

# WORK PLAN AND SAMPLING AND ANALYSIS PLAN ADDENDUM

## RANGE MANAGEMENT UNIT 3



*Prepared for:*

## Camp Stanley Storage Activity Boerne, Texas

*PREPARED BY:*

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November 2012

## **ADDENDUM TO WORK PLAN AND SAMPLING AND ANALYSIS PLAN SITE CLOSURE INVESTIGATION FOR RMU-3**

Parsons is currently under contract to provide an investigation at Range Management Unit 3 (RMU-3), 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 contained herein, and an addendum to the existing CSSA *Field Sampling Plan*, February 1996 (see [CSSA Environmental Encyclopedia, Volume 1-4](#)) and Sampling and Analysis Plan (SAP) Addenda contained herein.

Previous investigations show that metals concentrations in soils at RMU-3 are in excess of identified Texas Risk Reduction Program (TRRP) protective concentration limits (PCLs) (see Section 2.3). The goal of the investigation will be the removal of all soils that exceed those criteria. It is expected that upon completion of this investigation, a Release Investigation Report (RIR) will be prepared. Both the identified PCLs and the type of closure report may be modified based on the investigation findings.

This Addendum describes additional activities to be conducted as part of this investigation, and addresses specific SAP 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 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 RMU-3*, November 2012 and the Resource Conservation and Recovery Act (RCRA) *Facility Investigation Interim Measures Waste Management Plan (RFI/IM WMP) Addendum for RMU-3*, November 2012.

### **1.0 SITE DESCRIPTION AND BACKGROUND**

#### **1.1 Description**

RMU-3 was reportedly used as a rifle range. Based on the review of historical photos, the dates of its usage are estimated to be 1940s through the 1950s. The 3.2-acre site is located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary (**Figure 1**). Additional background information on RMU-3 can be found in the [CSSA Environmental Encyclopedia, Volume 3-2](#).

#### **1.2 Previous Investigations**

Previous investigations at RMU-3 include conducting an x-ray fluorescence (XRF) survey and surface/subsurface soil sampling (**Figure 2**). The XRF survey (80 samples)

was conducted in December 2010 and indicated high levels of lead and zinc contamination. In February 2011, surface samples RMU3-SS01 through RMU2-SS10 were collected and analyzed for CSSA 9 metals. Two soil samples (SS01 and SS09) exceeded the Tier 1 protective concentration level (PCL) for lead (84.5 milligrams per kilogram [mg/kg]). Thirteen additional samples were collected on January 3, 2012 to further delineate the horizontal extent of contamination. Six soil samples (SS12, SS13, SS16, SS19, SS20, and SS21) all exceeded the Tier 1 PCL for lead (84.5 mg/kg). Two additional samples were collected at depth (1.5 feet and 2.5 feet) from SS12 and SS13 on January 10, 2012. Both of these results indicated that lead exceeded the Tier 1 PCL beyond those depths. These results will be used to define the initial extent of excavation and the proper management of impacted soils from the site.

## **2.0 INVESTIGATION PROCEDURES**

This investigation will include the excavation of contaminated soils and the collection of confirmation samples for laboratory analysis to verify the successful removal of all contaminated soils from the site. 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*, May 2012.

### **2.1 Excavation Effort**

Soils identified as contaminated (criteria described in Section 2.3) through the field screening effort and confirmation sampling will be excavated and managed accordingly. An estimated 3,500 cubic yards (CY) of contaminated soils may be excavated from an area of approximately 1.6 acres. The excavated soil material will be moved directly to the respective staging area (**Figure 3**) and placed into 500 cubic yard (CY) piles.

Passenger vehicles and equipment trailers will not enter the excavated area. Excavating equipment will be parked on a trailer prior to leaving CSSA.

### **2.2 Waste Management**

Contaminated soils will be managed in accordance with CSSA's *RFI Interim Measures Waste Management Plan*, Parsons, 2006 and the *RFI/IM Addendum for RMU-3*, November 2012.

For excavated soils, waste characterization sampling will occur at a frequency of 1 sample per 500 CY. Waste characterization samples will be analyzed by the toxicity characteristic leaching procedure (TCLP) for RCRA 8 metals. 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 PIMS, 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.

### 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 ( $^{Tot}Soil_{Comb}$ ); 2) the TRRP Tier 1 Residential 30-acre PCL for groundwater protection ( $^{GW}Soil_{Ing}$ ); and 3) the TCEQ Ecological Benchmark for Soil. If the lowest of these three values is less than the CSSA soil background value, the soil background value becomes the Tier 1 PCL. **Table 1** outlines these values and the identified PCLs for the CSSA 9 metal analytes. TRRP Tier 1 Residential 30-acre PCLs for explosives are available at <http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html>. 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 contaminated soils. 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 contamination above PCLs. The number and location of confirmation samples will be dependent on the extent of excavation.

