TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

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TestAmerica Job ID: 580-77502-1
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
AECOM
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Seattle, Washington 98101

Attn: Karen Mixon

M. Elaine Walker

*Authorized for release by:*
*6/27/2018 2:24:30 PM*

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Job ID: 580-77502-1

**Laboratory: TestAmerica Seattle**

**Narrative**

# CASE NARRATIVE
# Client: AECOM
# Project: Portland Harbor Pre-Remedial Design
# Report Number: 580-77502-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

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

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

**RECEIPT**

Fourteen samples were received on 5/23/2018 1:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6º C, 2.2º C, 3.8º C and 4.6º C.

A sample container was provided to be archived frozen at the TestAmerica Sacramento laboratory pending potential additional analyses.

This report contains results of all analyses performed by TestAmerica Seattle.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

**DIESEL AND EXTENDED RANGE ORGANICS**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for diesel and extended range organics in accordance with Method NWTPH-Dx.** The samples were prepared on 05/30/2018 and analyzed on 06/01/2018.

The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12), PDI-SG-B417-BL1 (580-77502-13) and (580-77502-A-8-B DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**DIESEL AND MOTOR OIL RANGE ORGANICS - Rinse Blank**

**Sample PDI-RB-VV-182105 (580-77502-14) was analyzed for diesel and motor oil range organics in accordance with Method NWTPH-Dx.** The sample was prepared on 06/01/2018 and analyzed on 06/04/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## Job ID: 580-77502-1 (Continued)

### Laboratory: TestAmerica Seattle (Continued)

**METALS (ICPMS)**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for Metals (ICPMS) in accordance with 6020A_LL.** The samples were prepared on 06/13/2018 and analyzed on 06/14/2018.

Copper, Lead and Zinc failed the recovery criteria high for the MS of sample PDI-SG-B299-BL1MS (580-77502-1) in batch 580-276343. Copper failed the recovery criteria high for the MSD of sample PDI-SG-B299-BL1MSD (580-77502-1) in batch 580-276343. The associated LCS/LCSD recoveries met acceptance limits.

Cadmium, Copper, Lead and Zinc exceeded the RPD limit for the duplicate of sample PDI-SG-B299-BL1DU (580-77502-1). Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**TOTAL MERCURY**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for total mercury in accordance with EPA SW-846 Method 7471A.** The samples were prepared and analyzed on 06/13/2018.

Mercury exceeded the RPD limit for the duplicate of sample PDI-SG-B417-BL1DU (580-77502-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**METALS (ICPMS) - Rinse Blank**

**Sample PDI-RB-VV-182105 (580-77502-14) was analyzed for Metals (ICPMS) in accordance with 6020A_LL.** The sample was prepared on 06/11/2018 and analyzed on 06/12/2018.

Zinc was detected in method blank MB 580-275973/22-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Copper exceeded the RPD limit for the duplicate of sample PDI-RB-VV-182105DU (580-77502-14).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**TOTAL MERCURY - Rinse Blank**

**Sample PDI-RB-VV-182105 (580-77502-14) was analyzed for total mercury in accordance with EPA SW-846 Methods 7470A.** The sample was prepared and analyzed on 06/13/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**TOTAL ORGANIC CARBON**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060.** The samples were analyzed on 06/02/2018 and 06/04/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## Job ID: 580-77502-1 (Continued)

### Laboratory: TestAmerica Seattle (Continued)

**TOTAL ORGANIC CARBON - Rinse Blank**

**Sample PDI-RB-VV-182105 (580-77502-14) was analyzed for total organic carbon in accordance with SM 5310B.** The sample was analyzed on 06/05/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**GRAIN SIZE**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for grain size in accordance with D7928/D6913.** The samples were analyzed on 06/17/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**PERCENT SOLIDS**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for percent solids in accordance with ASTM D2216.** The samples were analyzed on 05/29/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**TOTAL SOLIDS @ 70C**

**Samples PDI-SG-B299-BL1 (580-77502-1), PDI-SG-B298-BL1 (580-77502-2), PDI-SG-B305-BL1 (580-77502-3), PDI-SG-B214-BL1 (580-77502-4), PDI-SG-B234-BL1 (580-77502-5), PDI-SG-B234-BL1-D (580-77502-6), PDI-SG-B246-BL1 (580-77502-7), PDI-SG-B251-BL1 (580-77502-8), PDI-SG-B257-BL1 (580-77502-9), PDI-SG-B315-BL1 (580-77502-10), PDI-SG-B315-BL1-D (580-77502-11), PDI-SG-B398-BL1 (580-77502-12) and PDI-SG-B417-BL1 (580-77502-13) were analyzed for Total Solids @ 70C.** The samples were analyzed on 06/22/2018 and 06/25/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## Qualifiers

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| F1 | MS and/or MSD Recovery is outside acceptance limits. |
| F5 | Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL. |
| F3 | Duplicate RPD exceeds the control limit |

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B299-BL1**
**Date Collected: 05/21/18 10:28**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-1**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 30000 | | 2000 | 44 | mg/Kg | | | 06/02/18 22:03 | 1 |
| Total Solids | 40.7 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 41 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 12.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 8.5 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 0.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 79.0 | | | | % | | | 06/17/18 10:32 | 1 |

**Client Sample ID: PDI-SG-B299-BL1**
**Date Collected: 05/21/18 10:28**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-1**
**Matrix: Solid**
**Percent Solids: 40.7**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 84 | J | 120 | 30 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 17:42 | 1 |
| Motor Oil (>C24-C36) | 570 | | 120 | 43 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 17:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *75* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 17:42* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.2 | | 0.39 | 0.078 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 14:51 | 5 |
| Cadmium | 0.17 | J | 0.31 | 0.060 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 14:51 | 5 |
| Copper | 36 | F1 | 0.78 | 0.17 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 14:51 | 5 |
| Lead | 12 | F1 | 0.39 | 0.038 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 14:51 | 5 |
| Zinc | 94 | F1 | 3.9 | 1.3 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 14:51 | 5 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.068 | | 0.055 | 0.016 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:27 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B298-BL1**
**Date Collected: 05/21/18 14:46**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-2**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 2400 | | 2000 | 44 | mg/Kg | | | 06/02/18 22:08 | 1 |
| Total Solids | 72.2 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 74 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 2.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 62.1 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 31.1 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 4.7 | | | | % | | | 06/17/18 10:32 | 1 |

## Client Sample ID: PDI-SG-B298-BL1

**Date Collected: 05/21/18 14:46**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-2

**Matrix: Solid**
**Percent Solids: 72.2**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 51 | J | 66 | 16 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 18:04 | 1 |
| Motor Oil (>C24-C36) | 290 | | 66 | 23 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 18:04 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *79* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 18:04* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 22 | | 0.18 | 0.037 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:28 | 5 |
| Cadmium | 0.25 | | 0.15 | 0.028 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:28 | 5 |
| Copper | 62 | | 0.37 | 0.081 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:28 | 5 |
| Lead | 73 | | 0.18 | 0.018 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:28 | 5 |
| Zinc | 270 | | 1.8 | 0.59 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:28 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.041 | | 0.031 | 0.0094 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:30 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B305-BL1**
**Date Collected: 05/21/18 16:57**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-3**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 75000 | | 2000 | 44 | mg/Kg | | | 06/02/18 22:13 | 1 |
| Total Solids | 59.5 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 56 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 3.9 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 6.7 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 34.8 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 27.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 27.6 | | | | % | | | 06/17/18 10:32 | 1 |

