TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Katherine LaPierre and Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil 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.

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 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.

All sample results 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 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%

All sample results for copper 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 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 $\leq$ 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 copper and zinc only. All metals met criteria in the dilution test analyzed on DD-SW06 except for the following:

Metal	%D	Criteria
Copper Zinc	15.8 12.1	%D ≤ 10

  All copper results were previously flagged "M" due to the failing MS/MSD recoveries, so no corrective action was needed for this metal. Zinc met criteria in the MS/MSD, so all sample results were flagged "J" in accordance with the CSSA QAPP.

  Both copper and zinc met criteria in the dilution test analyzed on DD-SW11.

- 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 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

  Because no MS/MSD was available, the arsenic results in all 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 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 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). 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 samples DD-SW06 and DD-SW11. The DT analyzed on sample DD-SW06 was evaluated using the 10x and 50x dilutions, even though the parent sample was analyzed at a 5x dilution. The DT analyzed on sample DD-SW06 failed to meet criteria as follows:

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

  All 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 sample DD-SW11 met criteria with a %D of 8.6.

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

TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Katherine LaPierre and Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on December 29, 2003. The samples in the following Sample Delivery Group (SDG) were analyzed for volatile organic compounds (VOCs) and metals:

43447

The only field quality control (QC) sample collected in association with this SDG was one Trip Blank. 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 cooler associated with this SDG was received by the laboratory at a temperature of 6.0° C which is within the 2-6° C range recommended by the QAPP.

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.

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; field and laboratory quality control results; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists.. 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.

VOLATILES

General

The VOC portion of this SDG consisted of fifteen (15) environmental soil samples. The samples were collected on December 29, 2003 and were analyzed for Toluene only according to the United States Environmental Protection Agency (USEPA) SW846 Method 8260B. Only samples from the DD area required analysis for Toluene.

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.

The samples in this SDG were run in three analytical batches (two for soil and one for water) on two different instruments.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) and LCS duplicate (LCSD) samples and the surrogate spikes. No sample was designated for MS/MSD analysis on the COC.

There were three LCS/LCSD pair analyzed, one pair for each analytical batch. All LCS/LCSD recoveries were within acceptance criteria.

All surrogate spike recoveries were within acceptance criteria, except for the following:

Sample ID	Surrogate	%R	Criteria
DD-SW11	1,2-Dichloroethane-D4	152	52-149%

The high surrogate recovery was due to the low internal standard response for this sample. Since the surrogate was recovered high and toluene was non-detect in this sample, no corrective action was necessary.

Precision

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

All three LCS/LCSD 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 field and laboratory blanks for cross contamination of samples during shipment or 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. There were two ICALs for this SDG, one for soils and one for waters.
- All second source verification criteria were met. The ICV samples were analyzed using a secondary source.
- All calibration verification criteria were met. No CCV data was reported for waters because the ICAL was analyzed in the same batch as the samples.
- All internal standard criteria were met, except for the following:

Sample ID	Internal Standard	Area	Lower Limit
DD-SW01	1,4-Dichlorobenzene-D4	197380	205708
DD-SW04	1,4-Dichlorobenzene-D4	197402	205708
DD-SW11	Fluorobenzene	576252	605725
	Chlorobenzene-D5	405787	429430
	1,4-Dichlorobenzene-D4	183019	205708

A low internal standard response results in a high bias for analyte results. Toluene is quantitated against the internal standard Fluorobenzene, so the low response for the other internal standards did not affect the data. Only sample DD-SW11 had a low response for Fluorobenzene and toluene was non-detect in this sample, so no corrective action was necessary. It should be noted that the lab reanalyzed the samples with failing internal standards and similar results were obtained.

- All manual integrations were verified and approved.

Three method blanks (two soils and one water) and one trip blank were analyzed in association with the VOC analyses in this SDG. Toluene was not detected at or above the RL in any of the blanks.

Completeness

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

All Toluene results for the samples in this SDG were considered usable. The completeness of the VOC 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 five (5) environmental soil samples. The samples were collected on December 29, 2003 and were analyzed for a reduced list of ICP metals, which included barium, chromium copper and nickel. Only the samples from AOC54 required analysis for ICP metals.

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. No sample was designated for MS/MSD analysis on the COC.

All 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.
- All interference check criteria were met.

- A dilution test (DT) was analyzed on sample AOC54-SW04. All metals except Nickel met tolerance in the DT as follows:

Metal	%D	Criteria
Barium	2.3	%D ≤ 10
Chromium	5.3	
Copper	0.7	
Nickel	13.8	

No MS/MSD was available for this SDG, so all nickel results were flagged "M" in accordance with the CSSA QAPP.

