

FINAL WORK PLAN

Contract No. DACA87-02-D-0005
Task Order No. DY01



Prepared for:

**Camp Stanley Storage Activity
Boerne, Texas**

Prepared by:

PARSONS

Austin, TX

September 2007

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ACRONYMS AND ABBREVIATIONS

2,4-DNT	2,4-Dinitrotoluene
APAR	Affected Property Assessment Report
AOC	Area of concern
CESWF	Corps of Engineers Fort Worth District
CFR	Code of Federal Regulations
COC	Constituent of concern
CSSA	Camp Stanley Storage Activity
DQO	Data quality objective
DVR	Data validation report
EE	Environmental encyclopedia
GIS	Geographic Information System
IDW	Investigation-derived waste
IM	Interim measures
NOR	Notice of Registration
PCB	Polychlorinated biphenyls
PCL	Protective concentration limit
PIMS	Phosphate induced metals stabilization
QA/QC	Quality assurance/quality control
QAPP	Quality assurance project plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RIR	Release investigation report
SLERA	Screening level ecological risk assessment
SWMU	Solid waste management unit
SVOC	Semi-volatile organic compound
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TO	Task order
TPH	Total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TRRP	Texas Risk Reduction Program
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UXO	Unexploded ordnance
VOC	Volatile organic compound
WMP	Waste management plan

1.0 INTRODUCTION

Parsons is under contract with the U.S. Army Corps of Engineers (USACE), Fort Worth District (CESWF) to provide investigations at hazardous waste sites and environmental services under COE Contract DACA87-02-D-0005 as Task Order (TO) DY01. Services will be provided for Camp Stanley Storage Activity (CSSA) at the facility located in Boerne, Texas. The work shall be 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 (30 TAC) §350, the Texas Risk Reduction Program (TRRP).

This work plan provides the activities to be conducted to complete the requirements of the scope of work in effect for TO DY01. Existing work plans for current and previous CSSA TOs fulfilled by Parsons are in effect and are available in the CSSA Environmental Encyclopedia, [Volume 1, Work Plans](#). Activities to be conducted for TO DY01 will follow the provisions of those prior work plans. This work plan sets out project-specific activities directly related to TO DY01.

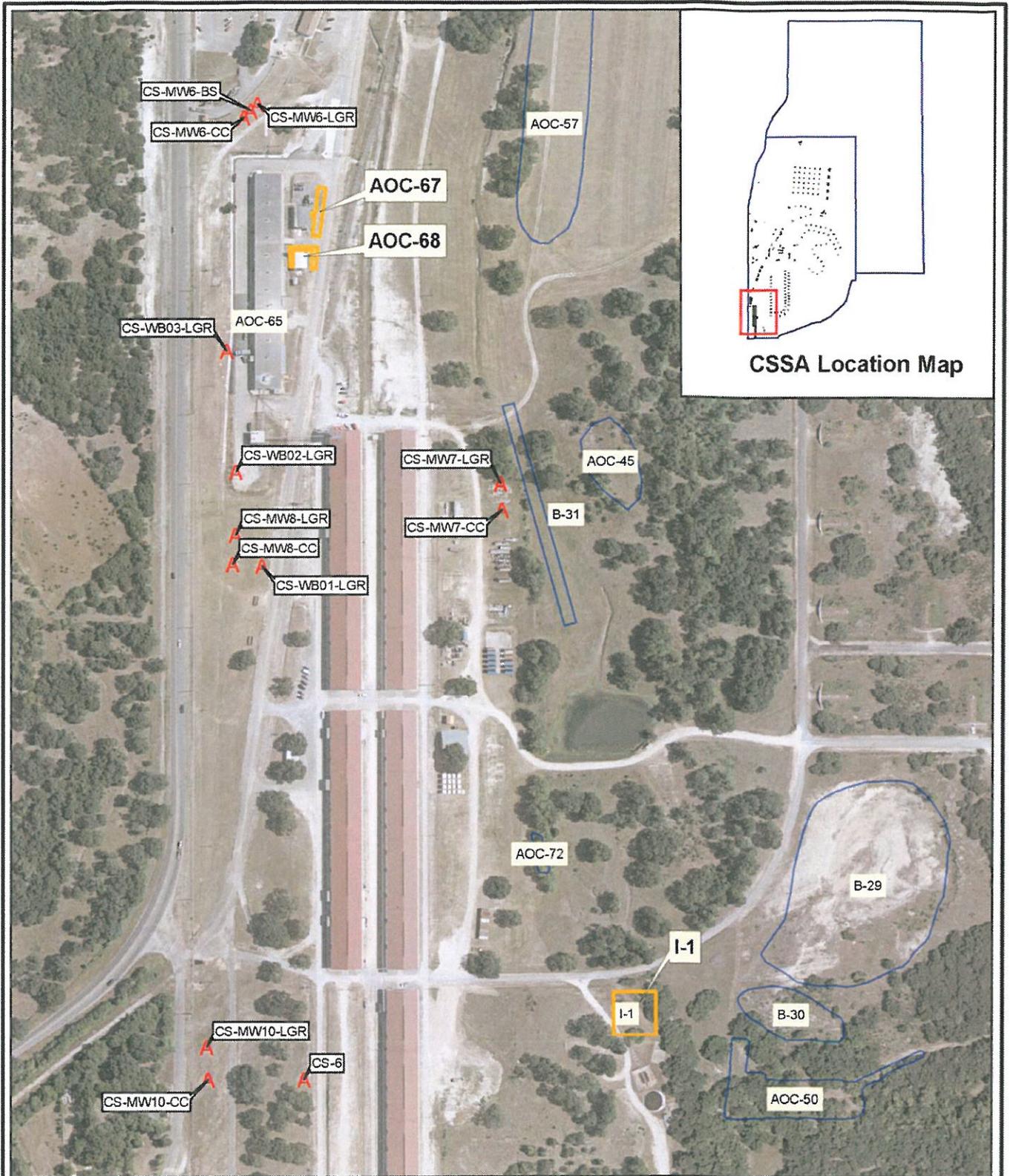
2.0 TO DY01 SCOPE OF WORK

The activities covered by this work plan include investigation and characterization of select solid waste management units (SWMUs) and areas of concern (AOC), and the preparation of appropriate documentation. Investigations and characterizations will generally include soil sampling for volatile organic compound (VOC), metals and explosive analyses, and geophysical surveys. Parsons will complete the appropriate Environmental Encyclopedia (EE) updates for reports prepared under this TO, publish the reports to the EE website, prepare changes and updates to the CSSA geographic information system (GIS), provide agency meeting support, and Title 2 oversight support. Detailed information regarding previous investigations at each of the subject sites are described in the CSSA Environmental Encyclopedia (Volume 3-3, [Investigation and Closure Reports Table of Contents](#)).

2.1 FIELD INVESTIGATIONS

Field work is anticipated to be initiated in the months of October and November 2007. The sites to be investigated are located in the inner cantonment (SWMU I-1, AOC-67, and AOC-68) [Figure 2-1] and in the north pasture (SWMUs B-2, B-8, B-20/21, and B-24) [Figure 2-2]. I-1 and AOC-67/68 are not anticipated to require APARs and will stand alone for reporting purposes. B-2, B-8, B-20/21, and B-24 are planned to be addressed and combined into one APAR.

Sampling will be conducted utilizing the CSSA Field Sampling Plan procedures with exceptions as appropriate for specific site conditions. The field team will follow the methods established in the [CSSA Quality Assurance Program Plan](#) (QAPP) (Parsons, 2002), the [RFI and Interim Measures Waste Management Plan](#) (WMP) (Parsons, 2006), the [CSSA Field Sampling Plan](#), (Parsons, 1996) and the site-specific Sampling and Analysis Plan (SAP) for this TO DY01.



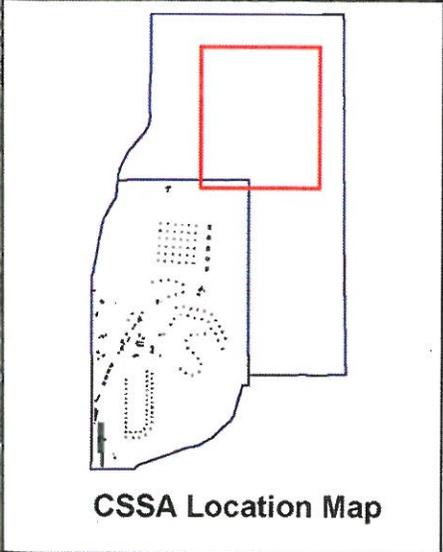
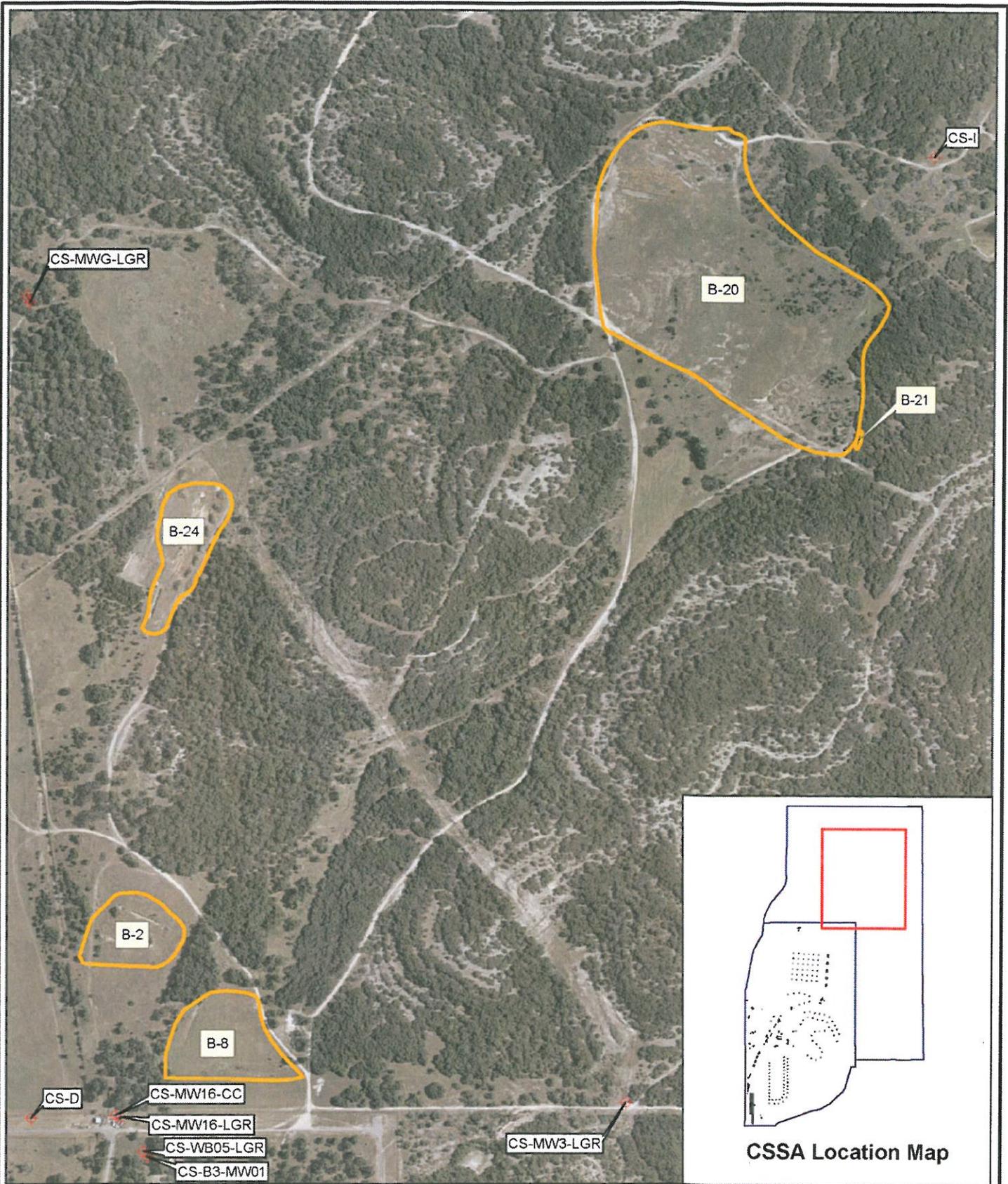
CSSA Location Map

