79868

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III
CENTRAL REGIONAL LABORATORY
201 DEFENSE HIGHWAY
SUITE 200
ANNAPOLIS, MARYLAND 21401

QUALITY
ASSURANCE
BRANCH

surface soil

DATE : February 16, 1994

SUBJECT: Region III Data QA Review

FROM : Cynthia E. Caporale C. Caporale
Region III ESAT RPO (3ES30)

TO : Harry Harbold
Regional Project Manager (3HW21)

Attached is the inorganic data validation report for the Boarhead Farms Site (Case 21247) completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III ESD.

If you have any questions regarding this review, please call me at (410) 573-6832.

Attachment

cc: Koumudi Ketkar, $CH_2M$ Hill
Regional CLP TPO: Stevie Wilding Region:III Lab Code: ITPA

TID File: 03931375


Printed on Recycled Paper

Lockheed
Environmental Systems & Technologies Co.
Environmental Services Assistance Teams
Region 3
1419 Forest Drive, Suite 104
Annapolis, Maryland 21403
Phone: (410) 268-7705
Fax: (410) 268-8472

**DATE:** FEBRUARY 11, 1994

**SUBJECT:** INORGANIC DATA VALIDATION (IM2 LEVEL) CASE 21247
SITE: BOARHEAD FARMS

**FROM:** HARI PRASAD HP
INORGANIC DATA REVIEWER

MAHBOOBEH MECANIC MM
SENIOR OVERSIGHT CHEMIST

**TO:** CYNTHIA E. CAPORALE
ESAT REGIONAL PROJECT OFFICER

**THROUGH:** DALE S. BOSHART DB
ESAT TEAM MANAGER

OVERVIEW

The set of samples for Case 21247 consisted of four (4) aqueous and soil samples, each, analyzed by ITAS Pittsburgh Laboratory (ITPA) for metals and cyanide (CN) according to the Contract Laboratory Program (CLP) Routine Analytical Services (RAS) Statement of Work (SOW) ILM03.0. All the aqueous samples were equipment blanks. The soil samples included one (1) field duplicate pair.

SUMMARY

All analytes were successfully analyzed in all samples. The equipment blanks were applied to the samples collected on the same day. Areas of concern with respect to data usability are listed below, according to the seriousness of the problem.

MINOR ISSUES

Preparation (PB), continuing calibration (CCB) and equipment blanks had concentrations greater than the Instrument Detection Limit (IDL) for the analytes given below. The reported results in the affected samples which are less than five times the blank concentrations may be biased high and have been qualified "B".

| Matrix | Blank Type | Analyte(s) |
|---|---|---|
| Aqueous | PB | Arsenic (As), Zinc (Zn) |
| | CCB | Barium (Ba) |
| Soil | PB | Selenium (Se) |
| | EB | Sodium (Na) |

The ICP serial dilution result for the soil samples was outside the 10 % control limit for the vanadium (V) analyte. The reported results for this analyte are estimated and have been qualified "J".

The soil matrix spike recoveries were low for the antimony (Sb) and Se analytes. The reported results and quantitation limits for these samples may be biased low and have respectively been qualified "L" and "UL", unless superseded by the "B" qualifier previously mentioned.

The soil matrix spike recoveries were high for the manganese (Mn) and nickel (Ni) analytes. The reported results for these analytes may be biased high and have been qualified "K".

The Contract Required Detection Limit (CRDL) standard recoveries were low for the chromium (Cr) analyte. The quantitation limits for this analyte in the aqueous samples may be biased low and have been qualified "UL".

The CRDL standard recoveries were high for the As, silver (Ag) and cadmium (Cd) analytes. The reported results for these analytes which are less than 2x CRDL may be biased high and have been qualified "K", unless superseded by the "B" qualifier.

The laboratory blanks for the aqueous samples had negative results with absolute value greater than the IDL for the analytes given below. The quantitation limits for these analytes in the affected samples may be biased low and have been qualified "UL". The quantitation limits for the Cr analyte have already been qualified "UL" due to low CRDL standard recoveries.

| Blank Type | Analyte(s) |
|---|---|
| PB | Cr |
| CCB | Iron (Fe), Se, Ni |

NOTES

The field duplicate results for the sample pair (MCKR42 and MCKR43) were within the control limit for the laboratory duplicates (35% RPD, ± 2x CRDL).

Soil sample concentrations are calculated on the basis of the raw data value (in µg/L), the gram weight of sample used, the volume of the digestate/distillate, and the % solids according to the following equation:

$$mg/Kg = \frac{(\text{raw value, } \mu g/L)(\text{digestate volume, } L)}{(\text{weight, } g)(\%\ \text{solids}/100)}$$

To obtain the quantitation limit, insert the IDL (Form X) for the raw value; refer to Forms XIII to obtain each sample preparation weight and volume used. The quantitation limits thus obtained are specific for each sample and preparation method.

The data were reviewed in accordance with the National Functional Guidelines for Evaluating Inorganic Analyses, with modifications for use within Region III.

**INFORMATION REGARDING REPORT CONTENT**

Table 1A is a summary of qualifiers added to the results from the laboratory during validation.

ATTACHMENTS

| | |
|---|---|
| TABLE 1A | SUMMARY OF QUALIFIERS ON DATA SUMMARY AFTER DATA VALIDATION |
| TABLE 1B | CODES USED IN COMMENTS COLUMN |
| TABLE 2 | GLOSSARY OF DATA QUALIFIER CODES |
| TABLE 3 | DATA SUMMARY FORMS |
| APPENDIX A | RESULTS REPORTED BY LABORATORY FORM Is |
| APPENDIX B | TPO REPORT |
| APPENDIX C | SUPPORT DOCUMENTATION |

DCN: HP412A07.BOA

# TABLE 1A

## SUMMARY OF QUALIFIERS ON DATA SUMMARY FORM AFTER DATA VALIDATION

| ANALYTE | MATRIX | SAMPLES AFFECTED | POSITIVE VALUES | NON-DETECTED VALUES | BIAS | COMMENTS* |
|---|---|---|---|---|---|---|
| Sb | Soil | All samples | | UL | Low | A (39.2%) |
| As | Aqueous | MCKR33 | B | | High | B (1.4 µg/L)<br>C (114%) |
| | Soil | All samples | K | | High | C (114%) |
| Ba | Aqueous | MCKR33 | B | | High | D (0.6 µg/L) |
| Cd | Soil | MCKR41,MCKR43 | K | | High | C (111%,119%) |
| Cr | Aqueous | All samples | | UL | Low | E (74.6%,72.4%<br>F (-5.2 µg/L) |
| Fe | Aqueous | All samples | | UL | Low | G (-17.1 µg/L) |
| Mn | Soil | All samples | K | | High | H (174%) |
| Ni | Soil | All samples | K | | High | H (144%) |
| | Aqueous | All samples | | UL | Low | G (-8.5 µg/L) |
| Se | Aqueous | All samples | | UL | Low | G (-1.1 µg/L) |
| | Soil | All samples | B | | High | B (0.2 mg/Kg)<br>A (71.9%) |
| Ag | Aqueous | MCKR32 | K | | High | C (115%) |
| Na | Soil | MCKR40 | B | | High | I (481 µg/L) |
| | | MCKR41 | B | | High | I (412 µg/L) |
| | | MCKR42,MCKR43 | B | | High | I (493 µg/L) |
| V | Soil | All samples | J | | | J (11.6%) |
| Zn | Aqueous | All samples | B | | High | B (2.5 µg/L) |

* See explanation of Comments on Table 1B.

**TABLE 1B**

**CODES USED IN COMMENTS COLUMN**

A = The matrix spike recovery was low (< 75%) [the result is in parenthesis]. The reported results and quantitation limits may be biased low.

B = The preparation blank had a result >IDL (the result is in parenthesis). The reported results which are <5x the blank concentration may be biased high.

C = The CRDL standard recovery was high (> 110%) [the result is in parenthesis]. The reported results which are < 2x CRDL may be biased high.

D = The continuing calibration blank had a result > IDL (the result is in parenthesis). The reported results which are < 5x the blank concentration may be biased high.

E = The CRDL standard recovery was low (< 90%) [the result is in parenthesis]. The quantitation limits may be biased low.

F = The preparation blank had a negative result with absolute value greater than the IDL (the result is in parenthesis). The quantitation limits may be biased low.

G = The continuing calibration blank had a negative result with absolute value greater than the IDL (the result is in parenthesis). The quantitation limits may be biased low.

H = The matrix spike recovery was high (> 125%) [the result is in parenthesis]. The reported results may be biased high.

I = The equipment blank had a result > IDL (the result is in parenthesis). The reported results which are <5x the blank concentration may be biased high.

J = The ICP serial dilution result is outside the control limit (10% D) [the result is in parenthesis]. The reported results are estimated.

## TABLE 2

## GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION
(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unusable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION
(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

[] = Analyte present. As values approach the IDL the quantitation may not be accurate.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

OTHER CODES

Q = No analytical result.

