

TO19 DATA VERIFICATION SUMMARY REPORT
for samples collected from
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

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INTRODUCTION

The following data verification summary report covers soil and rock samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on December 18, 2003. The samples in the following Sample Delivery Group (SDG) were analyzed for semivolatile organic compounds (SVOCs) and metals:

43395

It should be noted that there was one sample on the COC for waste characterization parameters. This sample was logged and reported under a different SDG (number 43396). In addition, one sample had volatile organic compounds (VOCs) requested on the COC. The analysis was canceled by Tammy Chang on December 30, 2003 because no Trip Blank was included in the cooler. However, the laboratory had already loaded the sample on the instrument for analysis and reported the data. The entire VOC section was removed from this report. The sample was re-collected for VOC analysis on December 29, 2003 and the results were reported in SDG 43447.

There were no field quality control (QC) samples collected in association with this SDG. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, version 1.0.

The Demo Dud samples (designated by the sample IDs starting with "DD") are not applicable for site closure. The demo dud site was over-excavated after this sampling event and all soil was disposed of off-site. However, because all the samples were submitted and analyzed together as a group, all data in this SDG was reviewed and included for submittal, regardless of sampling location.

The cooler associated with this SDG was received by the laboratory at a temperature of 4.0° C which is within the 2-6° C range recommended by the QAPP.

The samples in this SDG consisted of two matrices, rock and soil, as follows:

ROCK	SOIL
B25-BOT01	B25-EM01
B25-SW01	B25-EM02
B25-SW03	B25-SW02
DD-BOT1	B25-SW04
DD-BOT2	B26-EM01
DD-BOT3	B26-EM02
DD-SW02	DD-SW01
DD-SW03	DD-SW05
DD-SW04	DD-SW06
DD-SW07	DD-SW09
DD-SW08	
DD-SW10	
DD-SW11	

The samples were divided into these two matrix groups for the purposes of flagging.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, version 1.0. Information reviewed in the data packages included sample results; laboratory quality control results; method blanks; calibrations; case narrative; raw data; and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, version 1.0, were met.

SEMIVOLATILES

General

The SVOC portion of this SDG consisted of fourteen (14) environmental soil and rock samples. The samples were collected on December 18, 2003 and were analyzed for SVOCs according to the United States Environmental Protection Agency (USEPA) SW846 Method 8270C.

All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS), the matrix spike (MS) and matrix spike duplicate (MSD) samples, and the surrogate spikes. No sample was designated for MS/MSD analysis on the COC, however, the lab analyzed an MS/MSD on sample DD-BOT1.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria, except for the following:

Analyte	MS %R	MSD %R	Criteria
3,3'-Dichlorobenzidine	22.9	22.3	25-175%
4-Chloroaniline	(37.7)	33.7	35-146%
Hexachlorocyclopentadiene	13.7	17.1	31-135%

() indicates the recovery met criteria.

The parent sample for this MS/MSD was rock in matrix, so all rock samples were flagged "M" for the non-compliant analytes listed above.

All spike surrogate recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD samples.

All MS/MSD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was analyzed using a secondary source.
- All calibration verification criteria were met.
- All internal standard criteria were met.
- All manual integrations were verified and approved.

One method blank was analyzed in association with the SVOC analyses in this SDG. No target analytes were detected at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All SVOC results for the samples in this SDG were considered usable. The completeness of the SVOC portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

ICP METALS

General

The ICP metals portion of this SDG consisted of twenty-three (23) environmental soil and rock samples. The samples were collected on December 18, 2003 and were analyzed for a reduced list of ICP metals. Samples B25-EM01, B25-EM02, B26-EM01 and B26-EM02 were analyzed for barium, chromium, copper, nickel, and zinc. All samples starting with B25-SW, or B25-BOT were analyzed for chromium, copper and zinc. All samples starting with DD- were analyzed for copper and zinc.

