

WORK PLAN AND SAMPLING AND ANALYSIS PLAN ADDENDUM

RANGE MANAGEMENT UNIT 2



Prepared for:

Camp Stanley Storage Activity Boerne, Texas

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May 2011

ADDENDUM TO WORK PLAN AND SAMPLING AND ANALYSIS PLAN SITE CLOSURE INVESTIGATION FOR RMU-2

Parsons is currently under contract to provide an investigation at Range Management Unit 2 (RMU-2), 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.

Based on the historic use of the site, there is potential for metal and explosives concentrations in the surface soils and the firing berm at RMU-2 to be 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-2*, May, 2011 and the Resource Conservation and Recovery Act (RCRA) *Facility Investigation Intermim Measures Waste Management Plan (RFI/IM WMP) Addendum for RMU-2*, May, 2011.

1.0 SITE DESCRIPTION AND BACKGROUND

1.1 Description

RMU-2 was reportedly used as a small pistol range. The dates of its usage are estimated to be 1960s through the 1980s. The 3.1-acre site is located within the inner cantonment as shown on Figure 1. Additional background information on RMU-2 can be found in the [CSSA Environmental Encyclopedia, Volume 3-2](#).

1.2 Previous Investigations

Previous investigations at RMU-2 are limited to a soil sampling event conducted in March 2011 Figure 2. Surface samples RMU2-SS01 through RMU2-SS08 were analyzed for CSSA 9 metals and explosives. Subsurface samples RMU2-BOT1 through

RMU2-BOT3 were taken at a foot deep interval and also analyzed for CSSA 9 metals and explosives. Composite waste characterization samples were also collected from the firing point area, the target berm area, and the area between these two areas (not shown). As shown by the sample results in the central portion of the site, elevated levels of metals are present in the surface soils down to a depth of one foot. 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. Based on the current sample data, the extent of contamination has not been delineated at this site. X-ray fluorescence (XRF) and discrete soil samples will be collected during excavation activities to confirm the extent has been defined. The investigation is anticipated to take approximately five weeks and is scheduled to begin May 31, 2011. 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.

Recently, an un-fuzed Stokes Mortar was found on the ground surface within the RMU-2 footprint. While additional munitions debris and munitions and explosives of concern (MEC) are not expected due to the history of RMU-2, a UXO technician will be present to provide UXO support at the site during the excavation effort. Passenger vehicles and equipment trailers will not enter the excavated area. Excavating equipment will be parked on a trail prior to leaving CSSA.

2.1 Excavation Effort

Soils identified as contaminated (criteria described in Section 2.3) through the sampling conducted on March 3, 2011 and additional confirmation sampling, as necessary, will be excavated and managed accordingly as described below. The excavation will be coordinated with CSSA to avoid the disturbance of all utility and communication lines, and any mature trees.

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-2*, February, 2011.

For excavated soils, waste characterization sampling will occur at a frequency of 1 sample per 500 cubic yards (CY). Soil media, which has been shown through Laboratory analysis or field testing methodology (e.g. XRF, etc.) 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. Waste characterization samples will be analyzed by the toxicity characteristic leaching procedure (TCLP) for RCRA 8 metals.

Any soil media identified above characteristic hazardous criteria (40 Code of Federal Regulations [CFR] 261.24) will be treated on site (i.e. with use of Apatite II, etc.) in accordance with the *RFI/Interim Measures Waste Management Plan* to non-hazardous levels. All impacted soil media that meets non-hazardous criteria, either initially or once treated, 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 identifies 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 the 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-2*, May 2011

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.