Table 3

DATA SUMMARY FORM: I N O R G A N I C S

AQUEOUS SAMPLES
(ug/L)

Site Name: Boarhead Farms

Case No. 21247 SDG No. HCKR31

+Due to dilution, sample quantitation limit is affected.
See dilution table for specifics.

| | Sample No. | HCKR31 | | HCKR32 | | HCKR33 | | HCKR34 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dilution Factor | 1.0 | | 1.0 | | 1.0 | | 1.0 | | | | | | | | | | | |
| | Location | EB111593/324 | | EB111693/325 | | EB111893/326 | | EB111993/327 | | | | | | | | | | | |
| | Sampling Date | 11/15/93 | | 11/16/93 | | 11/18/93 | | 11/19/93 | | | | | | | | | | | |
| | | Equip. Blank | | Equip. Blank | | Equip. Blank | | Equip. Blank | | | | | | | | | | | |
| CRDL | ANALYTE | | | | | | | | | | | | | | | | | | |
| 200 | Aluminum | | | | | [24.7] | | | | | | | | | | | | | |
| 60 | Antimony | | | | | | | | | | | | | | | | | | |
| 10 | *Arsenic | | | | | [1.2] | B | | | | | | | | | | | | |
| 200 | Barium | | | | | [0.55] | B | | | | | | | | | | | | |
| 5 | Beryllium | | | | | | | | | | | | | | | | | | |
| 5 | *Cadmium | | | | | | | | | | | | | | | | | | |
| 5000 | Calcium | [133] | | [148] | | [234] | | [247] | | | | | | | | | | | |
| 10 | *Chromium | | UL | | UL | | UL | | UL | | | | | | | | | | |
| 50 | Cobalt | | | | | | | | | | | | | | | | | | |
| 25 | Copper | | | | | | | | | | | | | | | | | | |
| 100 | Iron | | UL | | UL | | UL | | UL | | | | | | | | | | |
| 3 | *Lead | [0.50] | | [2.2] | | | | | | | | | | | | | | | |
| 5000 | Magnesium | [17.5] | | | | | | | | | | | | | | | | | |
| 15 | Manganese | | | | | | | | | | | | | | | | | | |
| 0.2 | Mercury | | | | | | | | | | | | | | | | | | |
| 40 | *Nickel | | UL | | UL | | UL | | UL | | | | | | | | | | |
| 5000 | Potassium | | | | | | | | | | | | | | | | | | |
| 5 | Selenium | | UL | | UL | | UL | | UL | | | | | | | | | | |
| 10 | Silver | | | [2.4] | K | | | | | | | | | | | | | | |
| 5000 | Sodium | [481] | | [412] | | [465] | | [493] | | | | | | | | | | | |
| 10 | Thallium | | | | | | | | | | | | | | | | | | |
| 50 | Vanadium | | | | | | | | | | | | | | | | | | |
| 20 | Zinc | [7.2] | B | [4.6] | B | [3.6] | B | [5.6] | B | | | | | | | | | | |
| 10 | *Cyanide | | | | | | | | | | | | | | | | | | |

CRDL = Contract Required Detection Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

revised 07/90

AR303732

DATA SUMMARY FORM: INORGANICS

SOIL SAMPLES
(mg/Kg)

2 weeks worth of surface soil sampling

Site Name: Boarhead Farms

Case No. 21247 SDG No. MCKR40

+Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

| | Sample No. | MCKR40 | | MCKR41 | | MCKR42 | | MCKR43 | |
|---|---|---|---|---|---|---|---|---|---|
| | Dilution Factor | 1.0 | | 1.0 | | 1.0 | | 1.0 | |
| | % Solids | 76.6 | | 75.9 | | 74.7 | | 74.6 | |
| | Location | SB226/310 | | SB145/311 | | SB135/312 | | SB135/313 | |
| | Sampling Date | 11/15/93 | | 11/16/93 | | 11/19/93 | | 11/19/93 | |
| CRDL | ANALYTE | | | | | Field Dup. of MCJR43 | | Field Dup. of MCJR42 | |
| 40 | Aluminum | 4900 | | 18100 | | 22300 | | 21500 | |
| 12 | Antimony | | UL | | UL | | UL | | UL |
| 2 | Arsenic | 3.0 | K | 4.0 | K | 4.4 | K | 4.0 | K |
| 40 | Barium | [24.2] | | 85.3 | | 102 | | 94.4 | |
| 1 | Beryllium | | | [0.41] | | [0.46] | | [0.43] | |
| 1 | Cadmium | | | 2.2 | K | 2.9 | | 1.8 | K |
| 1000 | Calcium | [462] | | 1800 | | 1710 | | 1700 | |
| 2 | Chromium | 51.5 | | 868 | | 458 | | 447 | |
| 10 | Cobalt | [7.2] | | 37.2 | | 45.8 | | 44.3 | |
| 5 | Copper | 6.8 | | 68.5 | | 50.9 | | 50.6 | |
| 20 | Iron | 12100 | | 36700 | | 41000 | | 41800 | |
| 0.6 | *Lead | 42.3 | | 44.3 | | 33.5 | | 29.3 | |
| 1000 | Magnesium | [598] | | 1540 | | 1680 | | 1750 | |
| 3 | Manganese | 126 | K | 381 | K | 1100 | K | 1040 | K |
| 0.1 | Mercury | | | | | | | | |
| 8 | Nickel | [4.6] | K | 202 | K | 102 | K | 89.4 | K |
| 1000 | Potassium | [145] | | [374] | | [458] | | [459] | |
| 1 | Selenium | [0.52] | B | [0.76] | B | [0.59] | B | [0.35] | B |
| 2 | Silver | | | | | | | | |
| 1000 | Sodium | [41.9] | B | [136] | B | [96.0] | B | [78.9] | B |
| 2 | Thallium | | | | | | | | |
| 10 | Vanadium | 44.1 | J | 105 | J | 120 | J | 122 | J |
| 4 | Zinc | 28.1 | | 49.5 | | 61.8 | | 61.9 | |
| 1 | Cyanide | | | | | | | | |

CRDL = Contract Required Detection Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

revised 07/90

AR303733

# APPENDIX A

# RESULTS REPORTED BY LABORATORY

# FORM Is

SDG MCKR31

U.S. EPA - CLP

1

# INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCKR32

Lab Name: ITAS_PITTSBURGH Contract: 68-D3-0048

Lab Code: ITPA Case No.: 21247 SAS No.: SDG No.: MCKR31

Matrix (soil/water): WATER Lab Sample ID: MCKR32

Level (low/med): LOW Date Received: 11/17/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 20.9 | U | | P |
| 7440-36-0 | Antimony | 15.3 | U | | P |
| 7440-38-2 | Arsenic | 1.0 | U | | F |
| 7440-39-3 | Barium | 0.50 | U | | P |
| 7440-41-7 | Beryllium | 0.40 | U | | P |
| 7440-43-9 | Cadmium | 2.7 | U | | P |
| 7440-70-2 | Calcium | 148 | B | | P |
| 7440-47-3 | Chromium | 2.5 | U | | P |
| 7440-48-4 | Cobalt | 2.9 | U | | P |
| 7440-50-8 | Copper | 1.5 | U | | P |
| 7439-89-6 | Iron | 3.3 | U | | P |
| 7439-92-1 | Lead | 2.2 | B | | F |
| 7439-95-4 | Magnesium | 16.7 | U | | P |
| 7439-96-5 | Manganese | 1.0 | U | | P |
| 7439-97-6 | Mercury | 0.20 | U | | CV |
| 7440-02-0 | Nickel | 7.4 | U | | P |
| 7440-09-7 | Potassium | 413 | U | | P |
| 7782-49-2 | Selenium | 0.90 | U | | F |
| 7440-22-4 | Silver | 2.4 | B | | P |
| 7440-23-5 | Sodium | 412 | B | | P |
| 7440-28-0 | Thallium | 1.0 | U | | F |
| 7440-62-2 | Vanadium | 2.0 | U | | P |
| 7440-66-6 | Zinc | 4.6 | B | | P |
| | Cyanide | 5.0 | U | | AS |

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

000003

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCKR31

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

Matrix (soil/water): WATER Lab Sample ID: MCKR31

Level (low/med): LOW__ Date Received: 11/17/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum_ | 20.9 | U | | P_ |
| 7440-36-0 | Antimony_ | 15.3 | U | | P_ |
| 7440-38-2 | Arsenic__ | 1.0 | U | | F_ |
| 7440-39-3 | Barium___ | 0.50 | U | | P_ |
| 7440-41-7 | Beryllium | 0.40 | U | | P_ |
| 7440-43-9 | Cadmium__ | 2.7 | U | | P_ |
| 7440-70-2 | Calcium__ | 133 | B | | P_ |
| 7440-47-3 | Chromium_ | 2.5 | U | | P_ |
| 7440-48-4 | Cobalt___ | 2.9 | U | | P_ |
| 7440-50-8 | Copper___ | 1.5 | U | | P_ |
| 7439-89-6 | Iron____ | 3.3 | U | | P_ |
| 7439-92-1 | Lead____ | 0.50 | B | | F_ |
| 7439-95-4 | Magnesium | 17.5 | B | | P_ |
| 7439-96-5 | Manganese | 1.0 | U | | P_ |
| 7439-97-6 | Mercury__ | 0.20 | U | | CV |
| 7440-02-0 | Nickel___ | 7.4 | U | | P_ |
| 7440-09-7 | Potassium | 413 | U | | P_ |
| 7782-49-2 | Selenium_ | 0.90 | U | | F_ |
| 7440-22-4 | Silver___ | 2.1 | U | | P_ |
| 7440-23-5 | Sodium___ | 481 | B | | P_ |
| 7440-28-0 | Thallium_ | 1.0 | U | | F_ |
| 7440-62-2 | Vanadium_ | 2.0 | U | | P_ |
| 7440-66-6 | Zinc____ | 7.2 | B | | P_ |
| | Cyanide__ | 5.0 | U | | AS |
| | | | | | |

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

AR303737

U.S. EPA - CLP

000005

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCKR33

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

Matrix (soil/water): WATER Lab Sample ID: MCKR33

Level (low/med): LOW__ Date Received: 11/19/93

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum_ | 24.7 | B | | P_ |
| 7440-36-0 | Antimony_ | 15.3 | U | | P_ |
| 7440-38-2 | Arsenic__ | 1.2 | B | | F_ |
| 7440-39-3 | Barium___ | 0.55 | B | | P_ |
| 7440-41-7 | Beryllium | 0.40 | U | | P_ |
| 7440-43-9 | Cadmium__ | 2.7 | U | | P_ |
| 7440-70-2 | Calcium__ | 234 | B | | P_ |
| 7440-47-3 | Chromium_ | 2.5 | U | | P_ |
| 7440-48-4 | Cobalt___ | 2.9 | U | | P_ |
| 7440-50-8 | Copper___ | 1.5 | U | | P_ |
| 7439-89-6 | Iron_____ | 3.3 | U | | P_ |
| 7439-92-1 | Lead_____ | 0.50 | U | | F_ |
| 7439-95-4 | Magnesium | 16.7 | U | | P_ |
| 7439-96-5 | Manganese | 1.0 | U | | P_ |
| 7439-97-6 | Mercury__ | 0.20 | U | | CV |
| 7440-02-0 | Nickel___ | 7.4 | U | | P_ |
| 7440-09-7 | Potassium | 413 | U | | P_ |
| 7782-49-2 | Selenium_ | 0.90 | U | | F_ |
| 7440-22-4 | Silver___ | 2.1 | U | | P_ |
| 7440-23-5 | Sodium___ | 465 | B | | P_ |
| 7440-28-0 | Thallium_ | 1.0 | U | | F_ |
| 7440-62-2 | Vanadium_ | 2.0 | U | | P_ |
| 7440-66-6 | Zinc_____ | 3.6 | B | | P_ |
| _____ | Cyanide__ | 5.0 | U | | AS |
| | | | | | |

