



DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE FOR OPERATIONAL HEALTH (AFMC)
BROOKS CITY-BASE TEXAS

12 Aug 04

MEMORANDUM FOR USATR-E

AMSAM-TMD-E-PN

CMR 434, APO AE 09138

Attn: Mr. Darryl Sontag

FROM: AFIOH/SDRH

2350 Gillingham Drive

Brooks City-Base, TX 78235-5103

SUBJECT: Consultative Letter # IOH-SD-BR-CL-2004- 0079 , Radioactive Material Consolidation Project, Nucleonics, Area Calibration Laboratory, Pirmasens Germany.

1. From 26 – 29 Apr 04, Mr. Saunders and SSgt McGehee, Air Force Institute for Operational Health, Environmental Radiation Branch, performed a material consolidation/minimization operation of 33 mixed and low-level radiological drums in storage at the U.S. Army TMDE facility located in Pirmasens Germany.
2. Background: The drums originated from several different USAFE maintenance units located throughout the European theater of operations and have been in storage awaiting disposition from the Air Force. The primary contaminant of concern is tritium (H3) and possibly some RCRA hazardous materials.
3. Survey instruments used to identify potentially contaminated items were a Bicon Analyst (SN# A090B, date cal 15 Oct 03) with PGM detector (SN# A66Q, date cal 15 Oct 03), and a Ludlum Model 19 (MicroR meter) (SN#131245, date cal 1 Mar 04). Instrumentation passed all function tests and had valid calibration stickers. All swipes were analyzed via liquid scintillation method at the TMDE Pirmasens Radiation Calibration Laboratory.
4. After a detailed inspection, it was determined that repackaging, compacting, and sampling of the material in the drums would help reduce volume and further define the proper disposal criteria. All barrels were opened, inspected and repacked into new, plastic-lined 55 gal, Type A drums. A total of 33 drums were eventually reduced to 17 drums, resulting in a 49% reduction in volume. Post procedural swipes verified that routine contamination control methodologies prevented contamination of equipment and the facility.
5. All original drums were surveyed, swiped, and found to have no residual tritium contamination and will be disposed of by the Army as scrap metal. The criterion for determining contamination levels was any result in excess of 24 DPM, which is the limit of detection for tritium on the TMDE Liquid Scintillator. The exterior of the 17 newly packed drums were also swiped and all results were below the limit of detection for residual tritium contamination.

These drums will remain in storage until shipped to the United States for disposal as mixed waste.

6. We would like to thank Mr. Sontag and his entire staff for their outstanding support during this project. If you have any questions concerning this letter, please contact Maj Bias at (210) 536-3489, DSN 240-3489, e-mail: craig.bias@brooks.af.mil or Mr. Brian Saunders at (210) 536-5570, DSN 240-5570, e-mail: brian.saunders@brooks.af.mil or call the ESOH Service Center at 1-888-232-3764.



SCOTT M. NICHELSON, Lt Col, USAF, CHP, CIH
Chief, Radiation Surveillance Division

Attachment:

1. Swipe Results Summary
2. Severn Trent Laboratory Results
3. AFIOH/SDRR Radioanalytical Results
4. DOT/IATA Results Comparison

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
TMDE REGION EUROPE
CMR 434, APO AE 09138

AMSAM-TMD-E-PN

14 May 04

MEMORANDUM FOR Environmental Radiation Branch (Brian E. Saunders),
AFIOH/Radiation Surveillance Division, Brook City-Base, TX 78235-5103.

SUBJECT: Radiological Wipe Test Evaluation of Drums Containing U.S. Air Force
Consolidated Material

1. The subject seventeen (17) drums were swiped on the outside and evaluated for H-3 (Tritium) contamination. Evaluations indicate the following amount of removable radioactive contamination:

| Sample ID | Analyzed For | Results in DPM |
|-------------------------------|---------------|----------------|
| 55 Gal Drums # 1 through # 17 | H-3 (Tritium) | 0 |

2. TMDE Region-Europe, Health Physics Laboratory (HPL), Control Number **04-0077a** is assigned to subject evaluation. This number should be annotated on any further correspondence regarding subject evaluation.

3. The limit of detection (LD) for H-3 (Tritium) is 24 DPM

4. The stated LD is derived and defined as per AMC Pamphlet 750-20, Nuclear Counting Quality Assurance (NCQA), 7 January 1999. The calibration of the counting instrument is traceable to National Institute of Standards and Technology (NIST).

5. Point of contact for this evaluation is Mr. Egon Bischof, Health Physics Lab, Tel DSN-E 495-6486 / 6123, Fax 495-7293, Email: tmdegepn@cmtymail.26asg.army.mil

//original signed
DARRYL SONTAG
Chief, Nucleonics ACL
RSO USATR-E

ATCH 1

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
TMDE REGION EUROPE
CMR 434, APO AE 09138

AMSAM-TMD-E-PN

14 May 04

MEMORANDUM FOR Environmental Radiation Branch (Brian E. Saunders),
AFIOH/Radiation Surveillance Division, Brook City-Base, TX 78235-5103.

SUBJECT: Radiological Wipe Test Evaluation of Empty Drums

1. Subject evaluation was performed on empty metal drums of varying sizes. Subject drums originally contained U.S. Air Force consolidated material.
2. The subject thirty-three (33) drums were comprehensively swiped on the inside and outside and subsequently evaluated for Gross Alpha/Beta and H-3 (Tritium) contamination. Evaluations indicate the following amount of removable radioactive contamination:

| Sample ID | Analyzed For | Result Gross Alpha/Beta (DPM) | Result H-3 (Tritium) (DPM) |
|-------------------------------|------------------------------------|--|----------------------------------|
| 90 Gal Drums # 1 through # 4 | Gross Alpha/Beta and H-3 (Tritium) | 0 | 0 |
| 55 Gal Drums # 1 through # 17 | Gross Alpha/Beta and H-3 (Tritium) | 0 | 0 |
| 30 Gal Drums # 1 through # 10 | Gross Alpha/Beta and H-3 (Tritium) | 0 | 0 |
| 25 Gal Drums # 1 through # 2 | Gross Alpha/Beta and H-3 (Tritium) | 0 | 0 |

3. TMDE Region-Europe, Health Physics Laboratory (HPL), Control Number(s) **04-0069a (Gross Alpha/Beta) and 04-0078a (H-3)** are assigned to subject evaluation(s). This number should be annotated on any further correspondence regarding subject evaluation.
 4. The limit of detection (LD) for Gross Alpha is 3 DPM (see Note 1).
 5. The limit of detection (LD) for Gross Beta is 8 DPM (see Note 2).
 6. The limit of detection (LD) for H-3 (Tritium) is 24 DPM
- Note 1: The LD for Gross Alpha is based on the efficiency of Am-241 (5.48 Mev).
Note 2: The LD for Gross Beta is based on the efficiency of Tc-99 (0.2936 Mev).
7. The stated LD is derived and defined as per AMC Pamphlet 750-20, Nuclear Counting Quality Assurance (NCQA), 7 January 1999. The calibration of the counting instrument is traceable to National Institute of Standards and Technology (NIST).

AMSAM-TMD-E-PN

SUBJECT: Radiological Evaluation of Wipe Test(s)

8. Point of contact for this evaluation is Mr. Egon Bischof, Health Physics Lab, Tel DSN-E 495-6486 / 6123, Fax 495-7293, Email: tmdegepn@cmtymail.26asg.army.mil

//original signed
DARRYL SONTAG
Chief, Nucleonics ACL
RSO USATR-E

**Certificate of
Analysis**

STL Austin
14046 Summit Drive
Austin, Texas 78728

Tel: 512 310 5202
Fax: 512 244 0160
www.stl-inc.com



STL Austin

ANALYTICAL REPORT

PROJECT NO. 06053.04.018

Brooks City-Base

Lot #: I4E190372

Gloria Gover

AFIOH
Chemistry Division
2350 Gillingham
Brooks City-Base, TX 78235-5103

SEVERN TRENT LABORATORIES, INC.

A handwritten signature in black ink, appearing to read "Neal Salcher".

Neal J. Salcher
Project Manager

June 4, 2004

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
STL Austin is a part of Severn Trent Laboratories, Inc.

June 7, 2004

STL LOT NUMBER: I4E190372

Gloria Gover
AFIOH
Chemistry Division
2350 Gillingham
Brooks City-Base, TX 78235-5103

Dear Gloria Gover,

This report contains the analytical results for the five samples received under chain of custody by Severn Trent Laboratories (STL) on May 19, 2004. These samples are associated with your Brooks City-Base project.

All applicable quality control procedures met method-specified acceptance criteria except as noted on the following page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions, please feel free to call me at (512) 244-0855.

Sincerely,



Neal Salcher
Project Manager

cc: Project File

LOT NUMBER I4E190372

Nonconformance 09-10969 - CLOSED

Affected Samples:

I4E190372 (5):

Affected Methods:

8021B

Case Narrative:

Sample -005 (GM04-2154) from lot I4E190372 had a high hit for Toluene that was over the high end of the calibration curve, but due to the homogenous nature of the sample the results would not be able to be reproduced. Data are reported as is.

Corrective Action:

None.

Nonconformance 09-10982

Affected Samples:

I4E190372 (1):

I4E190372 (2):

I4E190372 (3):

I4E190372 (4):

I4E190372 (5):

Affected Methods:

6010B, 7470A, 8021B

Case Narrative:

Samples received outside of recommended holding time and at 25 degrees C.

