

WORK PLAN AND SAMPLING AND ANALYSIS PLAN ADDENDUM

SWMU B-13



Prepared for:

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ADDENDUM TO WORK PLAN AND SAMPLING AND ANALYSIS PLAN SITE CLOSURE INVESTIGATION FOR SOLID WASTE MANAGEMENT UNIT B-13

Parsons is currently under contract to perform a Site Closure Investigation at Solid Waste Management Unit (SWMU) B-13, Camp Stanley Storage Activity (CSSA), Boerne, Texas. This document serves as both an addendum to the existing CSSA *Work Plan*, February, 1996 (see CSSA Environmental Encyclopedia (www.stanley.army.mil), Volume 1-1) and Work Plan Addenda and an addendum to the existing CSSA *Field Sampling Plan*, February 1996 (see CSSA Environmental Encyclopedia, Volume 1-4) and Sampling and Analysis Plan Addenda.

An investigation will be performed to remove impacted media and waste located at SWMU B-13 (**Figure 1**). The investigation will remove potential sources of contamination including metal and assorted debris, and all soils with contamination levels that exceed the identified Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCLs) (see Section 2.3). It is expected that upon completion of this investigation, a Release Investigation Report (RIR) will be completed for SWMU B-13. Both the identified PCLs and the type of closure report may be modified based on the results of the investigation.

This Addendum describes additional activities to be conducted as part of this investigation and addresses specific “sampling and analysis” items related to those activities. Work will be performed in accordance with the 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) administered by the Texas Commission on Environmental Quality (TCEQ).

Additional specific activities associated with this investigation are described in the *Storm Water Pollution Prevention Plan for SWMU B-13*, September 2012 and the *RCRA Facility Investigation Intermim Measures Waste Management Plan (RFI/IM WMP) Addendum for SWMU B-13*, September 2012.

1.0 SITE DESCRIPTION AND BACKGROUND

1.1 Description

SWMU B-13 is located in the southern portion of the Inner Cantonment Area about 500 feet north of the southern CSSA boundary (Figure 1). It consists of two hills divided by a wide drainage area. The three-acre site was used as a construction waste (e.g., concrete rubble, wire binding, bricks, etc.) disposal site for the post engineering/public works department during an unknown time period. The site was identified during a records review in 1993 and the site boundaries were mapped during a field investigation of the site in March 1996. Of three historical aerial photographs of CSSA dated 1966,

1973, and 1985, the SWMU B-13 area appears most disturbed in the 1985 photograph (**Figure 2**). Construction rubble, bricks, rebar, and railroad ties were identified in rubble piles at the site. The half-buried nature of the rubble piles, combined with the uneven nature of the hillsides, suggests that more waste may be buried at the site. Additional background information on SWMU B-13 can be found in CSSA Environmental Encyclopedia, Volume 3-1.

The nearest stream is a small, unnamed ephemeral stream located approximately a quarter mile west of the site (Figure 1). There is also a small unnamed ephemeral stream that is shown on site maps as a stream that passes through the SWMU B-13 site, however man-made berms located approximately 100 feet north of the site and 100 feet south of the site prevent stream flow from entering or leaving the site. Further details on the area's drainage patterns are included in the *Storm Water Pollution Prevention Plan for SWMU B-13*, September 2012.

1.2 Previous Investigations

Previous investigations at the site included a geophysical survey as well as surface and subsurface soil sampling. The geophysical survey conducted at the site in 1996 identified a number of anomalous areas as shown on **Figure 3**.

In March 2000, four soil borings (RW-B13-SB1, RW-B13-SB2, RW-B13-SB3, and RW-B13-SB4) were drilled to replace previously drilled but unusable samples. Both surface and subsurface samples were collected from the borings locations which are shown on Figure 3. The borings were drilled to refusal at depths ranging from 3 to 8 feet below ground surface (bgs). At borings SB01 and SB02, waste material (wood, wire, and scrap metal) was encountered at the surface down to a depth of approximately 7 feet bgs. A charred zone was encountered at approximately 2.4 feet bgs in SB03.

One surface soil sample and two subsurface samples (top of rock and several feet into the rock layer) were collected from each boring and were analyzed for CSSA 9 metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). The concentration of copper at RW-B13-SB01 (0.5-1 foot bgs), as reported in the the *RCRA Facility Investigation Report*, June, 2002 (CSSA Environmental Encyclopedia, Volume 3-1), exceeded the identified Tier 1 PCL. In addition, the concentrations of copper, lead, and zinc in the sample RW-B13-SB02 (0.5-1 foot bgs) also exceeded the identified Tier 1 PCLs. Reported concentrations of chromium, copper, lead, nickel, and zinc also exceeded the identified Tier 1 PCLs in RW-B13-SB04 (0.5-1 foot bgs).

No VOCs were detected. Fluoranthene and bis(2-ethylhexyl)phthalate were the only SVOCs reported with a detection of fluoranthene just above the quantitation limit at RW-B13-SB01 (0.5-1 foot bgs). Since no other VOCs or SVOCs were detected, the detection of bis(2-ethylhexyl)phthalate in 8 of 12 samples was considered to be associated with laboratory contamination. Based on the results as documented in the

RCRA Facility Investigation Report, June, 2002 (CSSA Environmental Encyclopedia, Volume 3-1), VOCs and SVOCs were removed from the list of contaminants of potential concern.

