

APPENDIX F. DATA VALIDATION



EcoChem, Inc.

Environmental Science and Chemistry

TRANSMITTAL

DATE: August 5, 2005

PROJECT NO.: C22002-6

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VIA: U.S. Mail

WE ARE SENDING THE FOLLOWING MATERIALS:

Data Validation report for metals for the POS Terminal 117 SDGs: ID10, IF10, ID44, ID46, IE50, and IE77.

Sincerely,

Chris Ransom
Project Manager
EcoChem, Inc.

Copies: Project files
Chron



EcoChem, Inc.

Environmental Science and Chemistry

DATA VALIDATION REPORT
PORT OF SEATTLE TERMINAL 117
SDGs: ID10, IF10, ID44, ID46, IE50, IE77

Prepared for:

Windward Environmental, LLC
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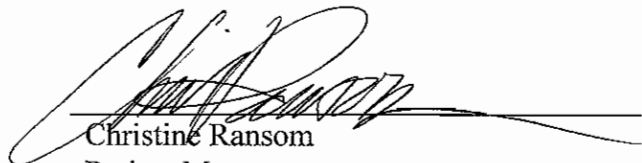
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August 4, 2005

Approved for Release:



Christine Ransom
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PROJECT NARRATIVE

Basis for the Data Validation

This report summarizes the results of the validation performed on eighty-two sediment samples, seven water samples and associated laboratory quality control samples. A **SAMPLE INDEX** is provided, followed by the validation report.

Samples were analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. The analytical methods and EcoChem project chemists are listed in the table below.

ANALYSIS METHODS AND ECOCHEM CHEMISTS

Analysis	Method	Primary Review	Secondary Review
PCB – Aroclors	SW8082	Mark Lybeer/Mark Brindle	John Mitchell
Polynuclear Aromatic Hydrocarbons (PAH)	SW8270 SIM	Melissa Swanson	
Diesel Range Hydrocarbons	NWTPH-Dx		
Conventionals: Grain Size Total Organic Carbon Total Solids Total Suspended Solids	PSEP EPA 415.1 EPA 160.3 EPA 160.2	Patricia Lambrecht	Christine Ransom

The data were reviewed using guidance and quality control criteria documented in the analytical methods; the project quality assurance project plan (QAPP) (*Port of Seattle, Lower Duwamish Waterway Superfund Site, Terminal 117 Early Action Area, December 2003*, and *National Functional Guidelines for Inorganic (USEPA 1999 & 2002) and Organic Data Review (USEPA 1999)*).

Data qualifier definitions, reason codes, and validation criteria are included as **APPENDIX A**. **APPENDIX B** contains the Qualified Data Summary Table. Data validation worksheets will be kept on file at EcoChem.

SAMPLE INDEX
Port of Seattle Terminal 117
SDG: IF10

Sample ID	Laboratory ID	PCB	PAH	NWTPHDx	Grain Size	Total Solids	TOC
T117-MW-2	05-10823-IF10A		✓	✓			

DATA VALIDATION REPORT
Port of Seattle Terminal 117
Polynuclear Aromatic Hydrocarbon Compounds
SW846 Method 8270-SIM
SDG: IF10

This report documents the review of the data from the analysis of one water sample for polynuclear aromatic hydrocarbon (PAH) compounds. The sample was analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. Refer to the **Sample Index** for sample identification.

I. DELIVERABLES/DOCUMENTATION

The laboratory provided all necessary data and documentation to meet project QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: changes and corrections were struck out by a single line with the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the data; and proper units for numerical values were used.

II. FIELD QUALITY CONTROL

No field quality control samples were submitted with this SDG.

III. TECHNICAL ASSESSMENT

1.0 Sample Holding Times and Sample Receipt: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

Field chain-of-custody (COC) forms were present and complete. No problems with sample receipt conditions were indicated on the field COC forms.

The sample cooler temperature was noted as 8.0°C. Samples were received and placed in storage by the laboratory on the date of sampling, so no action was required.

All samples were extracted and analyzed within the established holding time criteria.

2.0 GC/MS Instrument Performance Check: ACCEPTABLE/All criteria met.

Decafluorotriphenylphosphine (DFTPP) was analyzed at the beginning of each twelve-hour analytical sequence, as required. All necessary decafluorotriphenylphosphine data were provided, and results were within the allowable limits.

3.0 Initial and Continuing Calibration: ACCEPTABLE/All criteria met.

Qualified Data: See the **Qualified Data Summary Table**.

Discussion:

A six-point initial calibration (ICAL) was performed. The percent relative standard deviations (%RSD) were within the control limit of $\pm 30\%$, all correlation coefficients (r) were greater than 0.99, and relative response factor (RRF) values were calculated correctly and were greater than the minimum of 0.05.

Continuing calibrations (CCAL) were analyzed at the proper frequency. The percent differences (%D) were within the control limit of $\pm 25\%$ and RRF values were greater than the minimum of 0.05, with the exceptions below.

The %D values for benzo(g,h,i)perylene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene exceeded 30% due to low response. Reporting limits were estimated (UJ-5B) for these analytes.

4.0 Blank Analyses: ACCEPTABLE/All criteria met.

A method blank was extracted and analyzed at the proper frequency. No target analytes were detected in the method blank at concentrations greater than or equal to the reporting limit.