Corrective Action:

NA

EXECUTIVE SUMMARY - Detection Highlights

I4E190372

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING LIMIT</u> | <u>UNITS</u> | <u>ANALYTICAL METHOD</u> |
|-------------------------------------|---------------|----------------------------|--------------|------------------------------|
| GM04-2146 04/27/04 14:00 001 | | | | |
| Ethylbenzene | 42 | 24 | ug/kg | SW846 8021B |
| Toluene | 460 | 24 | ug/kg | SW846 8021B |
| Xylenes (total) | 290 | 24 | ug/kg | SW846 8021B |
| Cadmium - TCLP | 2.5 | 0.10 | mg/L | SW846 6010B |
| Corrosivity | 7.9 H | 1.0 | No Units | SW846 9040B |
| GM04-2148 04/27/04 14:05 002 | | | | |
| Ethylbenzene | 95 | 22 | ug/kg | SW846 8021B |
| Toluene | 550 | 22 | ug/kg | SW846 8021B |
| Xylenes (total) | 490 | 22 | ug/kg | SW846 8021B |
| Corrosivity | 7.7 H | 1.0 | No Units | SW846 9040B |
| GM04-2150 04/27/04 14:07 003 | | | | |
| Ethylbenzene | 37 | 23 | ug/kg | SW846 8021B |
| Toluene | 240 | 23 | ug/kg | SW846 8021B |
| Xylenes (total) | 220 | 23 | ug/kg | SW846 8021B |
| Corrosivity | 7.9 H | 1.0 | No Units | SW846 9040B |
| GM04-2152 04/27/04 14:09 004 | | | | |
| Benzene | 22 | 22 | ug/kg | SW846 8021B |
| Ethylbenzene | 240 | 22 | ug/kg | SW846 8021B |
| Toluene | 790 | 22 | ug/kg | SW846 8021B |
| Xylenes (total) | 1400 | 22 | ug/kg | SW846 8021B |
| Corrosivity | 9.9 H | 1.0 | No Units | SW846 9040B |
| GM04-2154 04/27/04 14:11 005 | | | | |
| Benzene | 60 | 27 | ug/kg | SW846 8021B |
| Ethylbenzene | 100 | 27 | ug/kg | SW846 8021B |
| Toluene | 2600 E | 27 | ug/kg | SW846 8021B |
| Xylenes (total) | 500 | 27 | ug/kg | SW846 8021B |
| Corrosivity | 7.3 H | 1.0 | No Units | SW846 9040B |

ANALYTICAL METHODS SUMMARY

I4E190372

| <u>PARAMETER</u> | <u>ANALYTICAL METHOD</u> |
|---|------------------------------|
| Corrosivity | SW846 9040B |
| Cyanide, Total | SW846 9012A |
| Ignitability | SW846 SECTION 7.1.2 |
| Mercury in Liquid Waste (Manual Cold-Vapor) | SW846 7470A |
| Sulfides, Total 9030B/9034 | SW846 9030B/9034 |
| Trace Inductively Coupled Plasma (ICP) Metals | SW846 6010B |
| Volatiles by GC | SW846 8021B |

References:

- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

I4E190372

| <u>WO #</u> | <u>SAMPLE#</u> | <u>CLIENT SAMPLE ID</u> | <u>SAMPLED DATE</u> | <u>SAMP TIME</u> |
|-------------|----------------|-------------------------|---------------------|------------------|
| GGK22 | 001 | GM04-2146 | 04/27/04 | 14:00 |
| GGK4J | 002 | GM04-2148 | 04/27/04 | 14:05 |
| GGK5A | 003 | GM04-2150 | 04/27/04 | 14:07 |
| GGK6R | 004 | GM04-2152 | 04/27/04 | 14:09 |
| GGK66 | 005 | GM04-2154 | 04/27/04 | 14:11 |

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

QC DATA ASSOCIATION SUMMARY

I4E190372

Sample Preparation and Analysis Control Numbers

| <u>SAMPLE#</u> | <u>MATRIX</u> | <u>ANALYTICAL METHOD</u> | <u>LEACH BATCH #</u> | <u>PREP BATCH #</u> | <u>MS RUN#</u> |
|----------------|---------------|------------------------------|--------------------------|-------------------------|----------------|
| 001 | SOLID | SW846 SECTION 7.1 | | 4142340 | 4142228 |
| | SOLID | SW846 7470A | P414105 | 4142326 | 4142223 |
| | SOLID | SW846 6010B | P414105 | 4141123 | 4141086 |
| | SOLID | SW846 9012A | | 4143051 | 4143029 |
| | SOLID | SW846 8021B | | 4149104 | 4149061 |
| | SOLID | SW846 9040B | | 4155158 | 4155116 |
| | SOLID | SW846 9030B/9034 | | 4141457 | 4141268 |
| 002 | SOLID | SW846 SECTION 7.1 | | 4142340 | 4142228 |
| | SOLID | SW846 7470A | P414105 | 4142326 | 4142223 |
| | SOLID | SW846 6010B | P414105 | 4141123 | 4141086 |
| | SOLID | SW846 9012A | | 4143051 | 4143029 |
| | SOLID | SW846 8021B | | 4149104 | 4149061 |
| | SOLID | SW846 9040B | | 4155158 | 4155116 |
| | SOLID | SW846 9030B/9034 | | 4141457 | 4141268 |
| 003 | SOLID | SW846 SECTION 7.1 | | 4142340 | 4142228 |
| | SOLID | SW846 7470A | P414105 | 4142326 | 4142223 |
| | SOLID | SW846 6010B | P414105 | 4141123 | 4141086 |
| | SOLID | SW846 9012A | | 4143051 | 4143029 |
| | SOLID | SW846 8021B | | 4149104 | 4149061 |
| | SOLID | SW846 9040B | | 4155158 | 4155116 |
| | SOLID | SW846 9030B/9034 | | 4141457 | 4141268 |
| 004 | SOLID | SW846 SECTION 7.1 | | 4142340 | 4142228 |
| | SOLID | SW846 7470A | P414105 | 4142326 | 4142223 |
| | SOLID | SW846 6010B | P414105 | 4141123 | 4141086 |
| | SOLID | SW846 9012A | | 4143051 | 4143029 |
| | SOLID | SW846 8021B | | 4149104 | 4149061 |
| | SOLID | SW846 9040B | | 4155158 | 4155116 |
| | SOLID | SW846 9030B/9034 | | 4141457 | 4141268 |
| 005 | SOLID | SW846 SECTION 7.1 | | 4142340 | 4142228 |
| | SOLID | SW846 7470A | P414105 | 4142326 | 4142223 |
| | SOLID | SW846 6010B | P414105 | 4141123 | 4141086 |
| | SOLID | SW846 9012A | | 4143051 | 4143029 |
| | SOLID | SW846 8021B | | 4149104 | 4149061 |
| | SOLID | SW846 9040B | | 4155158 | 4155116 |
| | SOLID | SW846 9030B/9034 | | 4141457 | 4141268 |

AFIOH

Client Sample ID: GM04-2146

GC Volatiles

Lot-Sample #...: I4E190372-001 Work Order #...: GGK221AA Matrix.....: SOLID
 Date Sampled...: 04/27/04 14:00 Date Received...: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #...: 4149104 Analysis Time...: 15:56
 Dilution Factor: 4.85
 % Moisture.....: Method.....: SW846 8021B

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | |
|------------------|---------------|------------------|--------------|
| | | <u>LIMIT</u> | <u>UNITS</u> |
| Benzene | ND | 24 | ug/kg |
| Ethylbenzene | 42 | 24 | ug/kg |
| Toluene | 460 | 24 | ug/kg |
| Xylenes (total) | 290 | 24 | ug/kg |

| <u>SURROGATE</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> |
|------------------------------|-------------------------|------------------------|
| Bromofluorobenzene | 81 | (41 - 150) |
| a,a,a-Trifluorotoluene (TFT) | 156 | (43 - 165) |

AFIOH

Client Sample ID: GM04-2146

TCLP Metals

Lot-Sample #...: I4E190372-001

Matrix.....: SOLID

Date Sampled...: 04/27/04 14:00 Date Received...: 05/14/04

Leach Date.....: 05/18/04 Leach Batch #...: P414105

| PARAMETER | RESULT | REPORTING | | | METHOD | PREPARATION- | WORK |
|--------------------------|--------|--------------------|-------|-------------------------|--------|------------------------|----------|
| | | LIMIT | UNITS | | | ANALYSIS DATE | ORDER # |
| Prep Batch #...: 4141123 | | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AH |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AJ |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Cadmium | 2.5 | 0.10 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AK |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AL |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AM |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AN |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | | 05/19-05/20/04 | GGK221AP |
| | | Dilution Factor: 1 | | Analysis Time...: 16:13 | | MS Run #.....: 4141086 | |
| Prep Batch #...: 4142326 | | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | | 05/20/04 | GGK221AG |
| | | Dilution Factor: 1 | | Analysis Time...: 16:53 | | MS Run #.....: 4142223 | |

NOTE(S) :

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

AFIOH

Client Sample ID: GM04-2146

General Chemistry

Lot-Sample #....: I4E190372-001 Work Order #....: GGK22 Matrix.....: SOLID
 Date Sampled...: 04/27/04 14:00 Date Received...: 05/14/04
 % Moisture.....:

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION- ANALYSIS DATE | PREP BATCH # |
|----------------|--------|------|-----------------------|-------------------------|-------------------------------|-----------------|
| Corrosivity | 7.9 H | 1.0 | No Units | SW846 9040B | 06/02/04 | 4155158 |
| | | | Dilution Factor: 1 | Analysis Time...: 15:00 | MS Run #.....: 4155116 | |
| Cyanide, Total | ND H | 0.49 | mg/kg | SW846 9012A | 05/28-05/29/04 | 4143051 |
| | | | Dilution Factor: 0.98 | Analysis Time...: 10:00 | MS Run #.....: 4143029 | |
| Ignitability | NO | -- | No Units | SW846 SECTION 7.1 | 05/21/04 | 4142340 |
| | | | Dilution Factor: 1 | Analysis Time...: 14:00 | MS Run #.....: 4142228 | |
| Total Sulfide | ND | 250 | mg/kg | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | | Dilution Factor: 1 | Analysis Time...: 00:00 | MS Run #.....: 4141268 | |

NOTE(S) :

RL Reporting Limit

H The sample was prepared or analyzed after the EPA recommended holding time had been exceeded.

