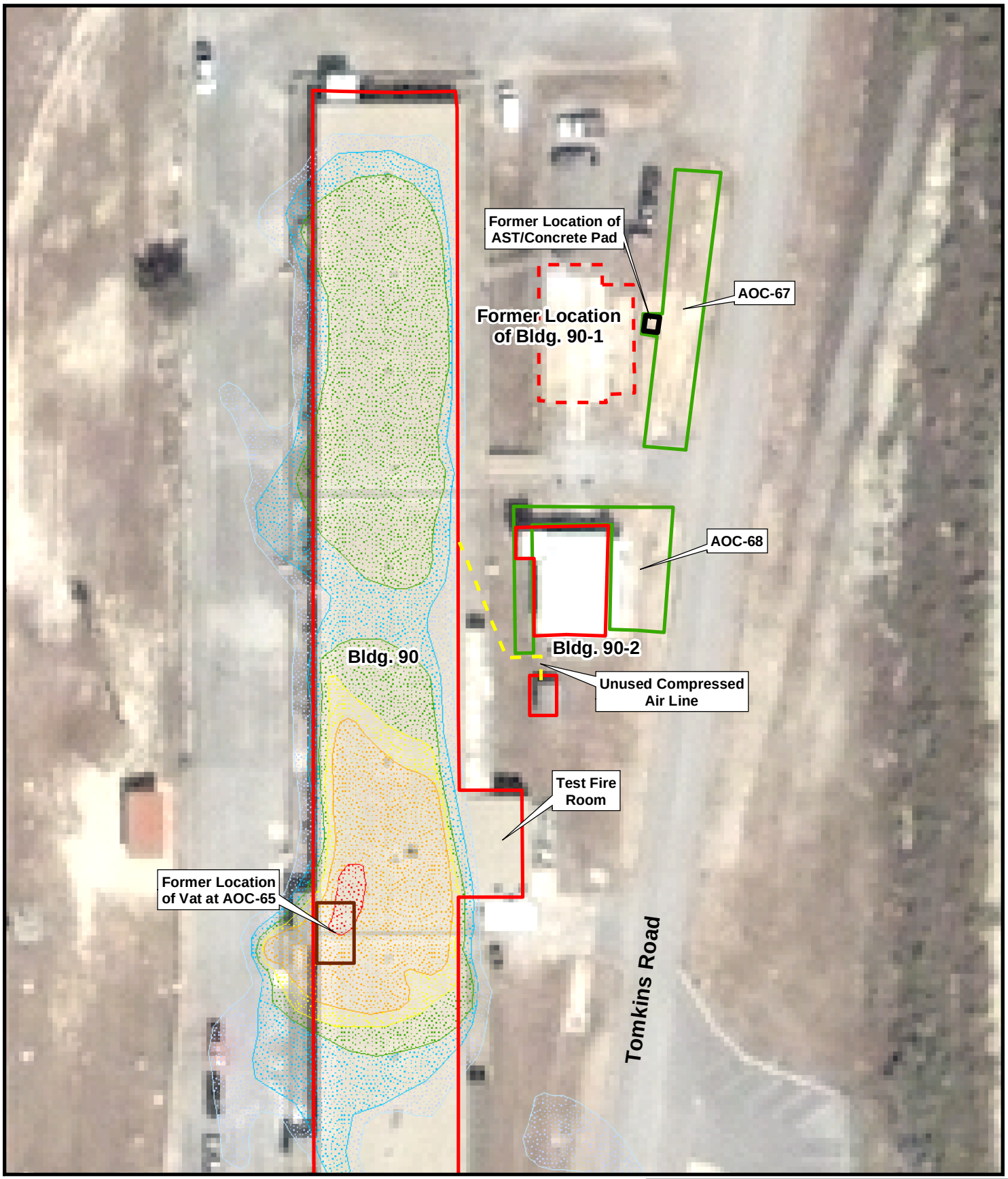


Figure 6

Soil Gas Survey Results for Adjacent Sites

Camp Stanley Storage Activity

PARSONS

J:\745\745428 CSSA TRRP\GIS\aoc67_68_SGSurvey_v2.mxd - 6/30/2010 @ 2:46:34 PM

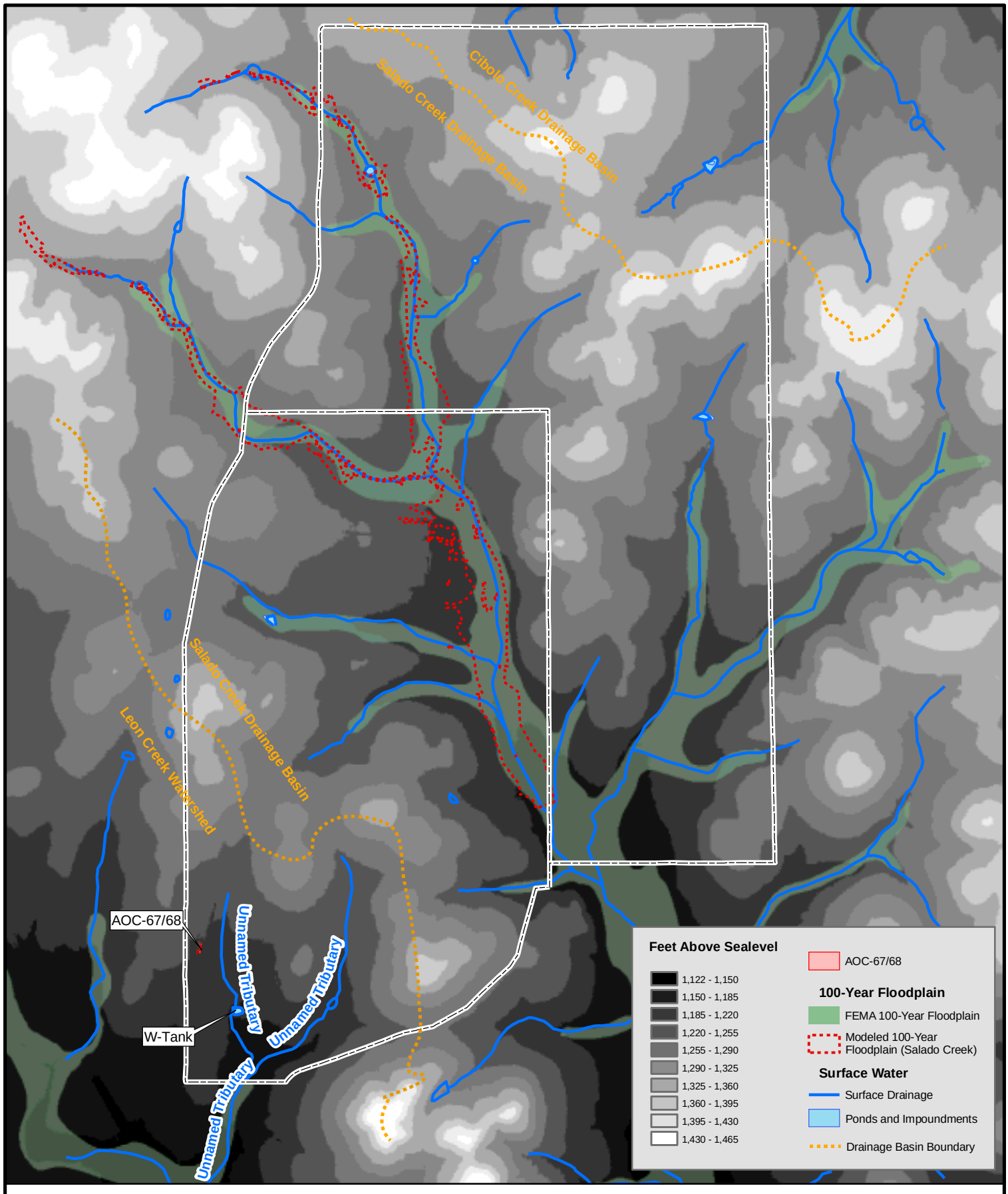


Figure 7

Topography, Surface Water, and Floodplains at CSSA
Camp Stanley Storage Activity

P a r s o n s

J:\745\745428 CSSA TRRP\GIS\aoc67_68_topo_map.mxd - 7/21/2009 @ 2:03:10 PM

APPENDIX A

Site Photographs

Photo 1. Bldg. 90-1 and AOC-67 drainage ditch to the east (facing north). (Photo taken 12-01.)

Photo 2. AOC-67 drainage ditch – preparing for 1st excavation activities (facing north). (Photo taken 2-26-04.)

Photo 3. AOC-67 drainage ditch – preparing for 1st excavation activities (facing south). (Photo taken 2-26-04.)

Photo 4. AOC-67 three-sided concrete storage area – preparing for 1st excavation activities. (Photo taken 2-26-04.)

Photo 5. AOC-67 saw cut of concrete for demolition and removal – 1st excavation activities. (Photo taken 2-26-04.)

Photo 6. AOC-67 demolition of concrete – 1st excavation activities. (Photo taken 2-26-04.)