- The laboratory also analyzed a post digestion spike (PDS) on sample AOC54-SW04. All PDS recoveries were within acceptance criteria.

One method blank 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 five (5) environmental soil samples. The samples were collected on December 29, 2003 and were analyzed for arsenic using USEPA SW846 Method 7060A. Only the samples collected from AOC54 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.

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 AOC54-SW04. Arsenic met criteria with a %D of 3.0.
- No PDS was required as per the CSSA QAPP.

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 five (5) environmental soil samples. The samples were collected on December 29, 2003 and were analyzed for cadmium using USEPA SW846 Method 7131A. Only samples from AOC54 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.

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 AOC54-SW04 and met criteria with a %D of 1.9.
- No PDS was required as per the CSSA QAPP.

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 five (5) environmental soil samples. The samples were collected on December 29, 2003 and were analyzed for lead using USEPA SW846 Method 7421. Only the samples collected from AOC54 required analysis for lead.

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 five samples required dilution due to the high levels of lead 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.

- A dilution test was analyzed on sample AOC54-SW04 and met criteria with a %D of 9.8. It should be noted that although the final dilution for this sample was 10x, the dilution test was evaluated using the 5x and 25x dilutions.
- No PDS was required as per the CSSA QAPP.

One method blank 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 five (5) environmental soil samples. The samples were collected on December 29, 2003 and were analyzed for mercury using USEPA SW846 Method 7471A. Only the samples collected from AOC54 required analysis for mercury.

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. 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. 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%.

TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Katherine LaPierre and Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on December 29, 2003. The samples in the following Sample Delivery Group (SDG) were previously analyzed for volatile organic compounds (VOCs) and metals. On May 18, 2004 Parsons requested that the samples from AOC54 be analyzed for pH due to the fact that AOC54 was once used as storage area for batteries. The pH readings were used to assess whether the soil could possibly be impacted by leaking battery acid. The pH for the AOC54 samples was reported in an addendum to the data package. This report covers only the pH analyses.

43447

No field quality control (QC) samples were associated with the pH results.

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 cooler associated with this SDG was received by the laboratory at a temperature of 6.0 $^{\circ}$ C, which is within the 2-6 $^{\circ}$ C range recommended by the QAPP.

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; field and laboratory quality control results; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists. 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.

PH

General

The pH portion of this SDG consisted of four (4) environmental soil samples. Sample AOC54-BOT01 did not have sufficient volume to be analyzed for pH. The samples were collected on December 29, 2003 and were analyzed for pH according to the United States Environmental Protection Agency (USEPA) SW846 Method 9045C. Only samples from AOC54 required analysis for pH.

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

Although the pH was measured several months after sample receipt, pH of environmental samples usually changes due to biological activity of microorganisms in the sample. These biological activities are more likely to occur in water samples than soil samples. Since these samples were soil, and were stored at 4 degrees C at the lab during the entire time between collection and storage, the pH value should not have changed significantly during storage. In addition, all samples in this SDG had pH readings between 8.0 and 8.2. These levels are consistent with background data, indicating that leaking battery acid did not affect the soil at AOC54. Thus, it is the professional opinion of the Parsons' data validators that the pH data is usable for the purposes of this project.

Accuracy

Accuracy was measured using a pH 7 buffer solution. The pH reading of the buffer solution was taken before and after samples were analyzed and both readings were 7.0. Although the CSSA QAPP indicates a buffer solution be read "At each sample location", since these samples were analyzed in the lab, the pH was verified with a pH 7 buffer solution only at the beginning and end of the batch.

Precision

Precision was evaluated using relative percent difference (RPD) obtained from the laboratory duplicate. The laboratory randomly chose one sample in the batch to analyze in duplicate. The laboratory duplicate was performed on a sample from a different client. The pH readings for both the parent sample and the laboratory duplicate were 7.5, so the RPD was zero.

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 outside the holding time required by the method. The pH meter was calibrated prior to sample analysis using three points that cover the range of expected pH measurements, in accordance with the CSSA QAPP. All readings were within acceptance criteria.

Completeness

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

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

TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on March 18, 2004. The samples in the following Sample Delivery Group (SDG) were analyzed for semivolatile organic compounds (SVOCs) and metals:

43982

The only field quality control (QC) sample collected in association with this SDG were two field duplicate (FD) samples. 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 cooler associated with this SDG was received by the laboratory at a temperature of 4.0º C which is within the 2-6° C range recommended by the QAPP.

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; field and laboratory quality control results; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists. 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 (SVOCs)

General

The SVOC portion of this SDG consisted of nine (9) samples, including six environmental soil samples, one field duplicate and one MS/MSD pair. The samples were collected on March 18, 2004 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) sample, the MS/MSD samples and the surrogate spikes. Sample B29-SW06 was designated for MS/MSD analysis on the COC.

All LCS and surrogates recoveries were within acceptance criteria.

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

Analyte	MS %R	MSD %R	Criteria
Benzoic Acid	6.3	7.4	25-172%

All sample results for benzoic acid were flagged "M" due to the low bias demonstrated by the MS/MSD.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD and field duplicate analyte results. Sample B29-SW05 was collected in duplicate. The second jar for this sample was submitted and analyzed as a field duplicate.

All MS/MSD RPDs were within acceptance criteria.

The RPD could not be evaluated for the field duplicate pair because all analytes were below the RL.

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.
- All continuing calibration verification criteria were met.
- All internal standard criteria were met.

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

Completeness

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

All SVOCs results for the samples in this SDG were considered usable. The completeness of the SVOCs 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 sixteen (16) samples, including twelve environmental soil samples, two field duplicates and one MS/MSD pair. The samples were collected on March 18, 2004 and were analyzed for a reduced list of ICP metals. The samples were analyzed for one or more of the following metals: chromium, copper, nickel, and zinc. Each sample has its own specific target list for metals.

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 in two batches and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample B29-SW06 was designated for MS/MSD analysis on the COC.

Two LCS/LCSD pair were analyzed for ICP metals. All LCS/LCSD and MS/MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD and MS/MSD samples and the field duplicate analyte results. Sample B29-SW05 and sample DD-SW16 were collected in duplicate. The second jar for each sample was submitted and analyzed as a field duplicate.

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

For the field duplicate pair analyzed on sample B29-SW05, the RPDs for chromium and zinc could not be calculated because these metals were below the RL in both the parent and field duplicate. The RPD for nickel met criteria as follows:

Metal	B29-SW05 Result (mg/kg)	FD Result (mg/kg)	RPD	Criteria
Nickel	3.62	3.42	5.7	RPD ≤ 20

For the field duplicate pair analyzed on sample DD-SW16, the RPD for copper met criteria, but the RPD for zinc exceeded criteria as follows:

Metal	DD-SW16 Result (mg/kg)	FD Result (mg/kg)	RPD	Criteria
Copper	17.17	15.83	8.1	RPD ≤ 20
Zinc	17.36	13.59	24.4	

The AFCEE QAPP indicates all zinc detections above the RL should be flagged "J". However, all zinc results above the RL were flagged "M" due to the failing dilution test. Since the "M" flag supercedes the "J" flag in the CSSA QAPP flag hierarchy, no corrective action was taken based on the high field duplicate RPD for zinc.

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.

- The instrument was calibrated twice on March 24, 2004 due to instrument drift. All initial calibration criteria were met for both initial calibration curves (ICALs).
- 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 ICV was injected after the first ICAL only since both calibrations were analyzed on the same day.
- All interference check criteria were met.
- No dilution test (DT) was required for analytical batch 040323A-74363 since all chromium results were below the RL and all copper, nickel and zinc detections were less than 50 times associated MDLs.
- A DT was required for analytical batch 040323A-74364 since both copper and zinc were detected above 50 times the MDL in one or more samples in this analytical batch. The DT was performed with sample DD-SW18. Both copper and zinc had non-compliant recoveries, as follows:

Metal	%D	Criteria
Copper Zinc	32.5 15.2	%D ≤ 10

No MS/MSD was available for this analytical batch, so all copper and zinc results were flagged "M" for the samples in this batch in accordance with the CSSA QAPP.

- No PDS was required as per the CSSA QAPP.

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) samples, including six (6) environmental soil samples, one field duplicate and one MS/MSD pair. The samples were collected on March 18, 2004 and were analyzed for arsenic using USEPA SW846 Method 7060A.

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 sample B29-SW05 required a 2x dilution due to the high level of arsenic present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample B29-SW06 was designated for MS/MSD analysis on the COC.

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

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD and MS/MSD samples, and the field duplicate analyte results. Sample B29-SW05 was collected in duplicate. The second jar for this sample was submitted and analyzed as a field duplicate.

All LCS/LCSD, MS/MSD and field duplicate 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.
- The DT was analyzed on sample B29-SW06. Arsenic failed to meet the criteria (%D ≤ 10) with a %D of 13.2. Because the MS/MSD met criteria for this metal, all arsenic results were flagged "J" in accordance with the CSSA QAPP.
- No PDS was required as per the CSSA QAPP.

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%.

LEAD

General

The lead portion of this SDG consisted of twenty-two (22) samples, including eighteen (18) environmental soil samples, two field duplicates and one MS/MSD pair. The samples were collected on March 18, 2004 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 in two analytical batches and within the holding time required by the method.

It should be noted that most samples required dilution due to the high levels of lead present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS/MSD samples. Sample B29-SW06 was designated for MS/MSD analysis on the COC.

Two LCS/LCSD pair were analyzed for lead. All LCS/LCSD recoveries were within acceptance criteria.

The lead recovery was slightly above tolerance in the MS, but met criteria in the MSD as follows:

Analyte	MS %R	MSD %R	Criteria
Lead	126	88.4	74-124%

All lead results were flagged "M" in accordance with the CSSA QAPP.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD and MS/MSD samples, and the field duplicate analyte results. Samples B29-SW05 and DD-SW16 were both collected in duplicate. The second jar for each sample was submitted and analyzed as a field duplicate.

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

For the field duplicate pair analyzed on sample B29-SW05, the RPD for lead met criteria as follows:

Metal	B29-SW05 Result (mg/kg)	FD Result (mg/kg)	RPD	Criteria
Lead	3.76	4.08	8.2	RPD ≤ 25

For the field duplicate pair analyzed on sample DD-SW16, the RPD for lead exceeded criteria as follows:

Metal	DD-SW16 Result (mg/kg)	FD Result (mg/kg)	RPD	Criteria
Lead	370.18	104.10	112.2	RPD ≤ 25

All lead results above the RL were previously flagged "M" due to the failing MS recovery, so no corrective action was necessary for the high field duplicate RPD (since the "M" flag supercedes the "J" flag in the CSSA QAPP flag hierarchy).

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.

- There were two initial calibration curves analyzed for lead. Both curves met all initial calibration criteria.
- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The two ICV samples (one for each ICAL) were prepared using a secondary source.
- Two dilution tests were analyzed. The DT run on sample B29-SW06 was evaluated using the 2x and 10x dilutions. The DT run on sample DD-SW19 was evaluated using the undiluted result and the 5x dilution. Both DTs met criteria for lead.
- No PDS was required as per the CSSA QAPP.

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 seven (7) samples, including six (6) environmental soil samples and one filed duplicate. The samples were collected on March 18, 2004 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.

It should be noted that sample DD-SW17 required a 5x dilution due to the high level of mercury 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 and the field duplicate analyte results. Sample DD-SW16 was collected in duplicate. The second jar for this sample was submitted and analyzed as a field duplicate.

The LCS/LCSD RPD was within acceptance criteria.

The field duplicate RPD for sample DD-SW16 exceeded criteria as follows:

Analyte	DD-SW16 Result (mg/kg)	FD Result (mg/kg)	RPD	Criteria
Mercury	0.56	0.76	30	RPD ≤ 25

All mercury results above the RL were flagged "J" due to the high RPD.

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%.

TO19 DATA VERIFICATION SUMMARY REPORT

for DD-SW22 and DD-SW25 collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers two soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on May 11, 2004. Additional analysis for copper was requested for samples DD-SW22 and DD-SW25 on August 11, 2004 after the original data package (44445) was received. The laboratory generated the copper results from the original data stored in the LIMS for sample DD-SW25, and analyzed sample DD-SW22 for copper on August 11, 2004. The lab reported copper and included all other target ICP metals results in the amended data package. All QC data related to zinc was previously verified. Therefore, this report only includes a discussion of the copper analyses. The Addendum report was assigned to the following Sample Delivery Group (SDG):

44445 Addendum

There were no field quality control (QC) samples associated with the copper analyses reported in this SDG Addendum.

Both 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 cooler associated with this SDG was received by the laboratory at a temperature of 3° C which is within the 2-6° C range recommended by the QAPP.

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; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists. 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.

COPPER

General

The addendum report consisted of two (2) soil samples, DD-SW22 and DD-SW25. Both samples were collected on May 11, 2004 and were analyzed for copper.

The copper and zinc analyses for DD-SW22 were performed on May 13, 2004 but the result was not included in the ICP section of the original data package 44445 since copper was not requested on the original COC.

Sample DD-SW25 was analyzed on August 11, 2004 for copper using USEPA SW846 Method 6010B.

Both samples in this addendum report were analyzed following the procedures outlined in the CSSA QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS/LCSD samples. Neither of the two samples included in this report was designated for MS/MSD analysis on the COC.

