FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

**Date of Report: February 26, 1996**
**Date Received: February 20, 1996**
**Project: Holnam Testing, PO #M52343**

## QUALITY ASSURANCE RESULTS FOR TCLP METALS IN ACCORDANCE WITH 40 CFR PART 261
### Results Reported as mg/L (ppm)

Laboratory Code: 66660 (Duplicate)

| Analyte: | Reporting Units | Sample Result | Duplicate Result | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|---|
| Arsenic | mg/L (ppm) | <0.5 | <0.5 | nm | 0-20 |
| Barium | mg/L (ppm) | <1 | <1 | nm | 0-20 |
| Cadmium | mg/L (ppm) | <0.1 | <0.1 | nm | 0-20 |
| Chromium | mg/L (ppm) | <0.5 | <0.5 | nm | 0-20 |
| Lead | mg/L (ppm) | 1.7 | 1.7 | 0 | 0-20 |
| Selenium | mg/L (ppm) | <0.5 | <0.5 | nm | 0-20 |
| Silver | mg/L (ppm) | <0.5 | <0.5 | nm | 0-20 |

Laboratory Code: 666660MS/MSD

| Analyte: | Reporting Units | Spike Level | Sample Result | % Recovery MS | % Recovery MSD | Acceptance Criteria | Relative Percent Difference |
|---|---|---|---|---|---|---|---|
| Arsenic | mg/L (ppm) | 10 | <0.5 | 99 | 100 | 50-150 | 1 |
| Barium | mg/L (ppm) | 5 | <1 | 97 | 92 | 50-150 | 5 |
| Cadmium | mg/L (ppm) | 5 | <0.1 | 101 | 101 | 50-150 | 0 |
| Chromium | mg/L (ppm) | 5 | <0.5 | 99 | 99 | 50-150 | 0 |
| Lead | mg/L (ppm) | 10 | 1.7 | 101 | 102 | 50-150 | 1 |
| Selenium | mg/L (ppm) | 10 | <0.5 | 119 | 118 | 50-150 | 1 |
| Silver | mg/L (ppm) | 2 | <0.5 | 78 | 78 | 50-150 | 0 |

Laboratory Code: Spike Blank

| Analyte: | Reporting Units | Spike Level | % Recovery MS | % Recovery MSD | Acceptance Criteria | Relative Percent Difference |
|---|---|---|---|---|---|---|
| Arsenic | mg/L (ppm) | 10 | 102 | 97 | 80-120 | 5 |
| Barium | mg/L (ppm) | 5 | 105 | 101 | 80-120 | 4 |
| Cadmium | mg/L (ppm) | 5 | 104 | 95 | 80-120 | 9 |
| Chromium | mg/L (ppm) | 5 | 103 | 97 | 80-120 | 6 |
| Lead | mg/L (ppm) | 10 | 105 | 98 | 80-120 | 7 |
| Selenium | mg/L (ppm) | 10 | 98 | 97 | 80-120 | 1 |
| Silver | mg/L (ppm) | 2 | 84 | 77 | 80-120 | 9 |

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

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ENVIRONMENTAL CHEMISTS

Date of Report: February 26, 1996
Date Received: February 20, 1996
Project: Holnam Testing, PO #M52343
Date Samples Extracted: February 20 and 21, 1996
Date Extracts Analyzed: February 23, 1996

## RESULTS FROM THE ANALYSIS OF TCLP EXTRACT SAMPLES FOR TOTAL MERCURY BY COLD VAPOR

Results Reported as mg/L (ppm)

| Sample ID | Mercury |
|---|---|
| M52343 A (3317) | <0.002 |
| M52343 B (3350) | <0.002 |
| M52343 C (3317 Plasma) | <0.002 |
| M52343 D (80) | <0.002 |
| Method Blank | <0.002 |

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**Project: Holnam Testing, PO #M52343**