AFIOH

Client Sample ID: GM04-2148

GC Volatiles

Lot-Sample #....: I4E190372-002 Work Order #....: GGK4J1AE Matrix.....: SOLID
 Date Sampled....: 04/27/04 14:05 Date Received...: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #....: 4149104 Analysis Time...: 16:24
 Dilution Factor: 4.5
 % Moisture.....: Method.....: SW846 8021B

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | |
|------------------------------|-----------------|------------------|--------------|
| | | <u>LIMIT</u> | <u>UNITS</u> |
| Benzene | ND | 22 | ug/kg |
| Ethylbenzene | 95 | 22 | ug/kg |
| Toluene | 550 | 22 | ug/kg |
| Xylenes (total) | 490 | 22 | ug/kg |
| | | | |
| <u>SURROGATE</u> | <u>PERCENT</u> | <u>RECOVERY</u> | |
| | <u>RECOVERY</u> | <u>LIMITS</u> | |
| Bromofluorobenzene | 80 | (41 - 150) | |
| a,a,a-Trifluorotoluene (TFT) | 138 | (43 - 165) | |

AFIOH

Client Sample ID: GM04-2148

TCLP Metals

Lot-Sample #...: I4E190372-002

Matrix.....: SOLID

Date Sampled...: 04/27/04 14:05 Date Received...: 05/14/04

Leach Date.....: 05/18/04 Leach Batch #...: P414105

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|--------------------------|--------|--------------------|-------|-------------------------|-------------------------------|-----------------|
| Prep Batch #...: 4141123 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AL |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AM |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AN |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AP |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AQ |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AR |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK4J1AT |
| | | Dilution Factor: 1 | | Analysis Time...: 16:18 | MS Run #.....: 4141086 | |
| Prep Batch #...: 4142326 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 05/20/04 | GGK4J1AK |
| | | Dilution Factor: 1 | | Analysis Time...: 16:54 | MS Run #.....: 4142223 | |

NOTE(S) :

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

AFIOH

Client Sample ID: GM04-2148

General Chemistry

Lot-Sample #...: I4E190372-002 Work Order #...: GGK4J Matrix.....: SOLID
 Date Sampled...: 04/27/04 14:05 Date Received...: 05/14/04
 % Moisture.....:

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION- ANALYSIS DATE | PREP BATCH # |
|----------------|--------|------|----------|-----------------------|-------------------------------|------------------------|
| Corrosivity | 7.7 H | 1.0 | No Units | SW846 9040B | 06/02/04 | 4155158 |
| | | | | Dilution Factor: 1 | Analysis Time...: 15:00 | MS Run #.....: 4155116 |
| Cyanide, Total | ND H | 0.48 | mg/kg | SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | | | Dilution Factor: 0.97 | Analysis Time...: 10:00 | MS Run #.....: 4143029 |
| Ignitability | NO | -- | No Units | SW846 SECTION 7.1 | 05/21/04 | 4142340 |
| | | | | Dilution Factor: 1 | Analysis Time...: 14:00 | MS Run #.....: 4142228 |
| Total Sulfide | ND | 250 | mg/kg | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | | | Dilution Factor: 1 | Analysis Time...: 00:00 | MS Run #.....: 4141268 |

NOTE(S):

RL Reporting Limit

H The sample was prepared or analyzed after the EPA recommended holding time had been exceeded.

AFIOH

Client Sample ID: GM04-2150

GC Volatiles

Lot-Sample #....: I4E190372-003 Work Order #....: GGK5A1AA Matrix.....: SOLID
 Date Sampled....: 04/27/04 14:07 Date Received...: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #....: 4149104 Analysis Time...: 16:51
 Dilution Factor: 4.63
 % Moisture.....: Method.....: SW846 8021B

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | |
|------------------------------|-----------------|------------------|--------------|
| | | <u>LIMIT</u> | <u>UNITS</u> |
| Benzene | ND | 23 | ug/kg |
| Ethylbenzene | 37 | 23 | ug/kg |
| Toluene | 240 | 23 | ug/kg |
| Xylenes (total) | 220 | 23 | ug/kg |
| | | | |
| <u>SURROGATE</u> | <u>PERCENT</u> | <u>RECOVERY</u> | |
| | <u>RECOVERY</u> | <u>LIMITS</u> | |
| Bromofluorobenzene | 80 | (41 - 150) | |
| a,a,a-Trifluorotoluene (TFT) | 128 | (43 - 165) | |

AFIOH

Client Sample ID: GM04-2150

TCLP Metals

Lot-Sample #...: I4E190372-003

Matrix.....: SOLID

Date Sampled...: 04/27/04 14:07 Date Received...: 05/14/04

Leach Date.....: 05/18/04 Leach Batch #...: P414105

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|--------------------------|--------|--------------------|-------|-------------------------|-------------------------------|-----------------|
| Prep Batch #...: 4141123 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AH |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AJ |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AK |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AL |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AM |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AN |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK5A1AP |
| | | Dilution Factor: 1 | | Analysis Time...: 16:35 | MS Run #.....: 4141086 | |
| Prep Batch #...: 4142326 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 05/20/04 | GGK5A1AG |
| | | Dilution Factor: 1 | | Analysis Time...: 16:59 | MS Run #.....: 4142223 | |

NOTE(S) :

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

AFIOH

Client Sample ID: GM04-2150

General Chemistry

Lot-Sample #...: I4E190372-003 Work Order #...: GGK5A Matrix.....: SOLID
 Date Sampled...: 04/27/04 14:07 Date Received...: 05/14/04
 % Moisture.....:

| <u>PARAMETER</u> | <u>RESULT</u> | <u>RL</u> | <u>UNITS</u> | <u>METHOD</u> | <u>PREPARATION- ANALYSIS DATE</u> | <u>PREP BATCH #</u> |
|------------------|---------------|-----------|-----------------------|-------------------------|---------------------------------------|-------------------------|
| Corrosivity | 7.9 H | 1.0 | No Units | SW846 9040B | 06/02/04 | 4155158 |
| | | | Dilution Factor: 1 | Analysis Time...: 15:00 | MS Run #.....: 4155116 | |
| Cyanide, Total | ND H | 0.49 | mg/kg | SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | | Dilution Factor: 0.98 | Analysis Time...: 10:00 | MS Run #.....: 4143029 | |
| Ignitability | NO | -- | No Units | SW846 SECTION 7.1 | 05/21/04 | 4142340 |
| | | | Dilution Factor: 1 | Analysis Time...: 14:00 | MS Run #.....: 4142228 | |
| Total Sulfide | ND | 250 | mg/kg | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | | Dilution Factor: 1 | Analysis Time...: 00:00 | MS Run #.....: 4141268 | |

NOTE(S):

RL Reporting Limit

H The sample was prepared or analyzed after the EPA recommended holding time had been exceeded.

AFIOH

Client Sample ID: GM04-2152

GC Volatiles

Lot-Sample #....: I4E190372-004 Work Order #....: GGK6R1AE Matrix.....: SOLID
 Date Sampled....: 04/27/04 14:09 Date Received..: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date..: 05/27/04
 Prep Batch #....: 4149104 Analysis Time...: 17:19
 Dilution Factor: 4.39
 % Moisture.....: Method.....: SW846 8021B

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | |
|------------------|---------------|------------------|--------------|
| | | <u>LIMIT</u> | <u>UNITS</u> |
| Benzene | 22 | 22 | ug/kg |
| Ethylbenzene | 240 | 22 | ug/kg |
| Toluene | 790 | 22 | ug/kg |
| Xylenes (total) | 1400 | 22 | ug/kg |

| <u>SURROGATE</u> | <u>PERCENT</u> | <u>RECOVERY</u> |
|------------------------------|-----------------|-----------------|
| | <u>RECOVERY</u> | <u>LIMITS</u> |
| Bromofluorobenzene | 81 | (41 - 150) |
| a,a,a-Trifluorotoluene (TFT) | 171 * | (43 - 165) |

NOTE (S) :

* Surrogate recovery is outside stated control limits.

Surrogates outside acceptance criteria due to coelution.