Confirmation soil samples will be collected and analyzed for CSSA 9 metals and explosives. 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**

Erosion control and site rehabilitation will follow the *Storm Water Pollution Prevention Plan for RMU-3*, November 2012. The area to be disturbed during the excavation effort is less than 5 acres so a Notice of Intent is not required.

There will be no permanent storm water controls. 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**

This investigation may take place at any time and is anticipated to take approximately eight weeks. All excavation work will be coordinated and scheduled in advance with CSSA.

Upon completion of the field effort, a Release Investigation Report (RIR) will be completed for RMU-3. If necessary, the type of closure report may be modified based on the findings of the investigation.

Table 1. Assessment Levels for Chemicals of Potential Concern, CSSA 9 Metals, at RMU-3

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

1) Texas Risk Reduction Program Rule Tier 1 Protective Concentration Levels (PCLs) <sup>Tot</sup>Soil<sub>Comb</sub>, 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) <sup>GW</sup>Soil<sub>Ing</sub>, 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**.





Aerial Photo Date: Jan. 2012



 Intermittent Stream  
 Site Boundary


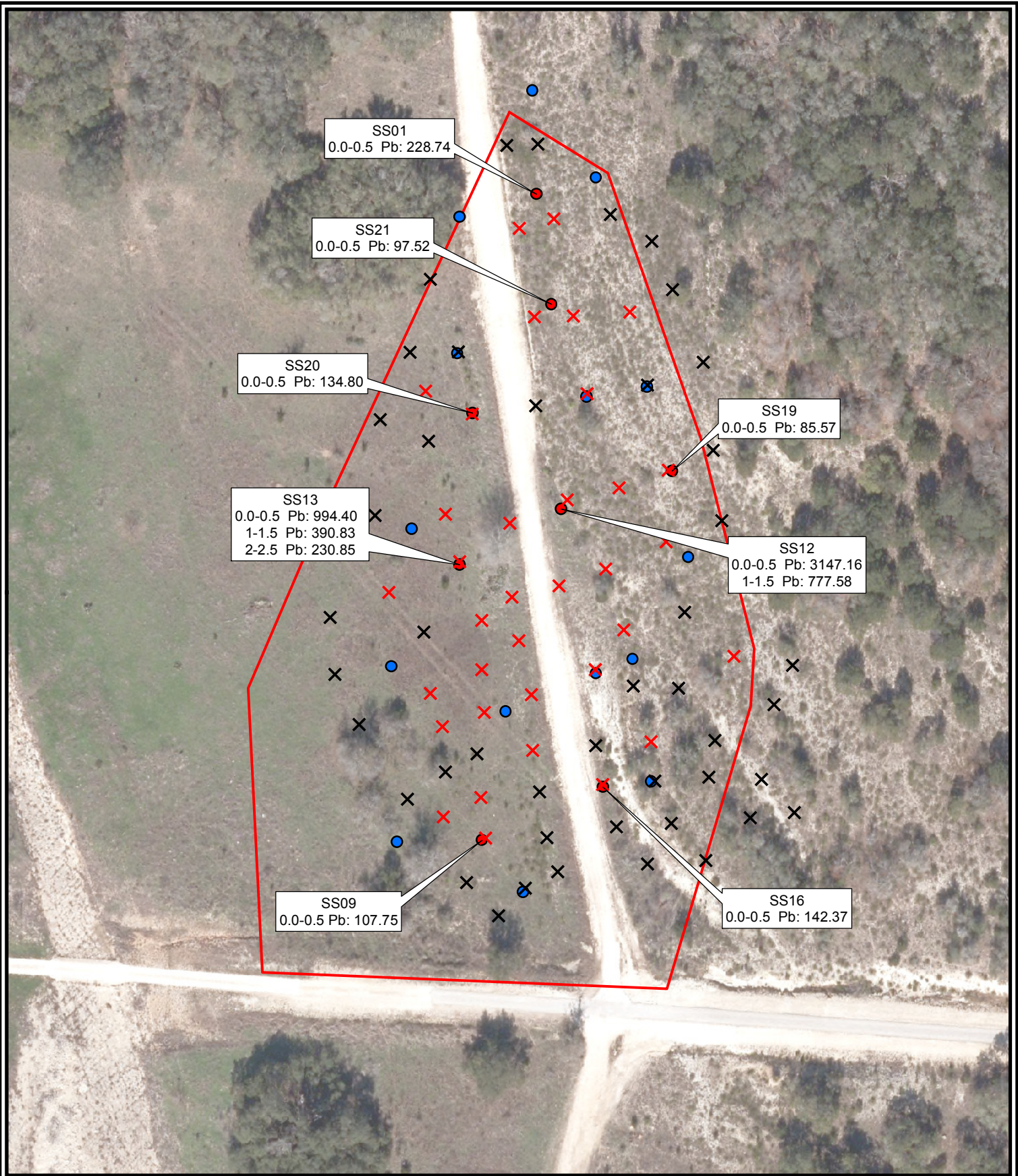
0 25 50 100  
 Feet

Figure 1
RMU-3 Site Location Map Camp Stanley Storage Activity
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0 25 50 100  
Feet