Photo 7. AOC-67 demolition of concrete pad and three-sided concrete storage area – 1st excavation activities. (Photo taken 2-26-04.)

Photo 8. AOC-67 loading excavated material for off-post disposal – 1st excavation and removal activities. (Photo taken 2-26-04.)

Photo 9. AOC-67 following 1st excavation, removal and confirmation sampling activities. Two sample locations shown with orange flags. (Photo taken 3-25-04.)

Photo 10. AOC-67 following 1st excavation, removal and confirmation sampling activities. One sample location shown with orange flag (facing south). (Photo taken 3-25-04.)

Photo 11. AOC-67 during 2nd excavation activities.
(Photo taken 4-27-04.)

Photo 12. AOC-67 during 2nd excavation activities.
(Photo taken 4-27-04).

Photo 13. Building 90-1 and AOC-67 following 1st and 2nd excavation, removal and confirmation sampling activities (facing northwest). (Photo taken 5-4-04.)

Photo 14. AOC-67 following 1st and 2nd excavation, removal and confirmation sampling activities (north end). (Photo taken 5-4-04.)

Photo 15. AOC-67 view of bedrock at the former three-sided concrete storage area. (Photo taken 5-4-04.)

Photo 16. AOC-67 3rd excavation (over-excavating and re-scraping activities). (Photo taken 5-5-04.)