Figure 2-1

Inner Cantonment
Site Investigations
Camp Stanley Storage Activity

Parsons





CSSA Location Map

Figure

North Pasture
 Site Investigations
 Camp Stanley Storage Activity

PARSONS



0 380 760 1,140 1,520 Feet

⊕ Wells
 □ Current Investigation Sites

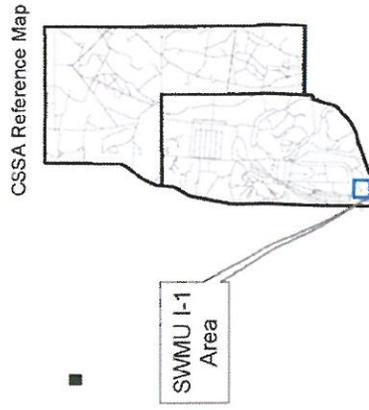
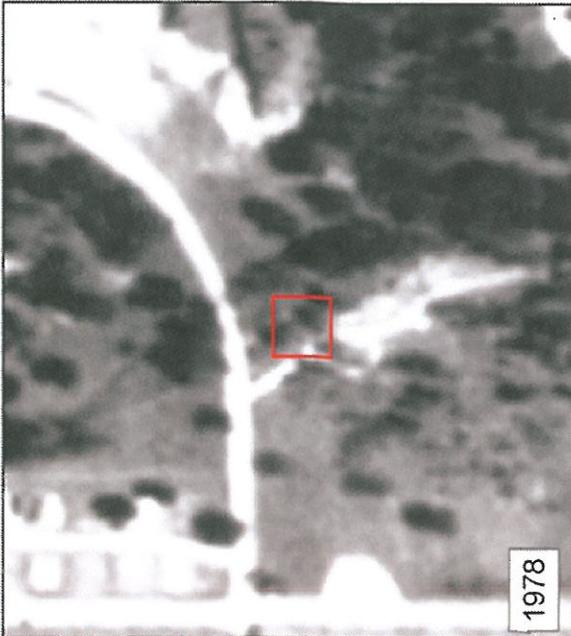


Figure 2-3
SWMU I-1
Aerial Photographs
Camp Stanley Storage Activity
Parsons

200 100 0 200 Feet
Scalebar for Aerial Photographs

In March 2000, three soil borings were advanced and soil/rock samples were obtained at three discrete intervals from each boring. The borings were drilled adjacent to the I-1 building, where contamination would be expected to have been transmitted should a release have occurred within the I-1 building. The soil boring samples were analyzed for VOCs, arsenic, cadmium, lead, mercury, barium, chromium, copper, nickel, and zinc. A total of nine environmental samples, two field duplicates, one equipment blank, two trip blanks, one matrix spike, and one spike duplicate were submitted for analyses. At the time of sampling, no discernable evidence of contamination was noted during the sampling activities. As shown in Table 2-1, none of these samples exceed soil action levels (0.5-acre Tier 1 residential protective concentration levels [PCLs]).

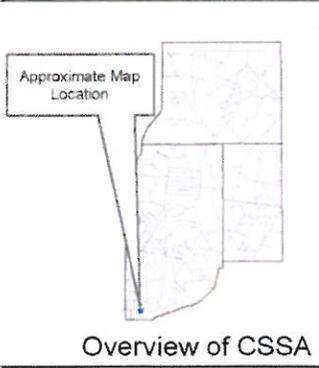
Three surface samples collected from SWMU I-1 were analyzed for PCBs as shown in Table 2-2. No PCBs were detected in the samples at a method detection limit of 0.001 mg/kg. Based on analytical results of the soil samples, the SWMU I-1 area does not exceed soil action levels. Sample locations are shown on Figure 2-4.

One swipe sample was taken in the interior of Building 294 and analyzed for dioxins and furans as shown in Table 2-3. The surface wipe sample analytical results indicate very slight presence ($<0.05 \text{ ng/cm}^2$) of total hepta chloro dibenzodioxin (H_pCDD_s) and total hepta, hexa, peca, and tetra chloro dibenzofurans. There are no applicable state of federal comparison criteria for swipe samples, but their presence was confirmed within the building interior by the swipe sample.

2.1.1.3 Work to be Completed

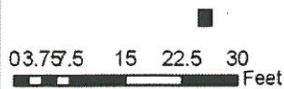
Soil samples did not exceed soil action levels (0.5-acre Tier 1 residential PCLs) at SWMU I-1. A release investigation report for SWMU I-1 (area outside the building) will be submitted to TCEQ with a request for approval of no-further-action status. In accordance with TCEQ guidance, an RIR may be submitted when the results of an investigation led to a conclusion that the concentration of chemicals of concern did not exceed Tier 1 residential assessment levels and there is no evidence of other affected media. An APAR form is only required when the investigation results are equal or exceed Tier 1 residential assessment levels. The RIR will document the previous investigation and will provide justification for no-further-action.

Although the interior of Building 294 is not regulated, the concrete floor will be sampled using a drill and powder sample preferred by the EPA. Five samples (proposed locations on Figure 2-4) will be composited into one sample and analyzed for PCBs. Even though the interior of Building 294 is not subject to TRRP as a release, the analytical results will be compared to Toxic Substances Control Act (TSCA) waste disposal criterion of 1 ppm to demonstrate no contamination exists; and, therefore, no waste residue is present. A summary report with results of all previous investigations will be kept on file at the CSSA Environmental Office. The RIR will be prepared following the analysis results of the chip samples.



Aerial Photo Date: 2003

- Proposed composite sample locations
- Previous soil sample locations



No 0.5-Acre Tier 1 residential assessment level exceedances

Figure 2-4
SWMU I-1
Sample Location Map
Camp Stanley Storage Activity
Parsons

Table 2-2
 Summary of Chemical Constituents Detected in Soils, April 2000
 SVWMU I-1

Res SurfSoil PCL	Res SurfSoil PCL Source	Lab		Sample ID		Sample Date		Sample Type	Beginning Depth	Ending Depth	Lab ID	Result	Flags
		RL	MDL	11-SS01	11-SS02	11-SS03	27-Apr-00						
SW8082 (mg/kg)													
Atroclor 1016	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U
Atroclor 1221	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U
Atroclor 1232	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U
Atroclor 1242	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U
Atroclor 1248	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U
Atroclor 1254	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U
Atroclor 1260	1.135944 R05acr_Tot_Soil_Comb	0.7	0.001	ND	0	U	ND	0	U	ND	0	U	U

Notes and Abbreviations

This table presents laboratory results for analytes detected over the method detection limit; no results exceeded the Tier 1 0.5-acre residential assessment level.
 Surface soil for residential land use is from 0 to 15 ft.

All samples were analyzed by APPL, Inc.

MDL - Method detection limit (SQL)

RL - Reporting limit (MQL)

ND - Not detected

Table 2-3
Summary of Chemical Constituents Detected in Surface Wipe Sample, March 2001
SWMU I-1

Sample ID		I-1-WIPE 1		
Sample Date		03/21/01		
Normal or Field Dup		N		
Matrix (Swipe)		SW		
Lab Sample ID		285-88-2		
Run Number		1		
		Results	Flags	Dilution
SW8290 (ng/cm ²)	1,2,3,4,6,7,8-HpCDD	0.01	F	1
	1,2,3,4,6,7,8-HpCDF	0.008	F	1
	1,2,3,4,7,8,9-HpCDF	0.005	U	1
	1,2,3,4,7,8-HxCDD	0.004	U	1
	1,2,3,4,7,8-HxCDF	0.01	F	1
	1,2,3,6,7,8-HxCDD	0.004	U	1
	1,2,3,6,7,8-HxCDF	0.004	F	1
	1,2,3,7,8,9-HxCDD	0.003	U	1
	1,2,3,7,8,9-HxCDF	0.003	U	1
	1,2,3,7,8-PeCDD	0.003	U	1
	1,2,3,7,8-PeCDF	0.005	J	1
	2,3,4,6,7,8-HxCDF	0.002	U	1
	2,3,4,7,8-PeCDF	0.007	F	1
	2,3,7,8-TCDD	0.003	U	1
	2,3,7,8-TCDF	0.02	F	1
	HpCDDs (total)	0.01		1
	HpCDFs (total)	0.008		1
	HxCDDs (total)	0.003	U	1
	HxCDFs (total)	0.02		1
	OCDD	0.02	F	1
	OCDF	0.01	U	1
	PeCDDs (total)	0.003	U	1
	PeCDFs (total)	0.05		1
	TCDDs (total)	0.003	U	1
	TCDFs (total)	0.11		1

All samples were analyzed by Triangle Laboratories
Referenced laboratory package number: 53443

Notes:

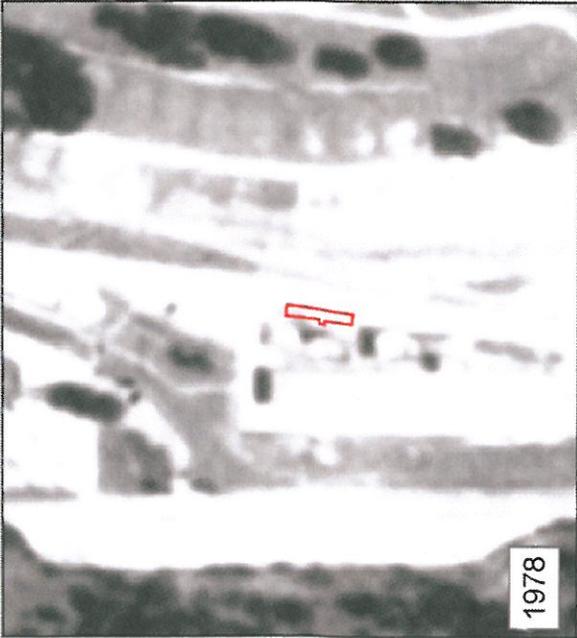
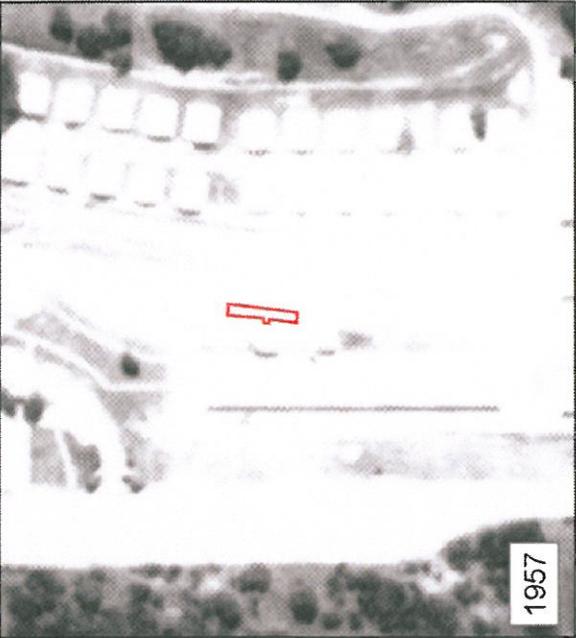
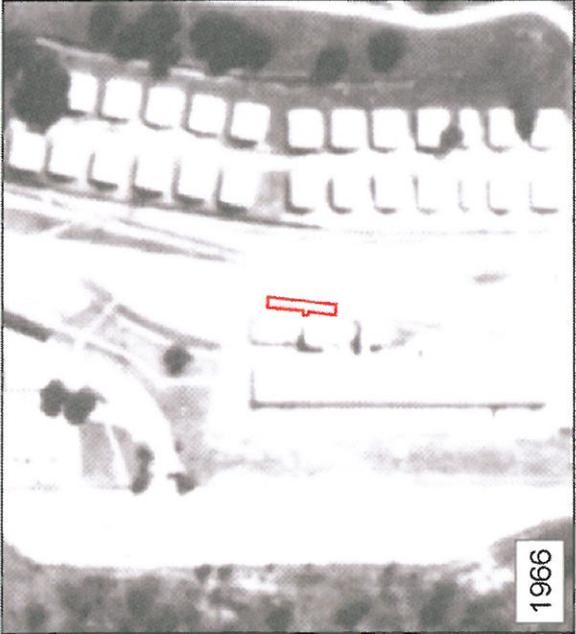
ng/cm² - nanograms per square centimeter

Data Qualifiers:

F- The analyte was positively identified, but the associated numerical value is below the RL.