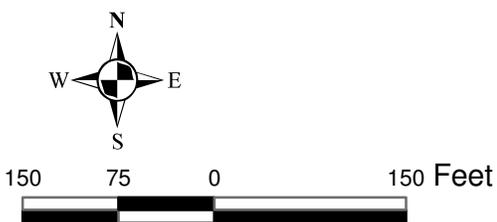
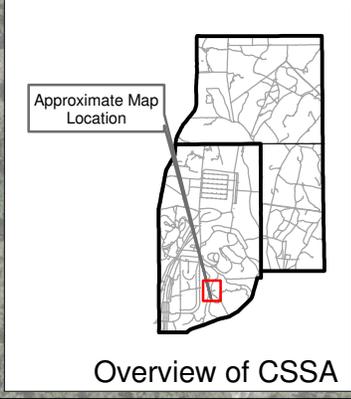
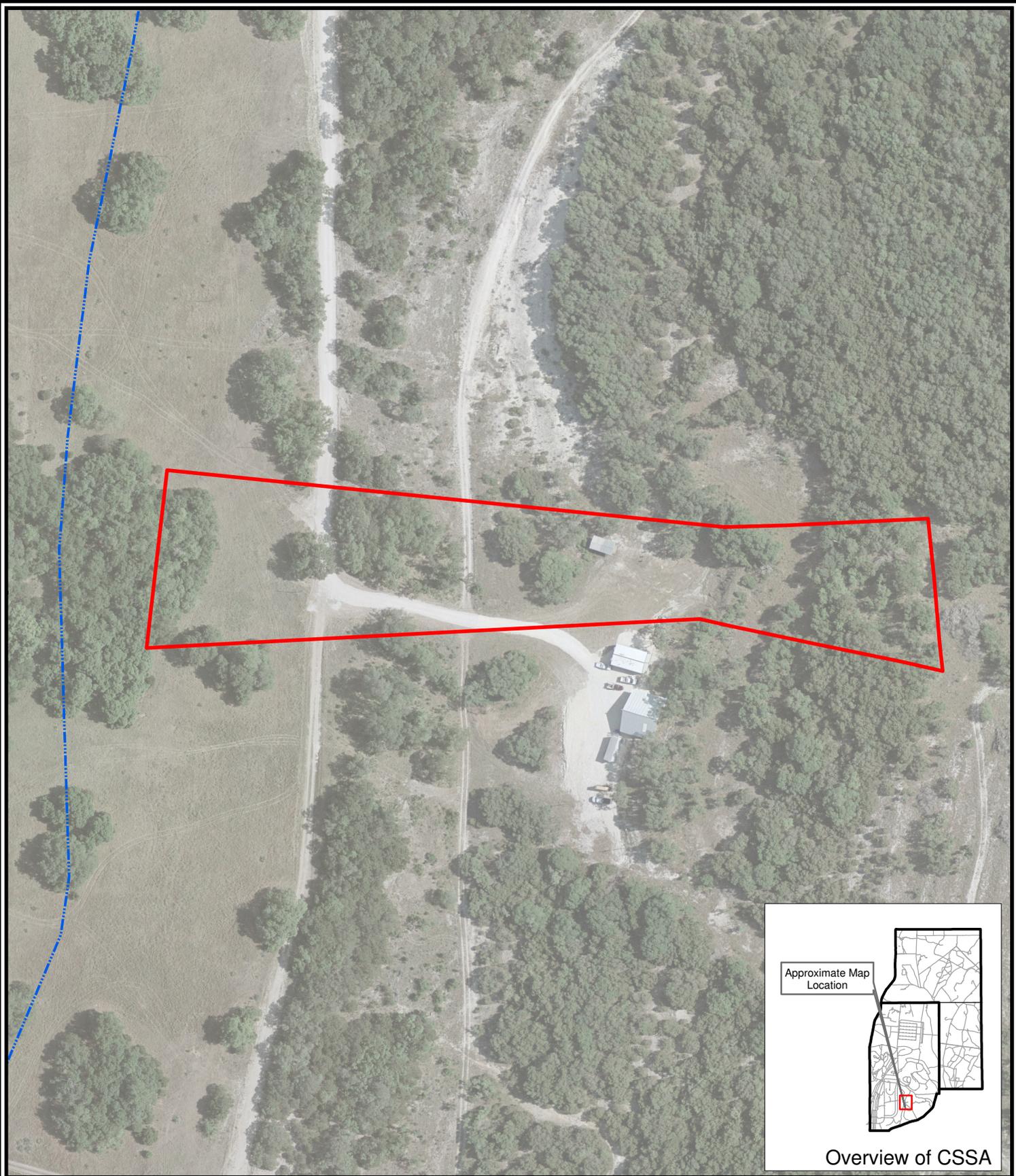
3.0 SCHEDULE

The RMU-2 investigation is scheduled to begin May 31, 2011 and is anticipated to take approximately five weeks to complete.. All excavation work will be scheduled in accordance with the operational schedules of nearby CSSA facilities.

Upon completion of the field effort, a Release Investigation Report (RIR) will be completed for RMU-2. If necessary, the type of closure report may be modified based on the findings of the investigation.