5.0 Surrogate Recovery: ACCEPTABLE/All criteria met.

All samples were spiked with the surrogates d10-2-methylnaphthalene and d14-dibenzo(a,h)anthracene prior to extraction. The surrogate %R values for all sample analyses met the acceptance criteria.

6.0 Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

Matrix spike and matrix spike duplicate analyses were not performed. The laboratory control sample recoveries indicated acceptable laboratory accuracy. Laboratory precision could not be evaluated.

7.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

A laboratory control sample (LCS) was analyzed at the proper frequency of one per extraction batch. All %R values met the laboratory (and QAPP) acceptance criteria.

8.0 Internal Standards Performance: ACCEPTABLE/All criteria met.

An evaluation of areas and retention times for internal standards was performed as required. All retention times were within ± 30 seconds of the associated CCAL internal standard retention time. All internal standard areas were within the specified acceptance limits of 50% to 200% of the associated CCAL internal standard area.

9.0 Compound Identification: ACCEPTABLE/All criteria met.

All compound identifications were reviewed and are acceptable. No false positives or negatives were found.

10.0 System Performance: ACCEPTABLE/All criteria met.

No signs of degraded instrument performance were observed. The analytical systems were judged to have been in tune, within control, and stable during the course of these analyses.

IV. OVERALL ASSESSMENT OF THE DATA

As was determined by this evaluation, the laboratory followed the specified analytical methods. Precision could not be assessed. Accuracy was acceptable, as demonstrated by the surrogate and LCS recovery results.

Data were qualified as estimated due to continuing calibration %D outliers.

All data as qualified, are acceptable for use.

DATA VALIDATION REPORT
Port of Seattle Terminal 117
Diesel Range Organic Compounds
Method NWTPH-Dx
SDG: IF10

This report documents the review of the data from the analysis of one water sample for diesel range organic compounds. The sample was analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. Refer to the **Sample Index** for a list of samples reviewed.

I. DELIVERABLES/DOCUMENTATION

The laboratory provided all necessary data and documentation to meet project QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: manual integrations, changes and corrections were struck out by a single line with the entry initialed and dated by the analyst; no correction fluid or tape was found on the data; and proper units for numerical values were used.

II. FIELD QUALITY CONTROL

No field quality control samples were submitted with this SDG.

III. TECHNICAL DATA VALIDATION

1.0 Holding Times and Sample Receipt: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

Field chain-of-custody (COC) forms were present and complete. No problems with sample receipt conditions were indicated on the field COC forms.

The sample cooler temperature was 8.0°C on receipt. Samples were received and placed in storage by the laboratory on the date of sampling, so no action was required.

All samples were extracted and analyzed within the established holding time criteria.

2.0 Initial and Continuing Calibration: ACCEPTABLE/All criteria met.

A six-point initial calibration (ICAL) was performed. The percent relative standard deviation (%RSD) values were calculated correctly, and were acceptable. Continuing calibrations (CCAL) were analyzed at the proper frequency. The percent difference (%D) values were calculated correctly and were within the acceptance criterion of 25%.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

A method blanks was extracted and analyzed at the proper frequency. No diesel range organics were detected in the method blanks at concentrations greater than or equal to the reporting limit.

4.0 Surrogate Recovery: ACCEPTABLE/All criteria met.

All samples were spiked with o-terphenyl prior to extraction. All recoveries were within the control limits.

5.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

A laboratory control sample (LCS) was analyzed at the proper frequency of one per extraction batch. All %R values met the laboratory (and QAPP) acceptance criteria.

6.0 Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

Matrix spike and matrix spike duplicate analyses were not performed. The laboratory control sample was analyzed within control limits, indication acceptable laboratory accuracy. Laboratory precision could not be evaluated.

7.0 Compound Identification: ACCEPTABLE/All criteria met.

All compound identifications were reviewed and are acceptable. No false positives or negatives were found.

8.0 Compound Quantitation: ACCEPTABLE/All criteria met.

Several compound quantitation and reporting limit results were verified by recalculation. No transcription or calculation errors were found.

9.0 Reporting Limits: ACCEPTABLE/All criteria met.

10.0 System Performance: ACCEPTABLE/All criteria met.

IV. OVERALL ASSESSMENT

Accuracy was acceptable, as demonstrated by the laboratory control sample recovery values and the surrogate %R results. Precision could not be assessed.

No data were qualified for any reason.

All data, as reported, are acceptable for use.