J- The analyte was positively identified, the quantitation is an estimation.

U - The analyte was analyzed for, but not detected. The associated numerical value is the MDL.



CSSA Reference Map



AOC 67 Area

Figure 2-5

AOC 67

Aerial Photographs

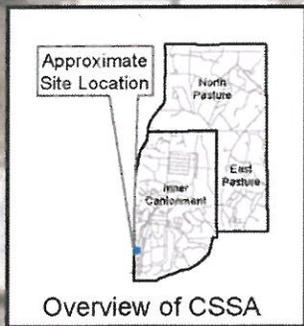
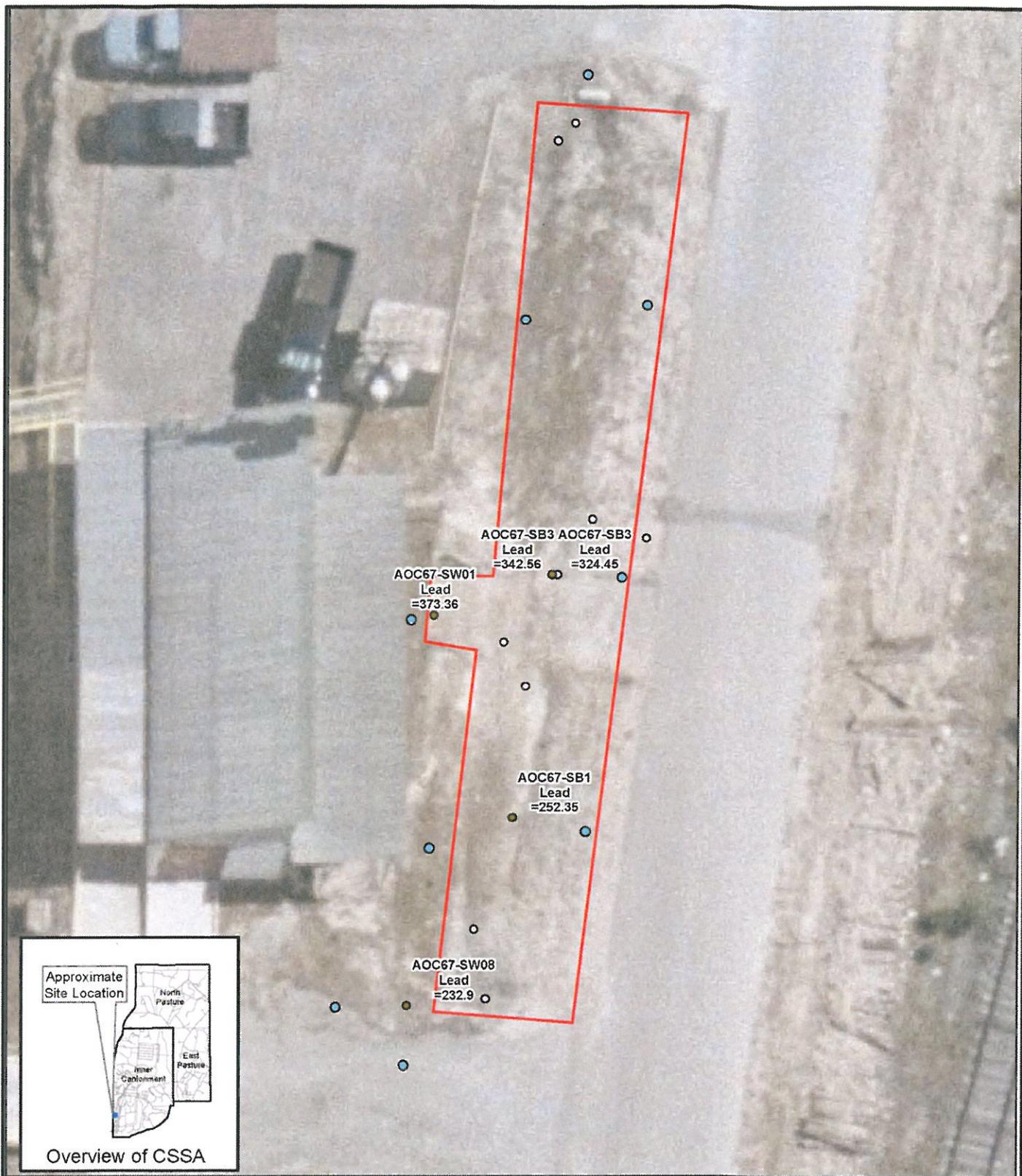
Camp Stanley Storage Activity

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200 100 0 200 Feet

Scale bar for Aerial Photographs

C:\Users\matt\Documents\AOC67\Aerial_Photos.mxd



- AOC-67 Boundary
 - Detected conc > 0.5-Acr Res PCL
 - Sample Points < 0.5-Acr Res PCL
 - Proposed sample locations for lead
- All concentrations mg/kg*

0 5 10 20
Feet

Figure 2-6

AOC-67
Sample Location Map
Camp Stanley Storage Activity

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Table 2.4
AOC 67 Summary of Detected Constituents
April 2001

Constituent	Res Surf/Soil PCL		Res Subsoil PCL		Soil Comparison Criteria		AOC-67-SB01		AOC-67-SB02		AOC-67-SB03		AOC-67-SB04					
	Res PCL	Surf/Soil	Res PCL	Subsoil	Res Subsoil PCL	Source	Lab MDL	Lab RL	Results	Flags	Dil	Results	Flags	Dil	Results	Flags	Dil	
Barium	443.8523	R05acr_GW_Soil_Inq	443.8523	R05acr_GW_Soil_Inq	0.08	1.0	29.97 J	1	4.59 J	1	4.73 J	1	82.50 M	1	218.26 M	1	9.60 J	1
Chromium	2400.102	R05acr_GW_Soil_Inq	2400.2	R05acr_GW_Soil_Inq	0.1	20	50.0	1	4.6 F	1	3.9 F	1	47.0	1	52.9	1	8.8 F	1
Copper	547.8895	R05acr_GW_Soil_Inq	1042.491	R05acr_GW_Soil_Inq	0.19	2.0	13.27 J	1	1.79 F	1	2.27 J	1	31.77 M	1	11.95 M	1	8.84	1
Nickel	157.3053	R05acr_GW_Soil_Inq	157.2653	R05acr_GW_Soil_Inq	0.12	2.0	6.97	1	2.11	1	2.04	1	9.15 J	1	9.86 J	1	11.28 J	1
Zinc	2360.479	R05acr_GW_Soil_Inq	2360.5	R05acr_GW_Soil_Inq	0.63	5.0	61.49	1	4.43 F	1	3.92 F	1	108.77 J	1	148.08 J	1	6.61 J	1
Arsenic	19.6	Background	19.6	Background	0.04	0.5	2.73	1	0.04 U	1	0.2 F	1	1.19 J	1	2.40 J	1	3.57 J	1
SW737A (mg/kg)	1.509581	R05acr_GW_Soil_Inq	1.51	R05acr_GW_Soil_Inq	0.01	0.1	0.95 J	4	0.08 F	1	0.04 F	1	1.35 M	10	1.38 M	5	0.05 F	1
SW7424 (mg/kg)	84.5	Background	84.5	Background	0.13	0.5	252.35	200	1.89	1	1.8	1	342.56 M	100	324.45 M	100	3.85 J	1
SW7471A (mg/kg)	0.04	Background	0.04	Background	0.01	0.1	0.02 F	1	0.01 U	1	0.01 U	1	0.01 U	1	0.02 F	1	0.01 U	1
SW8260 (mg/kg)	0.01907543	R05acr_GW_Soil_Inq	0.0190754	R05acr_GW_Soil_Inq	0.0007	0.005	0.0007 U	1	0.0020 F	1	0.0007 U	1	0.0017 F	1	0.0046 F	1	0.0063 J	1
Naphthalene	31.24623	R05acr_GW_Soil_Inq	31.24623	R05acr_GW_Soil_Inq	0.001	0.02	0.001 U	1	0.001 U	1	0.001 U	1	0.001 M	1	0.001 M	1	0.002 F	1
Toluene	8.210392	R05acr_GW_Soil_Inq	8.210392	R05acr_GW_Soil_Inq	0.0003	0.005	0.0003 U	1	0.0003 U	1	0.0003 U	1	0.0003 U	1	0.0003 U	1	0.0005 F	1
SW8270 (mg/kg)	43.15708	R05acr_Tol_Soil_Comb	163.5216	R05acr_GW_Soil_Inq	0.03	0.7	0.21 F	1	0.84 F	1	0.15 F	1	0.10 F	1	0.12 F	1	0.24 F	1
Chrysene	590.6287	R05acr_Tol_Soil_Comb	1545.337	R05acr_GW_Soil_Inq	0.04	0.7	0.05 F	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1
D-n-butylphthalate	3317.491	R05acr_GW_Soil_Inq	3317.491	R05acr_GW_Soil_Inq	0.04	0.7	0.05 F	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1
Fluoranthene	1917.250	R05acr_GW_Soil_Inq	1917.250	R05acr_GW_Soil_Inq	0.04	0.7	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1
Naphthalene	31.24623	R05acr_GW_Soil_Inq	31.24623	R05acr_GW_Soil_Inq	0.04	0.7	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1	0.04 U	1
Pyrene	1116.515	R05acr_GW_Soil_Inq	1116.515	R05acr_GW_Soil_Inq	0.05	0.7	0.07 F	1	0.05 U	1	0.05 U	1	0.05 U	1	0.05 U	1	0.05 U	1

Tables present all laboratory results for analytes detected above the method detection limit. Results from all laboratory analysis are presented in appendix A. All samples were analyzed by APPL Inc. Reference laboratory package numbers: APPL Inc. 34953, 34956.

- Abbreviations/Notes:
 H: High School
 R: Residential
 S: Surface
 G: Groundwater
 W: Waste
 I: Infiltration
 C: Commercial
 T: Traffic
 B: Background
 J: Judgment
 M: Method
 F: Field
 U: Unavailable
 DL: Detection Limit
 MDL: Method Detection Limit
 N1: Environmental Sample
 RL: Reporting Limit

Data Qualifiers:
 B: The analyte was found in an associated blank, as well as in the sample.
 F: The analyte was positively identified but the associated numerical value is below the RL.
 J: The analyte was positively identified, but the associated numerical value is below the RL.
 U: The analyte was not positively identified, but the associated numerical value is below the RL.

