

**Arthur D. Little, Inc.**

Environmental Monitoring and Analysis

**Minerals Management Service - Shelikof Strait and Outermost Cook Inlet**

1997 Final Data (Not Surrogate Corrected) - Source Samples - METALS

| Field ID              | 97-BB-01-01-00-MET-C | 97-CR-01-01-00-MET-S | 97-CR-01-01-00-MET-S | 97-CT-01-01-00-MET-O |
|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Lab ID                | 97-BB-01-01-00-MET-C | 97-CR-01-01-00-MET-S | 97-CR-01-01-00-MET-S | 97-CT-01-01-00-MET-O |
| SDG                   | NA                   | NA                   | NA                   | NA                   |
| File                  | NA                   | NA                   | NA                   | NA                   |
| Sample Type           | SAMP                 | SAMP                 | QC                   | SAMP                 |
| Matrix                | Coal                 | Sediment             | Sediment             | Oil                  |
| Sample Size           | 0.3266 g             | 0.4898 g             | 0.4556 g             | 20 ml                |
| Weight Basis          | DRY                  | DRY                  | DRY                  | DRY                  |
| Associated Blank      | NA                   | NA                   | NA                   | NA                   |
| Field Date            | 11/9/1997            | 7/15/1997            | 7/15/1997            | 8/14/1997            |
| Extract Date          | 2/17/1998            | 2/17/1998            | 2/17/1998            | 2/5/1998             |
| Analysis Date         | 2/17/1998            | 2/17/1998            | 2/17/1998            | 2/5/1998             |
| Min Reporting Limit   | NA                   | NA                   | NA                   | NA                   |
| Units                 | ---                  | ---                  | ---                  | ---                  |
| <b>METALS</b>         |                      |                      |                      |                      |
| Ag - Silver (ug/g)    | 0.09                 | 0.07                 | 0.06                 | N.D.                 |
| Al - Aluminum (%)     | 0.42                 | 7.38                 | 7.39                 | N.A.                 |
| As - Arsenic (ug/g)   | NA                   | 5.3                  | 5.7                  | N.D.                 |
| Ba - Barium (ug/g)    | 348                  | 625                  | 613                  | 0.595                |
| Be - Beryllium (ug/g) | 0.22                 | 1.01                 | 1.05                 | N.D.                 |
| Ca - Calcium (%)      | 1.14                 | 5.94                 | 6                    | N.A.                 |
| Cd - Cadmium (ug/g)   | 0.05                 | 0.14                 | 0.14                 | 0.0046               |
| Cr - Chromium (ug/g)  | 5                    | 58.3                 | 62.7                 | 0.179                |
| Cu - Copper (ug/g)    | 19.7                 | 41.3                 | 40.9                 | 0.0086               |
| Fe - Iron (%)         | 1.49                 | 3.86                 | 3.82                 | 1.39                 |
| Hg - Mercury (ug/g)   | 0.049                | 0.045                | 0.041                | N.D.                 |
| K - potassium (%)     | 0.06                 | 1.25                 | 1.25                 | N.A.                 |
| Mg - Magnesium (%)    | 0.11                 | 1.82                 | 1.82                 | N.A.                 |
| Mn - Manganese (ug/g) | 423                  | 814                  | 805                  | 0.03                 |
| Ni - Nickel (ug/g)    | 8.2                  | 35.1                 | 35.6                 | 1.46                 |
| Pb - Lead (ug/g)      | 2.7                  | 9                    | 8.9                  | 0.121                |
| Sb - Antimony (ug/g)  | 1.65                 | 0.64                 | 0.62                 | 0.0055               |
| Se - Selenium (ug/g)  | 0.37                 | 0.1 <                | 0.1 <                | N.D.                 |
| Sn - Tin (ug/g)       | 0.39                 | 1.35                 | 1.38                 | N.D.                 |
| Tl - Thallium (ug/g)  | 0.07                 | 0.24                 | 0.24                 | 0.0023               |
| V - Vanadium (ug/g)   | 12.9                 | 131                  | 134                  | 0.38                 |
| Zn - Zinc (ug/g)      | 3.7                  | 70.7                 | 69.3                 | 0.204                |