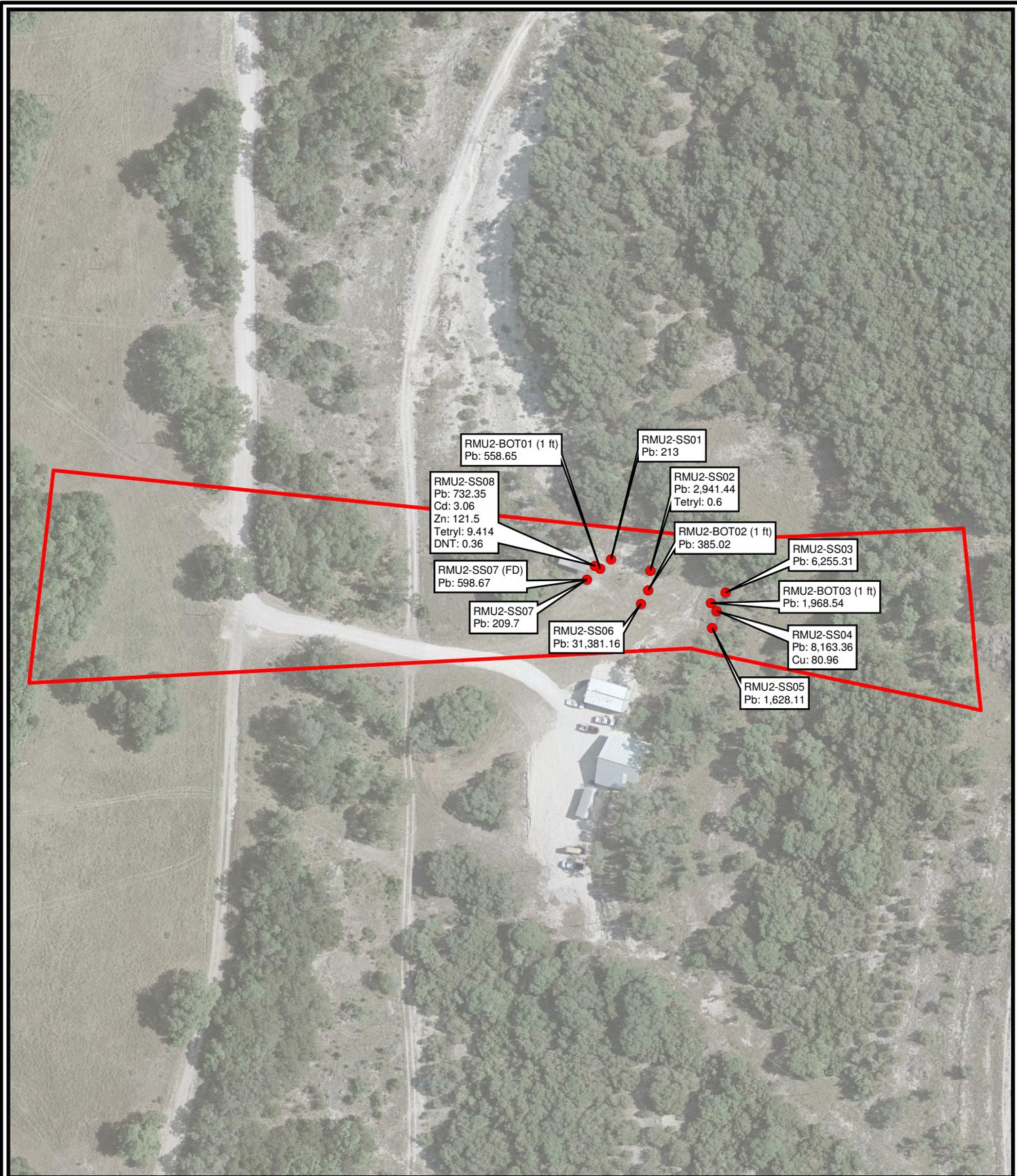
Table 1. Assessment Levels for Chemicals of Potential Concern,
CSSA 9 Metals, at RMU-2

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	EcoBenchmark (mg/kg) ⁴
Arsenic	24.2	2.5	19.6	18
Barium	7,840.5	221.9	186	330
Cadmium	52.4	0.75	3.0	32
Chromium	26,569.6	1200.1	40.2	0.4
Copper	547.6	521.2	23.2	61
Lead	500	1.5	84.5	120
Mercury	2.1	0.0039	0.77	0.1
Nickel	832.1	78.7	35.5	30
Zinc	9,921.5	1,180.2	73.2	120
<p>1) Texas Risk Reduction Program Rule Tier 1 Protective Concentration Levels (PCLs) ^{Tot}Soil_{Comb}, for 30 acre source area, March 31, 2010 (http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html).</p> <p>2) Texas Risk Reduction Program Rule Tier 1 Protective Concentration Levels (PCLs) ^{GW}Soil_{Ing}, for 30 acre source area, March 31, 2010 (http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html).</p> <p>3) Second Revision to Evaluation of Background Metals Concentrations in Soils and Bedrock, February 2002.</p> <p>4) 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/remediation/eco/0106eragupdate.pdf).</p> <p>Identified PCLs are shown in bold.</p>				