**Table 2.5
Summary of Detected Constituents, March - April 2004
AOC-67**

Sample ID	Sample Date	Sample Type	Beginning Depth	Ending Depth	Lab ID	Soil Comparison Criteria		AOC67-EOT01		AOC67-SW61		AOC67-SW03		AOC67-SW04 DUP		AOC67-SW06		AOC67-SW07		AOC67-SW08																							
						Res Surf/Soil PCL	Res Surf/Soil PCL Source	Lab MDL	Lab RL	Results	Flags	Dil	Results	Flags	Dil	Results	Flags	Dil	Results	Flags	Dil	Results	Flags	Dil	Results	Flags	Dil																
						03/09/04	N1	0	0	0.5	AP66615	AP66616	03/09/04	N1	0	0	0.5	AP66618	03/09/04	N1	0	0	0.5	AP66620	04/28/04	N1	0	0	0.5	AP69121	04/28/04	N1	0	0	0.5	AP69121	05/11/04	N1	0	0	0.5	AP69121	
SW6010B (mg/kg)	Barium	443.8323	R05acr_GW_Soil_Ing	0.08	1.0	28.68	M	1	45.68	M	1	19.86	M	1	22.93	M	1																										
	Chromium	2400.192	R05acr_GW_Soil_Ing	0.1	20	21.3	M	1	102.1	M	1	11.70	M	1	12.30	M	1																										
	Copper	547.8895	R05acr_GW_Soil_Ing	0.19	2.0	4.30	M	1	11.49	M	1	2.94	M	1	3.09	M	1																										
	Zinc	2360.479	R05acr_GW_Soil_Ing	0.63	5.0	39.05	M	1	91.85	M	1	15.85	M	1	20.27	M	1																										
SW7421 (mg/kg)	Lead	64.5	Background	0.13	0.5	77.21		20	373.36		100	65.23		20	37.16		20	13.32		5	32.22		10	232.9		M	50																
	Naphthalene	51.24623	R05acr_GW_Soil_Ing	0.0010	0.002	0.0046	F	1	0.0026	F	1	0.0010	U	1	0.0010	U	1																										
SW8260B (mg/kg)	Methylene chloride	0.0130754	R05acr_GW_Soil_Ing	0.0013	0.005	0.0237		1	0.0013	U	1	0.0013	U	1	0.0013	U	1																										

Tables present all laboratory results for analytes detected above the method detection limit.
 All samples were analyzed by APPL Inc.
 Referenced laboratory package numbers: 43920

Abbreviations and Notes:

- H - Highlighted samples indicate results greater than TRRP Tier 1 0.5-acre human health residential assessment levels.
- R - Residential land use surface soil = 0 to 15 ft
- Dil - Dilution
- FD1 - Field Duplicate
- MDL - Method Detection Limit
- N1 - Environmental Sample
- RL - Reporting Limit

Data Qualifiers:

- B - The analyte was found in an associated blank, as well as in the sample.
- F - The analyte was positively identified, but the associated numerical value is below the RL.
- J - The analyte was positively identified, the quantitation is an estimation.

2.1.2.3 Work to be Completed

Delineation and confirmation sampling will be performed to ensure that no lead contamination remains at the site. Any observed visual potential contamination will be removed prior to sampling. Nine surface soil samples will be collected at proposed locations shown in Figure 2.6 and analyzed for lead. Because the ecological exposure pathway is incomplete, a Tier 1 exclusion criteria checklist will be included in the RIR which will include AOC-67 and AOC-68.

2.1.3 AOC-68

As an overview, AOC-68 is a drainage ditch south of AOC-67 and near the former Wheelabrator operations building. There have been no previous investigations. By visible inspection, a limited removal action will be performed, and then surface samples will be collected to confirm no affected soils remain. A RIR will be prepared including both AOC-67 and AOC-68 as these sites have similar characteristics and are in the same industrial area.

2.1.3.1 Background

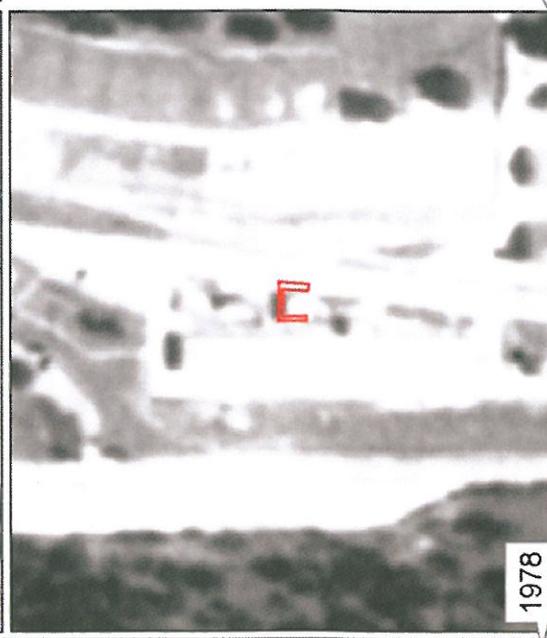
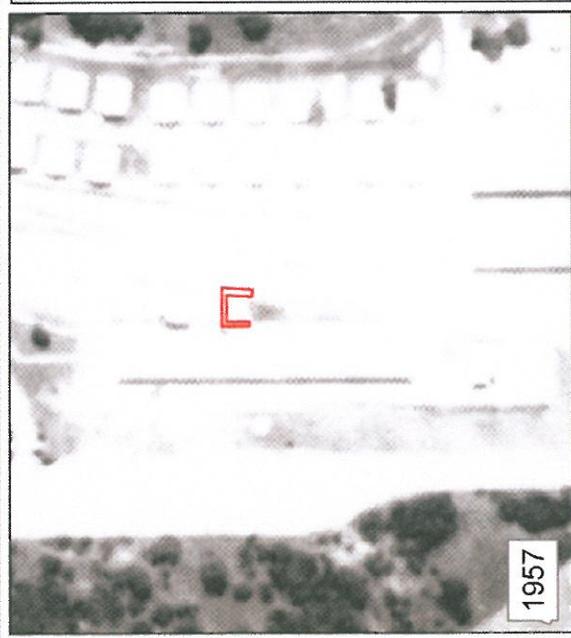
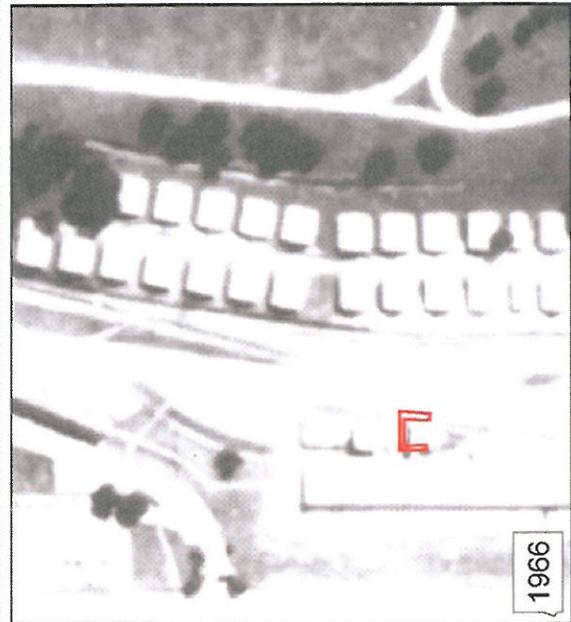
AOC-68 is a drainage ditch approximately 40 feet south of AOC-67 and is also less than 0.5 acres in size. AOC-68 was identified as the area where deposits of metal debris (dust) has accumulated outside of Building 90-2. Based on prior usage at the site as a storage area for metal slag/debris from Wheelabrator operations, chemicals of potential concern include metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel and zinc) Explosives are not included at this site since no evidence of ammunition has been found and the characteristics are expected to be the same as AOC-67. A series of historical aerial photos of the AOC-68 area is shown in Figure 2-7.

2.1.3.2 Previous Investigations and Findings

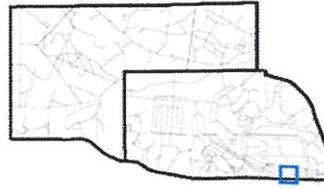
There have been no previous investigations at AOC-68.

2.1.3.3 Work to be Completed

Removal of visible metal slag/debris and associated surface soil, if deemed necessary. Six surface soil samples will be collected at AOC-68 and will be located so as to properly delineate and confirm that any potential contamination was removed, see Figure 2-8. The samples will be analyzed for VOCs, SVOCs, and CSSA's nine metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, zinc). A RIR will be prepared including both AOC-67 and AOC-68. Because these sites are in an industrial land use type and no further ecological evaluation is warranted, a Tier 1 ecological exclusion criteria checklist will be completed in lieu of an ecological risk assessment.



CSSA Reference Map



AOC 68 Area

Figure 2-7

AOC 68

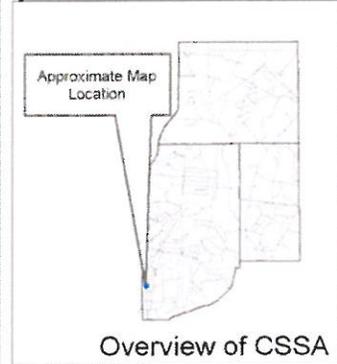
Aerial Photographs

Camp Stanley Storage Activity

Parsons

200 100 0 200 Feet

Scale bar for Aerial Photographs



Aerial Photo Date: 2003

- AOC-68 Boundary
- Proposed Soil Sample Locations

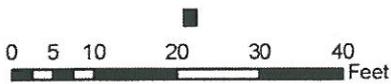


Figure 2-8

AOC-68
Sample Location Map
Camp Stanley Storage Activity

Parsons

2.1.4 SWMU B-2

SWMU B-2 was reportedly used as a burn site during 1954. Two trenches were observed at this site on aerial photographs. Soil mounds were present on the two ends of the trenches. These trenches were apparently used for burning small arms and small arms ammunition. A series of historic aerial photos are shown in Figure 2-9.

The southern trench was approximately 215 feet long and the northern trench was approximately 250 feet long, both oriented east to west. Both trenches were about 12 feet across. When closure activities were initiated in 2003, the southern trench was approximately 12 feet deep, and the northern trench was approximately 5 feet deep. During the field closure activities, an additional smaller, shallow trenched area was located to the north of the northern trench previously identified.

Additional background information regarding the location, size, and known historical use of SWMU B-2 is included in the **Environmental Encyclopedia (Volume 1-2, SWMU B-2)**.

2.1.4.1 Summary of Proposed Work

Investigations began at SWMU B-2 in 1995 with a soil gas survey. Soil borings were also drilled and sampled in 1995. In 1997, excavation of the trenches was initiated to determine if the buried waste included munitions. Some munitions debris was encountered, but excavation had to be suspended due to funding limitations. Excavation recommenced in 2003, with the intent of removing and disposing of all waste and closing the site to Risk Reduction Standard 1 (RRS1) criteria. All of the waste material was removed from the trench, but some surface soil analytical results still exceeded RRS1 criteria, preventing closure of the site under RRS1 before the grandfather period ended on 1-May-2005. Work planned for this site includes surface soil sampling, with possible limited removal action, and an ecological risk assessment (upon funding of Option 1 in SOW). A combined draft APAR will be completed for the north pasture sites.

2.1.4.2 Previous Investigations and Findings

Previous investigations conducted at SWMU B-2 included two geophysical surveys, subsurface soil and groundwater sampling, a soil gas survey, and excavation activities conducted to identify, investigate, and cleanup at SWMU B-2.

Electromagnetic (EM) and ground penetrating radar (GPR) geophysical surveys were conducted at the site in February and March 1995. The EM and GPR surveys identified five geophysical anomalies potentially related to past waste management activities. Three of the anomalies were adjacent to the two linear trenches, and two additional anomalies were situated to the north of the two trenches. During closure activities, two additional disposal areas, north of the northern trench were identified.

Soil Gas Survey — 1995

In June 1995, a soil gas survey was conducted at SWMU B-2 to test for VOCs. The soil gas survey collected samples from 20 sample points arranged in a grid within the SWMU B-2 boundary. Numerous soil gas samples were collected from the areas associated with each of the geophysical anomalies. In all samples collected, the only VOC detected was PCE at concentrations less than 1 microgram per liter ($\mu\text{g/L}$). Due to the very low concentrations of PCE detected in soil gas, the proximity of the groundwater PCE plume associated with SWMUs B-3 and O-1, and the lack of PCE detections in soil borings at the site, these low PCE concentrations detected in soil gas at SWMU B-2 are presumed to be associated with groundwater contamination in the vicinity of Well CS-MW16.

Soil Boring Sampling — 1995

Soil samples were collected from five soil borings drilled to a depth of 30 feet below ground level in March 1995. The borings were drilled on the edges of the two trenches known at the time to determine the extent of potential contamination and any potential releases associated with the trenches. In all of these borings, except B2-SB04, limestone was encountered at a depth of only one foot. Surface soil, subsurface rock, and two borehole groundwater samples were collected for analysis of metals, VOCs, and SVOCs.

Boring B2-SB01 was completed adjacent to a geophysical anomaly on the south side of the southern trench, and B2-SB02 was completed on the north side of the southern trench at SWMU B-2. None of the samples from these two borings contained contaminants of concern in concentrations above background concentrations. The remaining three borings were advanced adjacent to the northern trench. B2-SB03 and B2-SB05 were south of the northern trench, and B2-SB04 was to the northeast of the northern trench, between the areas of the geophysical anomalies. Thin metal wire was recovered from less than 6 feet below ground surface (bgs) in boring B2-SB04.