An x-ray fluorescence (XRF) survey for lead and zinc was conducted in June 2011. The purpose of the XRF survey was to gather field screening data regarding the presence of metals above Tier 1 PCLs in surface soils. Lead and zinc XRF results have shown a strong statistical correlation with laboratory-verified samples. As such, these metals were used as indicators of potential areas of metals contamination at the site. A total of 50 locations were analyzed using XRF, and sample locations and results for the XRF survey are shown on **Figure 4**. XRF analytical results showed that both lead and zinc were detected above Tier 1 PCLs at some locations.

2.0 INVESTIGATION PROCEDURES

This investigation involves the excavation of the two anomalous areas as shown in Figure 3, appropriate management of all associated debris and soils, and confirmation soil sampling to ensure the success of the excavation.

All removal work will be performed in Level D personal protective equipment and under the health and safety protocol included in the *Health and Safety Plan*, December, 2010. Because UXO has been encountered at other sites at CSSA, excavation activities will be supervised by UXO technicians. The technicians will provide MEC avoidance, identification, and clearance certification of the excavated media, and will be on site to address any MEC safety issues associated with the excavation process.

2.1 Excavation Effort

The identified anomaly areas shown in Figure 3 will be excavated to a depth where confirmation samples indicate the concentrations of contaminants of concern are below the criteria described in Section 2.3. For the two borings drilled during the RFI on the west side of the site (SB01 and SB02), the average depth to top of bedrock was 7.5 feet and for the two borings installed on the east side of the site (SB03 and SB04), the average depth to top of bedrock was 4 feet.

During the excavation effort, waste material will be sorted and managed as appropriate. Remaining excavated soil media will be staged in the staging areas (**Figure 6**) and will be characterized for management as described below.

2.2 Waste Management

It is anticipated that approximately 6,000 CY of excavated materials will require some form of management at B-13. All contaminated soils will be managed in accordance with CSSA's *RFI Interim Measures Waste Management Plan*, Parsons, 2006 and the *RFI/IM Addendum for SWMU B-13*, Parsons, 2011.

For excavated soils, waste characterization sampling will occur at a frequency rate of 1 sample per 500 CY. Waste characterization samples will be analyzed by the toxicity characteristic leaching procedure (TCLP) for RCRA 8 metals, in addition to other analysis, as appropriate. Soils will only be re-used at the site if sample analysis of CSSA 9 metals, VOCs, and SVOCs shows results lower than the identified PCLs. All impacted soils that meet non-hazardous criteria and CSSA standards for berm reuse will be transported to the East Pasture berm. Impacted soil media which is believed to contain potential contaminants of concern (COCs) greater than 20 times the regulated TCLP criteria (*i.e.*, 20 times rule) will undergo waste characterization sampling at a frequency of 1 sample per 200 CY.

Any soil media identified above characteristic hazardous criteria (40 Code of Federal Regulations [CFR] 261.24) will be treated in accordance with the *RFI/Interim Measures Waste Management Plan* (*i.e.* with use of Portland Cement, etc.) to non-hazardous levels and managed at the East Pasture berm or off-post as appropriate. All impacted soil media that meets non-hazardous criteria, and CSSA standards for berm reuse (*e.g.* no pieces of metal greater than six inches, no materials identified as MEC items, etc.), will be transported to the East Pasture berm for reuse. Parsons will coordinate the transportation of soils to the East Pasture berm with CSSA personnel. Parsons will coordinate the transportation of the soils to the East Pasture berm with CSSA personnel. Erosion control will follow the *Storm Water Pollution Prevention Plan for SWMU B-13 Investigation*, September 2012.

Stockpiles of soil identified containing concentrations of contaminants greater than hazardous toxicity criteria within the excavated area will be covered with plastic until the removal process begins. Excavated non-hazardous soils will remain uncovered.

2.3 Soil Sampling

The TRRP Tier 1 PCL identified for this investigation is defined as the lowest value among the following: 1) the TRRP Tier 1 Residential 30-acre PCL for total soil combined ($^{Tot}Soil_{Comb}$); and 2) the TRRP Tier 1 Residential 30-acre PCL for groundwater protection ($^{GW}Soil_{Ing}$). If the lowest value is less than the CSSA soil background value, the soil background value becomes the Tier 1 PCL. Table 1 outlines these values and identifies the PCLs for the CSSA 9 metal analytes. The identified PCLs may be modified based on investigation findings, if necessary.

Soil samples for laboratory analysis will be collected during and post-excavation, as necessary, to confirm the successful removal of the contaminated soils. Based on previous findings and results from the investigation, confirmation samples may be collected and analyzed for CSSA 9 metals, VOCs, SVOCs, and/or explosives. Soil samples with results lower than the identified PCLs will be used to confirm contamination removal at a rate of approximately 1 sample per 50 feet along the horizontal excavation boundary, and 1 sample per 10,000 square feet to confirm the vertical excavation boundary. If any results indicate contamination above the identified

PCLs, the excavation of soils will be expanded in that direction until confirmation samples show no indication of metal contamination above PCLs. The number and location of confirmation samples will be dependent on the extent of excavation.

Soil samples will be discrete grab samples and will be collected as prescribed in the *CSSA SAP*, February, 1996. The collection and analysis of quality assurance/quality control (QA/QC) samples is described in the *CSSA Base-wide Quality Assurance Project Plan, Version 1.0*, January, 2003 (see CSSA Environmental Encyclopedia, Volume 1-4). The QA/QC samples and their collection frequency are as follows:

- One Field Duplicate (FD) per 10 samples
- One Matrix Spike (MS) and one Matrix Spike Duplicate (MSD) per 20 samples
- One Equipment Blank (EB) per site.

Full QA/QC will be performed on these samples and 100% of the results will be validated/verified by a chemist.