The ICP metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples and MS/MSD samples. No sample was designated for MS/MSD analysis on the COC. However, the lab analyzed an MS/MSD on DD-SW04 for barium, chromium, copper, nickel and zinc, and an MS/MSD on DD-SW11 for copper and zinc only. Two LCS/LCSD pairs were analyzed, one for each AAB.

All LCS/LCSD recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria for the MS/MSD analyzed on sample DD-SW04. All MS/MSD recoveries were within acceptance criteria for the MS/MSD analyzed on sample DD-SW11, except for the following:

Parent	Metal	MS %R	MSD %R	Criteria
DD-SW11	Copper	72.8	150.6	75-125%

The parent sample for this MS/MDS was rock in matrix, so all rock samples were flagged “M” for copper.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples and the MS/MSD samples.

All LCS/LCSD RPDs were within acceptance criteria.

All MS/MSD RPDs were within criteria, except for the following:

Parent	Metal	RPD	Criteria
DD-SW11	Copper	24.3	RPD ≤ 20

All associated sample results were already flagged “M” due to the failing MS/SD recoveries, so no additional corrective action was necessary.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The ICV was prepared using a secondary source.
- All interference check criteria were met.

- A dilution test (DT) was analyzed on sample DD-SW06 for barium, chromium, copper, nickel and zinc, and on sample DD-SW11 for chromium and zinc only. All metals met criteria in the dilution test analyzed on sample DD-SW06 except for the following:

Metal	%D	Criteria
Copper	15.8	%D ≤ 10
Zinc	12.07	

The parent sample for this DT was soil in matrix. No MS/MSD was analyzed for soils, so the non-compliant analytes were flagged “M” in all soil samples in accordance with the CSSA QAPP.

All metals met criteria in the dilution test analyzed on sample DD-SW11 except for the following:

Metal	%D	Criteria
Chromium	16.7	%D ≤ 10

The parent sample for this DT was rock in matrix. The MS/MSD analyzed on the same parent sample failed for chromium. All associated sample results were already flagged “M” due to the failing MS/MSD recoveries. Therefore, no additional corrective action was necessary.

- The laboratory also analyzed a post digestion spike (PDS) on samples DD-SW06 and DD-SW11. All PDS recoveries were within acceptance criteria.

Two method blanks and several calibration blanks were analyzed in association with the ICP analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

ARSENIC

General

The arsenic portion of this SDG consisted of nine (9) environmental soil and rock samples. The samples were collected on December 18, 2003 and were analyzed for arsenic using USEPA SW846 Method 7060A. Only the samples collected from B25 and B26 required analysis for arsenic.

The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

It should be noted that all nine samples were analyzed at a dilution due to the high levels of arsenic present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

Both LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

The LCS/LCSD RPD was within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The ICV was prepared using a secondary source.
- The dilution test (DT) was analyzed on sample B26-EM02. Arsenic failed criteria as follows:

Metal	%D	Criteria
Arsenic	52.4	%D ≤ 10

The parent sample for this DT was soil in matrix. Because no MS/MSD was available for the soil samples, the arsenic results in all associated samples were flagged “M” in accordance with the CSSA QAPP.

- The laboratory also analyzed a PDS on sample B26-EM02. Arsenic met criteria in the PDS with a recovery of 87.4%.

One method blank and several calibration blanks were analyzed in association with the arsenic analyses in this SDG. All blanks were free of arsenic at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All arsenic results for the samples in this SDG were considered usable. The completeness for the arsenic portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

CADMIUM

General

The cadmium portion of this SDG consisted of four (4) environmental soil and rock samples. The samples were collected on December 18, 2003 and were analyzed for cadmium using USEPA SW846 Method 7131A. Only samples B25-EM01, B25-EM02, B26-EM01 and B26-EM02 required analysis for cadmium.

The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

It should be noted that two samples were analyzed at a dilution due to the high levels of cadmium present. Sample B26-EM01 required a 5x dilution, and sample B26-EM02 required a 2x dilution.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analysis on the COC.