As mentioned in the June 2002 SWMU B-2 RFI Report, concentrations of lead and cadmium were identified in groundwater collected from one soil boring at SWMU B-2, B2-SB3. However, these metals concentrations are below Tier 1 PCLs for residential Class 3 groundwater.

UXO Investigation — 1997

Because previous field investigations had identified possible UXO in the linear trenches at SWMU B-2, in September 1997, the two linear trenches at SWMU B-2 were excavated by UXO specialists. The lateral extent of the disturbed area to be excavated was determined based on site investigations and the use of a Schonstedt metal detector. The southern and northern trenches were identified to be approximately 215 feet and 250 feet in length, respectively, and approximately 12 feet wide. The northern trench was only approximately 5 feet deep, and the southern trench was approximately 12 feet deep.



Figure 2-10
 SWMU B-2
 Sample Location Map
 Camp Stanley Storage Activity

- Surface Soil Results ≥ 30-Acr Residential Human Health PCL
- Soil Results < 30-Acr Residential Human Health PCL
- Proposed sample locations

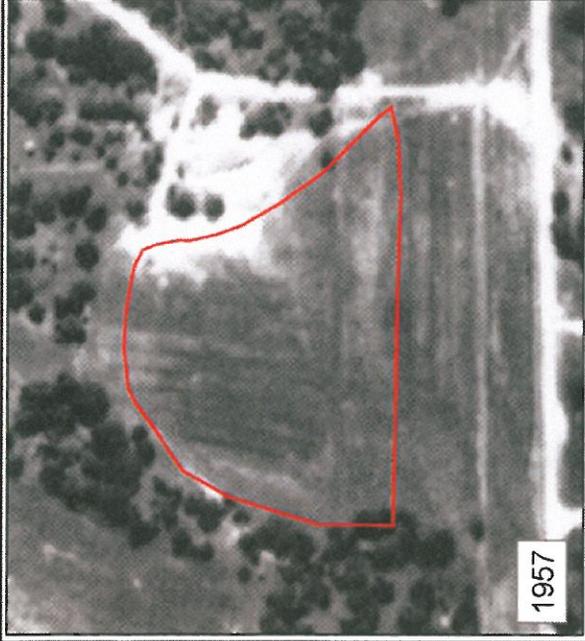
0 30 60 120 180 240 Feet

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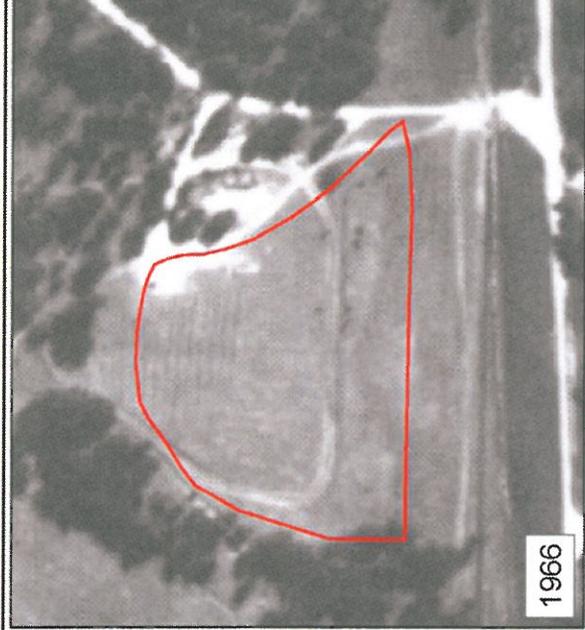
Overview of CSSA

Aerial Photo Date: 2003

Approvable Map Location



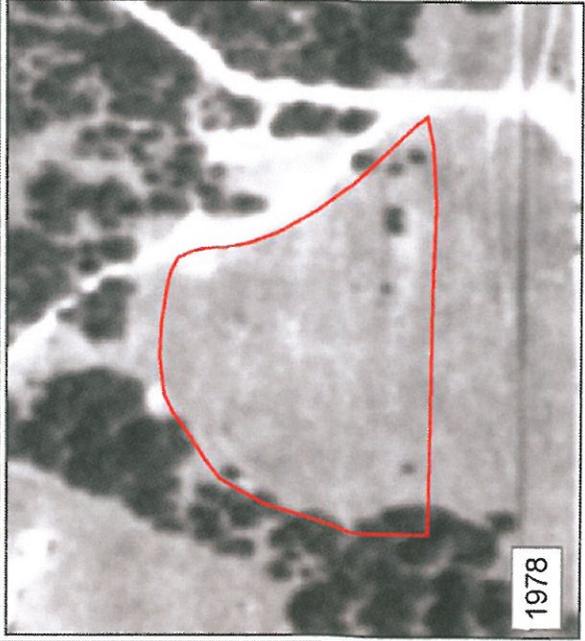
1957



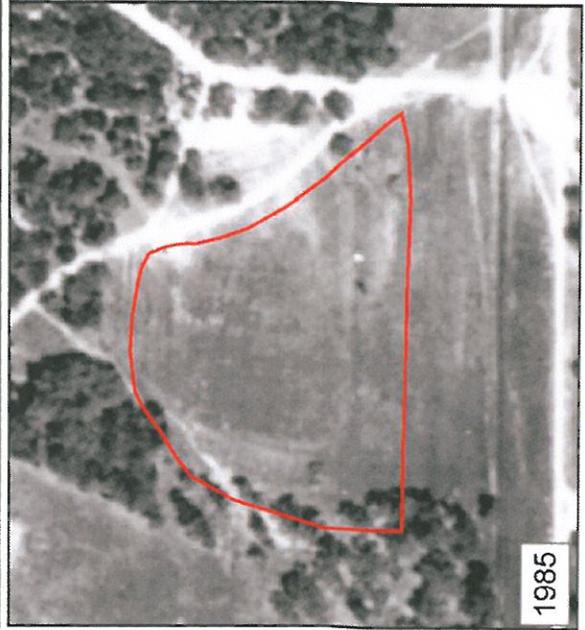
1966



2003



1978



1985

CSSA Reference Map



SWMU B-8 Area

Figure 2-11
SWMU B-8
Aerial Photographs
Camp Stanley Storage Activity
Parsons

200 100 0 200 Feet
 Scalebar for Aerial Photographs
 © 2003 Environmental Design Group, Inc.

2.1.5.1 Summary of Proposed Work

As an overview, during investigations in the SWMU B-8 area, the boundaries were adjusted based on results from soil sample results, geophysical surveys and soil gas surveys. Excavations were performed as a result of geophysical surveys and waste removed. Surface soil samples have shown metals levels that exceeded RRS1 in many areas within SWMU B-8, therefore closure activities were not completed. For this effort, surface soil samples will be collected and a limited removal action may be an alternative. An ecological risk assessment (Option 1 funding) should be performed so that a draft APAR may be completed.

2.1.5.2 Previous Investigations and Findings

Geophysical Survey — 1995

In May 1995, geophysical surveys were performed within a 2,000-foot radius of Well CS-16 to locate areas potentially related to past waste disposal activities. One of these areas within the 2,000-foot radius was SWMU B-8, which was known at that time as the “North Pasture” area. Three anomalies were detected, but were not investigated at that time.

Soil Gas Survey — 1995 and 1999

Soil gas surveys were performed at CSSA in 1995 and 1999 and a detailed description of the methodology is included in the Environmental Encyclopedia (**Volume 3-1**). Between the two surveys, 51 soil gas samples were collected within the former SWMU B-8 site boundary and were analyzed for BTEX compounds (benzene, toluene, ethylbenzene, m/p/o-xylenes), PCE, TCE, and *cis*-1,2- DCE.

During the June/July 1995 soil gas survey, PCE was detected in 10 of the 11 samples at concentrations of 0.01 to 0.07 µg/L. (keep the chronology straight) During the 1999 soil gas survey, PCE was detected at the southwestern corner of the site at locations 1 and 11. Both samples had a reported concentration of 0.02 µg/L. However, these results were flagged based on the detection of PCE in blanks. See the **SWMU B-8 Soil Gas Survey Results Report** (for a concentration contour map of the 1999 PCE soil gas findings in the vicinity of SWMU B-8).

The recent and previous data collected at this site suggest that this site does not contain a source of VOC contamination. The soil gas survey data at SWMU B-8 suggest that the PCE plume associated with Well CS-16 terminates as it approaches the southern boundary of the north pasture.

Soil Boring Sampling — 2000

Three soil borings were advanced on March 24, 2000, and three samples were collected from each boring. The borings were advanced to a total depth of between 9 to 14 feet bgs. Eleven soil/rock samples (including two duplicates) were submitted for analysis. Soil borings

results for surface soils (< 15 ft bgs) were above the RRS1 criteria for metals: barium, chromium, copper, nickel, zinc, and lead.

Geophysical Survey — 2003

During May/June 2003, a geophysical survey was conducted at SWMU B-8. The survey initially focused on SWMU B-8 only, but grew to include all of the open pasture area. Five anomalies were located within the SWMU B-8 area. Excavation of these anomalies revealed wire, nails, 30-caliber casings, and 50-caliber casings. The results of the survey are presented in the Environmental Encyclopedia (**Volume 3-1, SWMU B-8 RCRA Facility Investigation Addendum Report**).

Soil Sampling — 2003

As recommended in the RFI Report, additional surface soil samples were collected in March 2003 at SWMU B-8 to define the horizontal extent of metals contamination in surface soil. Surface soil samples were analyzed for barium, chromium, copper, lead, and zinc.

Results of the surface soil samples collected in March 2003 indicated that the extent of above-background inorganic COCs had not been adequately defined. Between May 19 and 22, 2003, additional on-site soil samples were collected and analyzed for lead concentrations using Palintest field test kits for lead. Lead was detected at the highest concentrations, and the results are helpful for determining the lateral extent of contamination. The field test kits have a detection range of 50 mg/kg to 3000 mg/kg for a 500 mg sample.

Metals were detected above background in each of the surface soil samples. The highest reported concentrations for each metal are 4,355 mg/kg for barium (B8-SS06), 31.6 mg/kg for chromium (B8-SS05), 34,942 mg/kg for copper (B8-SS08), 3,607 mg/kg for zinc (B8-SS08), and 48,619 mg/kg for lead (B8-SS12). All metals except chromium exceeded RRS1 criteria.

Overall, lead concentrations were the highest of all metals that were analyzed. The lead exceedances ranged from 151.67 mg/kg in B8-SS02 to 48,619.5 mg/kg in B8-SS12, with an average of 12,045 mg/kg for all exceedances.

Because results of the March 2003 sampling indicated that the lateral extent of contamination had not yet been determined, additional surface soil sampling was conducted in May 2005. The samples containing above-background concentrations were collected primarily on the northern and western side of the SWMU.

Two confirmation samples were also collected to verify results of the previous soil sampling effort and to confirm accuracy of the field test kits. Sample location, B8-SS04, which had a laboratory reported concentration of 41,565.5 mg/kg, had a field test concentration which exceeded the field test upper limit of 3,000 mg/kg. Sample location, B8-SS12, which had a laboratory reported concentration of 48,619.5 mg/kg, had a field test concentration of 1,413 mg/kg. Possible reasons for the discrepancy in the reported levels of lead at B8-SS12 are

the depth of sample collection. Samples collected on March 5, 2003 were collected from the 0.0 ft - 0.5 ft zone, while the samples obtained in May 2005 were collected slightly deeper from the 0.5 ft - 1.0 ft zone.

2.1.5.3 Comparison to TRRP Standards

Tables 2-8 and 2-9 show results above the method detection limit for SWMU B-8. Because some samples exceeded Tier 1 residential assessment levels, Tier 2 residential levels were calculated for 30-acre GW Soil Ingestion using conservative parameters for the north pasture area and used in the decision process as an indication of site exceedances. Only three surface soil sample results exceed the preliminary Tier 2 soil action levels for lead (500 mg/kg) as shown in Figure 2-12.