Photo 17. AOC-67 3rd excavation (over-excavating and re-scraping activities). (Photo taken 5-5-04.)

Photo 18. AOC-67 3rd excavation (over-excavating and re-scraping activities). (Photo taken 5-5-04.)

Photo 19. AOC-67 following 3rd excavation (over-excavating and re-scraping activities). (Photo taken 5-5-04.)

Photo 20. AOC-67 bedrock at south end of former drainage ditch. (Photo taken 5-5-04.)

Photo 21. AOC-68 drainage ditch (east side of Bldg. 90-2 facing north). (Photo taken 11-19-08.)

Photo 22. Bldg. 90-2 and AOC-68 (west side of Bldg. 90-2 facing north). (Photo taken 12-28-01.)

Photo 23. AOC-68 (west side of Bldg. 90-2 facing north). (Photo taken 11-19-08.)

Photo 24. AOC-68 north portion of excavation (facing east). (Photo taken 11-19-08.)

Photo 25. AOC-68 south portion of excavation (facing east). (Photo taken 11-19-08.)

Photo 26. AOC-68 southwest portion of excavation (facing southwest); covered air compressor and pad in background. (Photo taken 9-2-09.)

Photo 27. AOC-68 (facing southwest); compressor and compressed air line at southwest boundary of AOC-68. (Photo taken 1-20-10.)