AFIOH

Client Sample ID: GM04-2152

TCLP Metals

Lot-Sample #...: I4E190372-004

Matrix.....: SOLID

Date Sampled...: 04/27/04 14:09 Date Received...: 05/14/04

Leach Date.....: 05/18/04 Leach Batch #...: P414105

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|--------------------------|--------|--------------------|-------|-------------------------|-------------------------------|-----------------|
| Prep Batch #...: 4141123 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AL |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AM |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AN |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AP |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AQ |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AR |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK6R1AT |
| | | Dilution Factor: 1 | | Analysis Time...: 16:40 | MS Run #.....: 4141086 | |
| Prep Batch #...: 4142326 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 05/20/04 | GGK6R1AK |
| | | Dilution Factor: 1 | | Analysis Time...: 17:00 | MS Run #.....: 4142223 | |

NOTE (S) :

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

AFIOH

Client Sample ID: GM04-2152

General Chemistry

Lot-Sample #...: I4E190372-004 Work Order #...: GGK6R Matrix.....: SOLID
 Date Sampled...: 04/27/04 14:09 Date Received...: 05/14/04
 % Moisture.....:

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION- ANALYSIS DATE | PREP BATCH # |
|----------------|--------|------|-----------------------|------------------------|-------------------------------|-----------------|
| Corrosivity | 9.9 H | 1.0 | No Units | SW846 9040B | 06/02/04 | 4155158 |
| | | | Dilution Factor: 1 | Analysis Time..: 15:00 | MS Run #.....: 4155116 | |
| Cyanide, Total | ND H | 0.50 | mg/kg | SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | | Dilution Factor: 0.99 | Analysis Time..: 10:00 | MS Run #.....: 4143029 | |
| Ignitability | NO | -- | No Units | SW846 SECTION 7.1 | 05/21/04 | 4142340 |
| | | | Dilution Factor: 1 | Analysis Time..: 14:00 | MS Run #.....: 4142228 | |
| Total Sulfide | ND | 250 | mg/kg | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | | Dilution Factor: 1 | Analysis Time..: 00:00 | MS Run #.....: 4141268 | |

NOTE(S) :

RL Reporting Limit

H The sample was prepared or analyzed after the EPA recommended holding time had been exceeded.

AFIOH

Client Sample ID: GM04-2154

GC Volatiles

Lot-Sample #....: I4E190372-005 Work Order #....: GGK661AE Matrix.....: SOLID
 Date Sampled....: 04/27/04 14:11 Date Received...: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #....: 4149104 Analysis Time...: 17:47
 Dilution Factor: 5.38
 % Moisture.....: Method.....: SW846 8021B

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | |
|------------------|---------------|------------------|--------------|
| | | <u>LIMIT</u> | <u>UNITS</u> |
| Benzene | 60 | 27 | ug/kg |
| Ethylbenzene | 100 | 27 | ug/kg |
| Toluene | 2600 E | 27 | ug/kg |
| Xylenes (total) | 500 | 27 | ug/kg |

| <u>SURROGATE</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> |
|------------------------------|-------------------------|------------------------|
| Bromofluorobenzene | 76 | (41 - 150) |
| a,a,a-Trifluorotoluene (TFT) | 179 * | (43 - 165) |

NOTE(S) :

* Surrogate recovery is outside stated control limits.

E Estimated result. Result concentration exceeds the calibration range.

Surrogates outside acceptance criteria due to coelution.

AFIOH

Client Sample ID: GM04-2154

TCLP Metals

Lot-Sample #...: I4E190372-005

Matrix.....: SOLID

Date Sampled...: 04/27/04 14:11 Date Received...: 05/14/04

Leach Date.....: 05/18/04 Leach Batch #...: P414105

| PARAMETER | RESULT | REPORTING | | METHOD | PREPARATION- | WORK |
|--------------------------|--------|--------------------|-------|-------------------------|------------------------|----------|
| | | LIMIT | UNITS | | ANALYSIS DATE | ORDER # |
| Prep Batch #...: 4141123 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AL |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AM |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AN |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AP |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AQ |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AR |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGK661AT |
| | | Dilution Factor: 1 | | Analysis Time...: 16:46 | MS Run #.....: 4141086 | |
| Prep Batch #...: 4142326 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 05/20/04 | GGK661AK |
| | | Dilution Factor: 1 | | Analysis Time...: 17:01 | MS Run #.....: 4142223 | |

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

AFIOH

Client Sample ID: GM04-2154

General Chemistry

Lot-Sample #...: I4E190372-005 Work Order #...: GGK66 Matrix.....: SOLID
 Date Sampled...: 04/27/04 14:11 Date Received...: 05/14/04
 % Moisture.....:

| PARAMETER | RESULT | RL | UNITS | METHOD | PREPARATION- ANALYSIS DATE | PREP BATCH # |
|----------------|--------|------|----------|--|-------------------------------|-----------------|
| Corrosivity | 7.3 H | 1.0 | No Units | SW846 9040B | 06/02/04 | 4155158 |
| | | | | Dilution Factor: 1 Analysis Time...: 15:00 | MS Run #.....: 4155116 | |
| Cyanide, Total | ND H | 0.49 | mg/kg | SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | | | Dilution Factor: 0.98 Analysis Time...: 10:00 | MS Run #.....: 4143029 | |
| Ignitability | NO | -- | No Units | SW846 SECTION 7.1 | 05/21/04 | 4142340 |
| | | | | Dilution Factor: 1 Analysis Time...: 14:00 | MS Run #.....: 4142228 | |
| Total Sulfide | ND | 250 | mg/kg | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | | | Dilution Factor: 1 Analysis Time...: 00:00 | MS Run #.....: 4141268 | |

NOTE(S) :

RL Reporting Limit

H The sample was prepared or analyzed after the EPA recommended holding time had been exceeded.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: I4E190372 Work Order #...: GG8571AA Matrix.....: SOLID
 MB Lot-Sample #: I4E280000-104
 Analysis Date...: 05/27/04 Prep Date.....: 05/27/04 Analysis Time...: 14:20
 Dilution Factor: 1 Prep Batch #...: 4149104

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | | |
|-----------------------------------|-----------------|------------------|--------------|---------------|
| | | <u>LIMIT</u> | <u>UNITS</u> | <u>METHOD</u> |
| Benzene | ND | 5.0 | ug/kg | SW846 8021B |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8021B |
| Toluene | ND | 5.0 | ug/kg | SW846 8021B |
| Xylenes (total) | ND | 5.0 | ug/kg | SW846 8021B |
| | <u>PERCENT</u> | <u>RECOVERY</u> | | |
| <u>SURROGATE</u> | <u>RECOVERY</u> | <u>LIMITS</u> | | |
| Bromofluorobenzene | 94 | (41 - 150) | | |
| a, a, a-Trifluorotoluene (TFT) | 98 | (43 - 165) | | |

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

TCLP Metals

Client Lot #...: I4E190372

Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|---|--------|-------------------------|-------|-------------|-------------------------------|-----------------|
| MB Lot-Sample #: I4E200000-123 Prep Batch #...: 4141123 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AC |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AD |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AH |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AE |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AF |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 05/19-05/20/04 | GGMCF1AG |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 15:27 | | | | |
| MB Lot-Sample #: I4E210000-326 Prep Batch #...: 4142326 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 05/20/04 | GGRGJ1AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time...: 16:44 | | | | |

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: I4E190372

Matrix.....: SOLID

| <u>PARAMETER</u> | <u>RESULT</u> | <u>REPORTING</u> | | <u>METHOD</u> | <u>PREPARATION-</u> | <u>PREP</u> |
|------------------|---------------|------------------------|--------------------------------|------------------|----------------------|----------------|
| | | <u>LIMIT</u> | <u>UNITS</u> | | <u>ANALYSIS DATE</u> | <u>BATCH #</u> |
| Cyanide, Total | ND | Work Order #: GGV2J1AA | MB Lot-Sample #: I4E220000-051 | SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | 0.50 | mg/kg | | | |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 10:00 | | | | |
| Total Sulfide | ND | Work Order #: GGN7C1AA | MB Lot-Sample #: I4E200000-457 | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | 250 | mg/kg | | | |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 00:00 | | | | |

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I4E190372 Work Order #...: GG8571AC-LCS Matrix.....: SOLID
 LCS Lot-Sample#: I4E280000-104 GG8571AD-LCSD
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #...: 4149104 Analysis Time...: 08:30
 Dilution Factor: 1

| <u>PARAMETER</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> | <u>RPD</u> | <u>RPD LIMITS</u> | <u>METHOD</u> |
|-------------------------|-----------------------------|----------------------------|------------|-----------------------|---------------|
| Methyl tert-butyl ether | 106 | (70 - 141) | | | SW846 8021B |
| Benzene | 93 | (70 - 141) | 13 | (0-30) | SW846 8021B |
| | 103 | (73 - 128) | | | SW846 8021B |
| Ethylbenzene | 94 | (73 - 128) | 9.2 | (0-30) | SW846 8021B |
| | 101 | (73 - 136) | | | SW846 8021B |
| Toluene | 93 | (73 - 136) | 8.7 | (0-30) | SW846 8021B |
| | 103 | (71 - 129) | | | SW846 8021B |
| Xylenes (total) | 94 | (71 - 129) | 9.0 | (0-30) | SW846 8021B |
| | 105 | (74 - 130) | | | SW846 8021B |
| | 96 | (74 - 130) | 9.0 | (0-30) | SW846 8021B |

| <u>SURROGATE</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> |
|-----------------------------------|-----------------------------|----------------------------|
| Bromofluorobenzene | 95 | (71 - 133) |
| a, a, a-Trifluorotoluene (TFT) | 94 | (71 - 133) |
| | 101 | (67 - 125) |
| | 100 | (67 - 125) |