Both LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples.

The LCS/LCSD RPD was within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.

- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The ICV was prepared using a secondary source.
- The dilution test was analyzed on sample B26-EM01 and met criteria with a %D of 2.1.
- The laboratory also analyzed a PDS on sample B26-EM01. Cadmium met criteria in the PDS with a recovery of 87.4%.

One method blank and several calibration blanks were analyzed in association with the cadmium analyses in this SDG. All blanks were free of cadmium at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All cadmium results for the samples in this SDG were considered usable. The completeness for the cadmium portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

LEAD

General

The lead portion of this SDG consisted of eighteen (18) environmental soil and rock samples. The samples were collected on December 18, 2003 and were analyzed for lead using USEPA SW846 Method 7421.

The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. The samples were prepared and analyzed within the holding time required by the method.

It should be noted that all eighteen samples were analyzed at a dilution due to the high levels of lead present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples and MS/MSD samples. No sample was designated for MS/MSD analysis on the COC. However, the laboratory analyzed an MS/MSD on sample DD-SW06 and on sample DD-SW11. It should be noted that the parent sample DD-SW06 was analyzed at a 5x dilution, but the MS/MSD was analyzed at a 10x dilution. This was required so that the MS/MSD concentrations would be recovered within calibration range.

There were two LCS/LCSD pairs analyzed, one for the batch run 1/5/04 and one for the batch run 1/6/04. All LCS/LCSD recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria, except for the following:

Parent	Metal	MS %R	MSD %R	Criteria
DD-SW06	Lead	(124)	142	74-124%
DD-SW11	Lead	-677	850	74-124%

() indicates the recovery met criteria.

The anomalous recoveries for sample DD-SW11 were due to the fact that the concentration spiked (2.5 mg/kg) was just over one percent of the native sample concentration (228 mg/kg). Parent sample DD-SW06 was soil in matrix and parent sample DD-SW11 was rock in matrix, so all lead results were flagged “M” in accordance with the CSSA QAPP.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples and the MS/MSD samples.

All LCS/LCSD and MS/MSD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The ICV was prepared using a secondary source.
- A dilution test was analyzed on soil sample DD-SW06 and on rock sample DD-SW11. The DT analyzed on rock sample DD-SW06 was evaluated using the 10x and 50x dilutions, even though the parent sample was analyzed at a 5x dilution. The DT for rock failed to meet criteria as follows:

Sample	Metal	%D	Criteria
DD-SW06	Lead	22.5	%D ≤ 10

All rock sample results for lead were previously flagged “M” due to the failing MS/MSD, so no corrective action was necessary. (The “M” flag supercedes the “J” flag in the CSSA QAPP flag hierarchy.)

The DT analyzed on soil sample DD-SW11 met criteria with a %D of 8.6.

- The laboratory analyzed a PDS on soil sample DD-SW06 and on rock sample DD-SW11. Lead met criteria in the PDS analyzed on soil sample DD-SW06 with a recovery of 112%. Lead met criteria in the PDS analyzed on rock sample DD-SW11 with a recovery of 91.8%.

Two method blanks and several calibration blanks were analyzed in association with the lead analyses in this SDG. All blanks were free of lead at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All lead results for the samples in this SDG were considered usable. The completeness for the lead portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERCURY

General

The mercury portion of this SDG consisted of eighteen (18) environmental soil and rock samples. The samples were collected on December 18, 2003 and were analyzed for mercury using USEPA SW846 Method 7471A.

The samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples and MS/MSD samples. No sample was designated for MS/MSD analysis on the COC. However, the laboratory analyzed an MS/MSD on sample DD-SW11.

All LCS/LCSD and MS/MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples and MS/MSD samples.

All LCS/LCSD and MS/MSD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and

- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.

One method blank and several calibration blanks were analyzed in association with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.