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

MCKR34

Lab Name: ITAS_PITTSBURGH Contract: 68-D3-0048

Lab Code: ITPA Case No.: 21247 SAS No.: SDG No.: MCKR31

Matrix (soil/water): WATER Lab Sample ID: MCKR34

Level (low/med): LOW Date Received: 11/20/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 20.9 | U | | P |
| 7440-36-0 | Antimony | 15.3 | U | | P |
| 7440-38-2 | Arsenic | 1.0 | U | | F |
| 7440-39-3 | Barium | 0.50 | U | | P |
| 7440-41-7 | Beryllium | 0.40 | U | | P |
| 7440-43-9 | Cadmium | 2.7 | U | | P |
| 7440-70-2 | Calcium | 247 | B | | P |
| 7440-47-3 | Chromium | 2.5 | U | | P |
| 7440-48-4 | Cobalt | 2.9 | U | | P |
| 7440-50-8 | Copper | 1.5 | U | | P |
| 7439-89-6 | Iron | 3.3 | U | | P |
| 7439-92-1 | Lead | 0.50 | U | | F |
| 7439-95-4 | Magnesium | 16.7 | U | | P |
| 7439-96-5 | Manganese | 1.0 | U | | P |
| 7439-97-6 | Mercury | 0.20 | U | | CV |
| 7440-02-0 | Nickel | 7.4 | U | | P |
| 7440-09-7 | Potassium | 413 | U | | P |
| 7782-49-2 | Selenium | 0.90 | U | | F |
| 7440-22-4 | Silver | 2.1 | U | | P |
| 7440-23-5 | Sodium | 493 | B | | P |
| 7440-28-0 | Thallium | 1.0 | U | | F |
| 7440-62-2 | Vanadium | 2.0 | U | | P |
| 7440-66-6 | Zinc | 5.6 | B | | P |
| | Cyanide | 5.0 | U | | AS |

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SDG MCKR40

U.S. EPA - CLP

000003

1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

MCKR40

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Matrix (soil/water): SOIL_ Lab Sample ID: MCKR40

Level (low/med): LOW__ Date Received: 11/17/93

% Solids: _76.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4900 | | | P |
| 7440-36-0 | Antimony | 4.0 | U | N | P |
| 7440-38-2 | Arsenic | 3.0 | | | F |
| 7440-39-3 | Barium | 24.2 | B | | P |
| 7440-41-7 | Beryllium | 0.10 | U | | P |
| 7440-43-9 | Cadmium | 0.70 | U | | P |
| 7440-70-2 | Calcium | 462 | B | | P |
| 7440-47-3 | Chromium | 51.5 | | | P |
| 7440-48-4 | Cobalt | 7.2 | B | | P |
| 7440-50-8 | Copper | 6.8 | | | P |
| 7439-89-6 | Iron | 12100 | | | P |
| 7439-92-1 | Lead | 42.3 | | | F |
| 7439-95-4 | Magnesium | 598 | B | | P |
| 7439-96-5 | Manganese | 126 | | N | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 4.6 | B | N | P |
| 7440-09-7 | Potassium | 145 | B | | P |
| 7782-49-2 | Selenium | 0.52 | B | N | F |
| 7440-22-4 | Silver | 0.54 | U | | P |
| 7440-23-5 | Sodium | 41.9 | B | | P |
| 7440-28-0 | Thallium | 0.26 | U | | F |
| 7440-62-2 | Vanadium | 44.1 | | E | P |
| 7440-66-6 | Zinc | 28.1 | | | P |
| | Cyanide | 0.65 | U | | AS |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM

Color After: BROWN____ Clarity After: _____ Artifacts: YES___

Comments:
ROOTS

FORM I - IN ILM03.0

AR303741

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

000004

EPA SAMPLE NO.

MCKR41

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Matrix (soil/water): SOIL_ Lab Sample ID: MCKR41

Level (low/med): LOW__ Date Received: 11/17/93

% Solids: _75.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 18100 | | | P |
| 7440-36-0 | Antimony | 4.0 | U | N | P |
| 7440-38-2 | Arsenic | 4.0 | | | F |
| 7440-39-3 | Barium | 85.3 | | | P |
| 7440-41-7 | Beryllium | 0.41 | B | | P |
| 7440-43-9 | Cadmium | 2.2 | | | P |
| 7440-70-2 | Calcium | 1800 | | | P |
| 7440-47-3 | Chromium | 868 | | | P |
| 7440-48-4 | Cobalt | 37.2 | | | P |
| 7440-50-8 | Copper | 68.5 | | | P |
| 7439-89-6 | Iron | 36700 | | | P |
| 7439-92-1 | Lead | 44.3 | | | F |
| 7439-95-4 | Magnesium | 1540 | | | P |
| 7439-96-5 | Manganese | 381 | | N | P |
| 7439-97-6 | Mercury | 0.13 | U | | CV |
| 7440-02-0 | Nickel | 202 | | N | P |
| 7440-09-7 | Potassium | 374 | B | | P |
| 7782-49-2 | Selenium | 0.76 | B | N | F |
| 7440-22-4 | Silver | 0.55 | U | | P |
| 7440-23-5 | Sodium | 136 | B | | P |
| 7440-28-0 | Thallium | 0.26 | U | | F |
| 7440-62-2 | Vanadium | 105 | | E | P |
| 7440-66-6 | Zinc | 49.5 | | | P |
| | Cyanide | 0.66 | U | | AS |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM

Color After: BROWN____ Clarity After: _____ Artifacts: YES___

Comments:
ROOTS

FORM I - IN ILM03.0

AR303742

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

000005

MCKR42

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Matrix (soil/water): SOIL_ Lab Sample ID: MCKR42

Level (low/med): LOW__ Date Received: 11/20/93

% Solids: _74.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 22300 | | | P |
| 7440-36-0 | Antimony | 4.1 | U | N | P |
| 7440-38-2 | Arsenic | 4.4 | | | F |
| 7440-39-3 | Barium | 102 | | | P |
| 7440-41-7 | Beryllium | 0.46 | B | | P |
| 7440-43-9 | Cadmium | 2.9 | | | P |
| 7440-70-2 | Calcium | 1710 | | | P |
| 7440-47-3 | Chromium | 458 | | | P |
| 7440-48-4 | Cobalt | 45.8 | | | P |
| 7440-50-8 | Copper | 50.9 | | | P |
| 7439-89-6 | Iron | 41000 | | | P |
| 7439-92-1 | Lead | 33.5 | | | F |
| 7439-95-4 | Magnesium | 1680 | | | P |
| 7439-96-5 | Manganese | 1100 | | N | P |
| 7439-97-6 | Mercury | 0.13 | U | | CV |
| 7440-02-0 | Nickel | 102 | | N | P |
| 7440-09-7 | Potassium | 458 | B | | P |
| 7782-49-2 | Selenium | 0.59 | B | N | F |
| 7440-22-4 | Silver | 0.56 | U | | P |
| 7440-23-5 | Sodium | 96.0 | B | | P |
| 7440-28-0 | Thallium | 0.27 | U | | F |
| 7440-62-2 | Vanadium | 120 | | E | P |
| 7440-66-6 | Zinc | 61.8 | | | P |
| | Cyanide | 0.67 | U | | AS |

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM

Color After: BROWN____ Clarity After: _____ Artifacts: YES____

Comments:

ROOTS

FORM I - IN ILM03.0

AR303743

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
MCKR43

Lab Name: ITAS_PITTSBURGH Contract: 68-D3-0048

Lab Code: ITPA Case No.: 21247 SAS No.: SDG No.: MCKR40

Matrix (soil/water): SOIL Lab Sample ID: MCKR43

Level (low/med): LOW Date Received: 11/20/93

% Solids: 74.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 21500 | | | P |
| 7440-36-0 | Antimony | 4.1 | U | N | P |
| 7440-38-2 | Arsenic | 4.0 | | | F |
| 7440-39-3 | Barium | 94.4 | | | P |
| 7440-41-7 | Beryllium | 0.43 | B | | P |
| 7440-43-9 | Cadmium | 1.8 | | | P |
| 7440-70-2 | Calcium | 1700 | | | P |
| 7440-47-3 | Chromium | 447 | | | P |
| 7440-48-4 | Cobalt | 44.3 | | | P |
| 7440-50-8 | Copper | 50.6 | | | P |
| 7439-89-6 | Iron | 41800 | | | P |
| 7439-92-1 | Lead | 39.3 | | | F |
| 7439-95-4 | Magnesium | 1750 | | | P |
| 7439-96-5 | Manganese | 1040 | | N | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 89.4 | | N | P |
| 7440-09-7 | Potassium | 459 | B | | P |
| 7782-49-2 | Selenium | 0.35 | B | N | F |
| 7440-22-4 | Silver | 0.56 | U | | P |
| 7440-23-5 | Sodium | 78.9 | B | | P |
| 7440-28-0 | Thallium | 0.27 | U | | F |
| 7440-62-2 | Vanadium | 122 | | E | P |
| 7440-66-6 | Zinc | 61.9 | | | P |
| | Cyanide | 0.67 | U | | AS |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