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: I4E190372 Work Order #...: GG8571AC-LCS Matrix.....: SOLID
 LCS Lot-Sample#: I4E280000-104 GG8571AD-LCSD
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #...: 4149104 Analysis Time...: 08:30
 Dilution Factor: 1

| PARAMETER | SPIKE | MEASURED | UNITS | PERCENT | RPD | METHOD |
|--------------------------------|--------|----------|-------|----------|-----|-------------|
| | AMOUNT | AMOUNT | | RECOVERY | | |
| Methyl tert-butyl ether | 20.0 | 21.3 | ug/kg | 106 | | SW846 8021B |
| | 20.0 | 18.7 | ug/kg | 93 | 13 | SW846 8021B |
| Benzene | 20.0 | 20.6 | ug/kg | 103 | | SW846 8021B |
| | 20.0 | 18.8 | ug/kg | 94 | 9.2 | SW846 8021B |
| Ethylbenzene | 20.0 | 20.2 | ug/kg | 101 | | SW846 8021B |
| | 20.0 | 18.5 | ug/kg | 93 | 8.7 | SW846 8021B |
| Toluene | 20.0 | 20.5 | ug/kg | 103 | | SW846 8021B |
| | 20.0 | 18.7 | ug/kg | 94 | 9.0 | SW846 8021B |
| Xylenes (total) | 60.0 | 63.1 | ug/kg | 105 | | SW846 8021B |
| | 60.0 | 57.7 | ug/kg | 96 | 9.0 | SW846 8021B |

| SURROGATE | PERCENT | RECOVERY |
|-----------------------------------|----------|------------|
| | RECOVERY | LIMITS |
| Bromofluorobenzene | 95 | (71 - 133) |
| | 94 | (71 - 133) |
| a, a, a-Trifluorotoluene (TFT) | 101 | (67 - 125) |
| | 100 | (67 - 125) |

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TCLP Metals

Client Lot #...: I4E190372

Matrix.....: SOLID

| <u>PARAMETER</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> | <u>METHOD</u> | <u>PREPARATION- ANALYSIS DATE</u> | <u>WORK ORDER #</u> |
|---|-----------------------------|----------------------------|---------------|---------------------------------------|---------------------|
| LCS Lot-Sample#: I4E200000-123 Prep Batch #...: 4141123 | | | | | |
| Arsenic | 106 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AJ |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| Barium | 100 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AK |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| Cadmium | 107 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AL |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| Chromium | 103 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AQ |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| Lead | 106 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AM |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| Selenium | 107 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AN |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| Silver | 103 | (80 - 120) | SW846 6010B | 05/19-05/20/04 | GGMCF1AP |
| | | Dilution Factor: 5 | | Analysis Time...: 15:33 | |
| LCS Lot-Sample#: I4E210000-326 Prep Batch #...: 4142326 | | | | | |
| Mercury | 102 | (80 - 120) | SW846 7470A | 05/20/04 | GGRGJ1AC |
| | | Dilution Factor: 1 | | Analysis Time...: 16:45 | |

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TCLP Metals

Client Lot #...: I4E190372

Matrix.....: SOLID

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECVRY | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|-----------|--------------|-----------------|-------|----------------|--------|----------------------------|--------------|
|-----------|--------------|-----------------|-------|----------------|--------|----------------------------|--------------|

LCS Lot-Sample#: I4E200000-123 Prep Batch #...: 4141123

| | | | | | | | |
|---------|------|------|------|-----|--------------------|-------------------------|----------|
| Arsenic | 5.00 | 5.32 | mg/L | 106 | SW846 6010B | 05/19-05/20/04 | GGMCF1AJ |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

| | | | | | | | |
|--------|------|------|------|-----|--------------------|-------------------------|----------|
| Barium | 50.0 | 49.9 | mg/L | 100 | SW846 6010B | 05/19-05/20/04 | GGMCF1AK |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

| | | | | | | | |
|---------|------|------|------|-----|--------------------|-------------------------|----------|
| Cadmium | 1.00 | 1.07 | mg/L | 107 | SW846 6010B | 05/19-05/20/04 | GGMCF1AL |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

| | | | | | | | |
|----------|------|------|------|-----|--------------------|-------------------------|----------|
| Chromium | 5.00 | 5.14 | mg/L | 103 | SW846 6010B | 05/19-05/20/04 | GGMCF1AQ |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

| | | | | | | | |
|------|------|------|------|-----|--------------------|-------------------------|----------|
| Lead | 5.00 | 5.30 | mg/L | 106 | SW846 6010B | 05/19-05/20/04 | GGMCF1AM |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

| | | | | | | | |
|----------|------|------|------|-----|--------------------|-------------------------|----------|
| Selenium | 1.00 | 1.07 | mg/L | 107 | SW846 6010B | 05/19-05/20/04 | GGMCF1AN |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

| | | | | | | | |
|--------|------|------|------|-----|--------------------|-------------------------|----------|
| Silver | 1.00 | 1.03 | mg/L | 103 | SW846 6010B | 05/19-05/20/04 | GGMCF1AP |
| | | | | | Dilution Factor: 5 | Analysis Time...: 15:33 | |

LCS Lot-Sample#: I4E210000-326 Prep Batch #...: 4142326

| | | | | | | | |
|---------|---------|---------|------|-----|--------------------|-------------------------|----------|
| Mercury | 0.00500 | 0.00508 | mg/L | 102 | SW846 7470A | 05/20/04 | GGRGJ1AC |
| | | | | | Dilution Factor: 1 | Analysis Time...: 16:45 | |

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I4E190372

Matrix.....: SOLID

| <u>PARAMETER</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> | <u>METHOD</u> | <u>PREPARATION- ANALYSIS DATE</u> | <u>PREP BATCH #</u> |
|------------------|-----------------------------|--------------------------------------|--|---------------------------------------|-------------------------|
| Corrosivity | 100 | Work Order #: GHHW61AA (90 - 110) | LCS Lot-Sample#: I4F030000-158 SW846 9040B | 06/02/04 | 4155158 |
| | | Dilution Factor: 1 | | Analysis Time...: 15:00 | |
| Cyanide, Total | 103 | Work Order #: GGV2J1AC (90 - 110) | LCS Lot-Sample#: I4E220000-051 SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | Dilution Factor: 1 | | Analysis Time...: 10:00 | |
| Total Sulfide | 71 | Work Order #: GGN7C1AC (70 - 130) | LCS Lot-Sample#: I4E200000-457 SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | Dilution Factor: 1 | | Analysis Time...: 00:00 | |

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #....: I4E190372

Matrix.....: SOLID

| <u>PARAMETER</u> | <u>SPIKE</u> <u>AMOUNT</u> | <u>MEASURED</u> <u>AMOUNT</u> | <u>UNITS</u> | <u>PERCNT</u> <u>RECVRY</u> | <u>METHOD</u> | <u>PREPARATION-</u> <u>ANALYSIS DATE</u> | <u>PREP</u> <u>BATCH #</u> |
|------------------|-------------------------------|----------------------------------|--------------|--------------------------------|-------------------------|---|-------------------------------|
| Corrosivity | 7.00 | 7.00 | No Units | 100 | SW846 9040B | 06/02/04 | 4155158 |
| | | | | Dilution Factor: 1 | Analysis Time...: 15:00 | | |
| Cyanide, Total | 12.5 | 12.9 | mg/kg | 103 | SW846 9012A | 05/21-05/22/04 | 4143051 |
| | | | | Dilution Factor: 1 | Analysis Time...: 10:00 | | |
| Total Sulfide | 863 | 615 | mg/kg | 71 | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| | | | | Dilution Factor: 1 | Analysis Time...: 00:00 | | |

NOTE(S) :

 Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I4E190372 Work Order #...: GGK221AV-MS Matrix.....: SOLID
 MS Lot-Sample #: I4E190372-001 GGK221AW-MSD
 Date Sampled...: 04/27/04 14:00 Date Received...: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #...: 4149104 Analysis Time...: 18:15
 Dilution Factor: 5.21 % Moisture.....:

| <u>PARAMETER</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> | <u>RPD</u> | <u>RPD LIMITS</u> | <u>METHOD</u> |
|-------------------------|-------------------------|------------------------|------------|-------------------|---------------|
| Methyl tert-butyl ether | 221 a | (70 - 141) | | | SW846 8021B |
| | 325 a | (70 - 141) | 25 | (0-30) | SW846 8021B |
| Benzene | 56 a | (73 - 128) | | | SW846 8021B |
| | 107 p | (73 - 128) | 57 | (0-30) | SW846 8021B |
| Ethylbenzene | 0.0 a | (73 - 136) | | | SW846 8021B |
| | 46 a | (73 - 136) | 0.0 | (0-30) | SW846 8021B |
| Toluene | 261 a | (71 - 129) | | | SW846 8021B |
| | 902 a,p | (71 - 129) | 60 | (0-30) | SW846 8021B |
| Xylenes (total) | 0.0 a | (74 - 130) | | | SW846 8021B |
| | 62 a | (74 - 130) | 0.0 | (0-30) | SW846 8021B |

| <u>SURROGATE</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> |
|--------------------------------|-------------------------|------------------------|
| Bromofluorobenzene | 89 | (41 - 150) |
| | 73 | (41 - 150) |
| a, a, a-Trifluorotoluene (TFT) | 137 | (43 - 165) |
| | 190 * | (43 - 165) |

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

p Relative percent difference (RPD) is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: I4E190372 Work Order #...: GGK221AV-MS Matrix.....: SOLID
 MS Lot-Sample #: I4E190372-001 GGK221AW-MSD
 Date Sampled...: 04/27/04 14:00 Date Received...: 05/14/04 MS Run #.....: 4149061
 Prep Date.....: 05/27/04 Analysis Date...: 05/27/04
 Prep Batch #...: 4149104 Analysis Time...: 18:15
 Dilution Factor: 5.21 % Moisture.....:

| PARAMETER | SAMPLE | SPIKE | MEASRD | UNITS | PERCNT | | METHOD |
|-------------------------|-----------------|-------|--------|-------|--------|-----|-------------|
| | AMOUNT | AMT | AMOUNT | | RECVRY | RPD | |
| Methyl tert-butyl ether | 110 | 104 | 337 | ug/kg | 221 a | | SW846 8021B |
| | 110 | 100 | 432 | ug/kg | 325 a | 25 | SW846 8021B |
| Benzene | ND | 104 | 61.4 | ug/kg | 56 a | | SW846 8021B |
| | ND | 100 | 110 | ug/kg | 107 p | 57 | SW846 8021B |
| Ethylbenzene | 42 | 104 | 31.3 | ug/kg | 0.0 a | | SW846 8021B |
| | 42 | 100 | 88.6 | ug/kg | 46 a | 0.0 | SW846 8021B |
| Toluene | 460 | 104 | 732 | ug/kg | 261 a | | SW846 8021B |
| | 460 | 100 | 1360 | ug/kg | 902 | 60 | SW846 8021B |
| | Qualifiers: a,p | | | | | | |
| Xylenes (total) | 290 | 312 | 149 | ug/kg | 0.0 a | | SW846 8021B |
| | 290 | 300 | 477 | ug/kg | 62 a | 0.0 | SW846 8021B |

| SURROGATE | PERCENT | RECOVERY |
|-----------------------------------|----------|------------|
| | RECOVERY | LIMITS |
| Bromofluorobenzene | 89 | (41 - 150) |
| | 73 | (41 - 150) |
| a, a, a-Trifluorotoluene (TFT) | 137 | (43 - 165) |
| | 190 * | (43 - 165) |