2.1.5.4 Work to be Completed

Based on former analytical results obtained at SWMU B-8, the area has not been delineated, however the constituents of concern are known to be metals commonly found at CSSA. Ten surface samples are proposed at the approximate locations shown in Figure 2-12 to delineate the site horizontally. The previous soil borings had results that were nondetect at depths lower than surface soils, therefore the vertical extent has been determined.

An ecological risk assessment must be performed (after Option 1 is funded) to obtain a final critical PCL to use in the comparison process in the preparation process of the draft APAR.

2.1.6 SWMU B-20/21

SWMU B-20/21 is located in the northeast portion of the north pasture at CSSA in the outer cantonment and is comprised of approximately 35 acres. Records indicate that SWMU B-20/21 was used for demolition activities and periodically for open burning/open detonation of conventional ordnance between 1946 and 1987. During that period, ordnance was detonated, buried, and disposed of on the ground surface at the site. The site is vegetated with native grasses, isolated clusters of live oak stands, and juniper. Gravel roads form the south, west, and north boundaries of the site. A series of historical aerial photos of the B-20/21 area is shown in Figure 2-13.

2.1.6.1 Summary of Proposed Work

SWMU B-20/21 is a known burn and waste disposal site approximately 35 acres. Previously, extensive investigations and UXO removal actions have been completed. Both scrap metal and sifted soils were removed from the site. Surface soil samples will be collected and an APAR completed with the other north pasture sites.

Table 2-8
Summary of Chemical Constituents Detected in Soils, March 2000
SWMU B-8

Sample ID	Sample Date	Sample Type	Beginning Depth	Ending Depth	Lab ID	Soil Comparison Criteria		Res SurfSoil PCL Source		Res SubSoil PCL Source		Results Flags		Results Flags		Results Flags		Results Flags		
						Lab MDL	Lab RL	PCL	Res SurfSoil PCL	Res SubSoil PCL	Di	SOL	Di	SOL	Di	SOL	Di	SOL	Di	SOL
SW0108 (mg/kg)																				
Barium	5143	Tier 2	5143																	
Chromium	1200.096	R30acr_GW_Soil_Ing	1200.096																	
Copper	547.59	Tier 2	547.59																	
Nickel	79.99	R30acr_GW_Soil_Ing	79.99																	
Zinc	9921.474	R30acr_Tot_Soil_Comb	27173																	
SW7060A (mg/kg)																				
Arsenic	19.6	Background	19.6																	
SW7131A (mg/kg)																				
Cadmium	17.7	R30acr_GW_Soil_Ing	17.7																	
SW7421 (mg/kg)																				
Lead	500	R30acr_GW_Soil_Ing	2092																	
SW7471A (mg/kg)																				
Mercury	0.091	R30acr_GW_Soil_Ing	0.091																	
SW9260B (mg/kg)																				
Benzene	0.128	R30acr_GW_Soil_Ing	0.128																	
Butylbenzene N	69.67	R30acr_GW_Soil_Ing	69.67																	
Chloroform	0.597	R30acr_GW_Soil_Ing	0.597																	
Naphthalene	15.62	R30acr_GW_Soil_Ing	15.62																	
Toluene	4.195	R30acr_GW_Soil_Ing	4.195																	
Trichloroethene 1,1,2,3-	13.14411	R30acr_GW_Soil_Ing	13.14411																	
Trichloroethene 1,1,2,4-	2.3597	R30acr_GW_Soil_Ing	2.3597																	

Tables present all laboratory results for analytes detected above the method detection limit.

All samples were analyzed by ATE, Inc. and O'Brien and Gere Laboratories.

Standard laboratory package includes: AEDL Inc. 51302, 51289, 51300, 51301, 51302, 51303, 51304, 51305, 51306, 51307, 51308, 51309, 51310, 51311, 51312, 51313, 51314, 51315, 51316, 51317, 51318, 51319, 51320, 51321, 51322, 51323, 51324, 51325, 51326, 51327, 51328, 51329, 51330, 51331, 51332, 51333, 51334, 51335, 51336, 51337, 51338, 51339, 51340, 51341, 51342, 51343, 51344, 51345, 51346, 51347, 51348, 51349, 51350, 51351, 51352, 51353, 51354, 51355, 51356, 51357, 51358, 51359, 51360, 51361, 51362, 51363, 51364, 51365, 51366, 51367, 51368, 51369, 51370, 51371, 51372, 51373, 51374, 51375, 51376, 51377, 51378, 51379, 51380, 51381, 51382, 51383, 51384, 51385, 51386, 51387, 51388, 51389, 51390, 51391, 51392, 51393, 51394, 51395, 51396, 51397, 51398, 51399, 51400.

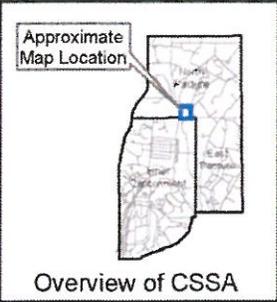
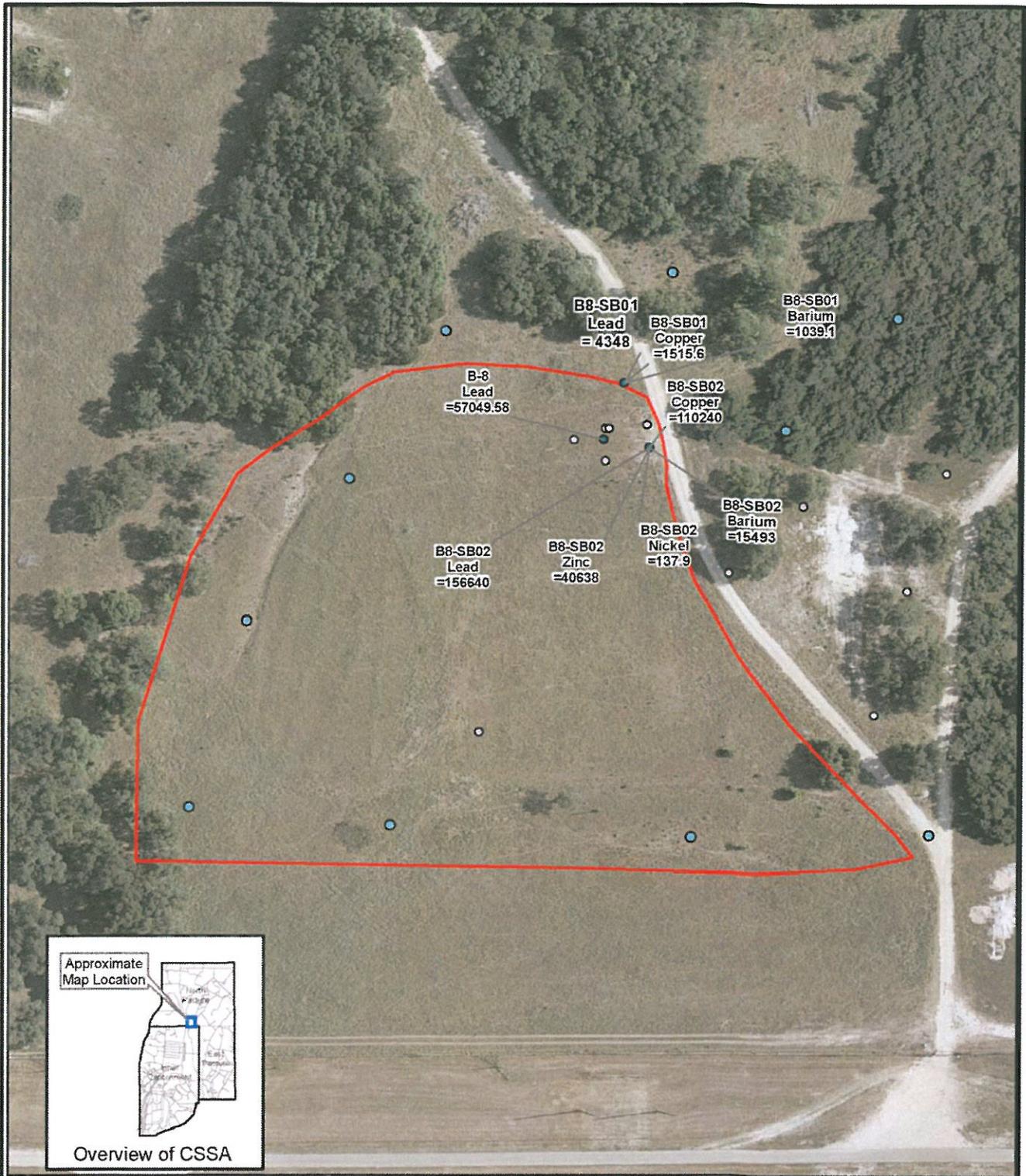
Soil type for respective soil type is: 0 to 15 ft, subsurface soil > 15 ft.

Abbreviations and Notes:

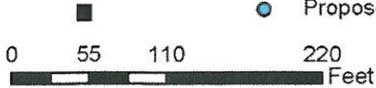
- Di - Analyte Detected
- U - Analyte Not Detected
- MDL - Method Detection Limit
- RL - Reporting Limit
- SOL - Sample Quantitation Limit

Data Qualifiers:

- 1 - The analyte was possibly identified, but the associated numerical value is below the RL.
- 2 - The analyte was possibly identified, but the associated numerical value is above the RL.
- 3 - The analyte was possibly identified, but the associated numerical value is above the RL.
- 4 - The analyte was possibly identified, but the associated numerical value is above the RL.
- 5 - The data are unreliable due to deficiencies in the ability to analyze the sample and meet QC criteria.
- 6 - The analyte was analyzed for, but not detected. The associated numerical value is the MDL.



- B-8 Boundary
- Surface Soil Results > 30-Acr Residential PCL
- Proposed sample locations