APPENDIX B

TPO REPORT

TPO: [ ] ACTION [X] FYI

Region 3

# INORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO: 21247
SDG NO: MCKR31
SOW: ILM03.0
NO. OF SAMPLES: Four (4)

LABORATORY: ITPA
DATA USER: Stevie Wilding
REVIEW COMPLETION DATE: 2/11/94
MATRIX: Aqueous (Equip. blanks)

REVIEWER: ESAT

| | ICP | AA | Hg | CYANIDE |
|---|---|---|---|---|
| 1. HOLDING TIMES | O | O | O | O |
| 2. INITIAL CALIBRATIONS | O | O | O | O |
| 3. CONTINUING CALIBRATIONS | M | O | O | O |
| 4. FIELD BLANKS (F=NOT APPLICABLE) | F | F | F | F |
| 5. LABORATORY BLANKS | M | M | O | O |
| 6. ICS | O | | | |
| 7. LCS | O | O | | |
| 8. DUPLICATE ANALYSIS | O | O | O | O |
| 9. MATRIX SPIKE | O | O | O | O |
| 10. ANALYTICAL SPIKE/MSA | | O | | |
| 11. SERIAL DILUTION | O | | | |
| 12. SAMPLE VERIFICATION | O | O | O | O |
| 13. REGIONAL QC | F | F | F | F |
| 14. OVERALL ASSESSMENT | M | M | O | O |

O = No problems or minor problems that do not affect data usability
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as estimated.
Z = More than about 5% of the data points are qualified as unusable.
A = TPO action requested; use in conjunction with one of the above codes.

TPO ACTION ITEM: _____

AREAS OF CONCERN: 3A, 3B, 5A, 5B,

INORGANIC REGIONAL DATA ASSESSMENT SUMMARY NOTES
CASE: 21247 SDG: MCKR31 MATRIX: AQUEOUS

Item 3A: The CRDL standard recoveries were low (< 90%) for the Cr (74.6%, 72.4%) analyte and high (> 110%) for the Ag (115%) analyte.

Item 3B: The CRDL standard recovery was high for the As (114%) analyte.

Item 5A: The laboratory blanks had reported results greater than the IDL for the analytes given below.

| Blank Type | Analyte | Concentration (µg/L) |
|---|---|---|
| CCB | Ba | 0.6 |
| PB | Zn | 2.5 |

The laboratory blanks had negative results with absolute value greater than the IDL for the analytes given below.

| Blank Type | Analyte | Concentration (µg/L) |
|---|---|---|
| PB | Cr | -5.2 |
| CCB | Fe | -17.1 |
| | Ni | -8.5 |

Item 5B: The preparation blank had a reported result greater than the IDL for the As analyte (1.4 µg/L).

The continuing calibration blank had a negative result with absolute value greater than the IDL for the Se analyte (-1.1 µg/L).

TPO: [ ] ACTION [X] FYI

Region 3

## INORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO: 21247
SDG NO: MCKR40
SOW: ILM03.0
NO. OF SAMPLES: Four (4)

LABORATORY: ITPA
DATA USER: Stevie Wilding
REVIEW COMPLETION DATE: 2/11/94
MATRIX: Soil

REVIEWER: ESAT

| | ICP | AA | Hg | CYANIDE |
|---|---|---|---|---|
| 1. HOLDING TIMES | O | O | O | O |
| 2. INITIAL CALIBRATIONS | O | O | O | O |
| 3. CONTINUING CALIBRATIONS | X | M | O | O |
| 4. FIELD BLANKS | M | O | O | O |
| 5. LABORATORY BLANKS | O | M | O | O |
| 6. ICS | O | | | |
| 7. LCS | O | O | | |
| 8. DUPLICATE ANALYSIS | O | O | O | O |
| 9. MATRIX SPIKE | M | O | O | O |
| 10. ANALYTICAL SPIKE/MSA | | O | | |
| 11. SERIAL DILUTION | M | | | |
| 12. SAMPLE VERIFICATION | O | O | O | O |
| 13. REGIONAL QC | F | F | F | F |
| 14. OVERALL ASSESSMENT | M | M | O | O |

O = No problems or minor problems that do not affect data usability
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as estimated.
Z = More than about 5% of the data points are qualified as unusable.
A = TPO action requested; use in conjunction with one of the above codes.

TPO ACTION ITEM: _____

AREAS OF CONCERN: 3A, 3B, 4A, 5B, 9A, 11A.

INORGANIC REGIONAL DATA ASSESSMENT SUMMARY NOTES

CASE: 21247 SDG: MCKR40 MATRIX: SOIL

Item 3A: The CRDL standard recoveries were high for the Cd analyte (111%, 119%).

Item 3B: The CRDL standard recovery was high for the As (114%) analyte.

Item 4A: The equipment blank had reported results greater than the IDL for the Na analyte affecting the samples given below.

| Blank Concentration (µg/L) | Samples Affected |
|---|---|
| 481 | MCKR40 |
| 412 | MCKR41 |
| 493 | MCKR42, MCKR43 |

Item 5B: The preparation blank had a reported result greater than the IDL for the Se analyte (0.2 mg/Kg).

Item 9A: The matrix spike recoveries were low (< 75%) for the Sb analyte (39.2%), and high (> 125%) for the Mn (174%) and Ni (144%) analytes.

Item 9B: The matrix spike recovery was low for the Se analyte (71.9%).

Item 11A: The ICP serial dilution result was outside the control limit (10% D) for the V analyte (11.6%).

# APPENDIX C

# SUPPORT DOCUMENTATION

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 000002

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247 SAS No.: _____ SDG No.: MCKR31

SOW No.: ILM03.0

| EPA Sample No. | Lab Sample ID |
|---|---|
| MCKR31 | MCKR31 |
| MCKR32 | MCKR32 |
| MCKR33 | MCKR33 |
| MCKR34 | MCKR34 |

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: David A Dunlap/VB Name: David A D nlap

Date: 12/21/93 Title: Project Manager



AR303751

REVIEWED BY: Acc
DATE: 12-20-93

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 000002

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247 SAS No.: _____ SDG No.: MCKR31

SOW No.: ILM03.0

| EPA Sample No. | Lab Sample ID |
|---|---|
| MCKR31 | MCKR31 |
| MCKR32 | MCKR32 |
| MCKR33 | MCKR33 |
| MCKR34 | MCKR34 |

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: David A Dunlap/WB Name: David A Dunlap

Date: 12/21/93 Title: Project Manager



AR303752

REVIEWED BY: Aoc
DATE: 12-20-93

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 000002

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247 SAS No.: _____ SDG No.:MCKR40

SOW No.: ILM03.0

| EPA Sample No. | Lab Sample ID |
|---|---|
| _MCKR40_____ | _MCKR40_____ |
| _MCKR41_____ | _MCKR41_____ |
| _MCKR41D_____ | _MCKR41D_____ |
| _MCKR41S_____ | _MCKR41S_____ |
| _MCKR42_____ | _MCKR42_____ |
| _MCKR43_____ | _MCKR43_____ |

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: David A Dunlap/JG Name: David A Dunlap

Date: 12/21/93 Title: Proje Manager



AR303753

RE IEWED BY: AWC
D TE: 12-30-93.

10

Instrument Detection Limits (Quarterly)

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

ICP ID Number: JA61E_____ Date: 10/15/93

Flame AA ID Number : _____

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 308.22 | | 200 | 20.9 | P |
| Antimony | 206.84 | | 60 | 15.3 | P |
| Arsenic | | | 10 | | NR |
| Barium | 493.41 | | 200 | 0.5 | P |
| Beryllium | 313.04 | | 5 | 0.4 | P |
| Cadmium | 228.80 | | 5 | 2.7 | P |
| Calcium | 317.93 | | 5000 | 4.4 | P |
| Chromium | 267.72 | | 10 | 2.5 | P |
| Cobalt | 228.62 | | 50 | 2.9 | P |
| Copper | 324.75 | | 25 | 1.5 | P |
| Iron | 259.94 | | 100 | 3.3 | P |
| Lead | | | 3 | | NR |
| Magnesium | 279.08 | | 5000 | 16.7 | P |
| Manganese | 257.61 | | 15 | 1.0 | P |
| Mercury | | | 0.2 | | NR |
| Nickel | 231.60 | | 40 | 7.4 | P |
| Potassium | 766.49 | | 5000 | 413.0 | P |
| Selenium | | | 5 | | NR |
| Silver | 328.07 | | 10 | 2.1 | P |
| Sodium | 588.99 | | 5000 | 10.4 | P |
| Thallium | | | 10 | | NR |
| Vanadium | 292.40 | | 50 | 2.0 | P |
| Zinc | 213.86 | | 20 | 2.0 | P |

Comments:

10

Instrument Detection Limits (Quarterly)

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

ICP ID Number: _____ Date: 10/15/93

Flame AA ID Number : LEEMAN_PS200

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 3 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | 253.70 | | 0.2 | 0.2 | CV |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

10

Instrument Detection Limits (Quarterly)

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

ICP ID Number: _____ Date: 10/15/93

Flame AA ID Number : _____

Furnace AA ID Number : PES100_____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | 193.70 | BZ | 10 | 1.0 | F |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 3 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | 276.80 | BZ | 10 | 1.0 | F |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

U.S. EPA - CLP

10

Instrument Detection Limits (Quarterly)

000027

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

ICP ID Number: _____ Date: 10/15/93

Flame AA ID Number : LACHAT_____

Furnace AA ID Number : _____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 3 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

FORM X - IN ILM03.0

AR303757

10

000028

Instrument Detection Limits (Quarterly)

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

ICP ID Number: _____ Date: 10/15/93

Flame AA ID Number : _____

Furnace AA ID Number : PC5100_____

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | 283.30 | BZ | 3 | 0.5 | F |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | 196.00 | BZ | 5 | 0.9 | F |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

SDG MCKR31

December 22, 1993

INTERNATIONAL TECHNOLOGY CORPORATION

00001

# CASE NARRATIVE

DEC 27 1993
RECEIVED

| | |
|---|---|
| Laboratory Name: | ITAS Pittsburgh, Pennsylvania |
| Laboratory Code: | ITPA |
| Project Name: | USEPA/CLP |
| Inorganic SOW: | ILM03.0 |
| Project Number: | 662004 |
| Work Order Number: | Q311255/277/314 |
| Contract Number: | 68-D3-0048 |
| Case Number: | 21247 |
| SDG Number: | MCKR31 |

Sample Number:

| | |
|---|---|
| MCKR31 | MCKR33 |
| MCKR32 | MCKR34 |

## Shipment

Four water samples were received at the ITAS Pittsburgh Laboratory on November 17, 19, and 20, 1993, for metals and cyanide analysis.