The necessary turnaround time (TAT) for the samples will be based on the current timeframe of the excavation and may range from expedited (3-day) to the standard TAT (21-day).

2.4 Erosion Control Measures and Site Rehabilitation

As mentioned in Section 1 and as shown on Figure 6, there is a small unnamed ephemeral stream that passes through SWMU B-13, however man-made berms located approximately 100 feet north of the site and 100 feet south of the site prevent stream flow from entering or leaving the site. The berms range from about 20 to 30 feet in height and have been confirmed during site walk-overs even though the berms are not evident on the contour map shown in Figure 4. It is anticipated that water would collect along the drainage path during a rain event, and that there would be no offsite drainage. Due to the locations of the current northern and southern drainage-controlling berms, additional sediment control (i.e., use of silt fences) is not required. In addition, a Notice of Intent is not required for construction sites less than five acres.

Once the excavation is complete, the site will be restored in coordination with CSSA's future plans for the area. If the area is to remain free of construction, native grasses will be planted to help control erosion.

3.0 SCHEDULE

The investigation is proposed to begin during the fall of 2012. It is projected to take approximately 11 weeks. Confirmation and waste characterization sampling will be conducted, as appropriate, throughout the excavation procedure.

Upon completion of the field effort, it is expected that a Release Investigation Report (RIR) will be completed for SWMU B-13. As discussed previously, if the investigation results warrant, another type of closure report may be completed instead.

Table 1. Assessment Levels for Chemicals of Potential Concern
 CSSA 9 Metals
 SWMU B-13

Chemical of Potential Concern	Residential Tier 1 ^{Tot} Soil _{Comb} (mg/kg) ¹	Residential Tier 1 ^{GW} Soil _{Ing} (mg/kg) ²	CSSA Soil Background (mg/kg) ³	Texas-Specific Soil Background (mg/kg) ⁴	EcoBenchmark (mg/kg) ⁵
Arsenic	24.2	2.51	19.6	5.9	18
Barium	8,095	221.9	186	300	330
Cadmium	52.4	0.75	3.0	NA	32
Chromium	26,569	1,200	40.2	30	0.4
Copper	548.2	521.2	23.2	15	61
Lead	500	1.51	84.5	15	120
Mercury	2.09	0.0039	0.77	0.04	0.1
Nickel	832.1	78.68	35.5	NA	30
Zinc	9,921	1,180.2	73.2	30	120

1) Texas Risk Reduction Program Rule Tier 1 Protective Concentration Levels (PCLs) ^{Tot}Soil_{Comb}, for 30-acre source area, June 2012, (<http://www.tceq.state.tx.us/remediation/trrp/trppcls.html>).

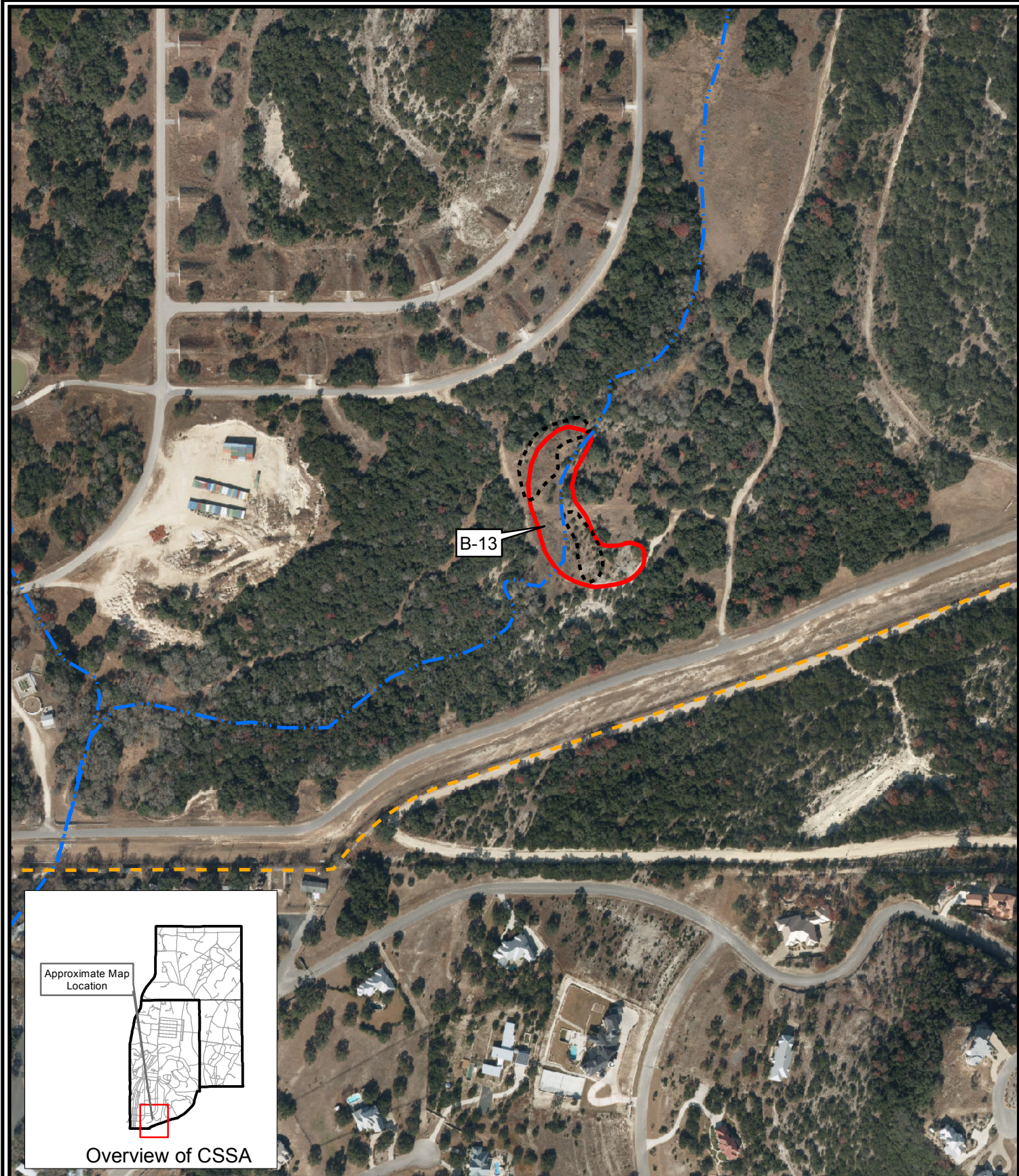
2) Texas Risk Reduction Program Rule Tier 1 Protective Concentration Levels (PCLs) ^{GW}Soil_{Ing}, for 30-acre source area, June 2012, (<http://www.tceq.state.tx.us/remediation/trrp/trppcls.html>).