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

p Relative percent difference (RPD) is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TCLP Metals

Client Lot #...: I4E190372

Matrix.....: SOLID

Date Sampled...: 05/13/04 10:00 Date Received...: 05/14/04

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|-----------|------------------|-----------------|-----|------------|--------|----------------------------|--------------|
|-----------|------------------|-----------------|-----|------------|--------|----------------------------|--------------|

MS Lot-Sample #: I4E140162-001 Prep Batch #...: 4141123
 Leach Date.....: 05/18/04 Leach Batch #...: P414105

Arsenic 106 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1AL
 108 (75 - 125) 1.0 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1AM
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

Barium 100 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1AN
 101 (75 - 125) 0.84 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1AP
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

Cadmium 108 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1AQ
 109 (75 - 125) 0.65 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1AR
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

Chromium 104 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1A1
 104 (75 - 125) 0.08 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1A2
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

Lead 107 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1AT
 108 (75 - 125) 0.58 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1AU
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

Selenium 107 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1AV
 108 (75 - 125) 0.98 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1AW
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

Silver 96 (75 - 125) SW846 6010B 05/19-05/20/04 GF9AG1AX
 98 (75 - 125) 1.5 (0-20) SW846 6010B 05/19-05/20/04 GF9AG1AO
 Dilution Factor: 5
 Analysis Time...: 15:56
 MS Run #.....: 4141086

MS Lot-Sample #: I4E140162-001 Prep Batch #...: 4142326
 Leach Date.....: 05/18/04 Leach Batch #...: P414105

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TCLP Metals

Client Lot #...: I4E190372

Date Sampled...: 05/13/04 10:00 Date Received...: 05/14/04

Matrix.....: SOLID

| <u>PARAMETER</u> | <u>PERCENT RECOVERY</u> | <u>RECOVERY LIMITS</u> | <u>RPD</u> | <u>RPD LIMITS</u> | <u>METHOD</u> | <u>PREPARATION- ANALYSIS DATE</u> | <u>WORK ORDER #</u> |
|------------------|-------------------------|------------------------|------------|-------------------|---------------|-----------------------------------|---------------------|
| Mercury | 99 | (75 - 125) | | | SW846 7470A | 05/20/04 | GF9AG1A3 |
| | 96 | (75 - 125) | 3.3 | (0-20) | SW846 7470A | 05/20/04 | GF9AG1A4 |

Dilution Factor: 1
 Analysis Time...: 16:50
 MS Run #.....: 4142223

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TCLP Metals

Client Lot #...: I4E190372

Matrix.....: SOLID

Date Sampled...: 05/13/04 10:00 Date Received...: 05/14/04

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|-----------|---------------|-----------|---------------|-------|---------------|-----|--------|----------------------------|--------------|
|-----------|---------------|-----------|---------------|-------|---------------|-----|--------|----------------------------|--------------|

MS Lot-Sample #: I4E140162-001 Prep Batch #...: 4141123

Leach Date.....: 05/18/04 Leach Batch #...: P414105

Arsenic

| | | | | | | | | | |
|-------------------------|------|--|------|------|-----|-----|-------------|----------------|----------|
| ND | 5.00 | | 5.33 | mg/L | 106 | | SW846 6010B | 05/19-05/20/04 | GF9AG1AL |
| ND | 5.00 | | 5.38 | mg/L | 108 | 1.0 | SW846 6010B | 05/19-05/20/04 | GF9AG1AM |
| Dilution Factor: 5 | | | | | | | | | |
| Analysis Time...: 15:56 | | | | | | | | | |
| MS Run #.....: 4141086 | | | | | | | | | |

Barium

| | | | | | | | | | |
|-------------------------|------|--|------|------|-----|------|-------------|----------------|----------|
| ND | 50.0 | | 49.9 | mg/L | 100 | | SW846 6010B | 05/19-05/20/04 | GF9AG1AN |
| ND | 50.0 | | 50.4 | mg/L | 101 | 0.84 | SW846 6010B | 05/19-05/20/04 | GF9AG1AP |
| Dilution Factor: 5 | | | | | | | | | |
| Analysis Time...: 15:56 | | | | | | | | | |
| MS Run #.....: 4141086 | | | | | | | | | |

Cadmium

| | | | | | | | | | |
|-------------------------|------|--|------|------|-----|------|-------------|----------------|----------|
| ND | 1.00 | | 1.08 | mg/L | 108 | | SW846 6010B | 05/19-05/20/04 | GF9AG1AQ |
| ND | 1.00 | | 1.09 | mg/L | 109 | 0.65 | SW846 6010B | 05/19-05/20/04 | GF9AG1AR |
| Dilution Factor: 5 | | | | | | | | | |
| Analysis Time...: 15:56 | | | | | | | | | |
| MS Run #.....: 4141086 | | | | | | | | | |

Chromium

| | | | | | | | | | |
|-------------------------|------|--|------|------|-----|------|-------------|----------------|----------|
| ND | 5.00 | | 5.22 | mg/L | 104 | | SW846 6010B | 05/19-05/20/04 | GF9AG1A1 |
| ND | 5.00 | | 5.21 | mg/L | 104 | 0.08 | SW846 6010B | 05/19-05/20/04 | GF9AG1A2 |
| Dilution Factor: 5 | | | | | | | | | |
| Analysis Time...: 15:56 | | | | | | | | | |
| MS Run #.....: 4141086 | | | | | | | | | |

Lead

| | | | | | | | | | |
|-------------------------|------|--|------|------|-----|------|-------------|----------------|----------|
| ND | 5.00 | | 5.40 | mg/L | 107 | | SW846 6010B | 05/19-05/20/04 | GF9AG1AT |
| ND | 5.00 | | 5.43 | mg/L | 108 | 0.58 | SW846 6010B | 05/19-05/20/04 | GF9AG1AU |
| Dilution Factor: 5 | | | | | | | | | |
| Analysis Time...: 15:56 | | | | | | | | | |
| MS Run #.....: 4141086 | | | | | | | | | |

Selenium

| | | | | | | | | | |
|-------------------------|------|--|------|------|-----|------|-------------|----------------|----------|
| ND | 1.00 | | 1.08 | mg/L | 107 | | SW846 6010B | 05/19-05/20/04 | GF9AG1AV |
| ND | 1.00 | | 1.09 | mg/L | 108 | 0.98 | SW846 6010B | 05/19-05/20/04 | GF9AG1AW |
| Dilution Factor: 5 | | | | | | | | | |
| Analysis Time...: 15:56 | | | | | | | | | |
| MS Run #.....: 4141086 | | | | | | | | | |

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TCLP Metals

Client Lot #....: I4E190372

Date Sampled....: 05/13/04 10:00 Date Received...: 05/14/04

Matrix.....: SOLID

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION- ANALYSIS DATE | WORK ORDER # |
|-----------|---------------|-----------|---------------|-------|---------------|-----|-------------|----------------------------|--------------|
| Silver | | | | | | | | | |
| | ND | 1.00 | 0.964 | mg/L | 96 | | SW846 6010B | 05/19-05/20/04 | GF9AG1AX |
| | ND | 1.00 | 0.979 | mg/L | 98 | 1.5 | SW846 6010B | 05/19-05/20/04 | GF9AG1A0 |

Dilution Factor: 5

Analysis Time...: 15:56

MS Run #.....: 4141086

MS Lot-Sample #: I4E140162-001 Prep Batch #....: 4142326

Leach Date.....: 05/18/04 Leach Batch #...: P414105

Mercury

| | | | | | | | | | |
|--|----|---------|---------|------|----|-----|-------------|----------|----------|
| | ND | 0.00200 | 0.00198 | mg/L | 99 | | SW846 7470A | 05/20/04 | GF9AG1A3 |
| | ND | 0.00200 | 0.00192 | mg/L | 96 | 3.3 | SW846 7470A | 05/20/04 | GF9AG1A4 |