## QUALITY ASSURANCE RESULTS FOR TOTAL MERCURY BY COLD VAPOR

Laboratory Code: 66660 (Duplicate)

| Analyte: | Reporting Units | Sample Result | Duplicate Result | Relative Percent Difference | Acceptance Criteria |
|---|---|---|---|---|---|
| Mercury | (ppm) | <0.002 | <0.002 | nm | 0-20 |

Laboratory Code: 66660 DP

| Analyte: | Reporting Units | Spike Level | Sample Result | % Recovery | | Acceptance Criteria | Relative Percent Difference |
|---|---|---|---|---|---|---|---|
| Mercury | (ppm) | 0.003 | <0.002 | 75 | 71 | 50-150 | 5 |

Laboratory Code: Spike Blank

| Analyte: | Reporting Units | Spike Level | Sample Result | % Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Mercury | (ppm) | 0.003 | <0.002 | 93 | 80-120 |

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: February 26, 1996
Date Received: February 20, 1996
Project: Holnam Testing, PO #M52343
Date Samples Extracted: February 20 and 21, 1996
Date Extracts Analyzed: February 23, 1996

## RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TCLP METALS IN ACCORDANCE WITH 40 CFR PART 261

**Results Reported as mg/L (ppm)**

| Sample ID | M52343 D (80) | Method Blank | TCLP Limit |
|---|---|---|---|
| Analyte: | | | |
| Arsenic | <0.5 | <0.5 | 5.0 |
| Barium | <1 | <1 | 100 |
| Cadmium | <0.1 | <0.1 | 1.0 |
| Chromium | <0.5 | <0.5 | 5.0 |
| Lead | 1.7 | <0.5 | 5.0 |
| Selenium | <0.5 | <0.5 | 1.0 |
| Silver | <0.5 | <0.5 | 5.0 |

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ENVIRONMENTAL CHEMISTS

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Date Samples Extracted: February 20 and 21, 1996
Date Extracts Analyzed: February 23, 1996

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TCLP METALS IN ACCORDANCE WITH 40 CFR PART 261**

**Results Reported as mg/L (ppm)**

| Sample ID | M52343 A (3317) | M52343 B (3350) | M52343 C (3317 Plasma) | TCLP Limit |
|---|---|---|---|---|
| Analyte: | | | | |
| Arsenic | <0.5 | <0.5 | <0.5 | 5.0 |
| Barium | 2 | 1 | <1 | 100 |
| Cadmium | <0.1 | <0.1 | <0.1 | 1.0 |
| Chromium | 4.5 | 0.5 | 3.4 | 5.0 |
| Lead | <0.5 | <0.5 | <0.5 | 5.0 |
| Selenium | <0.5 | <0.5 | <0.5 | 1.0 |
| Silver | <0.5 | <0.5 | <0.5 | 5.0 |

# FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3012 16th Avenue West
Seattle, WA 98119-2029
FAX: (206) 283-5044

February 26, 1996

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Enclosed are the results from the testing of material submitted on February 20, 1996 from your Holnam Testing, PO #M52343 project.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Kurt Johnson
Chemist

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Enclosures
ACU0226R.DOC

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

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(206) 285-8282

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Seattle, WA 98119
FAX: (206) 283-5044

## TRANSMITTAL

**DATE:** 2/26/96

**TO:** Gerry Thompson

**COMPANY:** Alaskan Copper **PROJECT ID:** #M 52343

**FAX #:** 382-4309 **PHONE #:**

**FROM:** Kurt Johnson

We are sending you: ☐ Attached ☐ Under separate cover via

| (including cover sheet) | Description |
|---|---|
| 7 | Results for samples submitted on February 20, 1996 |
| | |
| | |
| | |

These are transmitted as indicated:

☐ For your use ☐ For review and comment ☐ For your signature and return

☒ As requested ☐ As noted ☐ Other

Remarks:

Original: Will Follow ☒ By U.S. mail Will Not Follow ☐

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