## Metals

A duplicate digestion and a matrix spike were not performed on these samples as they were rinsates. A serial dilution was performed on sample MCKR31.

## Cyanide Analysis

A duplicate and matrix spike were not performed on these samples as they were rinsates.

3
BLANKS

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 20.9 | U | 20.9 | U | 20.9 | U | 20.9 | U | 20.900 | U | P |
| Antimony | 19.5 | B | 15.3 | U | 15.3 | U | 15.3 | U | 15.300 | U | P |
| Arsenic | 1.0 | U | 1.0 | U | 1.0 | B | 1.0 | U | 1.400 | B | F |
| Barium | 1.1 | B | 0.6 | B | 0.8 | B | 0.7 | B | 0.500 | U | P |
| Beryllium | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.400 | U | P |
| Cadmium | 3.5 | B | 2.7 | U | 2.7 | U | 2.7 | U | 2.700 | U | P |
| Calcium | 17.9 | B | 4.8 | B | 4.4 | U | 7.2 | B | 10.820 | B | P |
| Chromium | -5.3 | B | -4.5 | B | -4.5 | B | -3.3 | B | -5.190 | B | P |
| Cobalt | 2.9 | U | 2.9 | U | 2.9 | U | 2.9 | U | 2.900 | U | P |
| Copper | 1.5 | U | 1.5 | U | 1.5 | U | 1.5 | U | 1.500 | U | P |
| Iron | -15.8 | B | -13.1 | B | -17.1 | B | -15.9 | B | -10.630 | B | P |
| Lead | 0.5 | B | 0.5 | U | 0.5 | U | 0.5 | U | 0.500 | U | F |
| Magnesium | 16.7 | U | 16.7 | U | 16.7 | U | 16.7 | U | 16.700 | U | P |
| Manganese | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | 1.000 | U | P |
| Mercury | 0.2 | U | 0.2 | U | 0.2 | U | 0.2 | U | 0.200 | U | CV |
| Nickel | 7.4 | U | -8.5 | B | 7.4 | U | 7.4 | U | 7.400 | U | P |
| Potassium | 413.0 | U | 413.0 | U | 413.0 | U | 413.0 | U | 413.000 | U | P |
| Selenium | 0.9 | U | -1.1 | B | 0.9 | U | 0.9 | U | 0.900 | U | F |
| Silver | 2.8 | B | 2.1 | U | 2.1 | U | 2.1 | U | 2.100 | U | P |
| Sodium | 11.3 | B | 10.4 | U | 10.4 | U | 10.4 | U | 10.400 | U | P |
| Thallium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | 1.000 | U | F |
| Vanadium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 2.000 | U | P |
| Zinc | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 2.520 | B | P |
| Cyanide | 10.0 | U | 10.0 | U | 10.0 | U | 10.0 | U | 5.000 | U | AS |

All ICP samples affected.

U.S. EPA - CLP

000037

14

ANALYSIS RUN LOG

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.:MCKR31

Instrument ID Number: JA61E_____ Method: P_

Start Date: 12/15/93 End Date: 12/15/93

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ALK | SB | ASS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | AL | NI | TL | V | ZN | CN |
| S0 | 1.00 | 1535 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | X | X |
| S | 1.00 | 1538 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S | 1.00 | 1539 | | X | X | | | X | | | | | | X | | | | | X | | | | X | | | | | | |
| S | 1.00 | 1541 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 1.00 | 1543 | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| S | 1.00 | 1545 | | | | | X | | X | X | | X | X | | | X | X | | | X | | | | | | | X | |
| S | 1.00 | 1547 | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| ICV | 1.00 | 1549 | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| ICV | 1.00 | 1551 | | X | | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| ICB | 1.00 | 1554 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | | | |
| ICSA | 1.00 | 1556 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | | | |
| ICSAB | 1.00 | 1558 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| CRI | 1.00 | 1600 | | | X | | | X | X | | X | X | X | | | | X | | X | | | X | | | X | X | | |
| CCV | 1.00 | 1602 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV | 1.00 | 1604 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | | |
| CCB | 1.00 | 1606 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| PBW | 1.00 | 1612 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| LCSW | 1.00 | 1614 | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| LCSW | 1.00 | 1616 | | X | | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| MCKR31 | 1.00 | 1618 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| MCKR31L | 5.00 | 1620 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| MCKR32 | 1.00 | 1622 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| MCKR33 | 1.00 | 1625 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| MCKR34 | 1.00 | 1627 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| ZZZZZZ | 1.00 | 1629 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1633 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV | 1.00 | 1635 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV | 1.00 | 1637 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | | |
| CCB | 1.00 | 1640 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | | |
| ZZZZZZ | 1.00 | 1642 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1644 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1646 | | | | | | | | | | | | | | | | | | | | | | | | | | |

FORM XIV - IN ILM03.0

AR303762

# 2B
# CRDL STANDARD FOR AA AND ICP

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR31

AA CRDL Standard Source: FISHERRICCAM

ICP CRDL Standard Source: MALLINRICCAA

Concentration Units: ug/L

| Analyte | CRDL Standard for AA True | Found | %R | CRDL Standard for ICP Initial True | Initial Found | Initial %R | Final Found | Final %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | |
| Antimony | | | | 120.0 | 127.42 | 106.2 | 134.55 | 112.1 |
| Arsenic | 10.0 | 11.40 | 114.0 | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | 10.0 | 9.22 | 92.2 | 9.10 | 91.0 |
| Cadmium | | | | 10.0 | 11.10 | 111.0 | 11.89 | 118.9 |
| Calcium | | | | | | | | |
| Chromium | | | | 20.0 | 14.92 | 74.6 | 14.48 | 72.4 |
| Cobalt | | | | 100.0 | 106.75 | 106.8 | 109.41 | 109.4 |
| Copper | | | | 50.0 | 49.29 | 98.6 | 50.15 | 100.3 |
| Iron | | | | | | | | |
| Lead | 3.0 | 2.80 | 93.3 | | | | | |
| Magnesium | | | | | | | | |
| Manganese | | | | 30.0 | 30.16 | 100.5 | 31.44 | 104.8 |
| Mercury | 0.2 | 0.22 | 110.0 | | | | | |
| Nickel | | | | 80.0 | 74.20 | 92.8 | 77.03 | 96.3 |
| Potassium | | | | | | | | |
| Selenium | 5.0 | 5.30 | 106.0 | | | | | |
| Silver | | | | 20.0 | 22.95 | 114.8 | 20.13 | 100.6 |
| Sodium | | | | | | | | |
| Thallium | 10.0 | 9.20 | 92.0 | | | | | |
| Vanadium | | | | 100.0 | 107.70 | 107.7 | 109.60 | 109.6 |
| Zinc | | | | 40.0 | 42.03 | 105.1 | 41.84 | 104.6 |

SDG MCKR40

December 22, 1993

INTERNATIONAL TECHNOLOGY CORPORATION

00001

DEC 27 1993
RECEIVED

# CASE NARRATIVE

| | |
|---|---|
| Laboratory Name: | ITAS Pittsburgh, Pennsylvania |
| Laboratory Code: | ITPA |
| Project Name: | USEPA/CLP |
| Inorganic SOW: | ILM03.0 |
| Project Number: | 662004 |
| Work Order Number: | Q311254/313 |
| Contract Number: | 68-D3-0048 |
| Case Number: | 21247 |
| SDG Number: | MCKR40 |

Sample Number:

| | |
|---|---|
| MCKR40 | MCKR42 |
| MCKR41 | MCKR43 |

Shipment

Four soil samples were received at the ITAS Pittsburgh Laboratory on November 17 and 20, 1993, for metals and cyanide analysis.

Metals

A duplicate digestion and a matrix spike were performed on sample MCKR41. A serial dilution was performed on sample MCKR40.

The matrix spike recovery of sample MCKR41 exceeded the control limit for antimony, manganese, nickel, and selenium. All associated results were flagged with an "N" qualifier.

The serial dilution analysis of sample MCKR40 exceeded the control limit for vanadium. All associated results were flagged with an "E" qualifier.

Samples MCKR40, MCKR41, MCKR42, and MCKR43 exceeded the calibration range for lead and were analyzed diluted and the results of the dilutions were reported.

Cyanide Analysis

A duplicate and matrix spike were performed on sample MCKR41.