SAMPLE INDEX
Port of Seattle Terminal 117
SDG: ID10

Sample ID	Laboratory ID	PCB	PAH	NWTPHDx	Grain Size	Total Solids	TOC
T117-SB18-01	05-9447-ID10A	✓				✓	✓
T117-SB18-02	05-9448-ID10B	✓			✓	✓	✓
T117-SB18-03	05-9449-ID10C	✓				✓	✓
T117-SB18-04	05-9450-ID10D	✓				✓	✓
T117-SB18-05	05-9451-ID10E	✓				✓	✓
T117-SB18-06	05-9452-ID10F	✓				✓	✓
T117-SB18-07	05-9453-ID10G	✓				✓	✓
T117-SB17-01	05-9454-ID10H	✓				✓	✓
T117-SB17-02	05-9455-ID10I	✓				✓	✓
T117-SB17-03	05-9456-ID10J	✓				✓	✓
T117-SB17-04	05-9457-ID10K	✓				✓	✓
T117-SB17-05	05-9458-ID10L	✓			✓	✓	✓
T117-SB17-06	05-9459-ID10M	✓			✓	✓	✓
T117-SB17-07	05-9460-ID10N	✓				✓	✓
T117-SB17-08	05-9461-ID10O	✓			✓	✓	✓
T117-SB17-09	05-9462-ID10P	✓				✓	✓
T117-SB16-01	05-9463-ID10Q	✓				✓	✓
T117-SB16-02	05-9464-ID10R	✓				✓	✓
T117-SB16-03	05-9465-ID10S	✓			✓	✓	✓
T117-SB16-04	05-9466-ID10T	✓				✓	✓
T117-SB16-05	05-9467-ID10U	✓				✓	✓
T117-SB16-06	05-9468-ID10V	✓			✓	✓	✓
T117-SB16-07	05-9469-ID10W	✓			✓	✓	✓
T117-SB16-08	05-9470-ID10X	✓				✓	✓
T117-SB15-01	05-9471-ID10Y	✓				✓	✓
T117-SB15-02	05-9472-ID10Z	✓				✓	✓
T117-SB15-03	05-9473-ID10AA	✓				✓	✓
T117-SB15-04	05-9474-ID10AB	✓			✓	✓	✓
T117-SB15-05	05-9475-ID10AC	✓				✓	✓
T117-SB15-06	05-9476-ID10AD	✓			✓	✓	✓
T117-SB15-07	05-9477-ID10AE	✓				✓	✓
T117-SB15-08	05-9478-ID10AF	✓			✓	✓	✓

SAMPLE INDEX
Port of Seattle Terminal 117
SDG: ID44

Sample ID	Laboratory ID	PCB	PAH	NWTPHDx	Grain Size	Total Solids	TOC
T117-PD1-01	05-9760-ID44A	✓				✓	✓
T117-PD1-02	05-9761-ID44B	✓				✓	✓
T117-PD1-03	05-9762-ID44C	✓				✓	✓
T117-PD2-01	05-9763-ID44D	✓				✓	✓
T117-PD2-02	05-9764-ID44E	✓				✓	✓
T117-PD2-03	05-9765-ID44F	✓				✓	✓
T117-PD3-01	05-9766-ID44G	✓				✓	✓
T117-PD3-02	05-9767-ID44H	✓				✓	✓
T117-PD3-03	05-9768-ID44I	✓				✓	✓
T117-PD4-01	05-9769-ID44J	✓				✓	✓
T117-PD4-02	05-9770-ID44K	✓				✓	✓
T117-PD4-03	05-9771-ID44L	✓				✓	✓

SAMPLE INDEX
Port of Seattle Terminal 117
SDG: ID46

Sample ID	Laboratory ID	PCB	PAH	NWTPHDx	Grain Size	Total Solids	TOC
T117-PD5-01	05-9774-ID46A	✓				✓	✓
T117-PD5-02	05-9775-ID46B	✓				✓	✓
T117-PD5-03	05-9776-ID46C	✓				✓	✓
T117-PD6-01	05-9777-ID46D	✓				✓	✓
T117-PD6-02	05-9778-ID46E	✓				✓	✓
T117-PD6-03	05-9779-ID46F	✓				✓	✓
T117-PD7-01	05-9780-ID46G	✓				✓	✓
T117-PD7-02	05-9781-ID46H	✓				✓	✓
T117-PD7-03	05-9782-ID46I	✓				✓	✓
T117-PD8-01	05-9783-ID46J	✓				✓	✓
T117-PD8-02	05-9784-ID46K	✓				✓	✓
T117-PD8-03	05-9785-ID46L	✓				✓	✓
T117-PS1A-01	05-9786-ID46M	✓				✓	✓
T117-PS1A-02	05-9787-ID46N	✓				✓	✓
T117-PS2A-01	05-9788-ID46O	✓				✓	✓
T117-PS2A-02	05-9789-ID46P	✓				✓	✓
T117-PS2A-03	05-9790-ID46Q	✓				✓	✓
T117 DUPL-1	05-9791-ID46R	✓				✓	✓
T117 DUPL-2	05-9792-ID46S	✓				✓	✓
T117 PD4-RB	05-9793-ID46T	✓					✓
T117 PS1A-RB	05-9794-ID46U	✓					✓

SAMPLE INDEX
Port of Seattle Terminal 117
SDG: IE50

Sample ID	Laboratory ID	PCB	PAH	NWTPHDx	Total Suspended Solids	TOC
T117-MW-7	05-10511-IE50A	✓			✓	✓
T117-MW-8	05-10512-IE50B	✓			✓	✓
T117-MW-6	05-10513-IE50C	✓			✓	✓
T117-MW-5	05-10514-IE50D	✓			✓	✓

SAMPLE INDEX
Port of Seattle Terminal 117
SDG: IE77

Sample ID	Laboratory ID	PCB	PAH	NWTPHDx	Grain Size	Total Solids	TOC
T117-PS3-01	05-10649-IE77A	✓				✓	✓
T117-PS3-02	05-10650-IE77B	✓				✓	✓
T117-PS3-03	05-10651-IE77C	✓				✓	✓
T117-PS3-04	05-10652-IE77D	✓				✓	✓
T117-PS4-01	05-10653-IE77E	✓				✓	✓
T117-PS4-02	05-10654-IE77F	✓				✓	✓
T117-PS4-03	05-10655-IE77G	✓				✓	✓
T117-PS4-04	05-10656-IE77H	✓				✓	✓
T117-PS5-01	05-10657-IE77I	✓				✓	✓
T117-PS5-02	05-10658-IE77J	✓				✓	✓
T117-PS5-03	05-10659-IE77K	✓				✓	✓
T117-PS5-04	05-10660-IE77L	✓				✓	✓
T117-PS6-01	05-10661-IE77M	✓				✓	✓
T117-PS6-02	05-10662-IE77N	✓				✓	✓
T117-PS6-03	05-10663-IE77O	✓				✓	✓
T117-PS6-04	05-10664-IE77P	✓				✓	✓
T117-PS7-01	05-10665-IE77Q	✓				✓	✓
T117-PS7-02	05-10666-IE77R	✓				✓	✓
T117-PS7-04	05-10668-IE77T	✓				✓	✓