— · — · — Intermittent Stream
 □ RMU Boundary

Figure 1
 RMU-2
 Site Map
 Camp Stanley Storage Activity
PARSONS

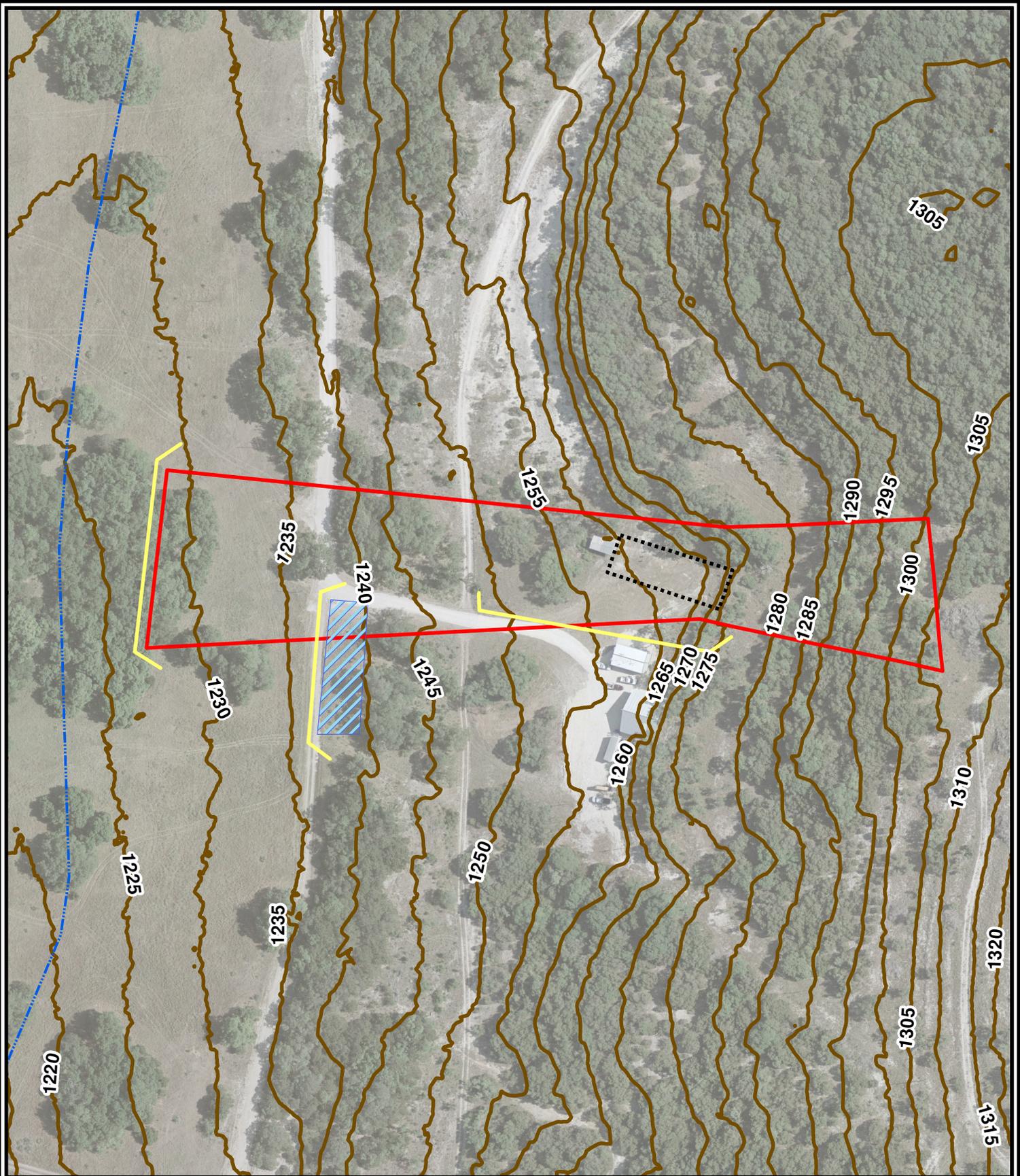


- Soil sample location with results above Tier 1 PCLs
- RMU-2 Boundary

Figure 2

RMU-2
 Sampling Results
 Camp Stanley Storage Activity

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-  Intermittent Stream
-  Proposed Staging Area
-  Proposed Excavation Area
-  RMU Boundary
-  5 Foot Contours
-  Silt Fence

Figure 3

RMU-2
Proposed Excavation Effort
Camp Stanley Storage Activity

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