## Client Sample ID: PDI-SG-B305-BL1

**Date Collected: 05/21/18 16:57**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-3

**Matrix: Solid**
**Percent Solids: 59.5**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 45 | J | 84 | 21 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 18:26 | 1 |
| Motor Oil (>C24-C36) | 200 | | 84 | 29 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 18:26 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *62* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 18:26* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.3 | | 0.25 | 0.050 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:32 | 5 |
| Cadmium | 0.090 | J | 0.20 | 0.038 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:32 | 5 |
| Copper | 130 | | 0.50 | 0.11 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:32 | 5 |
| Lead | 8.0 | | 0.25 | 0.024 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:32 | 5 |
| Zinc | 81 | | 2.5 | 0.80 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:32 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.015 | J | 0.039 | 0.012 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:32 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B214-BL1**
**Date Collected: 05/21/18 10:00**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-4**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 1800 | J | 2000 | 44 | mg/Kg | | | 06/02/18 22:19 | 1 |
| Total Solids | 66.1 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 77 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 1.3 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 71.3 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 24.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 3.4 | | | | % | | | 06/17/18 10:32 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B214-BL1**
**Date Collected: 05/21/18 10:00**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-4**
**Matrix: Solid**
**Percent Solids: 66.1**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 74 | 18 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 18:48 | 1 |
| **Motor Oil (>C24-C36)** | **64** | **J** | 74 | 26 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 18:48 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *73* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 18:48* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **2.2** | | 0.21 | 0.041 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:36 | 5 |
| **Cadmium** | **0.050** | **J** | 0.16 | 0.032 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:36 | 5 |
| **Copper** | **12** | | 0.41 | 0.091 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:36 | 5 |
| **Lead** | **3.8** | | 0.21 | 0.020 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:36 | 5 |
| **Zinc** | **46** | | 2.1 | 0.66 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:36 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.036 | 0.011 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:39 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B234-BL1**
**Date Collected: 05/22/18 12:20**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-5**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 28000 | | 2000 | 44 | mg/Kg | | | 06/02/18 22:24 | 1 |
| Total Solids | 38.5 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 39 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 12.9 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 13.1 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 0.6 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 73.4 | | | | % | | | 06/17/18 10:32 | 1 |

**Client Sample ID: PDI-SG-B234-BL1**
**Date Collected: 05/22/18 12:20**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-5**
**Matrix: Solid**
**Percent Solids: 38.5**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 66 | J | 130 | 32 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 19:09 | 1 |
| Motor Oil (>C24-C36) | 450 | | 130 | 45 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 19:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *74* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 19:09* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 5.8 | | 0.48 | 0.095 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:40 | 5 |
| Cadmium | 0.20 | J | 0.38 | 0.073 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:40 | 5 |
| Copper | 46 | | 0.95 | 0.21 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:40 | 5 |
| Lead | 12 | | 0.48 | 0.046 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:40 | 5 |
| Zinc | 100 | | 4.8 | 1.5 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:40 | 5 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.053 | | 0.052 | 0.016 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:41 | 1 |

## Client Sample ID: PDI-SG-B234-BL1-D

**Date Collected: 05/22/18 12:30**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-6

**Matrix: Solid**
**Percent Solids: 38.5**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 57 | J | 130 | 32 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 19:31 | 1 |
| Motor Oil (>C24-C36) | 410 | | 130 | 45 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 19:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *75* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 19:31* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6.4 | | 0.44 | 0.088 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:45 | 5 |
| Cadmium | 0.17 | J | 0.35 | 0.067 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:45 | 5 |
| Copper | 52 | | 0.88 | 0.19 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:45 | 5 |
| Lead | 12 | | 0.44 | 0.042 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:45 | 5 |
| Zinc | 110 | | 4.4 | 1.4 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:45 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.21 | | 0.069 | 0.021 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:44 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 26000 | | 2000 | 44 | mg/Kg | | | 06/02/18 22:30 | 1 |
| Total Solids | 38.5 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 39 | | 0.10 | 0.10 | % | | | 06/25/18 10:01 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B246-BL1**
**Date Collected: 05/22/18 15:10**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-7**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 11000 | | 2000 | 44 | mg/Kg | | | 06/04/18 13:56 | 1 |
| Total Solids | 54.4 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 54 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 4.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 1.6 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 51.5 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 7.7 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 35.1 | | | | % | | | 06/17/18 10:32 | 1 |

**Client Sample ID: PDI-SG-B246-BL1**
**Date Collected: 05/22/18 15:10**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-7**
**Matrix: Solid**
**Percent Solids: 54.4**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 38 | J | 86 | 21 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 19:54 | 1 |
| Motor Oil (>C24-C36) | 230 | | 86 | 30 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 19:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *76* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 19:54* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6.7 | | 0.29 | 0.059 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:49 | 5 |
| Cadmium | 0.16 | J | 0.24 | 0.045 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:49 | 5 |
| Copper | 27 | | 0.59 | 0.13 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:49 | 5 |
| Lead | 8.0 | | 0.29 | 0.028 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:49 | 5 |
| Zinc | 83 | | 2.9 | 0.95 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:49 | 5 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.040 | | 0.039 | 0.012 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:46 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B251-BL1**
**Date Collected: 05/22/18 16:10**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-8**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 27000 | | 2000 | 44 | mg/Kg | | | 06/04/18 14:01 | 1 |
| Total Solids | 39.8 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 40 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 14.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 13.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 0.3 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 72.4 | | | | % | | | 06/17/18 10:32 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B251-BL1**
**Date Collected: 05/22/18 16:10**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-8**
**Matrix: Solid**
**Percent Solids: 39.8**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 55 | J | 120 | 31 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 20:38 | 1 |
| Motor Oil (>C24-C36) | 410 | | 120 | 43 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 20:38 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *72* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 20:38* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 5.7 | | 0.37 | 0.074 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:53 | 5 |
| Cadmium | 0.28 | J | 0.30 | 0.057 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:53 | 5 |
| Copper | 48 | | 0.74 | 0.16 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:53 | 5 |
| Lead | 14 | | 0.37 | 0.036 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:53 | 5 |
| Zinc | 120 | | 3.7 | 1.2 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:53 | 5 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.070 | | 0.055 | 0.017 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:48 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B257-BL1**
**Date Collected: 05/22/18 16:45**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-9**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 590 | J | 2000 | 44 | mg/Kg | | | 06/04/18 14:07 | 1 |
| Total Solids | 87.5 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 88 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 32.8 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 11.6 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 28.8 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 25.7 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 1.2 | | | | % | | | 06/17/18 10:32 | 1 |

**Client Sample ID: PDI-SG-B257-BL1**
**Date Collected: 05/22/18 16:45**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-9**
**Matrix: Solid**
**Percent Solids: 87.5**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 54 | 13 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 21:22 | 1 |
| **Motor Oil (>C24-C36)** | **31** | **J** | 54 | 19 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 21:22 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *80* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 21:22* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **1.1** | | 0.15 | 0.029 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:57 | 5 |
| **Cadmium** | **0.054** | **J** | 0.12 | 0.023 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:57 | 5 |
| **Copper** | **10** | | 0.29 | 0.065 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:57 | 5 |
| **Lead** | **1.7** | | 0.15 | 0.014 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:57 | 5 |
| **Zinc** | **24** | | 1.5 | 0.47 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 15:57 | 5 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.022 | 0.0067 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:50 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B315-BL1**
**Date Collected: 05/22/18 10:37**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-10**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 6700 | | 2000 | 44 | mg/Kg | | | 06/04/18 14:12 | 1 |
| Total Solids | 69.8 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 73 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 1.6 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 2.3 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 29.2 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 51.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 16.0 | | | | % | | | 06/17/18 10:32 | 1 |