DATA VALIDATION REPORT
Port of Seattle Terminal 117
Polychlorinated Biphenyl (PCB) Compounds
SW846 Method 8082
SDGs: ID10, ID44, ID46, IE50, & IE77

This report documents the review of the data from the analysis of soil and water samples for PCB compounds. Samples were analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. Refer to the **Sample Index** for a list of samples reviewed.

I. DELIVERABLES/DOCUMENTATION

The laboratory provided all necessary data and documentation to meet project quality assurance project plan (QAPP) requirements. Good documentation practices were observed by the laboratory in the following areas: manual integrations, changes and corrections were struck out by a single line with the entry initialed and dated by the analyst; no correction fluid or tape was found on the data; and proper units for numerical values were used.

II. FIELD QUALITY CONTROL

SDG ID46: Two sets of field duplicate samples were included with this sample delivery group (SDG). The relative percent difference (RPD) values for Aroclor 1260 were less than the soil control limit of 75% in duplicate samples T117-PD1-01 (from SDG ID44) & T117-DUPL-1 and T117-PS2A-02 & T117-DUPL-2.

Data for two rinsate blanks (T117-PD4-RB and T117-PS1A-RB) were included with this SDG. No Aroclors were detected in these rinsate blanks at concentrations greater than or equal to the reporting limits..

III. TECHNICAL DATA VALIDATION

1.0 Holding Times and Sample Receipt: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

Field chain-of-custody (COC) forms were present and complete. No problems with sample receipt conditions were indicated on the field COC forms.

SDG ID10: The laboratory failed to record the temperature of the sample coolers. Samples were received and placed in storage by the laboratory on the date of sampling, so no action was required.

All samples were extracted and analyzed within the established holding time criteria.

2.0 Initial and Continuing Calibration: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **Qualified Data Summary Table**.

Discussion:

Five-point initial calibrations (ICAL) were performed. The percent relative standard deviation (%RSD) values were calculated correctly, and were acceptable. Continuing calibrations (CCAL) were analyzed at the proper frequency. The percent difference (%D) values were calculated correctly and were within the acceptance criterion of 25%, with the following exceptions.

SDG ID10: The average %D values for Aroclor 1254 exceeded $\pm 25\%$ on both columns from the 6/24/05 CCAL at 01:06. Results and reporting limits for Aroclor 1254 were qualified as estimated (UJ/J-5B) in the associated samples.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Method blanks were extracted and analyzed at the proper frequency. No Aroclors were detected in the method blanks at concentrations greater than or equal to the reporting limit.

4.0 Surrogate Recovery: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

All samples were spiked with decachlorobiphenyl (DCBP) and tetrachloro-m-xylene (TCMX) prior to extraction.

SDG ID10: The surrogate percent recovery (%R) values for all sample analyses met the acceptance criteria, with the exception of the %R value for DCBP (158%) in the method blank prepared 6/15/05. No qualifiers were required for the QC sample.

SDG ID46: The surrogate %R values for all sample analyses met the acceptance criteria, with the exception of the %R value for DCBP (160%) in the laboratory control sample prepared 6/17/05. No qualifiers were required for the QC sample.

SDG IE77: The surrogate percent recovery (%R) values for all sample analyses met the acceptance criteria, with the following exceptions. The %R value for TCMX (144%) in Sample T117-PS4-01 (10x) exceeded the lab control limit. The %R value for DCBP was within limits, so no qualifiers were required. Other %R outlier values occurred for DCBP (142%) and TCMX (216%) in the method blank prepared 6/28/05, and for TCMX (166%) in the matrix spike duplicate prepared on Sample T117-PS6-02. No qualifiers were required for the QC samples.

5.0 Laboratory Control Sample Analyses: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **Qualified Data Summary Table**.

Discussion:

SDG ID46: The %R value for Aroclor 1260 (at 170%) exceeded the control limit of 160% in the LCS extracted on 6/17/05. Positive results for Aroclor 1260 were qualified (J-10) in the associated Samples T117-PD5-01, T117-PD5-02, T117-PD5-03, T117-PS1A-01, T117-PS1A-02, T117-PS2A-01, T117-PS2A-02, T117-DUPL-1, and T117-DUPL-2.

6.0 Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

SDG ID10: Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed using Samples T117-SB18-03 and T117-SB18-07. For the T117-SB18-07 MS/MSD set, the %R and relative percent difference (RPD) values for Aroclor 1016 were within acceptance limits. The %R values for Aroclor 1260 were greater than the upper control limit. The parent sample concentration was greater than five times the spiking level; therefore no qualifiers were required.