Dilution Factor: 1

Analysis Time...: 16:50

MS Run #.....: 4142223

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: I4E190372

Matrix.....: SOLID

Date Sampled...: 05/11/04 11:00 Date Received...: 05/12/04

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION- ANALYSIS DATE | PREP BATCH # |
|-------------------------|------------------|-----------------|-------------------------------|------------|--------------------------------|----------------------------|--------------|
| % Moisture.....: 100 | | | | | | | |
| Cyanide, Total | | | WO#: GGK221AT-MS/GGK221AU-MSD | | MS Lot-Sample #: I4E190372-001 | | |
| 20 N | (90 - 110) | | | | SW846 9012A | 05/21-05/22/04 | 4143051 |
| 31 N, * | (90 - 110) | 41 | (0-20) | | SW846 9012A | 05/21-05/22/04 | 4143051 |
| Dilution Factor: 1 | | | | | | | |
| Analysis Time...: 10:00 | | | | | | | |
| MS Run #.....: 4143029 | | | | | | | |
| % Moisture.....: 100 | | | | | | | |
| Total Sulfide | | | WO#: GF3K51A0-MS/GF3K51A1-MSD | | MS Lot-Sample #: I4E120184-001 | | |
| 34 N | (70 - 130) | | | | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| 31 N | (70 - 130) | 8.5 | (0-20) | | SW846 9030B/9034 | 05/20-05/21/04 | 4141457 |
| Dilution Factor: 1 | | | | | | | |
| Analysis Time...: 00:00 | | | | | | | |
| MS Run #.....: 4141268 | | | | | | | |

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

* Relative percent difference (RPD) is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: I4E190372

Matrix.....: SOLID

Date Sampled...: 05/11/04 11:00 Date Received...: 05/12/04

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION- ANALYSIS DATE | PREP BATCH # |
|-----------|---------------|-----------|---------------|-------|---------------|-----|--------|----------------------------|--------------|
|-----------|---------------|-----------|---------------|-------|---------------|-----|--------|----------------------------|--------------|

% Moisture.....: 100

Cyanide, Total

WO#: GGK221AT-MS/GGK221AU-MSD MS Lot-Sample #: I4E190372-001

| | | | | | | | | | |
|----|------|--|--------|-------|----|----|-------------|----------------|---------|
| ND | 12.4 | | 2.51 N | mg/kg | 20 | | SW846 9012A | 05/21-05/22/04 | 4143051 |
| ND | 12.1 | | 3.80 | mg/kg | 31 | 41 | SW846 9012A | 05/21-05/22/04 | 4143051 |

Qualifiers: N,*

Dilution Factor: 1

Analysis Time...: 10:00

MS Run #.....: 4143029

% Moisture.....: 100

Total Sulfide

WO#: GF3K51A0-MS/GF3K51A1-MSD MS Lot-Sample #: I4E120184-001

| | | | | | | | | | |
|----|-----|--|-------|-------|----|-----|---------------|----------------|---------|
| ND | 863 | | 295 N | mg/kg | 34 | | SW846 9030B/9 | 05/20-05/21/04 | 4141457 |
| ND | 863 | | 271 N | mg/kg | 31 | 8.5 | SW846 9030B/9 | 05/20-05/21/04 | 4141457 |

Dilution Factor: 1

Analysis Time...: 00:00

MS Run #.....: 4141268

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

* Relative percent difference (RPD) is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: I4E190372

Work Order #...: GGK22-SMP
GGK22-DUP

Matrix.....: SOLID

Date Sampled...: 04/27/04 14:00

Date Received...: 05/14/04

| <u>PARAM RESULT</u> | <u>DUPLICATE RESULT</u> | <u>UNITS</u> | <u>RPD</u> | <u>RPD LIMIT</u> | <u>METHOD</u> | <u>PREPARATION- ANALYSIS DATE</u> | <u>PREP BATCH #</u> |
|---------------------|-------------------------|------------------|------------|------------------|---|-----------------------------------|---------------------|
| Ignitability | | No Units | 0 | (0-20) | SD Lot-Sample #: I4E190372-001 SW846 SECTION 7.1 | 05/21/04 | 4142340 |
| | | Dilution Factor: | 1 | | Analysis Time...: 14:00 | MS Run Number...: 4142228 | |

Report Attachment

Note that if this report contains tests performed for the following methods, the associated method deviations are applicable.

EPA 410.1 COD: Laboratory uses different analytical wavelength as specified by instrument manufacturer.

EPA 340.2 Fluoride: Preliminary Bellack distillation not performed.

EPA 8151A: Laboratory utilizes alternate extraction solvent.

Iowa OA-1: Benzene, toluene, ethylbenzene and xylenes (BTEX) not analyzed along with Gasoline Range Organics if client does not require BTEX.

EPA TO-12: Samples are not analyzed in duplicate.

EPA TO-14A and TO-15: Zero humidified nitrogen is used in place of air for method blanks.

TRRP Reporting Requirements

If this package contains reports requiring TRRP (Texas Risk Reduction Program) reporting criteria, the following information applies.

The REPORTING LIMIT is equivalent to the TRRP acronym MQL (method quantitation limit).

The MDL is equivalent to the TRRP acronym SQL (sample quantitation limit).



STL

CHAIN-OF-CUSTODY ADDENDUM

Lot No: 14E190372

RECEIVED BY: BG

COC NUMBER: _____

DATE/TIME RECEIVED: 5/14/04 0930

QUOTE/PROFILE: 55230

UNPACKED DATE/TIME: 5/14/04 1045

Protocol B

CLIENT/PROJECT: _____

SAMPLES LOGGED IN: _____ LOG-IN REVIEWED: _____

Number of Shipping Containers Received with Chain of Custody 1

CC BG

VOC AIR / FILTER SAMPLES YES SEE SECTIONS 1.0, 2.0, & 6.0

1.0 CONTAINERS EXAMINED UPON RECEIPT: 13

Container Sealed: YES NO Custody Seal Signed/Dated: YES NO
Custody Seal Present: YES NO Containers checked for radioactivity: YES NO N/A
If seal not intact or Geiger counter reading >0.5 mR/hr, list air bill number of that container(s): _____

2.0 VOC CANISTERS EXAMINED UPON RECEIPT: _____

Canister Valves Closed: YES NO Samples Received Match Chain: YES NO
Canister Valves Capped: YES NO See Additional Comments (Section 5.0 and / or 7.0) YES NO
Packing Material Used: (circle) Chain-of-Custody form properly maintained: YES NO
None / Absorbent / Paper / Bubble Wrap Can Size: 6L 15L Other _____

3.0 SAMPLE TEMPERATURE UPON RECEIPT: 25 BG IR THERMOMETER #: P-5

The temperature of the container(s) is: [acceptable tolerance 4°C ± 2°; (NC, WI: 1-4.4°C)]

| | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|
| 25°C | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|

If temperature is outside acceptable tolerance, Project Manager was notified (____ PM). Date: _____ Time: _____

Samples received do not require cooling _____ OK to analyze samples: YES NO

PRESERVATION OF SAMPLES REQUIRED: NA YES VERIFIED BY: BG

Base samples are >pH 12: YES NO Acid preserved are <pH 2: YES NO
Cyanide samples checked for sulfides: YES Sulfide samples appear to be preserved with zinc acetate: YES NO
Samples checked for chlorine per specification: YES Free chlorine present: YES NO

If sample preservation is outside acceptable tolerance, Project Manager was notified (____ PM)
Date: _____ Time: _____ see pH adjustment form

VOLATILE SAMPLES FILLED COMPLETELY, IF NOT, LIST ID AND HEADSPACE OF VOAs CONTAINING BUBBLES EXCEEDING 6MM IN DIAMETER:

| Sample ID | mm Headspace |
|-----------|--------------|
| | |
| | |
| | |
| | |

| Sample ID | mm Headspace |
|-----------|--------------|
| | |
| | |
| | |
| | |

4.0 CONDITION OF BOTTLES/CONTAINERS

VERIFIED BY: B

Samples received match COC: YES NO Bottles received intact: YES NO
 See additional discrepancies/comments section: YES NO Samples received from USDA restricted area: YES NO
 Chain-of-Custody form properly maintained: YES NO VOA trip blanks included: YES NO N/A

5.0 ADDITIONAL DISCREPANCIES

| Appears on COC | | Appears on Label | | Comments |
|----------------|-----------|------------------|-----------|----------|
| Sample ID | Date/Time | Sample ID | Date/Time | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

6.0 SHIPPING DOCUMENTATION:

Air/freight bill is available and attached to COC: YES NO Air bill #: _____
 Hand-delivered Carrier: _____ Date: _____ Time: _____

7.0 OTHER COMMENTS:

CORRECTIVE ACTION:

Client's Name: _____ Informed verbally on: _____ By: _____

Client's Name: _____ Informed verbally on: _____ By: _____

Sample(s) processed "as is" comments: _____

Samples(s) on hold until: _____ If released, notify: _____

REVIEW:
 Project Management: Neal Hall Date: 6/7/04

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE



SDC Project Manager: Ms Gover @ (210) 536-6211 Laboratory of Analysis: STL AUSTIN POC: NEAL SALCHER
 SDR Project POC (Name & Tel): Buck Saunders @ 4-5570 14046 Summit Drive Bldg B Tel: 1-512-310-5215
 SDR Project POC E-mail: brian.saunders@brooks.af.mil Austin, TX 78728

| | |
|----------------------|--|
| SAMPLER | |
| SIGNATURE OF SAMPLER | Buck Saunders |
| ADDRESS | 2350 Gillingham Dr. AFIOH/SDRE |
| COMMERCIAL/DSN PHONE | 210-536-5570/DSN 240-5570 (Where samples collected) |
| BASE NAME / CODE | |
| SITE IDENTIFIER | |
| BASE NAME/CODE | BROOKS CITY-BASE/90101 |
| SITE IDENTIFIER | 2004IH90101 |
| PID (Project ID) | COMPOSITE-SDR-0512 |
| RESULTS NEEDED BY | 12-15 Day TAT |

| Base Sample Number/ IDENTIFICATION | Collection Date/Time | (for LAB use only) AFIOH/SDC NUMBERS | MATRIX | Laboratory of Analysis: STL AUSTIN | | | | | LAB USE ONLY | COMMENTS | |
|---------------------------------------|-------------------------|---|--------|------------------------------------|--------------|---------------|----------------|------|-----------------|----------|-------------|
| | | | | CORROSIVITY | IGNITABILITY | TOTAL CYANIDE | TOTAL SULFIDE | VOC | | | TCLP METALS |
| GM04-2146 | 27Apr04 1400 | | | 9045C | 1010 | 9012 | 9030B/ 9034 | 8021 | 6010B 7470A | | |
| GM04-2148 | 27Apr04 1405 | | | | | | | | | | |
| GM04-2150 | 27Apr04 1407 | | | | | | | | | | |
| GM04-2152 | 27Apr04 1409 | | | | | | | | | | |
| GM04-2154 | 27Apr04 1411 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Notes