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| Field ID            | 97-CT-01-01-00-MET-O    | 97-HH-01-01-00-MET-S | 97-PW-01-01-00-MET-FE | 97-S-01-01-00-MET-S |
|---------------------|-------------------------|----------------------|-----------------------|---------------------|
| Lab ID              | 97-CT-01-01-00-MET-O #2 | 97-HH-01-01-00-MET-S | 97-PW-01-01-00-MET-FE | 97-S-01-01-00-MET-S |
| SDG                 | NA                      | NA                   | NA                    | NA                  |
| File                | NA                      | NA                   | NA                    | NA                  |
| Sample Type         | QC                      | SAMP                 | SAMP                  | SAMP                |
| Matrix              | Oil                     | Sediment             | Water                 | Sediment            |
| Sample Size         | 20 ml                   | 0.4542 g             | 1.012 g               | 0.4516 g            |
| Weight Basis        | DRY                     | DRY                  | DRY                   | DRY                 |
| Associated Blank    | NA                      | NA                   | NA                    | NA                  |
| Field Date          | 8/14/1997               | 7/16/1997            | 8/12/1997             | 7/20/1997           |
| Extract Date        | 2/5/1998                | 1/18/1998            | 2/5/1998              | 2/17/1998           |
| Analysis Date       | 2/5/1998                | 1/18/1998            | 2/5/1998              | 2/17/1998           |
| Min Reporting Limit | NA                      | NA                   | NA                    | NA                  |
| Units               | ---                     | ---                  | ---                   | ---                 |

| METALS                |        |      |       |         |       |
|-----------------------|--------|------|-------|---------|-------|
| Ag - Silver (ug/g)    |        | N.D. | 0.1   | N.D.    | 0.2   |
| Al - Aluminum (%)     |        | N.A. | 6.94  | N.A.    | 6.08  |
| As - Arsenic (ug/g)   |        | N.D. | 9.3   | 0.0002  | 13.7  |
| Ba - Barium (ug/g)    | 0.769  |      | 800   | 0.01    | 1090  |
| Be - Beryllium (ug/g) |        | N.D. | 1.34  | N.D.    | 1.56  |
| Ca - Calcium (%)      |        | N.A. | 1.51  | N.A.    | 1.99  |
| Cd - Cadmium (ug/g)   | 0.005  |      | 0.13  | 0.00001 | 0.3   |
| Cr - Chromium (ug/g)  | 0.157  |      | 72.3  | 0.0005  | 76.9  |
| Cu - Copper (ug/g)    | 0.0088 |      | 32.2  | 0.002   | 31.8  |
| Fe - Iron (%)         | 1.55   |      | 3.84  | 1.11    | 2.67  |
| Hg - Mercury (ug/g)   | --     |      | 0.075 | N.D.    | 0.023 |
| K - potassium (%)     |        | N.A. | 1.53  | N.A.    | 1.86  |
| Mg - Magnesium (%)    |        | N.A. | 1.13  | N.A.    | 1.03  |
| Mn - Manganese (ug/g) | 0.03   |      | 626   | 0.23    | 602   |
| Ni - Nickel (ug/g)    | 1.53   |      | 33.9  | 0.0017  | 41.3  |
| Pb - Lead (ug/g)      | 0.182  |      | 11.5  | 0.0003  | 13.8  |
| Sb - Antimony (ug/g)  | 0.0045 |      | 1.12  | 0.0002  | 1.44  |
| Se - Selenium (ug/g)  |        | N.D. | 0.29  | 0.0004  | 0.42  |
| Sn - Tin (ug/g)       |        | N.D. | 1.56  | 0.004   | 1.91  |
| Tl - Thallium (ug/g)  | 0.0024 |      | 0.41  | 0.00002 | 0.57  |
| V - Vanadium (ug/g)   | 0.304  |      | 114   | 0.001   | 83.2  |
| Zn - Zinc (ug/g)      | 0.207  |      | 94.3  | 0.0065  | 80    |

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**Minerals Management Service - Shelikof Strait and Outermost Cook Inlet**

1997 Final Data (Not Surrogate Corrected) - Source Samples - METALS

| Field ID            | 97-TB-01-01-00-MET-PW | 97-S-01-02-00-MET-S | 97-CR-02-01-00-MET-S | 97-CR-03-01-00-MET-S |
|---------------------|-----------------------|---------------------|----------------------|----------------------|
| Lab ID              | 97-TB-01-01-00-MET-PW | 97-S-01-02-00-MET-S | 97-CR-02-01-00-MET-S | 97-CR-03-01-00-MET-S |
| SDG                 | NA                    | NA                  | NA                   | NA                   |
| File                | NA                    | NA                  | NA                   | NA                   |
| Sample Type         | SAMP                  | SAMP                | SAMP                 | SAMP                 |
| Matrix              | Produced Water        | Sediment            | Sediment             | Sediment             |
| Sample Size         | 1.028 g               | 0.4517 g            | 0.4904 g             | 0.4551 g             |
| Weight Basis        | DRY                   | DRY                 | DRY                  | DRY                  |
| Associated Blank    | NA                    | NA                  | NA                   | NA                   |
| Field Date          | 8/26/1997             | 7/26/1997           | 7/15/1997            | 7/15/1997            |
| Extract Date        | 2/5/1998              | 2/17/1998           | 2/17/1998            | 2/17/1998            |
| Analysis Date       | 2/5/1998              | 2/17/1998           | 2/17/1998            | 2/17/1998            |
| Min Reporting Limit | NA                    | NA                  | NA                   | NA                   |
| Units               | ---                   | ---                 | ---                  | ---                  |