## Client Sample ID: PDI-SG-B315-BL1

**Date Collected: 05/22/18 10:37**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-10

**Matrix: Solid**
**Percent Solids: 69.8**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 40 | J | 67 | 17 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 21:44 | 1 |
| Motor Oil (>C24-C36) | 180 | | 67 | 24 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 21:44 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *79* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 21:44* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 5.4 | | 0.21 | 0.042 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:01 | 5 |
| Cadmium | 0.21 | | 0.17 | 0.032 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:01 | 5 |
| Copper | 30 | | 0.42 | 0.092 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:01 | 5 |
| Lead | 14 | | 0.21 | 0.020 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:01 | 5 |
| Zinc | 110 | | 2.1 | 0.67 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:01 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.039 | | 0.032 | 0.0095 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:53 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B315-BL1-D**
**Date Collected: 05/22/18 10:38**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-11**
**Matrix: Solid**
**Percent Solids: 69.2**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 39 | J | 71 | 18 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 22:06 | 1 |
| Motor Oil (>C24-C36) | 210 | | 71 | 25 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 22:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *80* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 22:06* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6.4 | | 0.24 | 0.048 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:22 | 5 |
| Cadmium | 0.18 | J | 0.19 | 0.037 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:22 | 5 |
| Copper | 23 | | 0.48 | 0.11 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:22 | 5 |
| Lead | 11 | | 0.24 | 0.023 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:22 | 5 |
| Zinc | 100 | | 2.4 | 0.78 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:22 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.047 | | 0.033 | 0.0098 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:55 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 6300 | | 2000 | 44 | mg/Kg | | | 06/04/18 14:24 | 1 |
| Total Solids | 69.2 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 70 | | 0.10 | 0.10 | % | | | 06/25/18 10:01 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B398-BL1**
**Date Collected: 05/22/18 13:09**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-12**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 31000 | | 2000 | 44 | mg/Kg | | | 06/04/18 14:29 | 1 |
| Total Solids | 39.2 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 39 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 8.9 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 0.4 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 26.3 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 1.9 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 62.4 | | | | % | | | 06/17/18 10:32 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B398-BL1**
**Date Collected: 05/22/18 13:09**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-12**
**Matrix: Solid**
**Percent Solids: 39.2**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 72 | J | 130 | 31 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 22:28 | 1 |
| Motor Oil (>C24-C36) | 520 | | 130 | 44 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 22:28 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *80* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 22:28* | *1* |

### Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 5.3 | | 0.46 | 0.091 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:26 | 5 |
| Cadmium | 0.16 | J | 0.36 | 0.070 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:26 | 5 |
| Copper | 44 | | 0.91 | 0.20 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:26 | 5 |
| Lead | 15 | | 0.46 | 0.044 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:26 | 5 |
| Zinc | 110 | | 4.6 | 1.5 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:26 | 5 |

### Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.044 | J | 0.061 | 0.018 | mg/Kg | ☼ | 06/13/18 09:54 | 06/13/18 12:57 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-SG-B417-BL1**
**Date Collected: 05/22/18 14:58**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-13**
**Matrix: Solid**

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 1600 | J | 2000 | 44 | mg/Kg | | | 06/04/18 14:35 | 1 |
| Total Solids | 71.2 | | 0.1 | 0.1 | % | | | 05/29/18 09:01 | 1 |
| Total Solids @ 70°C | 74 | | 0.10 | 0.10 | % | | | 06/22/18 15:44 | 1 |

## Method: D7928/D6913 - ASTM D7928/D6913

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Clay | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Coarse Sand | 0.9 | | | | % | | | 06/17/18 10:32 | 1 |
| Fine Sand | 47.8 | | | | % | | | 06/17/18 10:32 | 1 |
| Gravel | 0.0 | | | | % | | | 06/17/18 10:32 | 1 |
| Medium Sand | 49.7 | | | | % | | | 06/17/18 10:32 | 1 |
| Silt | 1.6 | | | | % | | | 06/17/18 10:32 | 1 |

**Client Sample ID: PDI-SG-B417-BL1**
**Date Collected: 05/22/18 14:58**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-13**
**Matrix: Solid**
**Percent Solids: 71.2**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 66 | 16 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 22:49 | 1 |
| **Motor Oil (>C24-C36)** | **63** | **J** | 66 | 23 | mg/Kg | ☼ | 05/30/18 15:53 | 06/01/18 22:49 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *80* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 22:49* | *1* |

## Method: 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **4.6** | | 0.23 | 0.047 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:30 | 5 |
| **Cadmium** | **0.043** | **J** | 0.19 | 0.036 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:30 | 5 |
| **Copper** | **18** | | 0.47 | 0.10 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:30 | 5 |
| **Lead** | **7.7** | | 0.23 | 0.022 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:30 | 5 |
| **Zinc** | **71** | | 2.3 | 0.75 | mg/Kg | ☼ | 06/13/18 16:05 | 06/14/18 16:30 | 5 |

## Method: 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.028** | **J** | 0.033 | 0.010 | mg/Kg | ☼ | 06/13/18 12:15 | 06/13/18 15:58 | 1 |

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

**Client Sample ID: PDI-RB-VV-182105**
**Date Collected: 05/22/18 17:05**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-14**
**Matrix: Water**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 0.12 | 0.069 | mg/L | | 06/01/18 09:34 | 06/04/18 14:16 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.37 | 0.10 | mg/L | | 06/01/18 09:34 | 06/04/18 14:16 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *86* | | *50 - 150* | *06/01/18 09:34* | *06/04/18 14:16* | *1* |

### Method: 6020B - Metals (ICP/MS) - Total Recoverable

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.0010 | 0.00020 | mg/L | | 06/11/18 16:19 | 06/12/18 15:04 | 1 |
| Cadmium | ND | | 0.00040 | 0.00010 | mg/L | | 06/11/18 16:19 | 06/12/18 15:04 | 1 |
| **Copper** | **0.00084** | **J** | 0.0020 | 0.00060 | mg/L | | 06/11/18 16:19 | 06/12/18 15:04 | 1 |
| Lead | ND | | 0.00080 | 0.00020 | mg/L | | 06/11/18 16:19 | 06/12/18 15:04 | 1 |
| Zinc | ND | | 0.0070 | 0.0019 | mg/L | | 06/11/18 16:19 | 06/12/18 15:04 | 1 |

### Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00030 | 0.00015 | mg/L | | 06/13/18 10:46 | 06/13/18 15:06 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Total Organic Carbon** | **0.41** | **J** | 1.0 | 0.19 | mg/L | | | 06/05/18 13:23 | 1 |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-275011/1-A**
**Matrix: Solid**
**Analysis Batch: 275208**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 275011**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 50 | 12 | mg/Kg | | 05/30/18 15:53 | 06/01/18 16:37 | 1 |
| Motor Oil (>C24-C36) | ND | | 50 | 18 | mg/Kg | | 05/30/18 15:53 | 06/01/18 16:37 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *80* | | *50 - 150* | *05/30/18 15:53* | *06/01/18 16:37* | *1* |