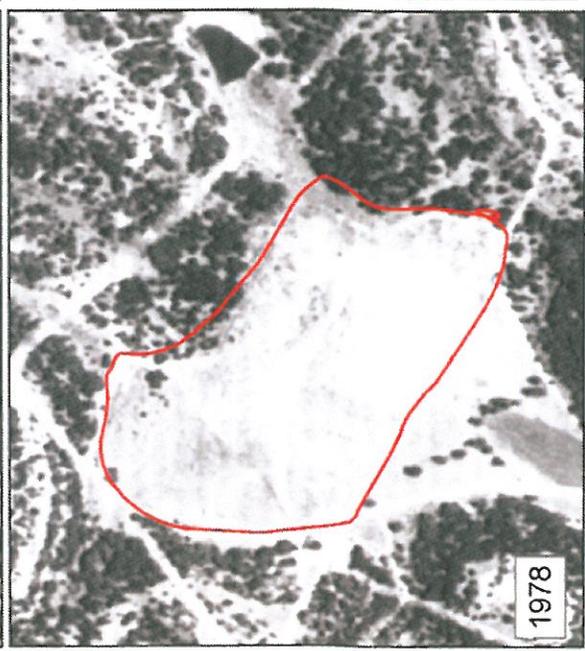
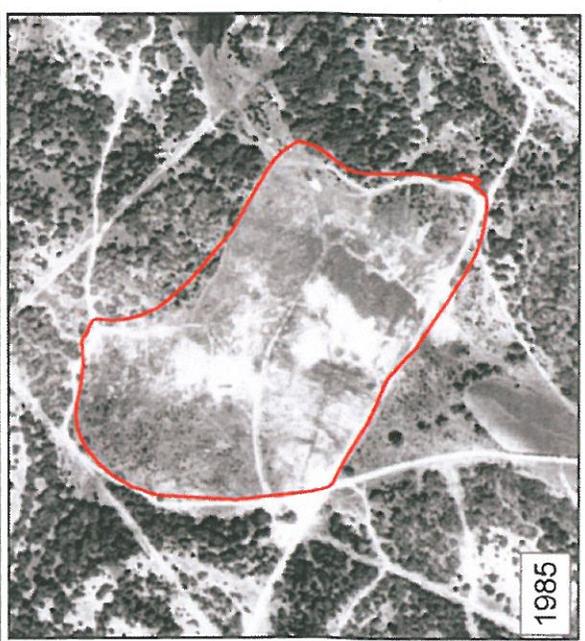
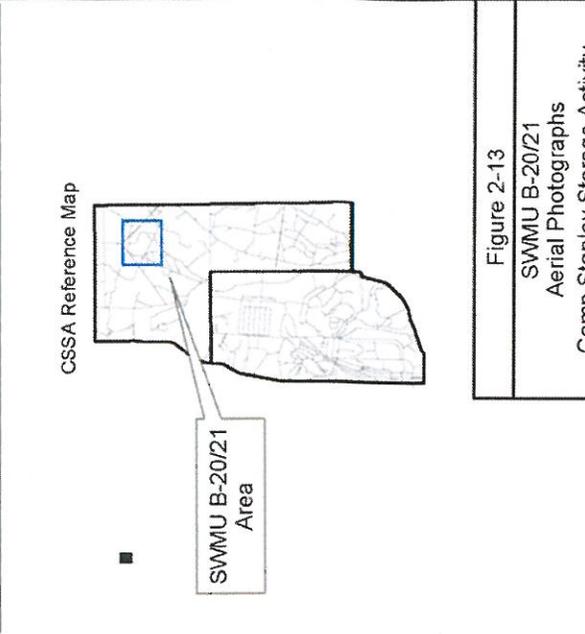
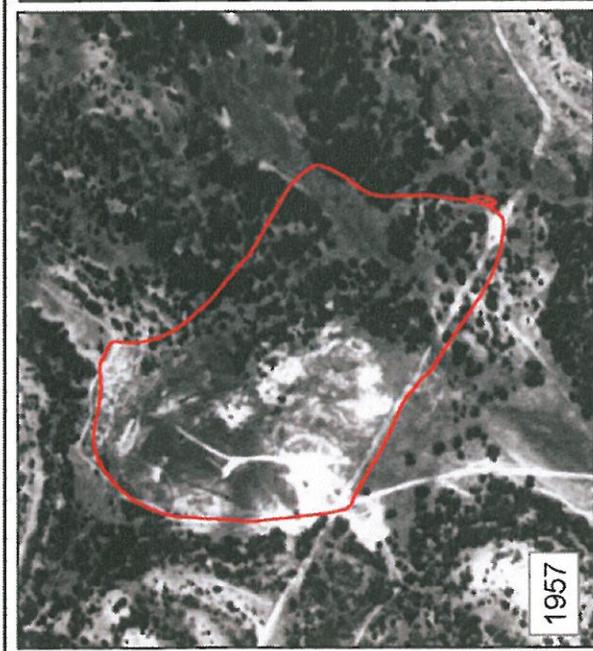
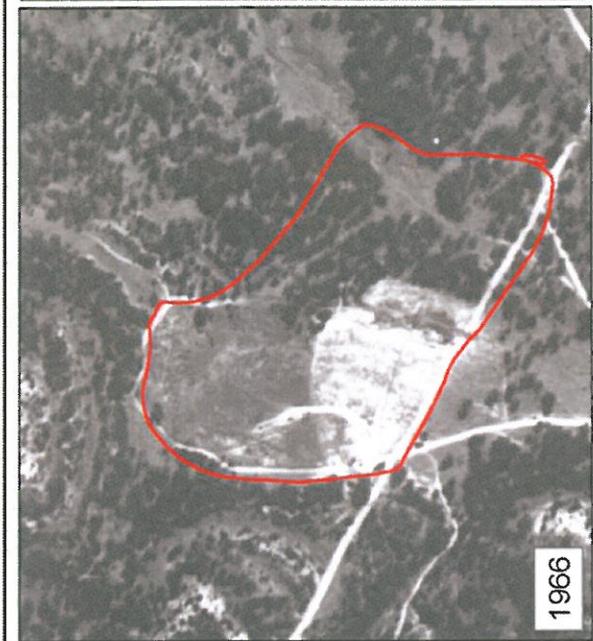
All concentrations mg/kg

J:\CSSA\environmental_files\gisdata\mxd\B8-sample_location_map.mxd

Figure 2-12

SWMU B-8
Sample Location Map
Camp Stanley Storage Activity

PARSONS



CSSA Reference Map



SWMU B-20/21 Area

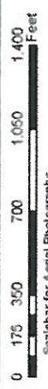
Figure 2-13

SWMU B-20/21

Aerial Photographs

Camp Stanley Storage Activity

Parsons



Scale for Aerial Photographs

1:250000 (approximate) - 1957/1985/2003/1978/1966/2003

2.1.6.2 Previous Investigations and Findings

Investigations at the site began in 1994 and included sampling of surface soil, subsurface soil and rock, groundwater, sediment, and surface water, and removal of surficial UXO. An approximate 10-acre area of surface soil was found to be above background levels, and 193 UXO items were found on the site and in the area immediately adjacent to the site. In addition, three borings were found to have metals levels above background. Explosives analyses were conducted by ITS Laboratory; results were later determined by EPA to be unusable.

Follow-on investigation was conducted in 1995 and 1996, and included additional surface soil sampling, drilling and sampling of three soil borings, and additional UXO clearance activities. Based on the results of the surface soil sampling, it was concluded that approximately 17,900 cubic yards of soil (assumed 2-foot depth) were contaminated above background levels.

TCLP and SPLP analysis of subsurface samples indicated that lead was leachable at one boring, and the concentration was above the MCL. During this second phase of investigation, both surface and subsurface UXO removal activities were conducted. A total of 507 UXO items were found on the ground surface within the site and in areas around the site indicated by conflagration patterns. In the northern six-acre area of the site, where a subsurface ordnance investigation removal action was conducted, 300 additional UXO items were found; however, the removal action could not be completed due to funding limitations. Detailed information regarding the previous extensive investigations is included in the EE (Volume 3-1, [SWMU B-20/21](#)).

A total of 507 UXO items and 100,280 pounds of scrap metal were removed from the site during UXO removal activities. The ordnance debris was found scattered across the site surface and within shallow trenches. As part of this UXO removal effort, 2,700 yd³ of soil were sifted and stockpiled on site. The subsurface UXO clearance was concentrated on the northern 6-acre area of the site. Subsurface waste was often encountered in this area during previous investigations (scattered and buried in shallow trenches). However, continuation of surficial UXO removal activities was necessary throughout the field work. UXO items continued to be exposed due to erosion, which was accelerated during sifting and associated earth-moving activities when vegetation was disturbed.

The approximate 2,700 yd³ of sifted soil has been approved by TCEQ to be moved to an active range on CSSA. Soils at the site were disturbed during sifting and grading operations, and therefore, historical results may no longer be representative of the area exceeding background. The lateral and vertical extent of metals contamination at this site is yet to be determined. The sifted material from B-20/21 was treated with PIMS and is now approved to be removed for further use at CSSA's small arms firing ranges.

One or more metals concentrations exceeded background in each of the sifted soil samples. Constituents of concern include barium, cadmium, copper, lead, and zinc. Arsenic, chromium, mercury, and nickel were not detected in any of the samples above background levels. Soil

borings drilled at the site in 2000 showed no explosives contamination in subsurface soil and rock (Table 2-10).

2.1.6.3 Work to be Completed

Additional surface and subsurface soil are necessary to confirm the contamination has been addressed after all the investigations and removal efforts. Based on results of the sifted soil sampling, additional soil sampling should only include analyses for the nine CSSA metals. Additional analytical testing for VOCs, SVOCs and explosives is not warranted. Figure 2-14 shows approximate locations for 22 surface soil samples to be collected. As part of the north pasture draft APAR, an ecological risk assessment must be performed (Option 1).

2.1.7 SWMU B-24

SWMU B-24 is located within the north pasture area of the outer cantonment and is approximately 5 acres. Initially, spent ammunition, and other metal scrap was observed on the ground surface, as well as sparse vegetation and some ground disturbance. A series of historical aerial photos of the B-24 area is shown in Figure 2-15.

2.1.7.1 Summary of Proposed Work

SWMU B-24 is a former waste area approximately 5 acres in size. Previous investigations at SWMU B-24 included geophysical surveys, surface and subsurface sampling, trenching and soil removal. Further investigation to identify any remaining waste is planned, including a geophysical survey with a potential for trenching and removal, based on the findings. An APAR will be completed, with an associated ecological risk assessment for the north pasture (upon funding).

2.1.7.2 Previous Investigations and Findings

A potential for buried waste, possibly including UXO, was also identified based on results of the 1995 geophysical survey, which identified magnetic anomalies in three areas. In 1997, UXO specialists worked at the site for approximately 6 months. During this time, four disposal trenches were excavated, approximately 5,700 yd³ of soil were sifted, a total of 1,484 UXO items were recovered and later detonated, and over 175,000 pounds of scrap metal were removed and recycled. In addition, some UXO items were identified in the area within approximately 25 ft east of the SWMU B-24; however, a systematic search was not conducted in this area. Previous site investigations are summarized in the CSSA EE (Volume 3-1, [SWMU B-24](#)).



Aerial Photo Date: 2003



- Proposed Soil Samples (approximate)
- Creeks (Dashed where intermittent)
- Ordinance Investigation and Removal Action Area



Figure 2-14
 SWMU B-20/21
 Sample Location Map
 Camp Stanley Storage Activity
 Parsons

Soil borings drilled at the site in 2000 showed some slight exceedances above RRS1 criteria in subsurface soil/rock samples of the VOCs and SVOCs (Table 2-11). These exceedances were limited to common laboratory contaminants methylene chloride and DEHP. Barium, chromium, and lead concentrations in the deepest samples collected at SB01 and SB05 only exceeded respective background levels by 3.0 mg/kg (or less) in each. Based on the soil boring results, contamination has apparently not migrated from the trenches.

Surface soil samples collected around the trenches showed similar contaminant concentrations. The common laboratory contaminant methylene chloride was detected in five of the six samples, but it was also detected in a laboratory blank associated with four of the samples. Toluene and 2,4-DNT were detected above RRS1 levels at SB05 (0-0.5 ft).

The approximate 5,700 yd³ of sifted soil was removed and used at CSSA's range management unit for berm construction. One or more metals concentrations exceeded background in each of the sifted soil sample results. Constituents of concern include barium, copper, lead, and zinc.

2.1.7.3 Work to be Completed

A geophysical survey will be performed at SWMU B-24; Parsons will perform UXO avoidance prior to the geophysical survey. A qualified UXO technician will walk the investigation areas with appropriate equipment to inspect the site for potential explosive safety hazards and discarded ordnance materials. The technician will flag any potential hazards for the investigation team to avoid. Each flag will have a unique identification to identify potential hazards for the geophysical team. The team will conduct the survey using magnetometers in transects set across the investigation areas.

The data for each transect will be mapped and any areas with geophysical anomalies identified will be proposed for trenching. Test trenching will be performed on the identified anomalies after trench locations are proposed to CESWF and CSSA. Parsons estimates that up to 16 trenches may be investigated at B-24. Each trench is estimated to be approximately 2 feet x 8 feet x 10 feet, but will be adjusted as indicated by the geophysical anomaly results and may be larger or smaller. All trenching activities will be supervised by a qualified environmental professional. Trench locations and contents will be documented by photographs, GPS locations, and field logbook entries. A UXO technician will be present for trenching conducted at sites where MEC hazards are expected to be present. Soil excavated from the trenches will be returned to the trenches unless hazardous materials are observed or analytical results indicate that an interim removal should be conducted. Parsons anticipates that disposal of 250 yd³ of nonhazardous soils off site will be necessary.

In addition, the area southeast of the current B-24 boundary should be investigated (shown as proposed survey area on Figure 2-16)-. The ground surface has apparently been disturbed in this area and numerous 20-mm projectiles were observed, potentially indicating a fifth trench. Investigation of this area should include removal of cedar in the vicinity of the suspect area. An EM geophysical survey will be conducted on a grid covering the area to determine if buried waste may be present. If geophysical survey results indicate the possible presence of buried waste, the anomaly should be excavated and sifted, and metal debris should be disposed or recycled off-site. Due to the amount of UXO found in other B-24 trenches, UXO specialists should oversee excavation activities. Samples of the excavated material should be collected for characterization purposes and trench bottom and sidewall samples will be collected to ensure that all contaminated media has been removed. The location and the number of samples will be determined after the survey.