3) Second Revision to Evaluation of Background Metals Concentrations in Soils and Bedrock, February 2002.

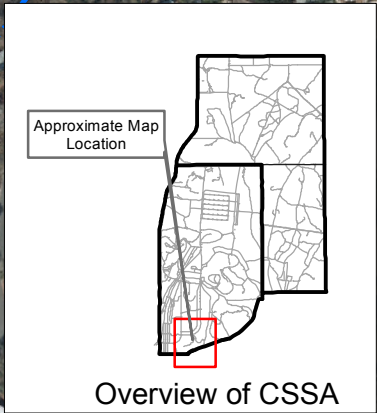
4) Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States, Jon J. Connor, Hansford T. Shacklette, and Richard J. Ebens, Geological Survey Professional Paper 574-F, United States Geological Survey, 1975.





5) TCEQ Ecological Benchmark for Soil as stated in Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas, Regulatory Guidance (RG)-263, Revised January 2006, (<http://www.tceq.state.tx.us/assets/public/remediations/eco/0106eragupdate.pdf>).

Identified PCLs are shown in **bold**.



B-13



-  Proposed Excavation Areas
-  Intermittent Stream
-  CSSA Outer Fence Line
-  Site Boundary

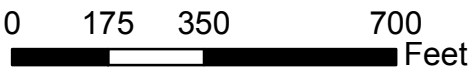
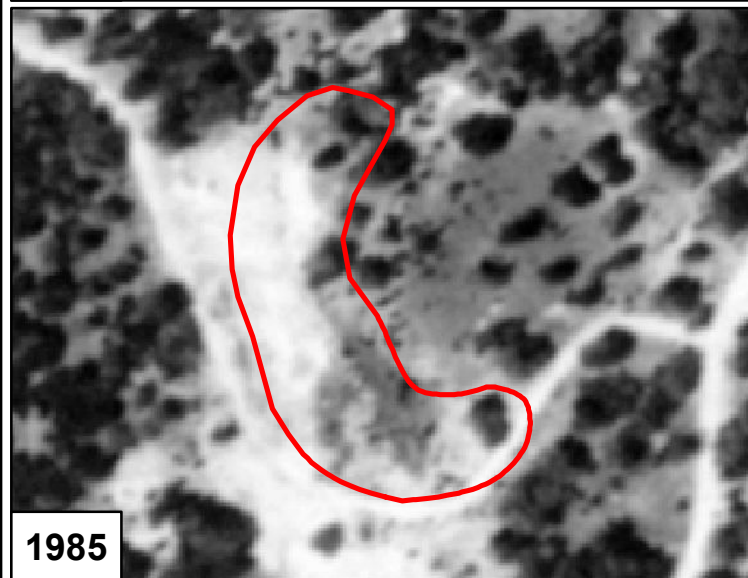
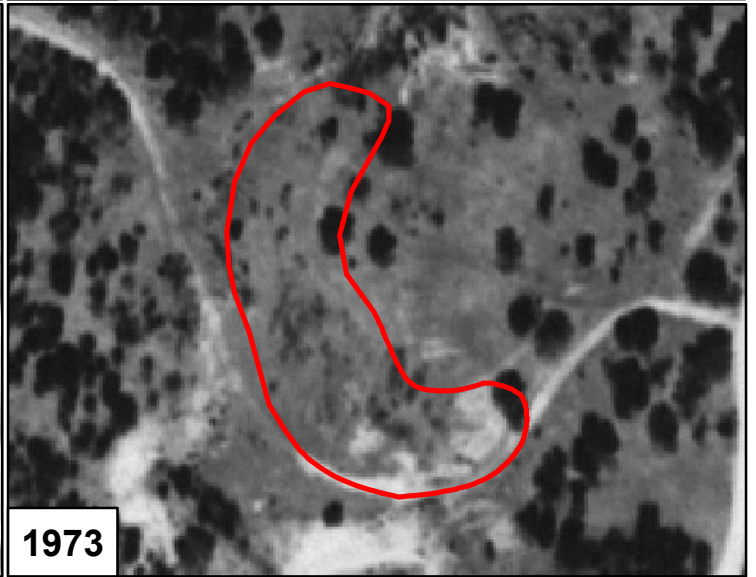
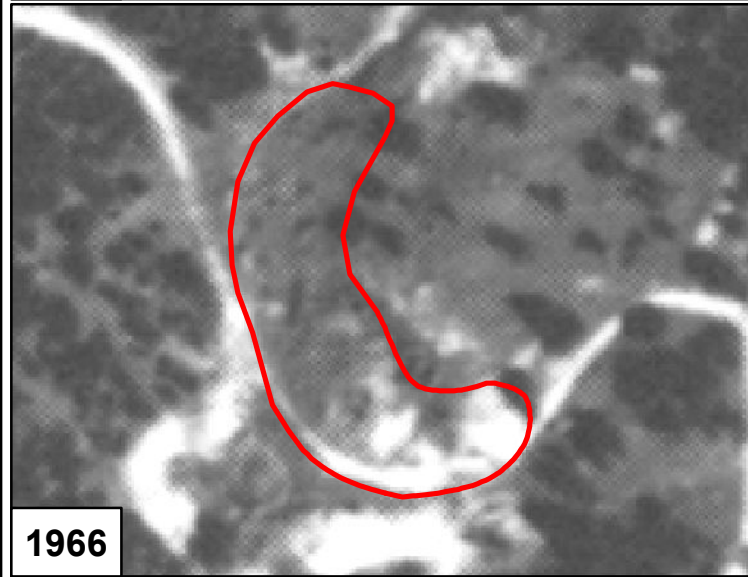
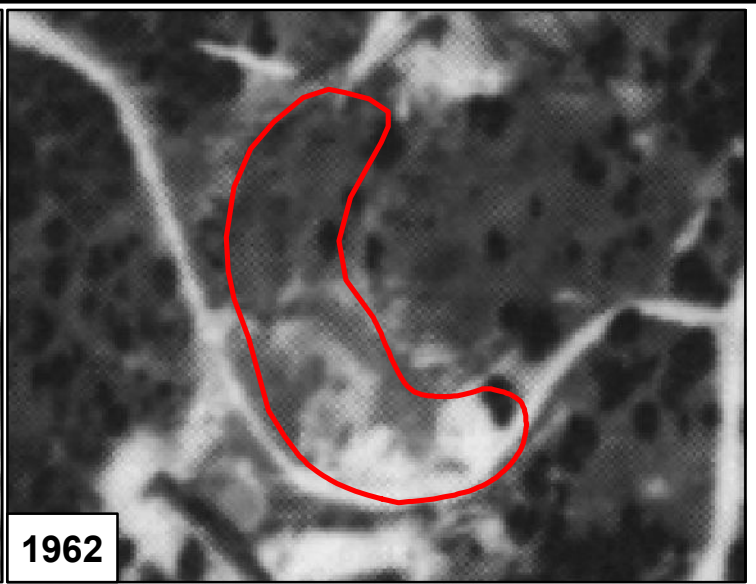
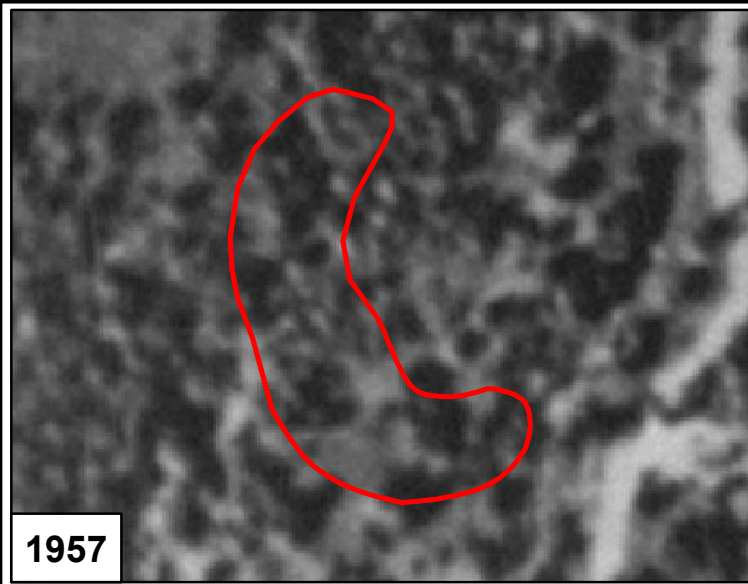