| METALS                |         |       |       |       |
|-----------------------|---------|-------|-------|-------|
| Ag - Silver (ug/g)    | N.D.    | 0.18  | 0.09  | 0.08  |
| Al - Aluminum (%)     | N.A.    | 6.08  | 7.45  | 7.21  |
| As - Arsenic (ug/g)   | 0.0024  | 12.3  | 6.3   | 5.3   |
| Ba - Barium (ug/g)    | 20.7    | 1090  | 650   | 611   |
| Be - Beryllium (ug/g) | N.D.    | 1.6   | 1.08  | 1.04  |
| Ca - Calcium (%)      | N.A.    | 2.05  | 5.83  | 6.5   |
| Cd - Cadmium (ug/g)   | 0.0001  | 0.29  | 0.17  | 0.16  |
| Cr - Chromium (ug/g)  | 0.0032  | 73.5  | 58.3  | 62.8  |
| Cu - Copper (ug/g)    | 0.006   | 29.4  | 43.4  | 44.4  |
| Fe - Iron (%)         | 0.76    | 2.54  | 3.85  | 4.02  |
| Hg - Mercury (ug/g)   | N.D.    | 0.019 | 0.057 | 0.042 |
| K - potassium (%)     | N.A.    | 1.86  | 1.27  | 1.25  |
| Mg - Magnesium (%)    | N.A.    | 1     | 1.79  | 1.95  |
| Mn - Manganese (ug/g) | 1.71    | 619   | 829   | 876   |
| Ni - Nickel (ug/g)    | 0.0075  | 38.6  | 36.7  | 37.5  |
| Pb - Lead (ug/g)      | 0.0001  | 13.7  | 9.7   | 9.2   |
| Sb - Antimony (ug/g)  | 0.0001  | 1.41  | 0.71  | 0.75  |
| Se - Selenium (ug/g)  | N.D.    | 0.31  | 0.1 < | 0.1 < |
| Sn - Tin (ug/g)       | 0.008   | 1.86  | 1.5   | 1.48  |
| Tl - Thallium (ug/g)  | 0.00025 | 0.54  | 0.27  | 0.26  |
| V - Vanadium (ug/g)   | 0.067   | 90.5  | 145   | 141   |
| Zn - Zinc (ug/g)      | 0.003   | 73.3  | 76.8  | 76.1  |

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1997 Final Data (Not Surrogate Corrected) - Source Samples - METALS

|                            |                             |
|----------------------------|-----------------------------|
| <b>Field ID</b>            | <b>97-CR-04-01-00-MET-S</b> |
| <b>Lab ID</b>              | <b>97-CR-04-01-00-MET-S</b> |
| <b>SDG</b>                 | <b>NA</b>                   |
| <b>File</b>                | <b>NA</b>                   |
| <b>Sample Type</b>         | <b>SAMP</b>                 |
| <b>Matrix</b>              | <b>Sediment</b>             |
| <b>Sample Size</b>         | <b>0.4564 g</b>             |
| <b>Weight Basis</b>        | <b>DRY</b>                  |
| <b>Associated Blank</b>    | <b>NA</b>                   |
| <b>Field Date</b>          | <b>7/15/1997</b>            |
| <b>Extract Date</b>        | <b>2/17/1998</b>            |
| <b>Analysis Date</b>       | <b>2/17/1998</b>            |
| <b>Min Reporting Limit</b> | <b>NA</b>                   |
| <b>Units</b>               | <b>---</b>                  |

|                       |       |
|-----------------------|-------|
| <b>METALS</b>         |       |
| Ag - Silver (ug/g)    | 0.09  |
| Al - Aluminum (%)     | 7.46  |
| As - Arsenic (ug/g)   | NA    |
| Ba - Barium (ug/g)    | 673   |
| Be - Beryllium (ug/g) | 1.09  |
| Ca - Calcium (%)      | 5.65  |
| Cd - Cadmium (ug/g)   | 0.16  |
| Cr - Chromium (ug/g)  | 67.7  |
| Cu - Copper (ug/g)    | 43.1  |
| Fe - Iron (%)         | 3.88  |
| Hg - Mercury (ug/g)   | 0.047 |
| K - potassium (%)     | 1.34  |
| Mg - Magnesium (%)    | 1.84  |
| Mn - Manganese (ug/g) | 821   |
| Ni - Nickel (ug/g)    | 36.4  |
| Pb - Lead (ug/g)      | 9.6   |
| Sb - Antimony (ug/g)  | 0.69  |
| Se - Selenium (ug/g)  | 0.15  |
| Sn - Tin (ug/g)       | 1.91  |
| Tl - Thallium (ug/g)  | 0.29  |
| V - Vanadium (ug/g)   | 119   |
| Zn - Zinc (ug/g)      | 79.2  |