SDG ID44: MS/MSD analyses were performed with the samples in this SDG using Samples T117-PD-02 and T177-PD4-03. For the T117-PD4-03 MS/MSD set, the %R and RPD values for Aroclor 1016 were within acceptance limits. The %R values for Aroclor 1260 were greater than the upper control limit, however the parent sample concentration was greater than five times the spiking level. No further action was taken and no qualifiers were required.

SDG IE50: No MS/MSD analysis was performed with this SDG due to insufficient sample volume. Precision and accuracy were assessed using duplicate LCS samples.

7.0 Compound Identification: ACCEPTABLE/All criteria met.

All compound identifications were reviewed and are acceptable. No false positives or negatives were found.

8.0 Compound Quantitation: ACCEPTABLE/All criteria met.

SDG IE77: Several compound quantitation and reporting limit results were verified by recalculation. No transcription or calculation errors were found.

9.0 Reporting Limits: ACCEPTABLE/With the following exceptions.

Qualified Data: See the **Data Qualifier Summary Table**.

Discussion:

SDG ID10: The detection limits for Aroclor 1260 in Samples T117-SB17-04, T117-SB17-06, and T117-SB16-03 were raised and flagged "Y" by the laboratory. The detection limit for Aroclor 1254 in Sample T117-SB17-06 was raised and flagged "Y" by the laboratory. The flag indicated this was due to interference from other Aroclor patterns present in the sample.

SDG ID44: The result for Aroclor 1260 was greater than the linear range of the calibration in the initial analysis of Sample T117-PD3-01. The sample was re-analyzed at a dilution (3X) and the result for this Aroclor was acceptable. The Aroclor 1260 result in the initial analysis was qualified as rejected (R-20) and the results for the other Aroclors were qualified as rejected (R-11) in the dilution analysis to indicate which results should be used.

SDG ID46: The result for Aroclor 1260 was greater than the linear range of the calibration in the initial analysis of Samples T117-PD6-01, T117-PD6-02, T117-PD7-01, T117-PD8-01, T117-PS2A-03, and T117-DUPL-2. The samples were re-analyzed at various dilutions and the results for this Aroclor were acceptable. The Aroclor 1260 results in the initial analyses were qualified as rejected (R-20) and the results for the other Aroclors were qualified as rejected (R-11) in the dilution analyses to indicate which results should be used.

SDG IE50: The detection limits for several Aroclors in Samples T117-MW-7, T117-MW-8, T117-MW-6 and T117-MW-5 were raised and flagged "Y" by the laboratory. The flag indicated this was due to interference from other Aroclor patterns present in the sample. A complete list of Aroclors is presented in the data validation worksheets.

SDG IE77: The result for Aroclor 1260 was greater than the linear range of the calibration in the initial analysis of all samples in this SDG, with the exception of Sample T117-PS4-03. The samples were re-analyzed at various dilutions and the results for this Aroclor were acceptable. The Aroclor 1260 results in the initial analyses were qualified as rejected (R-20) and the results for the other Aroclors were qualified as rejected (R-11) in the dilution analyses to indicate which results should be used.

10.0 System Performance: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

SDG ID46: The area of internal standard heptachlorobiphenyl was less than the lower control limit on one column in several samples in this SDG. Since the laboratory reported results from the column with passing internal standard criteria, no action was taken.

SDG IE77: The area of internal standard heptachlorobiphenyl was greater than the upper control limit on one or more columns in Samples T117-PS5-02 and T117-PS7-01. These outliers were

indicative of a high bias. Since there were no positive results for the affected compounds, no action was taken.

IV. OVERALL ASSESSMENT

Accuracy was acceptable, as demonstrated by the laboratory control sample recovery values, the MS/MSD, and the surrogate %R results, with the above exceptions. Precision was acceptable, as demonstrated by the MS/MSD RPD values.

Data were qualified as estimated due to continuing calibration %D outliers. Results were qualified as rejected to indicate which was the most appropriate result. A usable result remains for all analytes.

Data that has been rejected should not be used for any purpose. All other data, as qualified, are acceptable for use

DATA VALIDATION REPORT
Port of Seattle Terminal 117
Wet Chemistry Analyses
SDGs: ID10, ID44, ID46, IE50, IE77

This report documents the review of the data from the analysis of six water samples and eighty-two sediment samples for the general chemistry parameters listed below. Samples were analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. Refer to the **Sample Index** for a list of samples reviewed. The analytical tests that were performed are summarized below:

Parameter	Method
Total Organic Carbon (TOC)	Plumb, 1981 & EPA 415.1(water)
Grain Size	PSEP
Total Solids	EPA 160.3
Total Suspended Solids	EPA 160.2

I. DELIVERABLES/DOCUMENTATION

The laboratory provided all necessary data and documentation to meet project QAPP requirements. Good documentation practices were observed by the laboratory in the following areas: manual integrations, changes and corrections were struck out by a single line with the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the data; and proper units for numerical values were used.

SDG ID46: The deliverables package did not include the raw data for the total organic carbon analysis by method EPA 415.1. The data was submitted by the laboratory on July 29, 2005.

II. FIELD QUALITY CONTROL

SDG ID46: Two field duplicate pairs, T117-PD1-01 & T117-DUPL-1 and T117-PS2A-02 & T117-DUPL-2, were submitted and analyzed for total solids and total organic carbon. The relative percent difference (RPD) values were less than the QAPP specified control limit of 75%. Field precision was acceptable.

See **Section 3.0** for a discussion of field blanks.