Figure 1

SWMU B-13
Site Location Map
Camp Stanley Storage Activity

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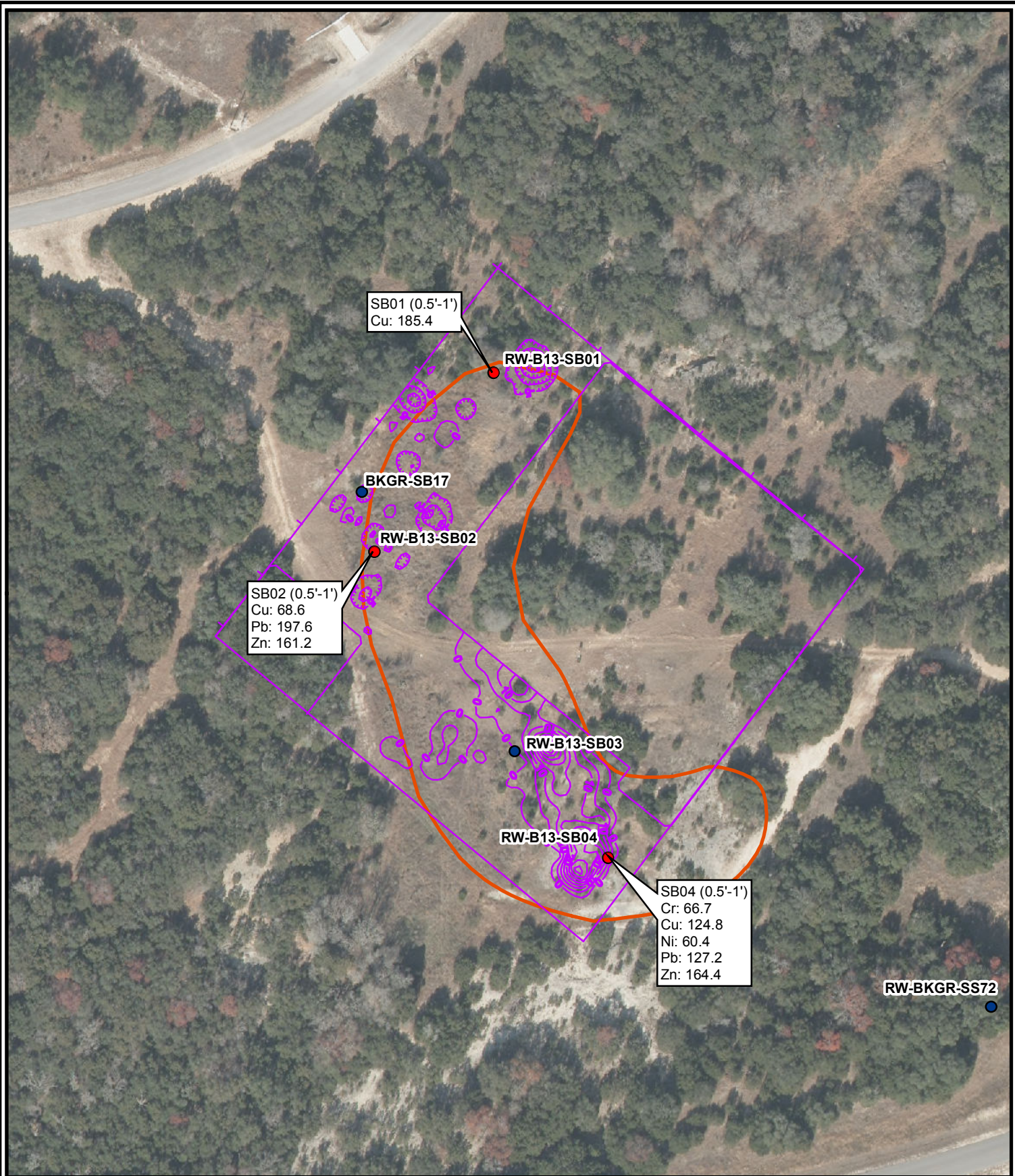
 SWMU B-13

0 100 200 400