3
BLANKS

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 20.9 | U | 20.9 | U | 20.9 | U | 20.9 | U | 4.180 | U | P |
| Antimony | 19.5 | B | 15.3 | U | 15.3 | U | 15.3 | U | 3.060 | U | P |
| Arsenic | 1.0 | U | 1.0 | U | 1.0 | B | 1.0 | U | 0.280 | B | F |
| Barium | 1.1 | B | 0.6 | B | 0.6 | B | 0.7 | B | 0.100 | U | P |
| Beryllium | 0.4 | U | 0.4 | U | 0.4 | U | 0.4 | U | 0.080 | U | P |
| Cadmium | 3.5 | B | 2.7 | U | 2.7 | U | 2.7 | U | 0.540 | U | P |
| Calcium | 17.9 | B | 4.8 | B | 4.4 | U | 7.2 | B | 2.802 | B | P |
| Chromium | -5.3 | B | -4.5 | B | -4.5 | B | -3.3 | B | -0.518 | B | P |
| Cobalt | 2.9 | U | 2.9 | U | 2.9 | U | 2.9 | U | 0.580 | U | P |
| Copper | 1.5 | U | 1.5 | U | 1.5 | U | 1.5 | U | 0.300 | U | P |
| Iron | -15.8 | B | -13.1 | B | -17.1 | B | -15.9 | B | -2.656 | B | P |
| Lead | 0.5 | B | 0.5 | U | 0.5 | U | 0.5 | U | 0.100 | U | F |
| Magnesium | 16.7 | U | 16.7 | U | 16.7 | U | 16.7 | U | 3.340 | U | P |
| Manganese | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | 0.200 | U | P |
| Mercury | 0.2 | U | 0.2 | U | 0.2 | U | | | 0.100 | U | CV |
| Nickel | 7.4 | U | -8.5 | B | 7.4 | U | 7.4 | U | 1.480 | U | P |
| Potassium | 413.0 | U | 413.0 | U | 413.0 | U | 413.0 | U | 82.600 | U | P |
| Selenium | 0.9 | U | -1.1 | B | 0.9 | U | 0.9 | U | 0.220 | B | F |
| Silver | 2.8 | B | 2.1 | U | 2.1 | U | 2.1 | U | 0.420 | U | P |
| Sodium | 11.3 | B | 10.4 | U | 10.4 | U | 10.4 | U | 2.182 | B | P |
| Thallium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | 0.200 | U | F |
| Vanadium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 0.400 | U | P |
| Zinc | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 0.400 | U | P |
| Cyanide | 10.0 | U | 10.0 | U | 10.0 | U | | | 0.500 | U | AS |

3
BLANKS

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | 20.9 | U | 20.9 | U | | | | | P |
| Antimony | | | 15.3 | U | 15.3 | U | | | | | P |
| Arsenic | | | 1.2 | B | 1.0 | U | 1.0 | U | | | F |
| Barium | | | 0.6 | B | 0.5 | U | | | | | P |
| Beryllium | | | 0.4 | U | 0.4 | U | | | | | P |
| Cadmium | | | 2.7 | U | 2.7 | U | | | | | P |
| Calcium | | | 5.3 | B | 4.4 | U | | | | | P |
| Chromium | | | -4.2 | B | -4.6 | B | | | | | P |
| Cobalt | | | 2.9 | U | 2.9 | U | | | | | P |
| Copper | | | 1.5 | U | 1.5 | U | | | | | P |
| Iron | | | -12.1 | B | -15.0 | B | | | | | P |
| Lead | | | 0.6 | B | | | | | | | F |
| Magnesium | | | 16.7 | U | 16.7 | U | | | | | P |
| Manganese | | | 1.0 | U | 1.0 | U | | | | | P |
| Mercury | | | | | | | | | | | NR |
| Nickel | | | 7.4 | U | 7.4 | U | | | | | P |
| Potassium | | | 413.0 | U | 413.0 | U | | | | | P |
| Selenium | | | 0.9 | U | 0.9 | U | -0.9 | B | | | F |
| Silver | | | 2.1 | U | 2.1 | U | | | | | P |
| Sodium | | | 10.4 | U | 10.4 | U | | | | | P |
| Thallium | | | 1.0 | U | 1.0 | U | 1.0 | U | | | F |
| Vanadium | | | 2.0 | U | 2.0 | U | | | | | P |
| Zinc | | | 2.0 | U | 2.0 | U | | | | | P |
| Cyanide | | | | | | | | | | | NR |

All ICP samples affected.

U.S. EPA - CLP

14
ANALYSIS RUN LOG

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.:MCKR40

Instrument ID Number: JA61E_____ Method: P_

Start Date: 12/15/93 End Date: 12/15/93

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 1535 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| S | 1.00 | 1538 | | | | | | | | | | | | | | | | | | | | X | | | | | |
| S | 1.00 | 1539 | | X | X | | | X | | | | | | X | | | | | X | | | | X | | | | |
| S | 1.00 | 1541 | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 1.00 | 1543 | | | | | | | | | X | | | | | | | | | | | | | | | | |
| S | 1.00 | 1545 | | | | | X | | X | X | | X | X | | | X | X | | | X | | | | | | X | |
| S | 1.00 | 1547 | | | | | | | | | | | | | | | | | | | | | | | X | | |
| ICV | 1.00 | 1549 | | | X | | | | | | | | | | | | | | | | | | | | | | |
| ICV | 1.00 | 1551 | | X | | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| ICB | 1.00 | 1554 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| ICSA | 1.00 | 1556 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | [illegible] | |
| ICSAB | 1.00 | 1558 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | [illegible] | |
| CRI | 1.00 | 1600 | | | X | | | X | X | | X | X | X | | | | X | | X | | | X | | | X | X | |
| CCV | 1.00 | 1602 | | | | | | | | | | | | | | | | | | | | X | | | | | |
| CCV | 1.00 | 1604 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | |
| CCB 1 | 1.00 | 1606 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| ZZZZZZ | 1.00 | 1612 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1614 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1616 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1618 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1620 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1622 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1625 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1627 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1629 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1633 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV | 1.00 | 1635 | | | | | | | | | | | | | | | | | | | | X | | | | | |
| CCV | 1.00 | 1637 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | |
| CCB 2 | 1.00 | 1640 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| ZZZZZZ | 1.00 | 1642 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1644 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1646 | | | | | | | | | | | | | | | | | | | | | | | | | |

U.S. EPA - CLP

000042

14

ANALYSIS RUN LOG

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.:MCKR40

Instrument ID Number: JA61E_____ Method: P_

Start Date: 12/15/93 End Date: 12/15/93

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| ZZZZZZ | 1.00 | 1648 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1650 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1652 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1654 | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1656 | | | | | | | | | | | | | | | | | | | | | | | | | |
| PBS | 1.00 | 1658 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| LCSS | 5.00 | 1701 | | | | | | | | X | | | | | | | | | | | | | | | | | |
| CCV | 1.00 | 1703 | | | | | | | | | | | | | | | | | | | | X | | | | | |
| CCV | 1.00 | 1705 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | |
| CCB 3 | 1.00 | 1707 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| SS | 1.00 | 1709 | | X | X | | X | X | X | | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| MCKR40 | 1.00 | 1711 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| MCKR40L | 5.00 | 1713 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| MCKR41 | 1.00 | 1715 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| MCKR41D | 1.00 | 1717 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| MCKR41S | 1.00 | 1720 | | | X | | X | X | X | | X | X | X | | | | X | | X | | | X | | | X | X | |
| MCKR41A | 1.00 | 1722 | | | X | | | | | | | | | | | | | | | | | | | | | | |
| MCKR42 | 1.00 | 1724 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| MCKR43 | 1.00 | 1726 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| CCV | 1.00 | 1728 | | | | | | | | | | | | | | | | | | | | X | | | | | |
| CCV | 1.00 | 1730 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | |
| CCB 4 | 1.00 | 1732 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| ICSA | 1.00 | 1734 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| ICSAB | 1.00 | 1737 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |
| CRI | 1.00 | 1739 | | | X | | | X | X | | X | X | X | | | | X | | X | | | X | | | X | X | |
| CCV | 1.00 | 1741 | | | | | | | | | | | | | | | | | | | | X | | | | | |
| CCV | 1.00 | 1743 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | | X | | X | X | |
| CCB | 1.00 | 1745 | | X | X | | X | X | X | X | X | X | X | X | | X | X | | X | X | | X | X | | X | X | |

FORM XIV - IN ILM03.0

AR303769

U.S. EPA - CLP

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

MCKR40L

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Matrix (soil/water): SOIL_ Level (low/med): LOW__

Concentration Units: ug/L

| Analyte | Initial Sample Result (I) | C | Serial Dilution Result (S) | C | % Difference | Q | M |
|---|---|---|---|---|---|---|---|
| Aluminum | 18943.55 | | 19506.05 | | 3.0 | | P |
| Antimony | 15.30 | U | 76.50 | U | | | P |
| Arsenic | | | | | | | NR |
| Barium | 93.43 | B | 95.15 | B | 1.8 | | P |
| Beryllium | 0.40 | U | 2.00 | U | | | P |
| Cadmium | 2.70 | U | 13.50 | U | | | P |
| Calcium | 1786.01 | B | 1830.35 | B | 2.5 | | P |
| Chromium | 199.16 | | 184.70 | | 7.3 | | P |
| Cobalt | 28.00 | B | 40.85 | B | 45.9 | | P |
| Copper | 26.37 | | 21.15 | B | 19.8 | | P |
| Iron | 46701.04 | | 48609.05 | | 4.1 | | P |
| Lead | | | | | | | NR |
| Magnesium | 2314.86 | B | 2392.80 | B | 3.4 | | P |
| Manganese | 488.68 | | 506.10 | | 3.6 | | P |
| Mercury | | | | | | | NR |
| Nickel | 17.92 | B | 37.00 | U | 100.0 | | P |
| Potassium | 560.62 | B | 2065.00 | U | 100.0 | | P |
| Selenium | | | | | | | NR |
| Silver | 2.10 | U | 10.50 | U | | | P |
| Sodium | 162.24 | B | 198.30 | B | 22.2 | | P |
| Thallium | | | | | | | NR |
| Vanadium | 170.77 | | 190.60 | B | 11.6 | E | P |
| Zinc | 108.78 | | 115.90 | | 6.5 | | P |