III. TECHNICAL DATA VALIDATION

1.0 Holding Times and Sample Receipt Conditions: ACCEPTABLE/ With the following discussion:

Qualified Data: None

Discussion:

The recommended holding times are as follows: seven days for total solids and total suspended solids, twenty-eight days for total organic carbon, and 180 days for grain size. All holding times were met.

SDG IE77: The samples arrived with cooler temperatures of 8.5 °C and 17.5 °C, which were greater than the recommended temperature range of 4° C +/- 2 °C. The data were judged to be unaffected by the temperature outliers and no action was taken on this basis.

2.0 Initial and Continuing Calibration: ACCEPTABLE/All criteria met.

Instrument calibration only applies to the TOC analyses. Initial calibrations were performed and calibration factors or calibration curves were calculated correctly, and were acceptable.

Continuing calibrations were analyzed at the proper frequency. The percent recovery (%R) values were calculated correctly, and were acceptable.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Method blanks were analyzed at the proper frequency. No analytes were detected in the method blanks at concentrations greater than or equal to the reporting limit.

For TOC, calibration blanks (ICB and CCB) were also analyzed. The required frequency of one calibration blank at the beginning and one every ten samples was met by the laboratory. No contaminants were detected in these blanks at concentrations greater than or equal to the reporting limit.

SDG ID46: Two rinsate blanks, T117 PD4-RB and T117 PS1A-RB, were submitted with this SDG. The samples were analyzed for TOC only; no positive results were reported.

4.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control samples (LCS) and standard reference materials (SRM) were analyzed for TOC only. Analyses were done at the proper frequency of one per analytical batch. All %R values were within the acceptance limits.

5.0 Matrix Spike Sample Analyses: ACCEPTABLE/All criteria met.

The analysis of matrix spike is required only for the TOC analyses. Matrix spikes were analyzed at the proper frequency of one per analytical batch. The %R values were within acceptance limits of 75%-125%.

6.0 Laboratory Triplicate Sample Analyses (Relative Standard Deviation Values): ACCEPTABLE/All criteria met.

A triplicate sample was analyzed at the proper frequency of one per analytical batch. All percent relative standard deviation (%RSD) values were within the control limit of 20%.

7.0 Contract-Required Reporting Limit and Sample Quantitation:
ACCEPTABLE/All criteria met.

All laboratory reporting limits met the QAPP-required reporting limits.

SDG IE77: Several results were verified by recalculation from the raw data. No calculation or transcription errors were noted.

IV. OVERALL ASSESSMENT OF THE DATA

As determined by this evaluation, the laboratory followed the specified analytical methods. The laboratory and field duplicate RPD and laboratory triplicate RSD values indicated acceptable precision. Accuracy was also acceptable, as demonstrated by the matrix spike, LCS and SRM %R values.

All data, as reported, are acceptable for use.



EcoChem, Inc.

Environmental Science and Chemistry

APPENDIX A
DATA QUALIFIER DEFINITIONS AND
VALIDATION CRITERIA

DATA VALIDATION QUALIFIER CODES National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Not detected, quantitation limit may be inaccurate or imprecise.
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DATA QUALIFIER REASON CODES

1	Holding Time/Sample Preservation
2	Chromatographic pattern in sample does not match pattern of calibration standard.
3	Compound Confirmation
4	Tentatively Identified Compound (TIC) (associated with NJ only)
5A	Calibration (initial)
5B	Calibration (continuing)
6	Field Blank Contamination
7	Lab Blank Contamination (e.g., method blank, instrument, etc.)
8	Matrix Spike(MS & MSD) Recoveries
9	Precision (all replicates)
10	Laboratory Control Sample Recoveries
11	A more appropriate result is reported (associated with "R" and "DNR" only)
12	Reference Material
13	Surrogate Spike Recoveries (a.k.a., labeled compounds & recovery standards)
14	Other (define in validation report)
15	GFAA Post Digestion Spike Recoveries
16	ICP Serial Dilution % Difference
17	ICP Interference Check Standard Recovery
18	Trip Blank Contamination
19	Internal Standard Performance (e.g., area, retention time, recovery)
20	Linear Range Exceeded
21	Potential False Positives

EcoChem Validation Guidelines (Based on Organic NFG 1999)
 Semivolatile Analysis by GC/MS

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C ±2°	J(+)/UJ(-) if greater than 6 deg. C (EcoChem PJ)	1
Holding Time	Water: 7 days from collection Soil: 14 days from collection Analysis: 40 days from extraction	<u>Water:</u> J(+)/UJ(-) if ext. > 7 and < 21 days J(+)/R(-) if ext > 21 days (EcoChem PJ) <u>Solids/Wastes:</u> J(+)/UJ(-) if ext. > 14 and < 42 days J(+)/R(-) if ext. > 42 days (EcoChem PJ) J(+)/UJ(-) if analysis >40 days	1
Tuning	DFTPP Beginning of each 12 hour period Method acceptance criteria	R(+/-) all analytes in all samples associated with the tune	5A
Initial Calibration (Minimum 5 stds.)	RRF > 0.05	(EcoChem PJ, see TM-06) If MDL= reporting limit: J(+)/R(-) if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05	5A
	%RSD < 30%	(EcoChem PJ, see TM-06) J(+) if %RSD > 30%	5A
Continuing Calibration (Prior to each 12 hr. shift)	RRF > 0.05	(EcoChem PJ, see TM-06) If MDL= reporting limit: J(+)/R(-) if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05	5B
	%D <25%	(EcoChem PJ, see TM-06) If > +/-90%: J+/-R- If -90% to -26%: J+ (high bias) If 26% to 90%: J+/-UJ- (low bias)	5B
Method Blank	One per matrix per batch No results > CRQL	U(+) if sample (+) result is less than CRQL and less than appropriate 5X or 10X rule (raise sample value to CRQL)	7
		U(+) if sample (+) result is greater than or equal to CRQL and less than appropriate 5X and 10X rule (at reported sample value)	7
	No TICs present	R(+) TICs using 10X rule	7
Field Blanks (Not Required)	No results > CRQL	Apply 5X/10X rule; U(+) < action level	6