Feet

Figure 2

SWMU B-13
Aerial Photographs
Camp Stanley Storage Activity

PARSONS



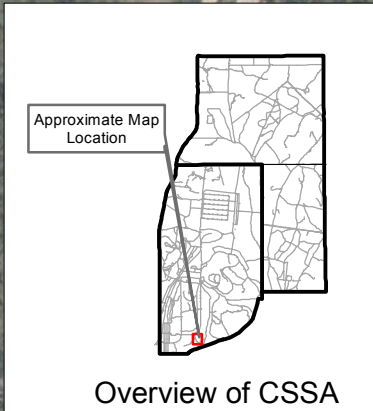
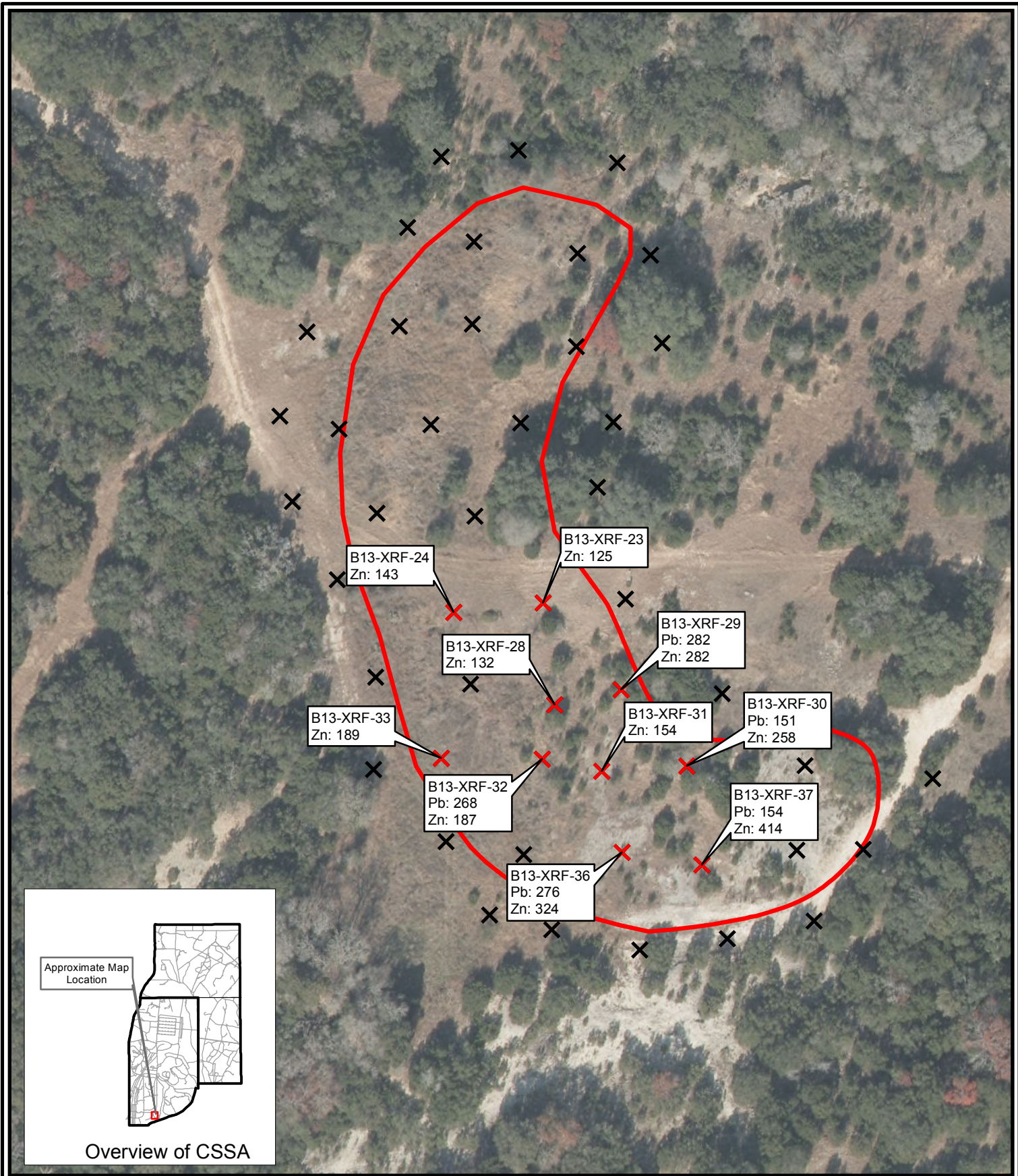
0 50 100 200
Feet