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MCKR41S

Lab Name: ITAS_PITTSBURGH Contract: 68-D8-0048

Lab Code: ITPA Case No.: 21247 SAS No.: _____ SDG No.: MCKR40

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 75.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | 75-125 | 51.5916 | | 4.0316 | U | 131.75 | 39.2 | N | P |
| Arsenic | 75-125 | 14.0975 | | 4.0316 | | 10.54 | 95.5 | | F |
| Barium | 75-125 | 574.6034 | | 85.2885 | | 527.01 | 92.8 | | P |
| Beryllium | 75-125 | 11.9289 | | 0.4058 | B | 13.18 | 87.4 | | P |
| Cadmium | 75-125 | 13.9947 | | 2.1871 | | 13.18 | 89.6 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | | 850.1186 | | 868.2609 | | 52.70 | -34.4 | | P |
| Cobalt | 75-125 | 174.1555 | | 37.2200 | | 131.75 | 103.9 | | P |
| Copper | 75-125 | 138.5165 | | 68.5349 | | 65.88 | 106.2 | | P |
| Iron | | | | | | | | | NR |
| Lead | | 45.4809 | | 44.2688 | | 5.27 | 23.0 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 611.2885 | | 381.3228 | | 131.75 | 174.5 | N | P |
| Mercury | 75-125 | 0.6983 | | 0.1255 | U | 0.66 | 105.8 | | CV |
| Nickel | 75-125 | 392.1476 | | 201.7365 | | 131.75 | 144.5 | N | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 2.6614 | | 0.7642 | B | 2.64 | 71.9 | N | F |
| Silver | 75-125 | 12.1897 | | 0.5534 | U | 13.18 | 92.5 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 12.0158 | | 0.2635 | U | 13.18 | 91.2 | | F |
| Vanadium | 75-125 | 227.8182 | | 105.1594 | | 131.75 | 93.1 | | P |
| Zinc | 75-125 | 176.1765 | | 49.5204 | | 131.75 | 96.1 | | P |
| Cyanide | 75-125 | 5.9483 | | 0.6588 | U | 6.59 | 90.3 | | AS |

Comments:
ROOTS

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MCKR41A

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

Matrix (soil/water) : SOIL__ Level (low/med): LOW___

Concentration Units: ug/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | 125.47 | | 15.30 | U | 120.0 | 104.6 | | P |
| Arsenic | | | | | | | | | NR |
| Barium | | | | | | | | | NR |
| Beryllium | | | | | | | | | NR |
| Cadmium | | | | | | | | | NR |
| Calcium | | | | | | | | | NR |
| Chromium | | | | | | | | | NR |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | | | | | | | | | NR |
| Magnesium | | | | | | | | | NR |
| Manganese | | 4501.35 | | 1447.12 | | 3000.0 | 101.8 | | P |
| Mercury | | | | | | | | | NR |
| Nickel | | 2322.20 | | 765.59 | | 1500.0 | 103.8 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | | | | | | | | | NR |
| Silver | | | | | | | | | NR |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | NR |

Comments:
ROOTS

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247_ SAS No.: _____ SDG No.: MCKR40

AA CRDL Standard Source: FISHERRICCAM

ICP CRDL Standard Source: MALLINRICCAA

Concentration Units: ug/L

| | CRDL Standard for AA | | | CRDL Standard for ICP | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Initial | | | Final | |
| Analyte | True | Found | %R | True | Found | %R | Found | %R |
| Aluminum | | | | | | | | |
| Antimony | | | | 120.0 | 127.42 | 106.2 | 134.55 | 112.1 |
| Arsenic | 10.0 | 11.40 | 114.0 | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | 10.0 | 9.22 | 92.2 | 9.10 | 91.0 |
| Cadmium | | | | 10.0 | 11.10 | 111.0 | 11.89 | 118.9 |
| Calcium | | | | | | | | |
| Chromium | | | | 20.0 | 14.92 | 74.6 | 14.48 | 72.4 |
| Cobalt | | | | 100.0 | 106.75 | 106.8 | 109.41 | 109.4 |
| Copper | | | | 50.0 | 49.29 | 98.6 | 50.15 | 100.3 |
| Iron | | | | | | | | |
| Lead | 3.0 | 2.80 | 93.3 | | | | | |
| Magnesium | | | | | | | | |
| Manganese | | | | 30.0 | 30.16 | 100.5 | 31.44 | 104.8 |
| Mercury | 0.2 | 0.13 | 65.0 | | | | | |
| Nickel | | | | 80.0 | 74.20 | 92.8 | 77.03 | 96.3 |
| Potassium | | | | | | | | |
| Selenium | 5.0 | 5.30 | 106.0 | | | | | |
| Silver | | | | 20.0 | 22.95 | 114.8 | 20.13 | 100.6 |
| Sodium | | | | | | | | |
| Thallium | 10.0 | 9.20 | 92.0 | | | | | |
| Vanadium | | | | 100.0 | 107.70 | 107.7 | 109.60 | 109.6 |
| Zinc | | | | 40.0 | 42.03 | 105.1 | 41.84 | 104.6 |

December 22, 1993

INTERNATIONAL TECHNOLOGY CORPORATION

00001

DEC 27 1993
RECEIVED

# CASE NARRATIVE

| | |
|---|---|
| Laboratory Name: | ITAS Pittsburgh, Pennsylvania |
| Laboratory Code: | ITPA |
| Project Name: | USEPA/CLP |
| Inorganic SOW: | ILM03.0 |
| Project Number: | 662004 |
| Work Order Number: | Q311254/313 |
| Contract Number: | 68-D3-0048 |
| Case Number: | 21247 |
| SDG Number: | MCKR40 |

Sample Number:

| | |
|---|---|
| MCKR40 | MCKR42 |
| MCKR41 | MCKR43 |

## Shipment

Four soil samples were received at the ITAS Pittsburgh Laboratory on November 17 and 20, 1993, for metals and cyanide analysis.

## Metals

A duplicate digestion and a matrix spike were performed on sample MCKR41. A serial dilution was performed on sample MCKR40.

The matrix spike recovery of sample MCKR41 exceeded the control limit for antimony, manganese, nickel, and selenium. All associated results were flagged with an "N" qualifier.

The serial dilution analysis of sample MCKR40 exceeded the control limit for vanadium. All associated results were flagged with an "E" qualifier.

Samples MCKR40, MCKR41, MCKR42, and MCKR43 exceeded the calibration range for lead and were analyzed diluted and the results of the dilutions were reported.

## Cyanide Analysis

A duplicate and matrix spike were performed on sample MCKR41.

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 000002

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: 21247 SAS No.: _____ SDG No.:MCKR40

SOW No.: ILM03.0

| EPA Sample No. | Lab Sample ID |
|---|---|
| _MCKR40_____ | _MCKR40_____ |
| _MCKR41_____ | _MCKR41_____ |
| _MCKR41D_____ | _MCKR41D_____ |
| _MCKR41S_____ | _MCKR41S_____ |
| _MCKR42_____ | _MCKR42_____ |
| _MCKR43_____ | _MCKR43_____ |

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: David A Dunlap/:lb Name: David A Dunlap

Date: 12/21/93 Title: Project Manager



AR303775

REVIEWED BY: AWC
DATE: 12-30-93.

U.S. EPA - CLP

000037

13
PREPARATION LOG

Lab Name: ITAS_PITTSBURGH_____ Contract: 68-D3-0048

Lab Code: ITPA__ Case No.: _21247_ SAS No.: _____ SDG No.: MCKR40

Method: P_

| EPA Sample No. | Preparation Date | Weight (gram) | Volume (mL) |
|---|---|---|---|
| LCSS | 12/09/93 | 1.00 | 200 |
| MCKR40 | 12/09/93 | 1.01 | 200 |
| MCKR41 | 12/09/93 | 1.00 | 200 |
| MCKR41D | 12/09/93 | 1.00 | 200 |
| MCKR41S | 12/09/93 | 1.00 | 200 |
| MCKR42 | 12/09/93 | 1.00 | 200 |
| MCKR43 | 12/09/93 | 1.00 | 200 |
| PBS | 12/09/93 | 1.00 | 200 |

FORM XIII - IN ILM03.0

AR303776

PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

# & Chain of Custody Record

(Inorganic CLP Analysis)

| 1. Sample Description (Enter in Column A) | 2. Preservative (Enter in Column D) | 3. Region No. | Sampling Co. | 5. Date Shipped | Carrier | 7. Date Received -- Received |
|---|---|---|---|---|---|---|
| 1. Surface Water<br>2. Ground Water<br>3. Leachate<br>4. Rinsate<br>5. Soil/Sediment<br>6. Oil (SAS)<br>7. Waste (SAS)<br>8. Other (SAS) (Specify) | 1. HCl<br>2. HNO3<br>3. NaOH<br>4. $H_2SO_4$<br>5. $K_2CR_2O_7$<br>6. Ice only<br>7. Other (SAS) (Specify)<br>N. Not preserved | III | CH2M Hill | 11/16/93 | Fedex | 11-17-93 J Smith |
| | | Sampler (Name): Lynn E. Vogel | | Airbill Number: 0568793282 | | Laboratory Contract Number: 68-D3-0048 |
| | | Sampler Signature: [signature] | | 6. Ship To: IT Analytical Service, 5103 Old William Penn Hill, Export PA 15632 | | 8. Transfer to / Date Received |
| | | 4. Type of Activity: Lead: SF, PRP, ST, FED; Pre-Remedial: PA, SSI, LSI; Remedial: RIFS, RD, RA, O&M, NPLD; Removal: CLEM, REMA, REM, OIL, UST | | | | Received by |
| | | | | | | Contract Number / Price |

| CLP Sample Numbers (from labels) | A Enter # from Box 1 | B Conc. Low Med High | C Sample Type: Comp./Grab | D Preservative from Box 6 | E. RAS Analysis: Metals Total | Metals Dissolved | Cyanide | Low Conc. Nitrate/Nitrite | Low Conc. Fluoride | High pH | High Conductivity | F Regional Specific Tracking Number or Tag Numbers | G Station Location Number | H Mo/Day/Year/Time Sample Collection | I Sampler Initials | J Corresp. CLP Org. Samp. No. | K Sample Condition on Receipt | L High Conc. Phases (Check below): Solids | Water Mis Liq. | Non-Water Mis Liq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCKR 40 | 5 | L | G | 6 | X | | X | | | | | 3-1245480,81 | SB226/310 | 11/15/93 1545 | LEV | CKG40 | O/C | | | |
| MCKR 41 | 5 | L | G | 6 | X | | X | | | | | 3-1240744,50<br>3-1218574,80 | SB145/311 | 11/16/93 1415<br>11/16/93 [illegible] | LEV | ~~MCKR41~~<br>CKG [illegible] | | | | |
| MCKR 31 | 4 | L | G | 2,3 | X | | X | | | | | 3-1218556,57 | CB111593/324 | 11/15/93 1615 | LEV | CKG31 | | | | |
| MCKR 32 | 4 | L | G | 2,3 | X | | X | | | | | 3-1218566,67 | CB111693/325 | 11/16/93 1530 | LEV | CKG32 | | | | |

| Shipment for Case complete? (Y/N) | Page 1 of ___ | Sample used for a spike and/or duplicate | Additional Sampler Signatures | Chain of Custody Seal Number |
|---|---|---|---|---|
| | | MCKR41 | [signature] | |