**Lab Sample ID: LCS 580-275011/2-A**
**Matrix: Solid**
**Analysis Batch: 275208**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 275011**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 500 | 433 | | mg/Kg | | 87 | 70 - 125 | | |
| Motor Oil (>C24-C36) | | | 500 | 468 | | mg/Kg | | 94 | 70 - 129 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *84* | | *50 - 150* |

**Lab Sample ID: LCSD 580-275011/3-A**
**Matrix: Solid**
**Analysis Batch: 275208**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 275011**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 500 | 437 | | mg/Kg | | 87 | 70 - 125 | 1 | 16 |
| Motor Oil (>C24-C36) | | | 500 | 477 | | mg/Kg | | 95 | 70 - 129 | 2 | 16 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *95* | | *50 - 150* |

**Lab Sample ID: 580-77502-8 DU**
**Matrix: Solid**
**Analysis Batch: 275208**

**Client Sample ID: PDI-SG-B251-BL1**
**Prep Type: Total/NA**
**Prep Batch: 275011**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | 55 | J | | 58.9 | J | mg/Kg | ☼ | | | 6 | 35 |
| Motor Oil (>C24-C36) | 410 | | | 431 | | mg/Kg | ☼ | | | 5 | 35 |

| *Surrogate* | *DU %Recovery* | *DU Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *74* | | *50 - 150* |

**Lab Sample ID: MB 580-275168/1-A**
**Matrix: Water**
**Analysis Batch: 275288**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 275168**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 0.11 | 0.065 | mg/L | | 06/01/18 09:34 | 06/04/18 12:49 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.35 | 0.096 | mg/L | | 06/01/18 09:34 | 06/04/18 12:49 | 1 |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

**Lab Sample ID: MB 580-275168/1-A**
**Matrix: Water**
**Analysis Batch: 275288**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 275168**

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| o-Terphenyl | 100 | | 50 - 150 | 06/01/18 09:34 | 06/04/18 12:49 | 1 |

**Lab Sample ID: LCS 580-275168/2-A**
**Matrix: Water**
**Analysis Batch: 275288**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 275168**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.54 | | mg/L | | 77 | 50 - 120 | | |
| Motor Oil (>C24-C36) | | | 2.00 | 1.84 | | mg/L | | 92 | 64 - 120 | | |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| o-Terphenyl | 106 | | 50 - 150 |

**Lab Sample ID: LCSD 580-275168/3-A**
**Matrix: Water**
**Analysis Batch: 275288**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 275168**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.66 | | mg/L | | 83 | 50 - 120 | 7 | 26 |
| Motor Oil (>C24-C36) | | | 2.00 | 1.91 | | mg/L | | 96 | 64 - 120 | 4 | 24 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| o-Terphenyl | 101 | | 50 - 150 |

## Method: 6020B - Metals (ICP/MS)

**Lab Sample ID: MB 580-276193/22-A**
**Matrix: Solid**
**Analysis Batch: 276343**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 276193**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.25 | 0.050 | mg/Kg | | 06/13/18 16:05 | 06/14/18 14:34 | 5 |
| Cadmium | ND | | 0.20 | 0.039 | mg/Kg | | 06/13/18 16:05 | 06/14/18 14:34 | 5 |
| Copper | ND | | 0.50 | 0.11 | mg/Kg | | 06/13/18 16:05 | 06/14/18 14:34 | 5 |
| Lead | ND | | 0.25 | 0.024 | mg/Kg | | 06/13/18 16:05 | 06/14/18 14:34 | 5 |
| Zinc | ND | | 2.5 | 0.81 | mg/Kg | | 06/13/18 16:05 | 06/14/18 14:34 | 5 |

**Lab Sample ID: LCS 580-276193/23-A**
**Matrix: Solid**
**Analysis Batch: 276343**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 276193**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | | | 200 | 211 | | mg/Kg | | 106 | 80 - 120 | | |
| Cadmium | | | 5.00 | 4.92 | | mg/Kg | | 98 | 80 - 120 | | |
| Copper | | | 25.0 | 26.4 | | mg/Kg | | 106 | 80 - 120 | | |
| Lead | | | 50.0 | 51.8 | | mg/Kg | | 104 | 80 - 120 | | |
| Zinc | | | 200 | 207 | | mg/Kg | | 104 | 80 - 120 | | |

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCSD 580-276193/24-A**
**Matrix: Solid**
**Analysis Batch: 276343**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 276193**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 200 | 207 | | mg/Kg | | 103 | 80 - 120 | 2 | 20 |
| Cadmium | 5.00 | 4.69 | | mg/Kg | | 94 | 80 - 120 | 5 | 20 |
| Copper | 25.0 | 25.8 | | mg/Kg | | 103 | 80 - 120 | 2 | 20 |
| Lead | 50.0 | 50.9 | | mg/Kg | | 102 | 80 - 120 | 2 | 20 |
| Zinc | 200 | 205 | | mg/Kg | | 103 | 80 - 120 | 1 | 20 |

**Lab Sample ID: 580-77502-1 MS**
**Matrix: Solid**
**Analysis Batch: 276343**

**Client Sample ID: PDI-SG-B299-BL1**
**Prep Type: Total/NA**
**Prep Batch: 276193**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.2 | | 305 | 367 | | mg/Kg | ☼ | 119 | 80 - 120 |
| Cadmium | 0.17 | J | 7.63 | 8.09 | | mg/Kg | ☼ | 104 | 80 - 120 |
| Copper | 36 | F1 | 38.1 | 100 | F1 | mg/Kg | ☼ | 167 | 80 - 120 |
| Lead | 12 | F1 | 76.3 | 108 | F1 | mg/Kg | ☼ | 126 | 80 - 120 |
| Zinc | 94 | F1 | 305 | 502 | F1 | mg/Kg | ☼ | 134 | 80 - 120 |

**Lab Sample ID: 580-77502-1 MSD**
**Matrix: Solid**
**Analysis Batch: 276343**

**Client Sample ID: PDI-SG-B299-BL1**
**Prep Type: Total/NA**
**Prep Batch: 276193**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.2 | | 288 | 316 | | mg/Kg | ☼ | 108 | 80 - 120 | 15 | 20 |
| Cadmium | 0.17 | J | 7.21 | 7.84 | | mg/Kg | ☼ | 106 | 80 - 120 | 3 | 20 |
| Copper | 36 | F1 | 36.1 | 83.8 | F1 | mg/Kg | ☼ | 132 | 80 - 120 | 18 | 20 |
| Lead | 12 | F1 | 72.1 | 92.8 | | mg/Kg | ☼ | 112 | 80 - 120 | 15 | 20 |
| Zinc | 94 | F1 | 288 | 426 | | mg/Kg | ☼ | 115 | 80 - 120 | 16 | 20 |

**Lab Sample ID: 580-77502-1 DU**
**Matrix: Solid**
**Analysis Batch: 276343**

**Client Sample ID: PDI-SG-B299-BL1**
**Prep Type: Total/NA**
**Prep Batch: 276193**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.2 | | 5.08 | | mg/Kg | ☼ | 19 | 20 |
| Cadmium | 0.17 | J | 0.233 | J F5 | mg/Kg | ☼ | 30 | 20 |
| Copper | 36 | F1 | 44.7 | F3 | mg/Kg | ☼ | 21 | 20 |
| Lead | 12 | F1 | 15.3 | F3 | mg/Kg | ☼ | 23 | 20 |
| Zinc | 94 | F1 | 122 | F3 | mg/Kg | ☼ | 26 | 20 |