- Soil Sample
- Soil sample with results exceeding Tier 1 PCLs
- EM Survey Contours
- Site Boundary

Figure 3

SWMU B-13
Site Map
Camp Stanley Storage Activity

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- ✕ XRF Sample
- ✖ XRF Sample with results exceeding Tier 1 PCLs
- ▭ SWMU B-13 Boundary

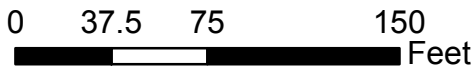


Figure 4

SWMU B-13
XRF Survey Map
Camp Stanley Storage Activity

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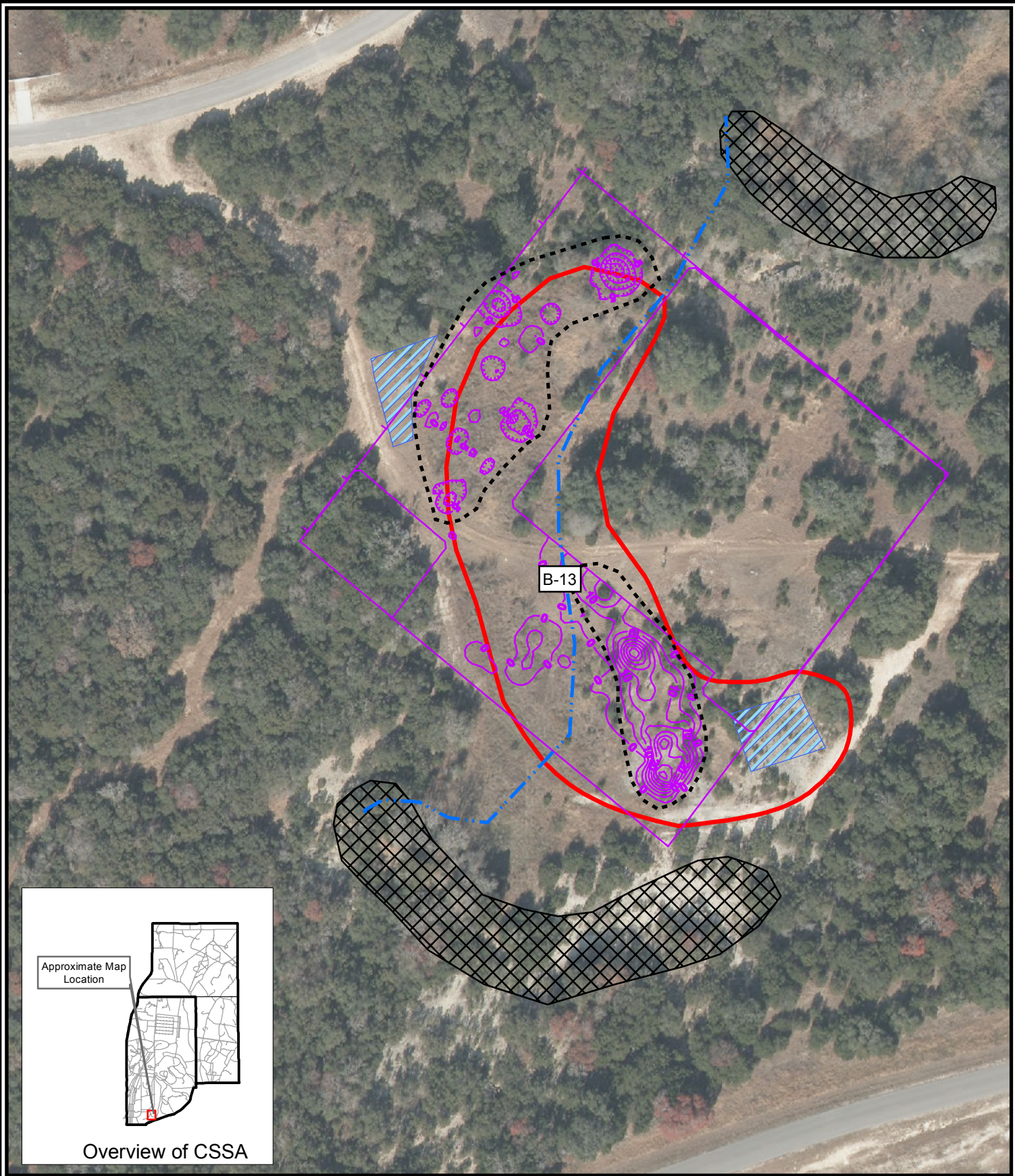