Samples collected at SWMU B-24 should be analyzed for VOCs, SVOCs and the CSSA nine metals. Based on past analytical results, a total of 24 samples will be collected (Figure 2-16). A draft APAR and ecological risk assessment (Option 1) is anticipated to be completed with the other north pasture sites.

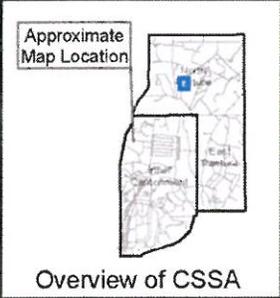
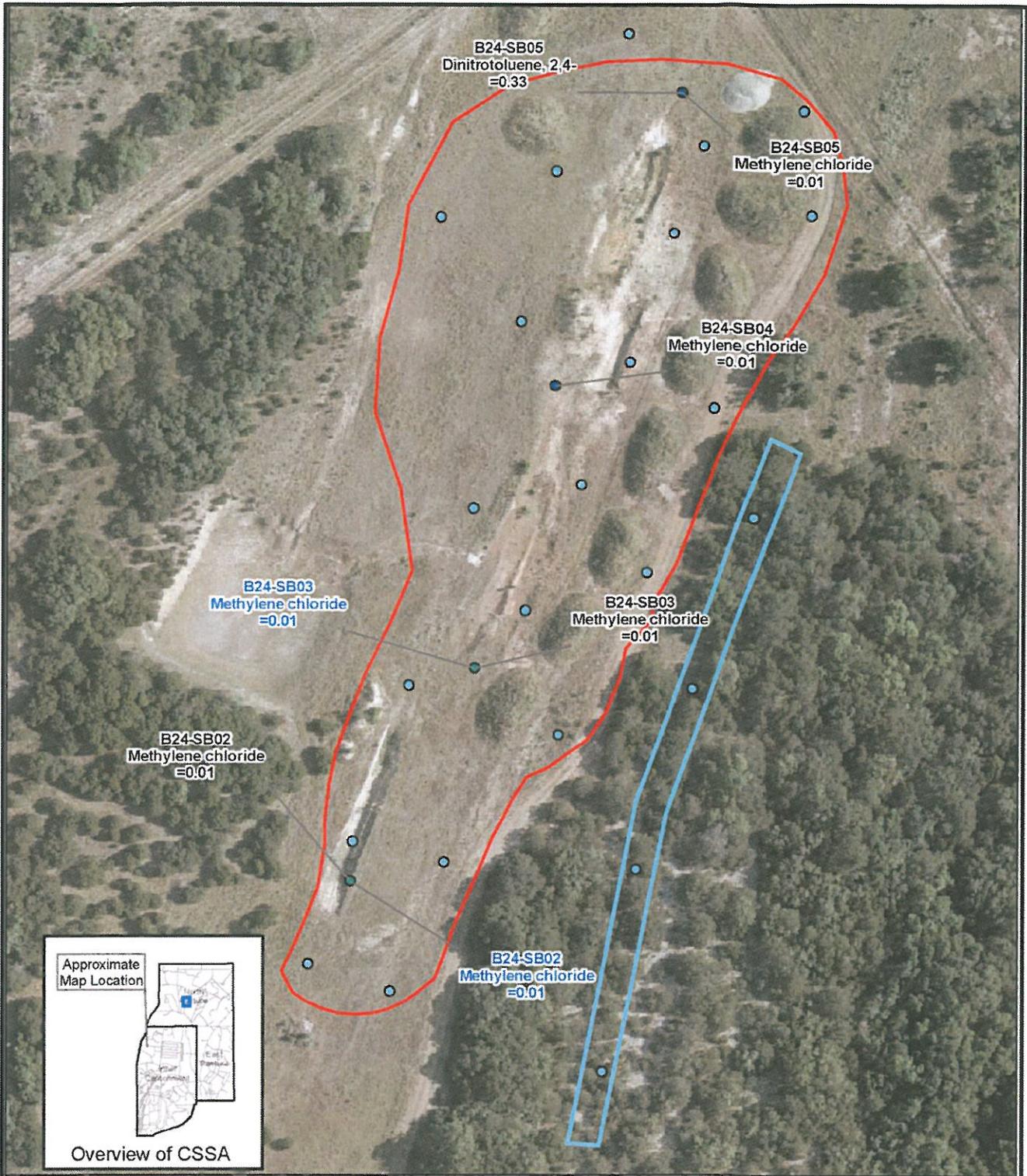
2.2 ANALYTICAL VALIDATION AND VERIFICATION

The analytical validation and verification activities will be performed in accordance with the CSSA QAPP and include: oversight of sample collection and submittal efforts, interaction with the selected laboratory, data verification, data validation, and management of electronic analytical data. The TRRP program includes a guidance document establishing analytical data requirements ([TRRP-13](#)). However, in accordance with the correspondence to TCEQ dated [January 30, 2003](#), as CSSA has a site-specific QAPP in place, TRRP-13 data requirements do not apply to CSSA.

The previous estimated sample counts included in proposal documentation did not include QA/QC samples, therefore an additional number of samples are detailed in the Sampling and Analysis Plan for this project including QA/QC.

Parsons will oversee each sampling event, including review of chains-of-custody for accuracy and completeness, verifying that the laboratory sample log-in sheets match the chain-of-custody forms, addressing any sample receipt issues (such as broken sample containers), and maintaining continuous contact with the laboratory regarding scheduling.

Laboratory data packages will be reviewed by Parsons chemists for completeness and adherence to the CSSA QAPP and the approved laboratory variances. All associated analytical QA/QC data will be examined, and all exceptions will be noted in both the case narrative and data verification report (DVR). The sample results associated with noncompliant QC performance will be qualified in accordance with the CSSA QAPP.



- B-24 Boundary
- Proposed survey area
- Proposed surface soil samples
- Surface Soil Results > 30-Acr Residential PCL
- Subsurface Soil Results > 30-Acr Residential PCL

0 25 50 100 Feet

All concentrations mg/kg

Figure 2-16
 SWMU B-24
 Sample Location Map
 Camp Stanley Storage Activity
 PARSONS

Following verification of the laboratory data, the data usability as related to the project DQOs will be assessed. Validation will include examination of historical data (if available), laboratory data trends, and the reasons for data collection. Based on the overall assessment of the data, flags may be removed or changed to reflect usability of the data. The basis for such changes will be detailed in the project summary report.

Electronic data submitted by the laboratories will be loaded into the CSSA GIS database, verified for accuracy, and updated to reflect all data qualifier changes incurred through the data verification and validation process. The data are to be supplied in ERPIMS compliant format, to maintain consistency with CSSA's historical data format.

2.2.1 Data Quality Objectives

The overall data quality goal for this project is to gather sufficient information to support closure or no further action under TRRP. For these investigations, the goal is to define the nature and extent of contamination, if any, at the site. Data quality is defined by its representativeness, precision, comparability, and completeness. Representativeness of the data is dependent on site selection and the number of samples taken, which are easily addressed in the sampling plan design. The requirements for precision, comparability, and completeness of the data vary between data types but all are enhanced by the use of standardized sampling and analysis protocols and standardized reporting procedures. Data quality objectives (DQOs) are continually being updated as the project progresses and data is generated.

2.4 TRRP REPORTING PROCEDURES

In accordance with 30 TAC §350, results from sampling investigations will be compiled into the appropriate TRRP report. Anticipated reports required under the TO DY01 scope-of-work will be those applicable under TRRP and include: Release Investigation Report and Affected Property Assessment Report for the selected sites. Specific reporting procedures will follow the provisions of the SOW and the procedures set out below.

2.4.1 Ecological Risk Assessment

For the SWMU I-1 RIR, Parsons will complete a Tier 1 Exclusion Criteria Checklist to address ecological risk, in accordance with 30 TAC §350.77(b). If the TCEQ determines that a Tier 2 Screening Level Ecological Risk Assessment (SLERA) is required, for these sites, this SLERA is not included in the current project SOW and is anticipated to be added in Option 1. I-1 and AOC-67/68 are not anticipated to require APARs and will stand alone for reporting purposes. B-2, B-8, B-20/21, and B-24 are planned to be addressed and combined into one APAR.

2.4.2 Release Investigation Report

An RIR will be submitted to the agency for documentation of no release at SWMU I-1. The content of the RIR will address the historical data gathered from the site demonstrating no

affected property exists at the site. I-1 and AOC-67/68 are not anticipated to require APARs and will stand alone for reporting purposes. B-2, B-8, B-20/21, and B-24 are planned to be addressed and combined into one APAR.

2.4.3 Affected Property Assessment Reports

Based on site similarity, and with TCEQ concurrence, sites may be combined in APARs as in the two groups mentioned in Section 2.1 for the inner cantonment and north pasture. CSSA has decided to use residential protective concentration levels (PCL) whether 0.5-acre or 30-acre depending on the site size, to compare to analytical results for this project. Groundwater is not being addressed under these investigations as the underlying groundwater is considered separately as an area-wide unit.

Based on previous data collection and investigations, Tier 2 or Tier 3 PCLs may need to be calculated for Tier 1 exceedances for select COCs. Parsons has an automated database system to present the APAR tables in the TCEQ format that is adaptable to changing from Tier 1 to Tier 2 values when needed for each site and COC. Another alternative would be calculating a representative concentration for COCs that may have a low incidence of exceedances of TRRP PCLs.

2.4.4 Report Distribution

From the field efforts for soil sampling covered in this work plan, two reports (one for the north pasture sites and one for the inner cantonment sites) will be submitted in draft and final versions to CSSA with final versions to be submitted to the TCEQ. Addressing TCEQ comments is not included in the SOW of this delivery order due to the TCEQ document turnaround time. In addition, all technical reports produced as part of DY01 will be submitted in accordance with the SOW provisions. The project deliverables will be prepared and submitted to the following entities as given in Table 2-12.

2.5 ENVIRONMENTAL ENCYCLOPEDIA UPDATES

Parsons will provide periodic of updates to the CSSA Administrative Record, or EE from October 2006 through September 2007. Quarterly updates are anticipated to include correspondence, updates to chronologies, investigation reports, and table-of-contents and will be made on an ongoing basis to the electronic version of the EE. The hard-copy updates will be compiled and organized, and update instructions will be prepared and submitted as needed. Plans and reports from different delivery orders will be collated into the updates, and the updates will be distributed to CSSA, AFCEE, USEPA, and regional and state offices of the TCEQ. Additional encyclopedia volumes (binders) will be included as necessary. A total of seven copies of the EE will be updated. Documents included in the updates will also be added to the hyperlinked version of the EE. DVD copies of the hyperlinked encyclopedia will also be distributed four times in 1 year of updates.

Table 2-12 Project Deliverables and Distribution List for DY01 Technical Reports

Item	Required Date per RFP	Proposed Date	Distribution			
			COE	TCEQ	Base POC	CSSA Admin Record
Draft APAR	<i>As needed</i>	<i>As needed</i>	1		1	
Final APAR	<i>As needed</i>	<i>As needed</i>	1	1	1	1
Project Schedule and updates	<i>As needed</i>	<i>As needed</i>	1		1	
CPSMR	Bimonthly	Bimonthly	1		1	
ERPIMS Package	<i>As needed</i>	<i>As needed</i>	1		1	
Draft Meeting Presentation Materials	<i>As needed</i>	<i>As needed</i>	1		2	
Final Meeting Presentation Materials	<i>As needed</i>	<i>As needed</i>	1		2	
Draft Meeting Agenda	<i>As needed</i>	<i>As needed</i>	1		2	
Final Meeting Agenda	<i>As needed</i>	<i>As needed</i>	1		2	
Draft Meeting Minutes	<i>As needed</i>	<i>As needed</i>	1		2	
Final Meeting Minutes	<i>As needed</i>	<i>As needed</i>	1	1	2	

All hard copy deliverables will be submitted on recycled content paper and printed double sided unless otherwise specified by the Air Force. All deliverables will be provided to CSSA and AFCEE according to format, content, and schedule as described below.