**Lab Sample ID: MB 580-275973/22-A**
**Matrix: Water**
**Analysis Batch: 276093**

**Client Sample ID: Method Blank**
**Prep Type: Total Recoverable**
**Prep Batch: 275973**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.0010 | 0.00020 | mg/L | | 06/11/18 16:19 | 06/12/18 14:53 | 1 |
| Cadmium | ND | | 0.00040 | 0.00010 | mg/L | | 06/11/18 16:19 | 06/12/18 14:53 | 1 |
| Copper | ND | | 0.0020 | 0.00060 | mg/L | | 06/11/18 16:19 | 06/12/18 14:53 | 1 |
| Lead | ND | | 0.00080 | 0.00020 | mg/L | | 06/11/18 16:19 | 06/12/18 14:53 | 1 |
| Zinc | 0.00256 | J | 0.0070 | 0.0019 | mg/L | | 06/11/18 16:19 | 06/12/18 14:53 | 1 |

**Lab Sample ID: LCS 580-275973/23-A**
**Matrix: Water**
**Analysis Batch: 276093**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total Recoverable**
**Prep Batch: 275973**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 4.00 | 3.87 | | mg/L | | 97 | 80 - 120 |
| Cadmium | 0.100 | 0.0982 | | mg/L | | 98 | 80 - 120 |
| Copper | 0.500 | 0.493 | | mg/L | | 99 | 80 - 120 |
| Lead | 1.00 | 0.925 | | mg/L | | 92 | 80 - 120 |
| Zinc | 4.00 | 3.79 | | mg/L | | 95 | 80 - 120 |

**Lab Sample ID: LCSD 580-275973/24-A**
**Matrix: Water**
**Analysis Batch: 276093**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total Recoverable**
**Prep Batch: 275973**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.00 | 3.86 | | mg/L | | 97 | 80 - 120 | 0 | 20 |
| Cadmium | 0.100 | 0.0982 | | mg/L | | 98 | 80 - 120 | 0 | 20 |
| Copper | 0.500 | 0.489 | | mg/L | | 98 | 80 - 120 | 1 | 20 |
| Lead | 1.00 | 0.926 | | mg/L | | 93 | 80 - 120 | 0 | 20 |
| Zinc | 4.00 | 3.81 | | mg/L | | 95 | 80 - 120 | 1 | 20 |

**Lab Sample ID: 580-77502-14 MS**
**Matrix: Water**
**Analysis Batch: 276093**

**Client Sample ID: PDI-RB-VV-182105**
**Prep Type: Total Recoverable**
**Prep Batch: 275973**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 4.00 | 3.69 | | mg/L | | 92 | 80 - 120 |
| Cadmium | ND | | 0.100 | 0.0901 | | mg/L | | 90 | 80 - 120 |
| Copper | 0.00084 | J | 0.500 | 0.467 | | mg/L | | 93 | 80 - 120 |
| Lead | ND | | 1.00 | 0.887 | | mg/L | | 89 | 80 - 120 |
| Zinc | ND | | 4.00 | 3.65 | | mg/L | | 91 | 80 - 120 |

**Lab Sample ID: 580-77502-14 MSD**
**Matrix: Water**
**Analysis Batch: 276093**

**Client Sample ID: PDI-RB-VV-182105**
**Prep Type: Total Recoverable**
**Prep Batch: 275973**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 4.00 | 3.86 | | mg/L | | 97 | 80 - 120 | 5 | 20 |
| Cadmium | ND | | 0.100 | 0.0952 | | mg/L | | 95 | 80 - 120 | 6 | 20 |
| Copper | 0.00084 | J | 0.500 | 0.487 | | mg/L | | 97 | 80 - 120 | 4 | 20 |
| Lead | ND | | 1.00 | 0.936 | | mg/L | | 94 | 80 - 120 | 5 | 20 |
| Zinc | ND | | 4.00 | 3.81 | | mg/L | | 95 | 80 - 120 | 4 | 20 |

**Lab Sample ID: 580-77502-14 DU**
**Matrix: Water**
**Analysis Batch: 276093**

**Client Sample ID: PDI-RB-VV-182105**
**Prep Type: Total Recoverable**
**Prep Batch: 275973**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | ND | | mg/L | | NC | 20 |
| Cadmium | ND | | ND | | mg/L | | NC | 20 |
| Copper | 0.00084 | J | 0.00154 | J F5 | mg/L | | 59 | 20 |
| Lead | ND | | ND | | mg/L | | NC | 20 |
| Zinc | ND | | ND | | mg/L | | NC | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 580-276128/22-A**
**Matrix: Water**
**Analysis Batch: 276182**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 276128**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00030 | 0.00015 | mg/L | | 06/13/18 10:46 | 06/13/18 14:28 | 1 |

**Lab Sample ID: LCS 580-276128/23-A**
**Matrix: Water**
**Analysis Batch: 276182**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 276128**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00200 | 0.00173 | | mg/L | | 86 | 80 - 120 |

**Lab Sample ID: LCSD 580-276128/24-A**
**Matrix: Water**
**Analysis Batch: 276182**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 276128**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.00200 | 0.00173 | | mg/L | | 86 | 80 - 120 | 0 | 20 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 580-276115/22-A**
**Matrix: Solid**
**Analysis Batch: 276162**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 276115**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.030 | 0.0090 | mg/Kg | | 06/13/18 09:54 | 06/13/18 11:42 | 1 |

**Lab Sample ID: LCS 580-276115/23-A**
**Matrix: Solid**
**Analysis Batch: 276162**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 276115**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.167 | 0.141 | | mg/Kg | | 85 | 80 - 120 |

**Lab Sample ID: LCSD 580-276115/24-A**
**Matrix: Solid**
**Analysis Batch: 276162**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 276115**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.167 | 0.140 | | mg/Kg | | 84 | 80 - 120 | 1 | 20 |

**Lab Sample ID: MB 580-276148/22-A**
**Matrix: Solid**
**Analysis Batch: 276218**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 276148**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.030 | 0.0090 | mg/Kg | | 06/13/18 12:15 | 06/13/18 15:51 | 1 |

## Method: 7471A - Mercury (CVAA) (Continued)

**Lab Sample ID: LCS 580-276148/23-A**
**Matrix: Solid**
**Analysis Batch: 276218**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 276148**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.167 | 0.151 | | mg/Kg | | 91 | 80 - 120 |

**Lab Sample ID: LCSD 580-276148/24-A**
**Matrix: Solid**
**Analysis Batch: 276218**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 276148**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.167 | 0.153 | | mg/Kg | | 92 | 80 - 120 | 1 | 20 |

**Lab Sample ID: 580-77502-13 MS**
**Matrix: Solid**
**Analysis Batch: 276218**

**Client Sample ID: PDI-SG-B417-BL1**
**Prep Type: Total/NA**
**Prep Batch: 276148**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.028 | J | 0.179 | 0.194 | | mg/Kg | ☼ | 92 | 80 - 120 |

**Lab Sample ID: 580-77502-13 MSD**
**Matrix: Solid**
**Analysis Batch: 276218**

**Client Sample ID: PDI-SG-B417-BL1**
**Prep Type: Total/NA**
**Prep Batch: 276148**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.028 | J | 0.174 | 0.184 | | mg/Kg | ☼ | 90 | 80 - 120 | 5 | 20 |