EcoChem Validation Guidelines (Based on Organic NFG 1999)
 Semivolatile Analysis by GC/MS

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
MS/MSD (recovery)	One per matrix per batch Use method acceptance criteria	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL J(+)/R(-) if both %R < 10% PJ if only one %R outlier	8
MS/MSD (RPD)	One per matrix per batch Use method acceptance criteria	J(+) if RPD > CL	9
LCS low conc. H2O SVOA	One per lab batch Within method control limits	J(+) assoc. cmpd if > UCL J(+)/R(-) assoc. cmpd if < LCL J(+)/R(-) all cmpds if half are < LCL	10
LCS regular SVOA (H2O & solid)	One per lab batch Lab or method control limits	J(+) if %R > UCL J(+)/UJ(-) if %R < LCL J(+)/R(-) if %R < 10% (EcoChem PJ)	10
LCS/LCSD (if required)	One set per matrix and batch of 20 samples RPD < 35%	J(+)/UJ(-) assoc. cmpd. in all samples	9
Surrogates	Minimum of 3 acid and 3 base/neutral compounds Use method acceptance criteria	Do not qualify if only 1 acid and/or 1 B/N surrogate is out unless <10% J(+) if %R > UCL J(+)/UJ(-) if %R < LCL J(+)/R(-) if %R < 10%	13
Internal Standards	IS area within -50% to 100% of CC RT within 30 seconds of CC RT	J(+) if IS > 100% J(+)/UJ(-) if IS < 50% J(+)/R(-) if IS is < 25% RT>30 seconds, narrate and Notify PM	19
Field Duplicates	Use QAPP limits If no QAPP: Use RPD < 35% (water) or < 50% (soil)	Narrate and qualify if required by project (EcoChem PJ)	9
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	R(+) common laboratory contaminants R(+) target compounds from other fractions See Technical Director for ID issues	4
Quantitation/Identification	RRT within 0.06 of standard RRT ion relative intensity within 20% of standard All ions in std. at > 10% intensity must be present in sample	See Technical Director if outliers	14 21 (false +)

**EcoChem Validation Guidelines (Based on Organic NFG 1999)
 Pesticides/PCBs by GC/ECD**

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C ±2°	J(+)/UJ(-) if greater than 6 deg. C (EcoChem PJ)	1
Holding Time	Water: 7 days from collection Soil: 14 days from collection Analysis: 40 days from extraction	J(+)/UJ(-) if ext/analyzed > HT J(+)/R(-) if ext/analyzed > 3X HT (EcoChem PJ)	1
Resolution Check	Beginning of ICAL Sequence Within RTW Resolution >90%	Narrate (Use Professional Judgement to qualify)	14
Instrument Performance (Breakdown)	DDT Breakdown: < 20% Endrin Breakdown: <20% Combined Breakdown: <30% Compounds within RTW	J(+) DDT NJ(+) DDD and/or DDE R(-) DDT - If (+) for either DDE or DDD J(+) Endrin NJ(+) EK and/or EA R(-) Endrin - If (+) for either EK or EA	5A
Retention Times	Surrogates: TCX (+/- 0.05); DCB (+/- 0.10) Target compounds: elute before heptachlor epoxide (+/- 0.05) elute after heptachlor epoxide (+/- 0.07)	NJ(+)/R(-) results for analytes with RT shifts For full DV, use PJ based on examination of raw data	5B
Initial Calibration	Pesticides: Low=CRQL, Mid=4X, High=16X Multiresponse - one point Calibration %RSD<20% %RSD<30% for surr; two comp. may exceed if <30% Resolution in Mix A and Mix B >90%	J(+)/UJ(-)	5A
Continuing Calibration	Alternating PEM standard and INDA/INDB standards every 12 hours (each preceded by an inst. Blank) %D < 25% Resolution >90% in IND mixes; 100% for PEM	J(+)/UJ(-) J(+)/R(-) if %D > 90% PJ for resolution	5B
Method Blank	One per matrix per batch No results > CRQL	U(+) if sample result is < CRQL and < 5X rule (raise sample value to CRQL)	7
		U(+) if sample result is > or equal to CRQL and < 5X rule (at reported sample value)	7
Instrument Blanks	Analyzed at the beginning of every 12 hour sequence No analyte > 1/2 CRQL	Same as Method Blank	7
Field Blanks	Not addressed by NFG No results > CRQL	Apply 5X rule; U(+) < action level	6