## CHAIN OF CUSTODY RECORD

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| [signature] | 11/16/93 1950 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Received by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | Is custody seal intact? Y/N/none |
| | | J Smith | 11/17/93 0945 | | |

EPA Form 9110-1 (Rev. 5-91) Replaces EPA Form (2075-6), previous edition which may be used

DISTRIBUTION:
Green - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for Return to SMO

Split Samples ☐ Accepted (Signature) ☐ Declined

000381

AR303777

I 020389

EPA Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

# & Chain of Custody Record

(For Inorganic CLP Analysis)

12124

1. Sample Description (Enter in Column A)
   1. Surface Water
   2. Ground Water
   3. Leachate
   4. Rinsate
   5. Soil/Sediment
   6. Oil (SAS)
   7. Waste (SAS)
   8. Other (SAS) (Specify)

2. Preservative (Enter in Column D)
   1. HCl
   2. HNO3
   3. NaOH
   4. $H_2SO_4$
   5. $K_2CR_2O_7$
   6. Ice only
   7. Other (SAS) (Specify)
   N. Not preserved

3. Region No.: III
Sampling Co.: CH2M Hill
Sampler (Name): LYNN E. VOGEL
Sampler Signature: [signature]

4. Type of Activity
Lead: SF, PRP, ST, FED
Pre-Remedial: PA, SSI, LSI
Remedial: RIFS, RD, RA, O&M, NPLD
Removal: CLEM, REMA, REM, OIL, UST

5. Date Shipped
Carrier: Fedex
Airbill Number: 0568793120

6. Ship To: IT Analytical Services, 5103 Old William Penn Hwy, Export PA 15632
Sample custodian

7. Date Received -- Received by: 11-19-93, J. Smith
Laboratory Contract Number: 68-D3-0048
8. Transfer to
Date Received
Received by
Contract Number
Price

| CLP Sample Numbers (from labels) | A Enter # from Box 1 | B Conc Low Med High | C Sample Type: Comp./Grab | D Preservative from Box 6 | E - RAS Analysis: Metals Total | Metals Dissolved | Cyanide | Low Conc. Nitrate/Nitrite | Low Conc. Fluoride | High pH | High Conductivity | F Regional Specific Tracking Number or Tag Numbers | G Station Location Number | H Mo/Day/Year/Time Sample Collection | I Sampler Initials | J Corresp. CLP Org. Samp. No. | K Sample Condition on Receipt | L High Conc. Phases (Check below): Solids | Water Liquid | Non-Water Liquid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCY133 | 4 | L | G | 2,3 | X | | X | | | | | 3-12185 13-14 | EB111893/326 | 11/18/93 1415 | LV | CKG33 | OK | | | |

Shipment for Case complete? (Y/N): Y
Page 1 of 1
Sample used for a spike and/or duplicate
Additional Sampler Signatures
Chain of Custody Seal Number

## CHAIN OF CUSTODY RECORD

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| [signature] | 11/18/93 1900 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Received by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks: Is custody seal intact? Y/N/none | |
| | | J. Smith | 11/19/93 0930 | | |

Split Samples: ☐ Accepted (Signature) ☐ Declined

EPA Form 9110-1 (Rev. 5-91) Replaces EPA Form (2075-6), previous edition which may be used

DISTRIBUTION:
Green - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for Return to SMO

AR303778

02038

000383

PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

# & Chain of Custody Record
(F... organic CLP Analysis)

| 1. Sample Descrip. (Enter in Column A) | 2. Preservative (Enter in Column D) | 3. Region No. | Sampling Co. | 5. Date Sh... | Carrier | 7. Date Received -- Received by |
|---|---|---|---|---|---|---|
| 1. Surface Water<br>2. Ground Water<br>3. Leachate<br>4. Rinsate<br>5. Soil/Sediment<br>6. Oil (SAS)<br>7. Waste (SAS)<br>8. Other (SAS) (Specify) | 1. HCl<br>2. HNO3<br>3. NaOH<br>4. $H_2SO_4$<br>5. $K_2CR_2O_7$<br>6. Ice only<br>7. Other (SAS) (Specify)<br>N. Not preserved | III | Clem/Hill | 11/19/93 | Fedex | 11-20-93 J Smith |
| | | Sampler (Name): LYNN EVOGEL | | Airbill Number: 0568793164 | | Laboratory Contract Number: 68-D3-0048 |
| | | Sampler Signature: [signature] | | 6. Ship To: IT Analytical Services, 5103 Old Will. Penn Hwy, Export PA 15632, Sample custodian | | 8. Transfer to: |
| | | 4. Type of Activity: Lead: SF, PRP, ST, FED; Pre-Remedial: PA, SSI, LSI; Remedial: RIFS, RD, RA, O&M, NPLD; Removal: CLEM, REMA, REM, OIL, UST | | | | Date Received: |
| | | | | | | Received by: |
| | | | | | | Contract Number: |
| | | | | | | Price: |

| CLP Sample Numbers (from labels) | A Enter # from Box 1 | B Conc. Low Med High | C Sample Type: Comp./Grab | D Preservative from Box 6 | E: RAS Analysis: Metals Total | Metals Dissolved | Cyanide | Low Conc. Nitrate/Nitrite | Low Conc. Fluoride | High pH | High Conductivity | F Regional Specific Tracking Number or Tag Numbers | G Station Location Number | H Mo/Day/Year/Time Sample Collection | I Sampler Initials | J Corresp. CLP Org. Samp. No. | K Sample Condition on Receipt | L High Conc. Phases (Check below): Solids | Water MS Liq. | Non-Water MS Liq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MCKR42 | 5 | L | G | 6 | X | | X | | | | | 3-103/934 [illegible] | SB135/312 | 11/19/93 1000 | LV | CKG 42 | OK | | | |
| MCKR43 | 5 | L | G | 6 | X | | X | | | | | 3-1054401 [illegible] | SB135/313 | 11/19/93 1000 | LV | CKG 43 | | | | |
| MCKR34 | 4 | L | G | 2,3 | X | | X | | | | | 3-103/991 [illegible] | EB111993/321 | 11/19/93 1330 | LV | CKG 34 | ✓ | | | |

| Shipment for Case complete? (Y/N) | Page 1 of 1 | Sample used for a spike and/or duplicate | Additional Sampler Signatures | Chain of Custody Seal Number |
|---|---|---|---|---|
| | | — | | |

## CHAIN OF CUSTODY RECORD

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| [signature] | 11/19/93 1900 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Received by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks: Is custody seal intact? Y/N/none | |
| | | J Smith | 11/20/93 1115 | | |

Split Samples: ☐ Accepted (Signature) ☐ Declined

EPA Form 9110-1 (Rev. 5-91) Replaces EPA Form (2075-6), previous edition which may be used

DISTRIBUTION:
Green - Region Copy Pink - SMO Copy White - Lab Copy Yellow - Lab Copy for Return to SMO

AR303779

I 020384

PAGE ___ OF ___

(1)

# EPA SAMPLE SHIPPING LOG

ARC|CHZ

(REQUIRED FOR ALL SAMPLES SENT THROUGH THE CONTRACT LAB PROGRAM)

PROJECT SITE NAME: Boomhead Farms ; EPA PROJ. OFFICER: Harry Harbold
RAS NO. 21247 ; SAS NO. ___ ; TASK OR SET NO. ___
PROJECT SITE LEADER: D. Conway ; PHONE NO. (215) 5634220
PROJECT SAMPLE COORDINATOR: J. Lovett ; PHONE NO. (103) 471 1441

SAS REQUEST (DETAILS REQUIRED)
(10)

Preservation –

| QC SAMPLE INFORMATION AND/OR COMMENTS | CONC. (LOW/MED./HIGH) | SAMPLE PHASE (AQ/SOL.) | TYPE OF REQUEST (ORG.DIO OR INOR) SAS | EPA SAMPLE NO. | ORGANICS OR INORGANICS: LAB NAME | DATE SHIPPED | DATA RECEIVED (XX-OUT ITEMS NOT REQUESTED): VOA | BNA | PEST | TCOD | TOTAL METALS | CN | SAS REQUEST LAB NAME | SAS REQUEST (ITEMIZE) | DATE SHIPPED | DATA REC'D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (2) | (3) | (4) | (5) | (6) | (7) | (8) | ← | — | — | (9) | — | → | (11) | (12) | (13) | |
| — | L | SOL | INOR | MCKR 40 | ITPA | 11/16/93 | | | | | | | | | | |
| ms/msd | ↓ | ↓ | ↓ | MCKR 41 | ↓ | 11/16/93 | | | | | | | | | | |
| — | | | | MCKR 42 | | 11/16/93 | | | | | | | | | | |
| duplicate | ↓ | ↓ | ↓ | MCKR 43 | ↓ | 11/16/93 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| equip rinsate | L | AQ | INORG | MCKR 31 | ITPA | 11/16/93 | | | | | ✓ | ✓ | | | | |
| ↓ | ↓ | ↓ | ↓ | MCKR 32 | ↓ | 11/16/93 | | | | | ✓ | ✓ | | | | |
| | | | | MCKR 33 | | 11/16/93 | | | | | ✓ | ✓ | | | | |
| ↓ | ↓ | ↓ | ↓ | MCKR 34 | ↓ | 11/16/93 | | | | | ✓ | ✓ | Fed 12/27/93 | | | |

AR303780