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:

AOCs-67/68 are located in an industrial area of the Inner Cantonment of CSSA (see Figure 2 of the RIR). AOC-67 is approximately 0.047 acre in size and AOC-68 is approximately 0.043 acre in size. As shown on Figure 3 of the RIR, AOC-67 consists of a concrete storage pad and drainage ditch immediately east of Building 90-1 (the former bluing shop) and AOC-68 consists of adjacent areas along the north, east and west sides of Building 90-2 (the former abrasive cleaner [Wheelabrator] site). AOC-67 is approximately 20 feet north-northeast of AOC-68. Both sites are close to Building 90, which is used for ordnance maintenance operations. AOC-67 is approximately 75 feet east of Building 90 and AOC-68 is approximately 22 feet east of Building 90. AOCs-67/68 are approximately 260 feet from the western boundary of CSSA and 2,470 feet from the southern boundary of CSSA.

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)

Definitions[1]

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

[1]These 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.

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).

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.

AOCs-67/68: AOCs-67/68 are located in an industrial area of the Inner Cantonment of CSSA (see Figures 2 and 3 of the RIR). AOC-67 consists of a concrete storage pad and drainage ditch immediately east of Building 90-1 (the former bluing shop) and AOC-68 consists of a drainage ditch along the east side and adjacent surface areas along the north and west sides of Building 90-2 (the former abrasive cleaner [Wheelabrator] site). AOC-67 is approximately 20 feet north-northeast of AOC-68. Both sites are close to Building 90, which is used for ordnance maintenance operations. AOC-67 is approximately 75 feet east of Building 90 and AOC-68 is approximately 22 feet east of Building 90. AOCs-67/68 are approximately 260 feet from the western boundary of CSSA and 2,470 feet from the southern boundary of CSSA.

AOC-67 is approximately 0.047 acre in size. The site consists of a north-south drainage ditch and a three-sided concrete storage area (open on one side with a concrete pad) that was built into the slope between the drainage ditch and Building 90-1. A 1,250-gallon aboveground storage tank (AST) was located on the concrete pad until 1997, when it was removed. The tank was reportedly used to temporarily store floor cleaning rinsate and residue from Building 90-1 and Building 90. There are no records of spills or overfills at the tank or any other releases to the drainage area.

AOC-68 is approximately 0.043 acre in size and consists of a drainage ditch along the east side and adjacent surface areas along the north and west sides of Building 90-2, the former Wheelabrator operations building (Figure 3). AOC-68 was identified as an area where deposits of metal debris (dust) have accumulated outside of Building 90-2.

There were no trenches or any other signs of disposal at the sites. No ammunition or ash was found at the sites.

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 4 of the RIR. Figures 2 and 3 of the RIR show the general location of AOCs-67/68.

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

Known/Suspected COC Location	Based on sampling data?	
☐ **NO** – Soil ≤ 5 ft below ground surface	☐ Yes	☐ √No

☐ **NO –** Soil >5 ft below ground surface ☐ Yes ☐ √No

☐ **NO –** Groundwater ☐ Yes ☐ √No

☐ **NO –** Surface Water/Sediments ☐ Yes ☐ √No

Explain (previously submitted information may be referenced):

Based on soil gas samples and soil samples collected at the surface and subsurface (up to 30.5 feet bgs, there are no VOCs or SVOCs at the sites. Metals that were found at the sites (lead, cadmium, and at one location, nickel) have been excavated and removed from the sites. There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOCs-67/68. Inorganic groundwater contamination has not been reported in the closest wells to AOCs-67/68. It is also unlikely that any drainage from AOCs-67/68 is discharged to any naturally occurring surface water body, because none are present downgradient or in any other direction of possible drainage from AOCs-67/68. Additionally, since soils that were found to have concentrations of metals (lead, cadmium, and nickel) above their PCLs have been excavated and removed, there will be no impact to groundwater, surface water, or sediment from AOCs-67/68.