- EPA 8021 or Equivalent Analysis, Including Toluene
- TCLP for 8 RCRA Metals - Arsenic, Cadmium, Chromium, Lead, Barium, Selenium, and Mercury

Sample Analysis Results Reported on 30-Jul-2004

AFIOH/SDRR ID 10400494

Customer Address Code 9010 I

AFIERA/SDRH

BLDG 140

SDRH Projects TX 782355114

IDENTIFICATION

| | | | |
|------------------------|-----------|-----------|-----------|
| Base Sample | GM042145 | Serial # | |
| Workplace or Site | 9010 | | |
| Date Collected | 4/27/2004 | Received | 6/23/2004 |
| | | Completed | 7/13/2004 |
| Sample Volume Received | 149.4 | g | |

| | | | |
|--------------|---------|-----------------------|-------------------|
| EPA CODE N/A | TRITIUM | 4.60E-01 +/- 2.90E-01 | PICOCURIES / GRAM |
|--------------|---------|-----------------------|-------------------|

COMMENTS

PIRMASENS/BARRELS 1-3

Amended Report: Report modified to reflect analyte concentration instead of total analyte activity in the entire sample.

RESULTS ACCURATE TO 2 SIGNIFICANT FIGURES.
UNCERTAINTY AT 95% CONFIDENCY LEVEL.

If you have any questions concerning the information provided above, please contact AFIOH/SDRR at DSN 240-2061 or commercially at (210) 536-2061 or call ESOH Service Center at 1 888 232-3764.

Mr. Dale D. Thomas, GS-13
Chief, Radioanalytical Branch

Sample Analysis Results Reported on 30-Jul-2004

AFIOH/SDRR ID 10400495

Customer Address Code 9010 I
AFIERA/SDRH
BLDG 140

SDRH Projects TX 782355114

IDENTIFICATION

Base Sample GM042147 Serial #
Workplace or Site 9010
Date Collected 4/27/2004 Received 6/23/2004 Completed 7/13/2004
Sample Volume Received 169.3 g

EPA CODE N/A TRITIUM 1.67E+02 +/- 1.24E+00 PICOCURIES / GRAM

COMMENTS

PIRMASENS/BARRELS 4-6

Amended Report: Report modified to reflect analyte concentration instead of total analyte activity in the entire sample.

RESULTS ACCURATE TO 2 SIGNIFICANT FIGURES.
UNCERTAINTY AT 95% CONFIDENCY LEVEL.

If you have any questions concerning the information provided above, please contact AFIOH/SDRR at DSN 240-2061 or commercially at (210) 536-2061 or call ESOH Service Center at 1 888 232-3764.

Mr. Dale D. Thomas, GS-13
Chief, Radioanalytical Branch

Sample Analysis Results Reported on 30-Jul-2004

AFIOH/SDRR ID 10400496

Customer Address Code 9010 I
AFIERA/SDRH
BLDG 140

SDRH Projects TX 782355114

IDENTIFICATION

Base Sample GM042149 Serial #
Workplace or Site 9010
Date Collected 4/27/2004 Received 6/23/2004 Completed 7/13/2004
Sample Volume Received 1384 g

EPA CODE N/A TRITIUM 3.76E+00 +/- 7.00E-02 PICOCURIES / GRAM

COMMENTS

PIRMASENS/BARRELS 7-9

Amended Report: Report modified to reflect analyte concentration instead of total analyte activity in the entire sample.

RESULTS ACCURATE TO 2 SIGNIFICANT FIGURES.
UNCERTAINTY AT 95% CONFIDENCY LEVEL.

If you have any questions concerning the information provided above, please contact AFIOH/SDRR at DSN 240-2061 or commercially at (210) 536-2061 or call ESOH Service Center at 1 888 232-3764.

Mr. Dale D. Thomas, GS-13
Chief, Radioanalytical Branch

Sample Analysis Results Reported on 30-Jul-2004

AFIOH/SDRR ID 10400497

Customer Address Code 9010 I
AFIERA/SDRH
BLDG 140

SDRH Projects TX 782355114

IDENTIFICATION

Base Sample GM042151 Serial #
Workplace or Site 9010
Date Collected 4/27/2004 Received 6/23/2004 Completed 7/13/2004
Sample Volume Received 254.9 g

EPA CODE N/A TRITIUM 4.60E+02 +/- 1.65E+00 PICOCURIES / GRAM

COMMENTS

PIRMASENS/BARRELS 10-13

Amended Report: Report modified to reflect analyte concentration instead of total analyte activity in the entire sample.

RESULTS ACCURATE TO 2 SIGNIFICANT FIGURES.
UNCERTAINTY AT 95% CONFIDENCY LEVEL.

If you have any questions concerning the information provided above, please contact AFIOH/SDRR at DSN 240-2061 or commercially at (210) 536-2061 or call ESOH Service Center at 1 888 232-3764.

Mr. Dale D. Thomas, GS-13
Chief, Radioanalytical Branch

Sample Analysis Results Reported on 30-Jul-2004

AFIOH/SDRR ID 10400498

Customer Address Code 9010 I
AFIERA/SDRH
BLDG 140

SDRH Projects TX 782355114

IDENTIFICATION

Base Sample GM042153 Serial #
Workplace or Site 9010
Date Collected 4/27/2004 Received 6/23/2004 Completed 7/13/2004
Sample Volume Received 365.2 g

EPA CODE N/A TRITIUM 1.17E+02 +/- 6.30E-01 PICOCURIES / GRAM

COMMENTS

PIRMASENS/BARRELS 14-17

Amended Report: Report modified to reflect analyte concentration instead of total analyte activity in the entire sample.

RESULTS ACCURATE TO 2 SIGNIFICANT FIGURES.
UNCERTAINTY AT 95% CONFIDENCY LEVEL.

If you have any questions concerning the information provided above, please contact AFIOH/SDRR at DSN 240-2061 or commercially at (210) 536-2061 or call ESOH Service Center at 1 888 232-3764.

Mr. Dale D. Thomas, GS-13
Chief, Radioanalytical Branch

RESULTS COMPARED TO DOT/ IATA REGULATIONS

| DRUM | weight(Kg) | weight(g) | pCi/g | pCi | Chem results | | | Rad (transport) |
|------|------------|-----------|-------|----------|--------------|-------|-------|---------------------|
| | | | | | 6010B | 7470A | 8021B | |
| 1 | 95 | 95000 | 0.46 | 4.37E+04 | y | n | y | D003, F003, F005 na |
| 2 | 91.6 | 91600 | 0.46 | 4.21E+04 | y | n | y | D003, F003, F005 na |
| 3 | 109.4 | 109400 | 0.46 | 5.03E+04 | y | n | y | D003, F003, F005 na |
| 4 | 60.3 | 60300 | 167 | 1.01E+07 | n | n | y | F003, F005 na |
| 5 | 89.8 | 89800 | 167 | 1.50E+07 | n | n | y | F003, F005 na |
| 6 | 101.6 | 101600 | 167 | 1.70E+07 | n | n | y | F003, F005 na |
| 7 | 105.4 | 105400 | 3.76 | 3.96E+05 | n | n | y | F003, F005 na |
| 8 | 101.7 | 101700 | 3.76 | 3.82E+05 | n | n | y | F003, F005 na |
| 9 | 143 | 143000 | 3.76 | 5.38E+05 | n | n | y | F003, F005 na |
| 10 | 98.3 | 98300 | 460 | 4.52E+07 | n | n | y | F003, F005 na |
| 11 | 102.2 | 102200 | 460 | 4.70E+07 | n | n | y | F003, F005 na |
| 12 | 105.4 | 105400 | 460 | 4.85E+07 | n | n | y | F003, F005 na |
| 13 | 83.2 | 83200 | 460 | 3.83E+07 | n | n | y | F003, F005 na |
| 14 | 72.8 | 72800 | 117 | 8.52E+06 | n | n | y | F003, F005 na |
| 15 | 90.4 | 90400 | 117 | 1.06E+07 | n | n | y | F003, F005 na |
| 16 | 92.6 | 92600 | 117 | 1.08E+07 | n | n | y | F003, F005 na |
| 17 | 85 | 85000 | 117 | 9.95E+06 | n | n | y | F003, F005 na |
| | 1627.7 | 1627700 | | 2.62E+08 | | | | |

RCRA metals

| | | | |
|----------------|----------------|----------|----------|
| 6010B | RCRA metals | | |
| 7470A | Mercury | Bq | pCi |
| 8021B | Volatiles | 1.00E+06 | 2.70E+07 |
| 9012A | Total Cyanide | 1.00E+09 | 2.70E+10 |
| 9030B | Total Sulfides | | |
| 9040B | Corrosivity | | |
| 7.1.2 | Ignitability | | |
| IATA rad limit | | | |
| Bq/g | pCi/g | Bq | pCi |
| 1.00E+06 | 2.70E+07 | 1.00E+09 | 2.70E+10 |
| DOT rad limit | | | |
| Bq/g | pCi/g | | |
| 70 | 1890 | | |