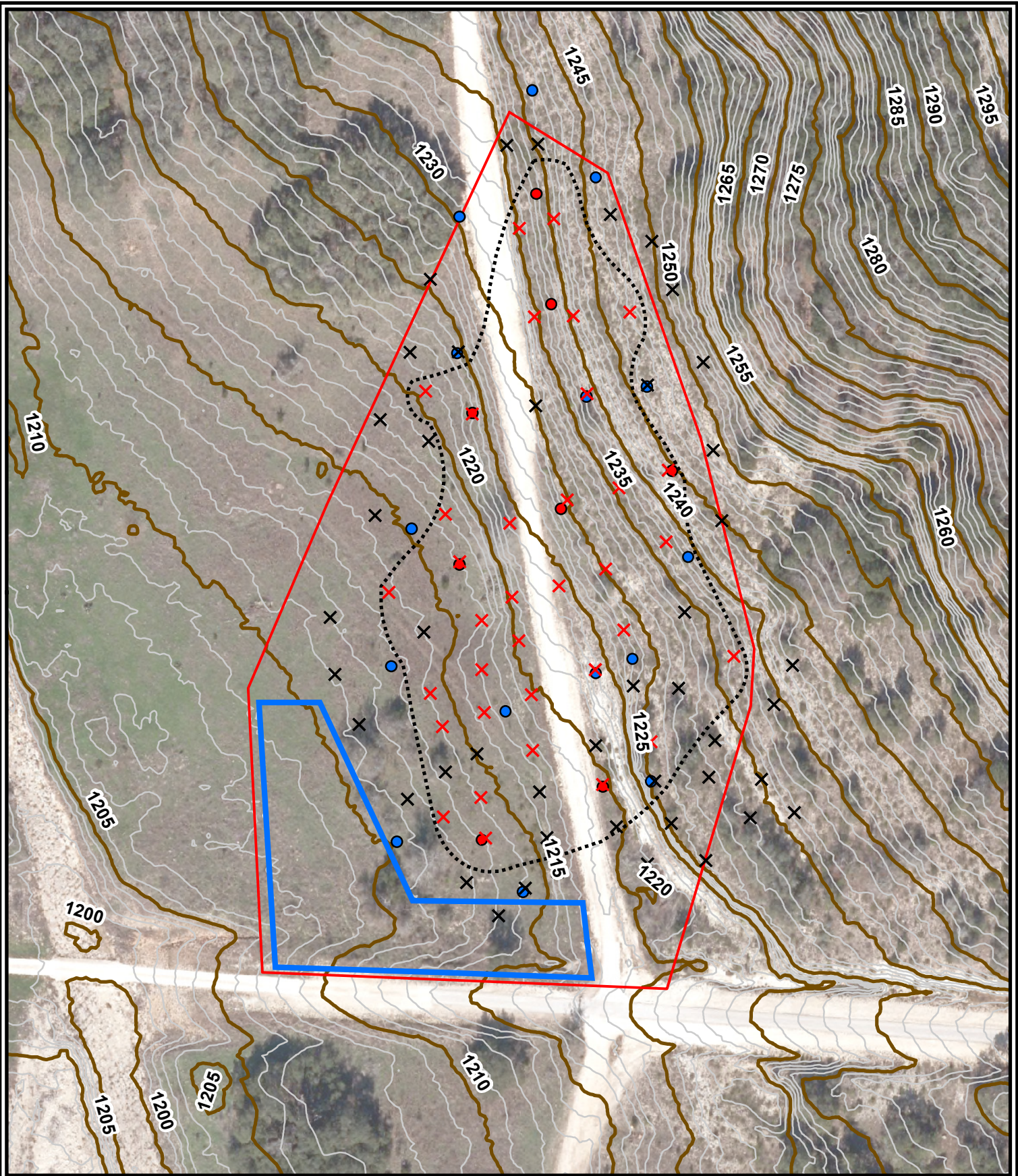
- Soil Sample
- Soil Sample with result (Pb and/or Zn) above Tier 1 PCL (mg/kg)
- ✕ XRF Sample Locations
- ✕ XRF Results above Tier 1 PCL
- RMU-3 Boundary

Figure 2

RMU-3  
Previous Sampling Map  
Camp Stanley Storage Activity

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0 25 50 100  
Feet

- 5 Foot Contours
- 1 Foot Contours
- Soil Sample
- Soil Sample with result (Pb and/or Zn) above Tier 1 PCL (mg/kg)
- × XRF Sample Locations
- × XRF Results above Tier 1 PCL
- Proposed Excavation Extent
- RMU-3 Boundary
- Proposed Staging Area

Figure 3

RMU-3  
Proposed Excavation Effort  
Camp Stanley Storage Activity

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