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 is **approximately 380 feet** from the affected property **(east of AOCs-67/68)** and is an **"unnamed tributary."** 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) **There are no downgradient surface water bodies that have the potential to become impacted from AOCs-67/68. AOCs-67/68 are approximately 0.09 acre in size and located in a developed industrial area of CSSA. The closest surface water body is an unnamed creek approximately 380 feet to the east-southeast of AOCs-67/68. This creek, and all other creeks at CSSA, are intermittent and only contain water during and immediately following rain events. It is unlikely that any drainage from AOCs-67/68 is discharged to this tributary, or any other naturally occurring surface water body, because none are present downgradient or in any other direction of possible drainage from AOCs-67/68.**

_____ 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 AOCs 67/68.

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 perennial surface water body to AOCs-67/68 is the W-Tank which is located approximately 1,250 feet to the south-southeast of the sites (see Figure 7 of the RIR). 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 feet. W-tank is fed by precipitation. The unnamed creek upgradient and downgradient from W-tank is an intermittent creek and only contains water during and immediately following rain events.

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 AOCs-67/68. Since soils that were found to have concentrations of lead, cadmium, and

nickel above their PCLs have been excavated/removed, there will be no impact to groundwater, surface water, or sediment from AOCs-67/68.

The closest surface water body to AOCs-67/68 is an unnamed creek approximately 380 feet to the east-southeast of thee sites. This creek is not a State-classified segment. This creek, and all other creeks at CSSA, are intermittent and only contain water during and immediately following rain events. It is unlikely that any drainage from AOCs-67/68 is discharged to this tributary, or any other naturally occurring surface water body, because none are present downgradient or in any other direction of possible drainage from AOCs-67/68.

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:

AOCs-67/68 are located in a developed industrial area of the Inner Cantonment of CSSA (see Figures 2 and 3 of the RIR). AOC-67 is approximately 0.047 acre in size and AOC-68 is approximately 0.043 acre in size. As shown on Figure 3 of the RIR, AOC-67 consists of a concrete storage pad and drainage ditch immediately east of Building 90-1 (the former bluing shop) and AOC-68 consists of a drainage ditch along the east side and adjacent surface areas along the north and west sides of Building 90-2 (the former abrasive cleaner [Wheelabrator] site). AOC-67 is approximately 20 feet north-northeast of AOC-68. Both sites are close to Building 90, which is used for ordnance maintenance operations. AOC-67 is approximately 75 feet east of Building 90 and AOC-68 is approximately 22 feet east of Building 90. AOCs-67/68 are approximately 260 feet from the western boundary of CSSA and 2,470 feet from the southern boundary of CSSA.

Concentrations of chemicals detected in soil samples do not exceed Tier 1 residential soil action levels. Soils that were found to have metals (lead, cadmium, and nickel) concentrations above their PCLs have been excavated and removed from the site.

There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at AOCs-67/68. Since soils that were found to have concentrations of metals above their PCLs have been excavated/removed, there will be no impact to groundwater, surface water, or sediment in the area. Inorganic groundwater contamination has not been reported in the closest wells to AOCs-67/68. It is also unlikely that any drainage from AOCs-67/68 is discharged to any surface water, because none are present downgradient or in any other direction of possible drainage from AOCs-67/68.

Additionally, several surveys have been conducted at CSSA for 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]. AOCs-67/68 are not located within BCVI or GCWA habitat. 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.**
- **Parsons, 2008. *Final Species and Habitat Distributions of Black-Capped Vireos and Golden-Cheeked Warblers, 2007 Breeding/Nesting Season*. Prepared for Camp Stanley Storage Activity, Boerne, Texas. March 2008.**

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 ☐ No **Subparts C and D skipped based on answers to Subparts A and B.**

Explain:

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 **Subparts C and D skipped based on answers to Subparts A and B.**

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: Lea Aurelius, P.G. *(Typed/Printed Name)*

Senior Scientist / Senior Risk Assessor *(Title)*

July 1, 2010 *(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)

July 1, 2010 *(Date Signed)*