Figure 5
SWMU B-13
Proposed Excavation Effort
Camp Stanley Storage Activity
PARSONS

	Preferential Site Drainage Path
	Proposed Excavation Areas
	EM Survey Contours
	General area of a pre-existing berm
	Site Boundary
	Proposed Staging Area

0 45 90 180
 Feet

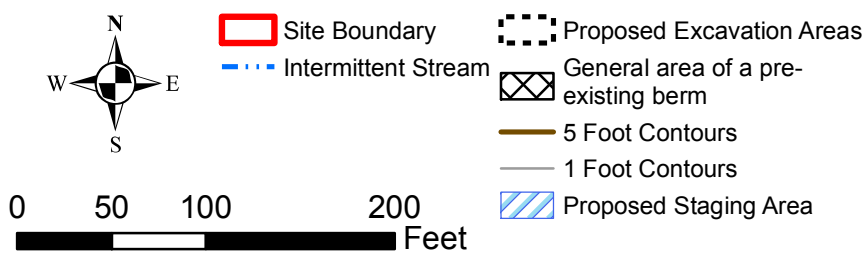
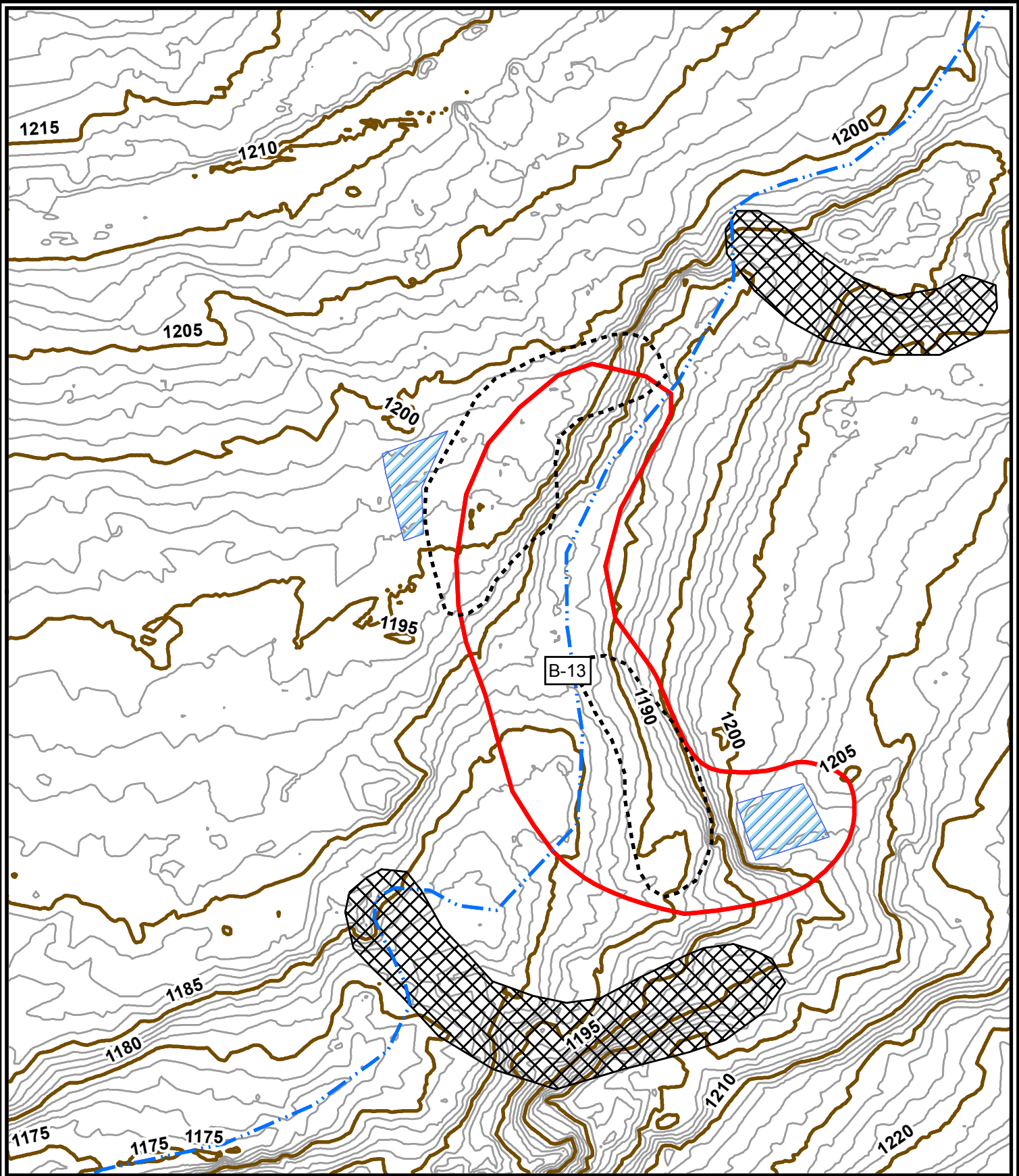


Figure 6

SWMU B-13
Drainage Control Features
Camp Stanley Storage Activity

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