**Lab Sample ID: 580-77502-13 DU**
**Matrix: Solid**
**Analysis Batch: 276218**

**Client Sample ID: PDI-SG-B417-BL1**
**Prep Type: Total/NA**
**Prep Batch: 276148**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Mercury | 0.028 | J | 0.0113 | J F5 | mg/Kg | ☼ | 85 | 20 |

## Method: 9060_PSEP - TOC (Puget Sound)

**Lab Sample ID: MB 580-275295/3**
**Matrix: Solid**
**Analysis Batch: 275295**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | ND | | 2000 | 44 | mg/Kg | | | 06/02/18 19:37 | 1 |

**Lab Sample ID: LCS 580-275295/4**
**Matrix: Solid**
**Analysis Batch: 275295**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | 4620 | 5320 | | mg/Kg | | 115 | 68 - 149 |

## Method: 9060_PSEP - TOC (Puget Sound) (Continued)

**Lab Sample ID: LCSD 580-275295/5**
**Matrix: Solid**
**Analysis Batch: 275295**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | | | 4620 | 4800 | | mg/Kg | | 104 | 68 - 149 | 10 | 32 |

**Lab Sample ID: MB 580-275350/3**
**Matrix: Solid**
**Analysis Batch: 275350**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | ND | | 2000 | 44 | mg/Kg | | | 06/04/18 12:42 | 1 |

**Lab Sample ID: LCS 580-275350/4**
**Matrix: Solid**
**Analysis Batch: 275350**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | | | 4620 | 5250 | | mg/Kg | | 114 | 68 - 149 | | |

**Lab Sample ID: LCSD 580-275350/5**
**Matrix: Solid**
**Analysis Batch: 275350**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon - Duplicates | | | 4620 | 5460 | | mg/Kg | | 118 | 68 - 149 | 4 | 32 |

## Method: D 2216 - Percent Moisture

**Lab Sample ID: 580-77502-13 DU**
**Matrix: Solid**
**Analysis Batch: 274846**

**Client Sample ID: PDI-SG-B417-BL1**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Solids | 71.2 | | | 70.9 | | % | | | | 0.4 | 20 |

## Method: SM 5310B - Organic Carbon, Total (TOC)

**Lab Sample ID: MB 580-275501/3**
**Matrix: Water**
**Analysis Batch: 275501**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | ND | | 1.0 | 0.19 | mg/L | | | 06/05/18 13:23 | 1 |

## Method: SM 5310B - Organic Carbon, Total (TOC) (Continued)

**Lab Sample ID: LCS 580-275501/4**
**Matrix: Water**
**Analysis Batch: 275501**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 10.0 | 10.2 | | mg/L | | 102 | 85 - 115 |

## Client Sample ID: PDI-SG-B299-BL1

**Lab Sample ID: 580-77502-1**

**Date Collected: 05/21/18 10:28**

**Matrix: Solid**

**Date Received: 05/23/18 13:40**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275295 | 06/02/18 22:03 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B299-BL1

**Lab Sample ID: 580-77502-1**

**Date Collected: 05/21/18 10:28**

**Matrix: Solid**

**Date Received: 05/23/18 13:40**

**Percent Solids: 40.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 17:42 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 14:51 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:27 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B298-BL1

**Lab Sample ID: 580-77502-2**

**Date Collected: 05/21/18 14:46**

**Matrix: Solid**

**Date Received: 05/23/18 13:40**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275295 | 06/02/18 22:08 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B298-BL1

**Lab Sample ID: 580-77502-2**

**Date Collected: 05/21/18 14:46**

**Matrix: Solid**

**Date Received: 05/23/18 13:40**

**Percent Solids: 72.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 18:04 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:28 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:30 | FCW | TAL SEA |

# Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

## Client Sample ID: PDI-SG-B305-BL1
**Date Collected: 05/21/18 16:57**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-3
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275295 | 06/02/18 22:13 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B305-BL1
**Date Collected: 05/21/18 16:57**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-3
**Matrix: Solid**
**Percent Solids: 59.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 18:26 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:32 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:32 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B214-BL1
**Date Collected: 05/21/18 10:00**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-4
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275295 | 06/02/18 22:19 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B214-BL1
**Date Collected: 05/21/18 10:00**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-4
**Matrix: Solid**
**Percent Solids: 66.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 18:48 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:36 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:39 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B234-BL1

**Lab Sample ID: 580-77502-5**
**Date Collected: 05/22/18 12:20**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275295 | 06/02/18 22:24 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B234-BL1

**Lab Sample ID: 580-77502-5**
**Date Collected: 05/22/18 12:20**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**
**Percent Solids: 38.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 19:09 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:40 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:41 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B234-BL1-D

**Lab Sample ID: 580-77502-6**
**Date Collected: 05/22/18 12:30**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275295 | 06/02/18 22:30 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277257 | 06/25/18 10:01 | HJM | TAL SEA |

## Client Sample ID: PDI-SG-B234-BL1-D

**Lab Sample ID: 580-77502-6**
**Date Collected: 05/22/18 12:30**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**
**Percent Solids: 38.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 19:31 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:45 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:44 | FCW | TAL SEA |

# Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

## Client Sample ID: PDI-SG-B246-BL1
**Date Collected: 05/22/18 15:10**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-7
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 13:56 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B246-BL1
**Date Collected: 05/22/18 15:10**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-7
**Matrix: Solid**
**Percent Solids: 54.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 19:54 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:49 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:46 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B251-BL1
**Date Collected: 05/22/18 16:10**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-8
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 14:01 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B251-BL1
**Date Collected: 05/22/18 16:10**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-8
**Matrix: Solid**
**Percent Solids: 39.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 20:38 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:53 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:48 | FCW | TAL SEA |

# Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

## Client Sample ID: PDI-SG-B257-BL1
**Date Collected: 05/22/18 16:45**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-9
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 14:07 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B257-BL1
**Date Collected: 05/22/18 16:45**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-9
**Matrix: Solid**
**Percent Solids: 87.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 21:22 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 15:57 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:50 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B315-BL1
**Date Collected: 05/22/18 10:37**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-10
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 14:12 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B315-BL1
**Date Collected: 05/22/18 10:37**
**Date Received: 05/23/18 13:40**

## Lab Sample ID: 580-77502-10
**Matrix: Solid**
**Percent Solids: 69.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 21:44 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 16:01 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:53 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B315-BL1-D
**Lab Sample ID: 580-77502-11**
**Date Collected: 05/22/18 10:38**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 14:24 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277257 | 06/25/18 10:01 | HJM | TAL SEA |

## Client Sample ID: PDI-SG-B315-BL1-D
**Lab Sample ID: 580-77502-11**
**Date Collected: 05/22/18 10:38**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**
**Percent Solids: 69.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 22:06 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 16:22 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:55 | FCW | TAL SEA |

## Client Sample ID: PDI-SG-B398-BL1
**Lab Sample ID: 580-77502-12**
**Date Collected: 05/22/18 13:09**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 14:29 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B398-BL1
**Lab Sample ID: 580-77502-12**
**Date Collected: 05/22/18 13:09**
**Matrix: Solid**
**Date Received: 05/23/18 13:40**
**Percent Solids: 39.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 22:28 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 16:26 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276115 | 06/13/18 09:54 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276162 | 06/13/18 12:57 | FCW | TAL SEA |

# Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

## Client Sample ID: PDI-SG-B417-BL1
**Date Collected: 05/22/18 14:58**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-13**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 9060_PSEP | | 1 | 275350 | 06/04/18 14:35 | Z1T | TAL SEA |
| Total/NA | Analysis | D 2216 | | 1 | 274846 | 05/29/18 09:01 | BAH | TAL SEA |
| Total/NA | Analysis | Moisture 70C | | 1 | 277104 | 06/22/18 15:44 | HJM | TAL SEA |
| Total/NA | Analysis | D7928/D6913 | | 1 | 276513 | 06/17/18 10:32 | DB | TAL SEA |

## Client Sample ID: PDI-SG-B417-BL1
**Date Collected: 05/22/18 14:58**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-13**
**Matrix: Solid**
**Percent Solids: 71.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 275011 | 05/30/18 15:53 | KMS | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275208 | 06/01/18 22:49 | CJ | TAL SEA |
| Total/NA | Prep | 3050B | | | 276193 | 06/13/18 16:05 | CJB | TAL SEA |
| Total/NA | Analysis | 6020B | | 5 | 276343 | 06/14/18 16:30 | FCW | TAL SEA |
| Total/NA | Prep | 7471A | | | 276148 | 06/13/18 12:15 | CJB | TAL SEA |
| Total/NA | Analysis | 7471A | | 1 | 276218 | 06/13/18 15:58 | FCW | TAL SEA |

## Client Sample ID: PDI-RB-VV-182105
**Date Collected: 05/22/18 17:05**
**Date Received: 05/23/18 13:40**

**Lab Sample ID: 580-77502-14**
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 275168 | 06/01/18 09:34 | JCM | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 275288 | 06/04/18 14:16 | AEK | TAL SEA |
| Total Recoverable | Prep | 3005A | | | 275973 | 06/11/18 16:19 | CJB | TAL SEA |
| Total Recoverable | Analysis | 6020B | | 1 | 276093 | 06/12/18 15:04 | FCW | TAL SEA |
| Total/NA | Prep | 7470A | | | 276128 | 06/13/18 10:46 | CJB | TAL SEA |
| Total/NA | Analysis | 7470A | | 1 | 276182 | 06/13/18 15:06 | FCW | TAL SEA |
| Total/NA | Analysis | SM 5310B | | 1 | 275501 | 06/05/18 13:23 | ASJ | TAL SEA |

**Laboratory References:**
TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Accreditation/Certification Summary

Client: AECOM
TestAmerica Job ID: 580-77502-1
Project/Site: Portland Harbor Pre-Remedial Design

## Laboratory: TestAmerica Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| Alaska (UST) | State Program | 10 | 17-024 | 01-19-19 |
| ANAB | DoD ELAP | | L2236 | 01-19-19 |
| ANAB | ISO/IEC 17025 | | L2236 | 01-19-19 |
| California | State Program | 9 | 2901 | 11-05-18 |
| Montana (UST) | State Program | 8 | N/A | 04-30-20 |
| Oregon | NELAP | 10 | WA100007 | 11-05-18 |
| US Fish & Wildlife | Federal | | LE058448-0 | 10-31-18 |
| USDA | Federal | | P330-14-00126 | 02-10-20 |
| Washington | State Program | 10 | C553 | 02-17-19 |

# Sample Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77502-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 580-77502-1 | PDI-SG-B299-BL1 | Solid | 05/21/18 10:28 | 05/23/18 13:40 |
| 580-77502-2 | PDI-SG-B298-BL1 | Solid | 05/21/18 14:46 | 05/23/18 13:40 |
| 580-77502-3 | PDI-SG-B305-BL1 | Solid | 05/21/18 16:57 | 05/23/18 13:40 |
| 580-77502-4 | PDI-SG-B214-BL1 | Solid | 05/21/18 10:00 | 05/23/18 13:40 |
| 580-77502-5 | PDI-SG-B234-BL1 | Solid | 05/22/18 12:20 | 05/23/18 13:40 |
| 580-77502-6 | PDI-SG-B234-BL1-D | Solid | 05/22/18 12:30 | 05/23/18 13:40 |
| 580-77502-7 | PDI-SG-B246-BL1 | Solid | 05/22/18 15:10 | 05/23/18 13:40 |
| 580-77502-8 | PDI-SG-B251-BL1 | Solid | 05/22/18 16:10 | 05/23/18 13:40 |
| 580-77502-9 | PDI-SG-B257-BL1 | Solid | 05/22/18 16:45 | 05/23/18 13:40 |
| 580-77502-10 | PDI-SG-B315-BL1 | Solid | 05/22/18 10:37 | 05/23/18 13:40 |
| 580-77502-11 | PDI-SG-B315-BL1-D | Solid | 05/22/18 10:38 | 05/23/18 13:40 |
| 580-77502-12 | PDI-SG-B398-BL1 | Solid | 05/22/18 13:09 | 05/23/18 13:40 |
| 580-77502-13 | PDI-SG-B417-BL1 | Solid | 05/22/18 14:58 | 05/23/18 13:40 |
| 580-77502-14 | PDI-RB-VV-182105 | Water | 05/22/18 17:05 | 05/23/18 13:40 |

# SURFACE SEDIMENT
# CHAIN OF CUSTODY

| | | | |
|---|---|---|---|
| **TestAmerica-Seattle**<br>5755-8th-Street-East<br>Tacoma, WA 98424-1317<br>**Ph: 253-922-2310 Fax: 253-922-5047** | **Project Contact: Amy Dahl / Chelsey Cook**<br>**Tel: (206) 438-2261 / (206) 438-2010**<br>**Analysis Turnaround Time**<br>Calendar ( C ) or Work Days (W) _____<br>☒ 21 days<br>☐ Other _____ | **Site Contact: Jennifer Ray / Michaela McCoog**<br>**Laboratory Contact: Elaine-Walker** | **5/23/2018**<br>**Carrier: Courier** | COC No: 2<br>1 of 2 page(s) |
| **Client Contact**<br>AECOM<br>1111 3rd Ave Suite 1600<br>Seattle, WA 98101<br>Phone: (206) 438-2700 Fax: 1+(866) 495-5288<br>Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling<br>Portland, OR<br>Project #: 60566335 Study: Surface Sediment | | | | |

| Sample Identification | Sample Date | Sample Time | Matrix | QC Sample | Sampler's Initials | Total No. of Cont. | Fraction | PCB Congeners 1668A | PCDD/Fs 1613B | TPH Diesel, Metals, Mercury (NWTPH-Dx, 6020B, 7471A | Grain size ASTM D7928/D6913 | Total organic carbon, Total solids 9060 | Archive Archive -20 C | WQ - PCB Congeners 1668A | WQ - PCDD/Fs 1613B | WQ - TPH Diesel NWTPH-Dx | WQ - Metals, Mercury 6020B, 7470 | WQ - Total Organic Carbon SM5310B | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PDI-SG-B299-BL1 | 5/21/2018 | 10:28 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B298-BL1 | 5/21/2018 | 14:46 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B305-BL1 | 5/21/2018 | 16:57 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B214-BL1 | 5/21/2018 | 10:00 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B234-BL1 | 5/22/2018 | 12:20 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B234-BL1-D | 5/22/2018 | 12:30 | SS | | AM | 5 | | x | x | x | | x | x | | | | | | |
| PDI-SG-B246-BL1 | 5/22/2018 | 15:10 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B251-BL1 | 5/22/2018 | 16:10 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B257-BL1 | 5/22/2018 | 16:45 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B315-BL1 | 5/22/2018 | 10:37 | SS | | MM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B315-BL1-D | 5/22/2018 | 10:38 | SS | | MM | 5 | | x | x | x | | x | x | | | | | | |
| PDI-SG-B398-BL1 | 5/22/2018 | 13:09 | SS | | MM | 6 | | x | x | x | x | x | x | | | | | | |


*Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column*

*Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid*

*Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)*

*Sample Disposal*
☐ Return To Client ☒ Disposal By Lab ☒ Archive For 12 Months

**Special Instructions/QC Requirements & Comments:**
Separate reports for each lab

3-8/4.6/2-2/0.6

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: | Company: AECOM | Date/Time: 5/23/18/1255 | Received by: | Company: M.E. | Date/Time: 5/23/18 1255 |
| Relinquished by: | Company: M.E. | Date/Time: 5/23/18 1340 | Received by: Tom Blount | Company: TA-Bor | Date/Time: 5/23/18 1340 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# SURFACE SEDIMENT
# CHAIN OF CUSTODY

| | | | |
|---|---|---|---|
| **TestAmerica-Seattle**<br>5755-8th-Street-East<br>Tacoma, WA 98424-1317<br>**Ph: 253-922-2310 Fax: 253-922-5047** | **Project Contact: Amy Dahl / Chelsey Cook**<br>**Tel: (206) 438-2261 / (206) 438-2010** | **Site Contact: Jennifer Ray / Michaela McCoog**<br>**Laboratory Contact: Elaine-Walker** | **5/23/2018** COC No: 2<br>2 of 2 page(s) |
| **Client Contact**<br>AECOM<br>1111 3rd Ave Suite 1600<br>Seattle, WA 98101<br>Phone: (206) 438-2700 Fax: 1+(866) 495-5288<br>Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling<br>Portland, OR<br>Project #: 60566335 Study: Surface Sediment | **Analysis Turnaround Time**<br>Calendar ( C ) or Work Days (W) _____<br>[x] 21 days<br>[ ] Other _____ | **Carrier: Courier** | |

| Sample Identification | Sample Date | Sample Time | Matrix | QC Sample | Sampler's Initials | Total No. of Cont. | Fraction | PCB Congeners 1668A | PCDD/Fs 1613B | TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A | Grain size ASTM D7928/D6913 | Total organic carbon, Total solids 9060 | Archive Archive -20 C | WQ - PCB Congeners 1668A | WQ - PCDD/Fs 1613B | WQ - TPH Diesel NWTPH-Dx | WQ - Metals, Mercury 6020B, 7470 | WQ - Total Organic Carbon SM5310B | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PDI-SG-B417-BL1 | 5/22/2018 | 14:58 | SS | | MM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-RB-VV-182105 | 5/22/2018 | 17:05 | W | | BC | 8 | | | | | | | | x | x | x | x | x | |

*Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column*

*Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid*

*Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)*

*Sample Disposal*
[ ] Return To Client [X] Disposal By Lab [X] Archive For 12 Months

**Special Instructions/QC Requirements & Comments:**
Separate reports for each lab

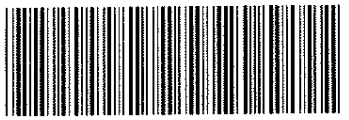
| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: | Company: AECOM | Date/Time: 5/23/18 1255 | Received by: | Company: M. E. | Date/Time: 5/23/18 1255 |
| Relinquished by: | Company: M. E. | Date/Time: 5/23/18 1340 | Received by: Tom Blankenship | Company: TAP | Date/Time: 5/23/18 1340 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# SURFACE SEDIMENT
# CHAIN OF CUSTODY

| | | | |
|---|---|---|---|
| **TestAmerica-Seattle**<br>5755-8th-Street-East<br>Tacoma, WA 98424-1317<br>**Ph: 253-922-2310 Fax: 253-922-5047** | **Project Contact: Amy Dahl / Chelsey Cook**<br>**Tel: (206) 438-2261 / (206) 438-2010**<br>**Analysis Turnaround Time**<br>Calendar ( C ) or Work Days (W) _____<br>[x] 21 days<br>[ ] Other _____ | **Site Contact: Jennifer Ray / Michaela McCoog**<br>**Laboratory Contact: Elaine-Walker** | **5/23/2018**<br>**Carrier: Courier** | COC No: 2<br>1 of 2 page(s) |

| **Client Contact** |
|---|
| AECOM |
| 1111 3rd Ave Suite 1600 |
| Seattle, WA 98101 |
| Phone: (206) 438-2700 Fax: 1+(866) 495-5288 |
| Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling |
| Portland, OR |
| Project #: 60566335 Study: Surface Sediment |

| Sample Identification | Sample Date | Sample Time | Matrix | QC Sample | Sampler's Initials | Total No. of Cont. | Fraction | PCB Congeners 1668A | PCDD/Fs 1613B | TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A | Grain size ASTM D7928/D6913 | Total organic carbon, Total solids 9060 | Archive Archive -20 C | WQ - PCB Congeners 1668A | WQ - PCDD/Fs 1613B | WQ - TPH Diesel NWTPH-Dx | WQ - Metals, Mercury 6020B, 7470 | WQ - Total Organic Carbon SM5310B | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PDI-SG-B299-BL1 | 5/21/2018 | 10:28 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B298-BL1 | 5/21/2018 | 14:46 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B305-BL1 | 5/21/2018 | 16:57 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B214-BL1 | 5/21/2018 | 10:00 | SS | | NM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B234-BL1 | 5/22/2018 | 12:20 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B234-BL1-D | 5/22/2018 | 12:30 | SS | | AM | 5 | | x | x | x | | x | x | | | | | | |
| PDI-SG-B246-BL1 | 5/22/2018 | 15:10 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B251-BL1 | 5/22/2018 | 16:10 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B257-BL1 | 5/22/2018 | 16:45 | SS | | AM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B315-BL1 | 5/22/2018 | 10:37 | SS | | MM | 6 | | x | x | x | x | x | x | | | | | | |
| PDI-SG-B315-BL1-D | 5/22/2018 | 10:38 | SS | | MM | 5 | | x | x | x | | x | x | | | | | | |
| PDI-SG-B398-BL1 | 5/22/2018 | 13:09 | SS | | MM | 6 | | x | x | x | x | x | x | | | | | | |

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**Sample Disposal**

[ ] Return To Client [X] Disposal By Lab [X] Archive For 12 Months

**Special Instructions/QC Requirements & Comments:**

**Separate reports for each lab**

3-8/4.6/2-2/0.6

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| Relinquished by: | Company: M.E. | Date/Time: 5/23/18 1340 | Received by: | Company: TA-Por | Date/Time: 5/23/18 1340 |
| Relinquished by: | Company: TAPOR | Date/Time: 5/23/18 1700 | Received by: | Company: TAES | Date/Time: 5-24-18 0930 |

# SURFACE SEDIMENT
# CHAIN OF CUSTODY

| | | | |
|---|---|---|---|
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| Relinquished by: | Company: TAP | Date/Time: 5/23/18 1700 | Received by: | Company: TASC | Date/Time: 5.24.18 |

# Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77502-1

**Login Number: 77502**
**List Number: 1**
**Creator: O'Connell, Jason I**

**List Source: TestAmerica Seattle**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |