

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 January 13, 2004. The samples in the following Sample Delivery Group (SDG) were analyzed for metals:

43515

The field quality control (QC) samples collected in association with this SDG included two matrix spike/matrix spike duplicate (MS/MSD) pair and four field duplicates (FD). 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 3.0⁰ C which is within the 2-6⁰ 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; MS/MSD samples; field duplicate 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.

ICP METALS

General

The ICP metals portion of this SDG consisted of twenty-three (23) samples, including fifteen environmental soil samples, two MS/MSD pairs and four field

duplicates. The samples were collected on January 13, 2004 and were analyzed for a reduced list of ICP metals. The COC indicated that the samples collected from AOC50 required analysis for chromium, copper and zinc only, and samples from B30 required analysis for copper, nickel and zinc only.

The ICP metals analyses were performed using United States Environmental Protection Agency (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.

Sample AOC50-SW06 required a 5x dilution for zinc only due to the high concentration present.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) and LCS duplicate (LCSD) samples and the MS/MSD samples. Samples B30-SW02 and AOC50-SW04 were designated for MS/MSD analysis on the COC.

There were two LCS/LCSD pair analyzed in this SDG, one LCS/LCSD pair for each analytical batch. All LCS/LCSD recoveries were within acceptance criteria.

All recoveries were within acceptance criteria for the MS/MSD analyzed on sample AOC50-SW04. All recoveries for the MS/MSD analyzed on sample B30-SW02 failed to meet criteria as follows:

Parent	Metal	MS %R	MSD %R	Criteria
B30-SW02	Copper	72.2	73.2	75-125%
	Nickel	65.0	65.2	
	Zinc	64.9	63.8	

All sample results for copper, nickel and zinc were flagged “M” due to the non-compliant MS/MSD recoveries.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples, the MS/MSD samples, and the field duplicate samples. The following samples were collected in duplicate: AOC50-BOT01, AOC50-SW05, B30-SW01, and B30-SW03. The second sample collected from each location was submitted and analyzed as a field duplicate.

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

The filed duplicate RPDs are detailed in the table below:

Parent	Metal	RPD	Criteria
AOC50-BOT01	Chromium	6.19	RPD ≤ 20
	Copper	49.8	
	Zinc	13.0	
AOC50-SW05	Chromium	3.29	RPD ≤ 20
	Copper	1.81	
	Zinc	8.01	
B30-SW01	Copper	4.19	RPD ≤ 20
	Nickel	9.93	
	Zinc	12.8	
B30-SW03	Copper	16.5	RPD ≤ 20
	Nickel	2.36	
	Zinc	28.4	

All field duplicate RPDs met criteria, with the exception of copper in the FD pair analyzed on sample AOC50-BOT01 and zinc in the FD pair analyzed on sample B30-SW03. No corrective action was necessary because the copper and zinc results were previously flagged “M” due to the failing MS/MSD recoveries. (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.

- All initial calibration criteria were met. There were two ICALs associated with this SDG.
- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The ICV samples were prepared using a secondary source.
- All interference check criteria were met.

- A dilution test (DT) was analyzed on samples B30-SW02 and AOC50-SW04. For the DT analyzed on sample B30-SW02, all three metals failed as follows:

Metal	%D	Criteria
Copper	82.8	%D ≤ 10
Nickel	28.3	
Zinc	36.8	

These metals also failed criteria in the MS/MSD, so all associated sample results were already flagged “M” and no corrective action was necessary. (The “M” flag supercedes the “J” flag in the CSSA QAPP flag hierarchy.)

For the DT analyzed on sample AOC50-SW04, chromium and copper met criteria, but zinc failed as follows:

Metal	%D	Criteria
Chromium	9.3	%D ≤ 10
Copper	7.8	
Zinc	13.6	

Zinc failed criteria in the MS/MSD, so all associated sample results were already flagged “M” and no corrective action was necessary. (The “M” flag supercedes the “J” flag in the CSSA QAPP flag hierarchy.)

- The laboratory also analyzed a post digestion spike (PDS) on samples B30-SW02 and AOC50-SW04. All recoveries met criteria for the PDS analyzed on sample AOC50-SW04. For the PDS analyzed on sample B30-SW02, copper met criteria, but nickel and zinc failed as follows:

Metal	%R	Criteria
Copper	80.3	75-125%
Nickel	72.0	
Zinc	69.3	

These metals also failed criteria in the MS/MSD, so all associated sample results were already flagged “M” and no corrective action was necessary. (The “M” flag supercedes the “J” flag in the CSSA QAPP flag hierarchy.)

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%.

CADMIUM

General

The cadmium portion of this SDG consisted of thirteen (13) samples, including nine environmental soil samples, one MS/MSD pair and two field duplicates. The samples were collected on January 13, 2004 and were analyzed for cadmium using USEPA SW846 Method 7131A. Only the samples collected from AOC50 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 all of the samples were analyzed at a dilution due to the high levels of cadmium present. The samples in this SDG were analyzed in three batches on a single instrument.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples and the MS/MSD samples. Sample AOC50-SW04 was designated for MS/MSD analysis on the COC.

There were two LCS/LCSD pair analyzed for this SDG. All LCS/LCSD recoveries were within acceptance criteria.

The MS failed to meet criteria, but the MSD passed as follows:

Parent	Metal	MS %R	MSD %R	Criteria
AOC50-SW04	Cadmium	126.7	(93.3)	80-122%

() indicates the recovery met criteria.

The cadmium results for all samples were flagged "M" due to the high MS recovery.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples, the MS/MSD samples, and the field duplicate analyte results. Samples AOC50-BOT01 and AOC50-SW05 were collected in duplicate. The second sample from each of these locations was submitted and analyzed as a field duplicate.

All LCS/LCSD and MS/MDS RPD were within acceptance criteria.

The field duplicate RPDs met acceptance criteria as follows:

Parent	Metal	FD RPD	Criteria
AOC50-BOT01	Cadmium	8.7	RPD \leq 25
AOC50-SW05	Cadmium	10.3	RPD \leq 25

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. There were three ICALs associated with this SDG.
- All initial and continuing calibration verification criteria were met.
- All second source calibration criteria were met. The ICV samples were prepared using a secondary source.
- The dilution test was analyzed on samples AOC50-SW04 and AOC50-SW06. For the DT analyzed on sample AOC50-SW04, cadmium met criteria with a %D of 6.6. For the DT analyzed on sample AOC50-SW06, cadmium failed criteria as follows:

Metal	%D	Criteria
Cadmium	18.4	%D ≤ 10

No corrective action was necessary because all sample results for cadmium were previously flagged “M” due to the failing MS/MSD recoveries.

- The laboratory also analyzed a PDS on samples AOC50-SW04 and AOC50-SW06. Cadmium failed criteria in both PDS samples as follows:

Parent	Metal	%R	Criteria
AOC50-SW04	Cadmium	136	85-115%
AOC50-SW06	Cadmium	20.2	85-115%

No corrective action was necessary because all sample results for cadmium were previously flagged “M” due to the failing MS/MSD recoveries.

Two method blanks 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 twenty-three (23) samples, including fifteen environmental soil samples, two MS/MSD pair and four field duplicates. The samples were collected on January 13, 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 within the holding time required by the method. The lead analyses were performed in two batches analyzed on a single instrument.

It should be all samples required a dilution due to the high level of lead present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples and MS/MSD samples. Samples AOC50-SW04 and B30-SW02 were designated for MS/MSD analysis on the COC.

There were two LCS/LCSD pair analyzed, one for each batch. 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
AOC50-SW04	Lead	(112.4)	374.8	74-124%
B30-SW02	Lead	-192.4	-46.4	74-124%

() indicates the recovery met criteria.

The anomalous recoveries in the MS/MSD samples were due to the parent sample concentration being significantly higher than (greater than ten times) the spike amount. The lead results for all samples were flagged "M" due to the non-compliant MS/MSD results.

Precision

Precision was evaluated using the RPD obtained from the LCS/LCSD samples, the MS/MSD samples, and the field duplicate analyte concentrations. Samples AOC50-BOT1, AOC50-SW05, B30-SW01 and B30-SW03 were collected in duplicate. The second sample from this location was submitted and analyzed as a field duplicate.

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

All field duplicate RPDs met criteria as follows:

Parent / FD	RPD	Criteria
AOC50-BOT01 / DUP	10.9	RPD ≤ 25
AOC50-SW05 / DUP	22.6	
B30-SW01 / DUP	6.9	
B30-SW03 / DUP	18.4	

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 performed on samples AOC-SW04 and B30-SW02. The DT analyzed on sample AOC50-SW04 met criteria with a %D of 3.6. The DT analyzed on sample B30-SW02 failed to meet criteria as follows:

Metal	%D	Criteria
Lead	20.2	%D ≤ 10

Lead also failed criteria in the MS/MSD. All sample results were previously flagged “M” so no corrective action was necessary since the “M” flag supercedes the “J” flag in the CSSA QAPP flag hierarchy.

- The laboratory analyzed a PDS on samples AOC50-SW04 and B30-SW02. Lead met criteria in the PDS samples with recoveries of 93.5% and 101% respectively.

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%.

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 February 17, 18 & 19, 2004. The samples in the following Sample Delivery Group (SDG) were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, perchlorate and explosives:

43809

The field quality control (QC) samples collected in association with this SDG included one field duplicate and 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. All analyses (except explosives) were performed 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 APPL at a temperature of 3.0⁰ C which is within the 2-6⁰ C range recommended by the QAPP. The explosives analyses were subcontracted by APPL to EMAX Laboratories in Torrance, California. The samples were shipped from APPL to EMAX in a single cooler. The cooler was received by EMAX at a temperature of 3.6⁰ C which is within the 2-6⁰ 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; cooler receipt form and 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.

VOLATILES

General

The VOC portion of this SDG consisted of nine (9) samples, including eight (8) environmental soil samples and one trip blank. Only the samples collected from AOC56 required analysis for VOCs. The samples were collected on February 19, 2004 and were analyzed for the full list of VOCs as specified in the CSSA QAPP.

The VOC analyses were performed according to the United States Environmental Protection Agency (USEPA) SW846 Method 8260B. 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) and LCS duplicate (LCSD) samples and the surrogate spikes. No sample was designated for MS/MSD analysis on the COC.

The soil batch contained an LCS only. The water batch contained both an LCS and LCSD. All LCS and LCSD recoveries were within acceptance criteria.

All surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the LCS/LCSD samples for waters. Precision could not be assessed for soils since no duplicate analyses were performed.

All LCS/LCSD RPDs were within acceptance criteria for waters.

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 sample transit and 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 associated with this SDG, one for soils and one for waters.
- All second source verification criteria were met. The LCS and LCSD samples were prepared using a secondary source.
- All calibration verification criteria were met, except for the following:

ICV ID	Analyte	%D	Criteria
Vol Std 03-01-04D@50ug/L	Chloromethane	20.8	%D ≤ 20

This ICV was run at the beginning of the soil batch. The chloromethane results for all soil samples were flagged “R” in accordance with the CSSA QAPP. However, because the %D failed by less than 1% and all samples were non-detect for chloromethane, the data was considered usable for the purposes of this study.

- All internal standard criteria were met, except for the following:

Method Blank	Matrix	Internal Standard	Area Counts	Lower AC Criteria
040301A BLK-1SC	Soil	1,4-Dichlorobenzene-d4	119359	125571

A low internal standard area count results in a high bias. Since all analytes were below the RL in this method blank, no corrective action was necessary.

- All manual integrations were reviewed and approved.

Two method blanks (one soil and one water) and one Trip Blank were analyzed in association with the VOC analyses in this SDG. The soil method blank was free of all target analytes at or above the RL. The water method blank was free of all target analytes at or above the RL, except for the following:

Analyte	Conc.	RL
1,2,3-Trichlorobenzene	0.60 µg/L	0.3 µg/L
Naphthalene	0.40 µg/L	0.3 µg/L

No corrective action was necessary because only the Trip Blank was associated with the water method blank and the Trip Blank was non-detect for all target analytes.

Completeness

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

All VOC 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%.

SEMIVOLATILES

General

The SVOC portion of this SDG consisted of eight (8) environmental soil samples. Only the samples collected from AOC56 required analysis for SVOCs. The samples were collected on February 19, 2004 and were analyzed for the full list of semivolatiles as specified in the CSSA QAPP

The SVOC analyses were performed 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 %R obtained from the LCS and the surrogate spikes. No sample was designated for MS/MSD analysis on the COC.

All LCS recoveries were within acceptance criteria.

All surrogate spike recoveries were within acceptance criteria.

Precision

Precision could not be evaluated for the SVOC portion of this SDG because no duplicate analyses were performed.

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.
- No continuing calibration verification was necessary for this SDG since the samples were analyzed immediately following the ICAL.
- All internal standard criteria were met.
- All manual integrations were reviewed and approved.

One method blank was analyzed in association with the SVOC analyses in this SDG. The method blank was free of all target analytes 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 nine (9) environmental soil samples. The samples were collected on February 18 & 19, 2004 and were analyzed for a reduced list of ICP metals. The samples collected from AOC56 required analysis for barium, chromium, copper, nickel and zinc. Sample AOC50-SW08 required analysis for copper and zinc only.

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. 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. 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.

All 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.

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 analyzed on a sample from a different SDG.
- The laboratory also analyzed a post digestion spike (PDS) on a sample from a different SDG.

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 eight (8) environmental soil samples. Only samples collected from AOC56 required analysis for arsenic. The samples were collected on February 19, 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.

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 AOC56-SW02. Arsenic met criteria with a %D of 0.5.

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 ten (10) samples, including nine environmental soil samples and one field duplicate. The samples were collected on February 18 & 19, 2004 and were analyzed for cadmium 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.

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 concentrations. Sample AOC50-SW07 was collected in duplicate. The second sample from this location was submitted and analyzed as a field duplicate.

The LCS/LCSD RPD was within acceptance criteria.

The field duplicate RPD met criteria at 14.9%.

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 AOC56-SW02. The DT failed to meet criteria as follows:

Sample ID	Metal	%D	Criteria
AOC56-SW02	Cadmium	122.4	%D ≤ 10

No MS/MSD was analyzed for cadmium, so all sample results for cadmium were flagged “M” in accordance with the CSSA QAPP.

- The laboratory also analyzed a PDS on sample AOC56-SW02. Cadmium met criteria in the PDS with a recovery of 103.7%.

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 twelve (12) samples, including eleven (11) environmental soil samples and one field duplicate. The samples were collected on February 18 & 19, 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 within the holding time required by the method.

It should be noted that all of the samples required a 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 and the field duplicate analyte concentrations. Sample AOC50-SW07 was collected in duplicate. The second sample from this location was submitted and analyzed as a field duplicate.

The LCS/LCSD RPD was within acceptance criteria.

The field duplicate RPD met criteria at 16.3%.

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. There were two ICALs analyzed for the Lead portion of this SDG.
- 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 AOC56-SW02. The DT failed to meet criteria as follows:

Metal	%D	Criteria
Lead	24.2	%D ≤ 10

No MS/MSD was analyzed for lead, so all samples results for lead were flagged "M" in accordance with the CSSA QAPP.

- The laboratory also analyzed a PDS on sample AOC56-SW02. Lead met criteria in the PDS with a recovery of 96.8%.

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 eight (8) environmental soil samples. Only the samples collected from AOC56 required analysis for mercury. The samples were collected on February 19, 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.

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%.

PERCHLORATE

General

The perchlorate portion of this SDG consisted of one (1) environmental soil sample. Only sample B23-JATO01 required analysis for perchlorate. The sample was collected on February 17, 2004 and was analyzed for perchlorate using USEPA Method 314.0.

The sample in this SDG was analyzed following the procedures outlined in the CSSA QAPP. The sample was analyzed within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD and MS samples. No sample was designated for MS/MSD analysis on the COC. However, the laboratory analyzed an MS only on sample B23-JATO01.

All LCS/LCSD and MS 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 sample in this SDG was analyzed following the COC and the analytical procedures described in the CSSA QAPP. The sample was analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met.

There was one method blank associated with the perchlorate analyses in this SDG. The method blank was non-detect for perchlorate.

Completeness

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

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

EXPLOSIVES

General

The explosives portion of this SDG consisted of eight (8) environmental soil samples. The samples were collected on February 19, 2004 and were analyzed for the full list of explosives as specified in the CSSA QAPP. The explosives analyses were performed in accordance with USEPA SW846 Method 8330.

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

It should be noted that the EMAX data was reported with RLs for several analytes that exceeded those listed in the CSSA QAPP. Details regarding the elevated RLs can be found in the following table. All RLs listed below are in mg/kg:

Analyte	Lab RL	QAPP RL
1,3,5-TNB	0.4	0.25
1,3-DNB	0.4	0.25
2,4,6-TNT	0.4	0.25
2,6-DNT	0.4	0.26
Nitrobenzene	0.4	0.26
o-Nitrotoluene	0.4	0.25

Accuracy

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

All LCS/LCSD recoveries were within acceptance criteria.

All surrogate spike recoveries were within criteria. The lab used 3,4-Dinitrotoluene as the surrogate. The laboratory tolerances for surrogate recoveries were 54-154%. However, the surrogate recoveries for all samples and QC associated with this ARF were within 93-111%.

Precision

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

All 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.

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 samples were non-detect for explosives, so no secondary column analysis was required.
- All initial calibration criteria were met for the Primary column.
- All second source verification criteria were met for the Primary column. The ICV was analyzed using a secondary source.
- All calibration verification criteria were met, except for the following:

CCV Date & Time	Analyte	%D	Criteria
3/1/2004 21:55	Tetryl	17	%D ≤ 15
3/2/2004 02:15	Tetryl	17	%D ≤ 15
3/2/2004 10:40	Tetryl 2,4,6-TNT	18 17	%D ≤ 15

The average %D for all analytes in the CCVs met method criteria. However, because the CSSA QAPP specifies that all analytes must be recovered within $\pm 15\%$, the analytes listed in the table above failed the QAPP criteria. The results for Tetryl and 2,4,6-TNT were flagged "R" as rejected for all samples associated with the CCVs listed above. However, because the %D for these analytes were only 2% to 3% outside of tolerance and these analytes were not detected in any samples, the data was considered usable for the purposes of this study. CSSA/Portage/Parsons reached an agreement on May 25, 2004, that no qualifier is needed for these two compounds.

There was one method blank associated with the Explosives analyses in this SDG. The method blank was non-detect for all target analytes.

Completeness

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

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

TO19 DATA VERIFICATION SUMMARY REPORT

for sample 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 one soil sample collected from Camp Stanley Storage Activity (CSSA) under Task Order 0019 on March 18, 2004. The sample in the following Sample Delivery Group (SDG) was analyzed for metals:

43979

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

The sample was 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; cooler receipt form; 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 were met.

ICP METALS

General

The ICP metals portion of this SDG consisted of one (1) sample. The sample was collected on March 18, 2004 and was analyzed for a reduced list of ICP metals, which included chromium, copper and zinc.

The ICP metals analyses were performed using USEPA SW846 Method 6010B. All sample was analyzed following the procedures outlined in the CSSA QAPP and was 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) and LCS Duplicate (LCSD) samples. No samples were 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.

All 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.

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 AOC50-BOT05. The DT met criteria for chromium and zinc, but failed criteria for copper as follows:

Metal	%D	Criteria
Chromium	10.3	%D ≤ 10
Copper	12.4	
Zinc	10.0	

No MS/MSD was analyzed for ICP metals, so the copper result for this samples were flagged “M” in accordance with the CSSA QAPP.

There was one method blank and several calibration blanks associated with the ICP metals 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 sample 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%.

CADMIUM

General

The cadmium portion of this SDG consisted of one (1) sample. The sample was collected on March 18, 2004 and was analyzed for cadmium using USEPA SW846 Method 7421.

The sample was analyzed following the procedures outlined in the CSSA QAPP and was prepared and analyzed within the holding time required by the method.

It should be noted that the sample required a 25x dilution due to the high level of cadmium present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No samples were 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 sample in this SDG was analyzed following the COC and the analytical procedures described in the CSSA QAPP and it 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 was prepared using a secondary source.

- The dilution test was analyzed on sample AOC50-BOT05. The dilution test was evaluated using the 25x and 125x dilutions for this sample. The DT failed to meet criteria as follows:

Metal	%D	Criteria
Cadmium	21.9	%D ≤ 10

No MS/MSD was analyzed for cadmium, so the cadmium result was flagged “M” in accordance with the CSSA QAPP.

There was one method blank and several calibration blanks associated 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.

The cadmium result for the sample in this SDG was 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 one (1) sample. The sample was collected on March 18, 2004 and was analyzed for lead using USEPA SW846 Method 7421.

The sample was analyzed following the procedures outlined in the CSSA QAPP and was prepared and analyzed within the holding time required by the method.

It should be noted that this sample required a 200x dilution due to the high level of lead present.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS/LCSD samples. No samples were 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 sample in this SDG was analyzed following the COC and the analytical procedures described in the CSSA QAPP. This 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 AOC50-BOT05. The DT was evaluated using the 200x and 100x dilutions for this sample. The DT failed to meet criteria as follows:

Metal	%D	Criteria
Lead	15.6	%D ≤ 10

No MS/MSD was analyzed for lead, so the lead result was flagged “M” in accordance with the CSSA QAPP.

There was one method blank and several calibration blanks associated 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.

The lead result for the sample in this SDG was considered usable. The completeness for the lead 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 25, 2004. The samples in the following Sample Delivery Group (SDG) were analyzed for semi-volatile organic compounds (SVOCs) and selected metals:

44052

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. All analyses were performed 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 APPL 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; calibrations; case narratives; raw data; cooler receipt checklist, and 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 three (3) environmental soil samples. Only the samples collected from B29 required analysis for SVOCs. The samples were collected on March 25, 2004 and were analyzed for the full list of semivolatiles as specified in the CSSA QAPP

The SVOC analyses were performed 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 LCS and the surrogate spikes. No sample was designated for MS/MSD analysis on the COC.

All LCS recoveries were within acceptance criteria.

All surrogate spike recoveries were within acceptance criteria.

Precision

Precision could not be evaluated for the SVOC portion of this SDG because no duplicate analyses were performed.

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.

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.
- There was one continuing calibration verification analyzed. All continuing calibration criteria were met.
- All internal standard criteria were met.

One method blank was analyzed in association with the SVOC analyses in this SDG. The method blank was free of all target analytes 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 for 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 four (4) environmental soil samples. The samples were collected on March 25, 2004 and were analyzed for a reduced list of ICP metals. The sample collected from AOC56 required analysis for chromium, copper, and zinc. Samples collected from B29 required analysis for chromium, nickel, 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. 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. 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.

All 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.

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 analyzed on sample B29-SW11. Copper and zinc met criteria, but chromium and nickel failed as follows:

Metal	%D	Criteria
Chromium	10.8	%D ≤ 10
Nickel	24.8	
Zinc	9.8	
Copper	9.1	

Since no MS/MSD was analyzed, all chromium and nickel results were flagged “M” in accordance with the CSSA QAPP.

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 three (3) environmental soil samples. Only samples collected from B29 required analysis for arsenic. The samples were collected on March 25, 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 two samples required 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 was analyzed on the five fold dilution of sample B29-SW11. The twenty-five (25) fold dilution was non-detect for arsenic, so the %D calculation was not-applicable. All arsenic results were flagged "M" since no MS/MSD was analyzed.

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 one (1) environmental soil sample. Only sample AOC50-BOT06 required analysis for cadmium. The sample was collected on March 25, 2004 and was analyzed for cadmium using USEPA SW846 Method 7421.

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

It should be noted that this sample required a five fold dilution due to the high level of cadmium 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 was analyzed on the five fold dilution for sample AOC50-BOT06. The DT failed to meet criteria as follows:

Metal	%D	Criteria
Cadmium	11.0	%D ≤ 10

Since no MS/MSD was analyzed, the cadmium result for sample AOC50-BOT06 was flagged “M” in accordance with 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 result for the sample in this SDG was 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 four (4) environmental soil samples. The samples were collected on March 25, 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 within the holding time required by the method.

It should be noted that all of the samples required a 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.
- The dilution test was analyzed on the ten fold dilution of sample B29-SW11. The DT result met criteria as follows:

Metal	%D	Criteria
Lead	10.2	%D ≤ 10

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%.

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 April 28, 2004. The samples in the following Sample Delivery Group (SDG) were analyzed for selected metals:

44350

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. All analyses were performed 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 APPL 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; calibrations; case narratives; raw data; cooler receipt checklist, and 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.

ICP METALS

General

The ICP metals portion of this SDG consisted of four (4) environmental soil samples. The samples were collected on April 28, 2004 and were analyzed for a reduced list of ICP metals. The three samples collected from AOC50 required analysis for copper and zinc. One sample collected from AOC67 required analysis for chromium 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. 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 LCS and 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.

All 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.

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.
- The dilution test was not applicable for copper and zinc since the concentrations were less than 50 times the MDL in all samples. A dilution test for chromium was analyzed on sample AOC67-SW06. The dilution test met criteria for chromium with a %D of 5.2.

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%.

LEAD

General

The lead portion of this SDG consisted of nine (9) environmental soil samples. The samples were collected on April 28, 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 within the holding time required by the method.

It should be noted that most of the samples required a 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. There were two initial calibration curves involved in this SDG due to the additional diluted analyses for these samples.
- 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 the ten fold dilution of sample AOC67-SW07. The %D was 11.1% which exceeded the 10% criteria. All lead results were flagged with "M" in accordance with 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%.