Two LCS/LCSD pair were analyzed for copper, one for each analytical batch. All LCS/LCSD recoveries were within acceptance criteria.

Precision

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

Both LCS/LCSD 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.

Both samples in this addendum 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 samples were prepared using a second source standard.
- All interference check criteria were met.
- A dilution test was performed with sample DD-SW24 (for the analytical batch involving DD-SW22) and on sample DD-SW25. Neither dilution test was applicable because neither sample contained copper at a concentration greater than 50 times the MDL.

- No PDS was required as per the CSSA QAPP.

Two method blanks and several calibration blanks were analyzed in association with the copper analysis in this SDG. All blanks were free of copper 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 copper results for DD-SW22 and DD-SW25 were considered usable. The completeness of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers three soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on August 11, 2004. Two samples were collected for mercury analysis and one sample was collected for copper analysis. These samples were assigned to the following Sample Delivery Group (SDG):

45103

There was one field duplicate sample collected for mercury analysis in this SDG. No other QC samples were collected.

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 cooler associated with this SDG was received by the laboratory at a temperature of 3° C which is within the 2-6° C range recommended by the QAPP.

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; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists. 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.

COPPER

General

The report consisted of one (1) soil sample, DD-SW27.

Sample DD-SW27 was analyzed for copper using USEPA SW846 Method 6010B. This sample was analyzed following the procedures outlined in the CSSA QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS/LCSD samples. No sample in this SDG was designated for MS/MSD analysis on the COC.

Both LCS and LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the LCS/LCSD results.

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 blank for cross contamination of samples during analysis.

This sample was analyzed following the COC and the analytical procedures described in the CSSA QAPP. This sample was 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 sample was prepared using a second source standard.
- All interference check criteria were met.
- A dilution test was performed with sample DD-SW27. The dilution test was not applicable because this sample was non-detect for copper. The lab included the dilution test result in the data package.
- No PDS was required as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the copper analysis in this SDG. All blanks were free of copper 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.

The copper result for DD-SW27 was considered usable. The completeness for the copper portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERCURY

General

The report consisted of two (2) soil samples, DD-SW26 and its field duplicate, DD-SW26FD.

Both samples were analyzed for mercury using USEPA SW846 Method 7471A. Both samples were analyzed following the procedures outlined in the CSSA QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS/LCSD samples. No sample in this SDG was designated for MS/MSD analysis on the COC.

Both LCS and LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD results and parent / field duplicate results.

The LCS/LCSD RPD was within acceptance criteria. The RPD calculation was not applicable for the field duplicate pair since both results were below the reporting limit.

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 blank for cross contamination of samples during analysis.

Both samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP. Both 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 samples were prepared using a second source standard.

One method blank and several calibration blanks were analyzed in association with the mercury analysis 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 result 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%.

TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers two soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on September 1, 2004. The samples in the following Sample Delivery Group (SDG) were analyzed for copper only:

45260

There were no field quality control (QC) samples collected in association with this SDG.

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

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; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists. 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.

COPPER

General

This SDG consisted of two (2) soil samples. The samples were collected on September 1, 2004 and were analyzed for copper only.

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

Accuracy

Accuracy was evaluated using the percent recovery 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 relative percent difference (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.
- All interference check criteria were met.
- A dilution test was performed on sample DD-SW29. The percent difference (%D) met criteria at 0.6%.
- No PDS was required as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the copper analysis in this SDG. All blanks were free of copper 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 copper results for the samples in this SDG were considered usable. The completeness of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

TO19 DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers two soil samples collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on September 29, 2004. These samples were logged in under the following Sample Delivery Group (SDG) and analyzed for copper only:

45487

There were no field QC samples collected.

Both 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 cooler associated with this SDG was received by the laboratory at a temperature of 4° C which is within the 2-6° C range recommended by the QAPP.

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; calibrations; case narratives; raw data; chain-of-custody (COC) forms and cooler receipt checklists. 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.

COPPER

General

The report consisted of two (2) soil samples collected on September 29, 2004. The samples were analyzed for copper only using USEPA SW846 Method 6010B following the procedures outlined in the CSSA QAPP and within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS/LCSD samples. No sample was designated for MS/MSD analyses on the COC.

Both LCS/LCSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (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.

Both 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 second source standard.
- All interference check criteria were met.
- A dilution test was performed on sample DD-SW31. Copper met criteria with a percent difference (%D) of 8.0.
- No post digestion spike was required as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the copper analysis in this SDG. All blanks were free of copper 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.

Both copper results in this SDG were considered usable. The completeness of this SDG is 100%, which meets the minimum acceptance criteria of 90%.