**EcoChem Validation Guidelines (Based on Organic NFG 1999)
 Pesticides/PCBs by GC/ECD**

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
MS/MSD (recovery)	One set per matrix per batch Method Acceptance Criteria	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL J(+)/R(-) if both %R < 10% PJ if only one %R outlier	8
MS/MSD (RPD)	One set per matrix per batch Method Acceptance Criteria	J(+) if RPD > CL	9
LCS	One per SDG Method Acceptance Criteria	J(+) if %R > UCL J(+)/UJ(-) if %R < LCL J(+)/R(-) using PJ if %R <<LCL (< 10%)	10
LCS/LCSD (if required)	One set per matrix and batch of 20 samples RPD < 35%	J(+)/UJ(-) assoc. cmpd. in all samples	9
Surrogates	TCX and DCB added to every sample %R = 30-150%	J(+)/UJ(-) if both %R = 10 - 60% J(+) if both >150% J(+)/R(-) if any %R <10%	13
Quantitation/ Identification	Analyte within RTW on both columns Quantitated using CCV or ICAL CF Lowest value from either column reported %D between columns (25%)	J(+) if %D = 25-50% JN(+) if %D = 50-90% R(+) using PJ if %D >90%	3
Two analyses for one sample	Report only one result per analyte	"DNR" results that should not be used to avoid reporting two results for one sample	11
Sample Clean-up	GPC required for soil samples Florisil required for all samples Sulfur is optional Clean-up standard check %R within CLP limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL	14
Field Duplicates	Water: RPD < 35% Soil: RPD < 50%	Narrate (Use Professional Judgement to qualify)	9

**State of Washington (and Oregon)
 Total Petroleum Hydrocarbons-Diesel (and Residual) Range**

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C±2°C	J(+)/UJ(-) using Professional Judgement	2
Holding Time	Water: 14 days from collection (if acidified); 7 days (if unacidified) Soil: 14 days from collection Analysis: 40 days from extraction	J(+)/UJ(-) if ext/analyzed > HT J(+)/R(-) if ext/analyzed > 3X HT (Prof. Judgement)	1
Retention Time Standards (RTS)	RTS run every 24 hours or at the beginning of each analytical shift (C10 and C24)	Narrate (Use Professional Judgement to qualify)	5B
Initial Calibration	5 calibration points (All within 15%) Linear Regression: R ² ≥ 0.990	J(+)/UJ(-) If R ² < 0.990	5A
Continuing Calibration	Recovery Range is 85% to 115% Must have opening and closing CCVs (no more than 20 samples)	CCV - J(+)/UJ(-) If %D > 15%	5B
Method Blank	One per matrix per batch No results ≥ CRQL	U(+) if sample result is < CRQL and < 5X rule (raise sample value to CRQL) UJ(+) if sample result is ≥ CRQL and < 5X rule (at reported sample value)	7
Field Blanks	No results ≥ CRQL	Apply 5X rule; U(+) < action level	6
MS (Optional)	Lab control limits	Qualify parent only, unless other QC indicates systematic problems. J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL PJ if only one %R outlier	8
Precision: MS/MSD or LCS/LCSD or sample/dup	Two lab dups per analytical batch RPD ≤ laboratory limits	J(+) if RPD > laboratory limits	9
LCS (Optional)	Lab control limits	J(+) if %R > UCL J(+)/R(-) if %R < LCL	10
Surrogates	Suggested Surrogates: 2-fluorobiphenyl, o, or p-terphenyl or pentacosane %R = 50-150%	If %R < LCL, J(+)/UJ(-) If > UCL, J(+) If any %R < 10%, J(+)/R(-)	13
Two analyses for one sample (dilution)	Report only one result per analyte	"DNR" results that should not be used to avoid reporting two results for one sample	14
Field Duplicates	Use RPD < 35% (water) or < 50% (soil)	Narrate (Use Professional Judgement to qualify)	9

EcoChem Validation Guidelines (Based on Methods)
 Conventionals Analyses

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature and Preservation	4°C ±2° Water: NaOH to pH > 12 (for CN)	J(+)/UJ(-) if preservation requirements not met EcoChem PJ	1
Holding Time	Method Specific	Professional Judgment J(+)/UJ(-) if holding time exceeded J(+)/R(-) if HT exceeded by > 3X	1
Initial Calibration	Method specific once every 24 hours One at CRDL r>0.995	Professional judgment J(+)/UJ(-) for r < 0.995	5A
Initial Calibration Verification (ICV)	Independent source analyzed immediately after cal. %R method specific	R(+/-) if %R sig < LCL J(+)/UJ(-) if %R < LCL J(+) if %R > UCL R(+) if %R sig > UCL	5A
Continuing Cal Verification (CCV)	Every ten samples, immed. following ICV/ICB and end of run %R method specific	R(+/-) if %R sig < LCL J(+)/UJ(-) if %R < LCL J(+) if %R > UCL R(+) if %R sig > UCL	5B
Initial and Continuing Cal Blanks (ICB/CCB)	After each ICV and CCV every ten samples and end of run blank < +/- IDL	For positive blk results: UJ(+) < 5X blk contamination For negative blk results: J(+)/UJ(-) < abs. value of 5X blk contamination	7
Prep Blank	One per matrix per batch (not to exceed 20 samples)	For positive blk results: UJ(+) < 5X blk contamination For negative blk results: J(+)/UJ(-) < abs. value of 5X blk contamination	7
Matrix Spike	One per matrix per batch; 5% frequency 75-125% for samples less than 4 x spike level	J(+) if %R > 125% or < 75% UJ(-) if %R = 30-74% R(+/-) results < IDL if %R < 30%	8
Laboratory Duplicate	One per matrix per batch RPD < 20% for samples > 5x CRDL Diff < CRDL for samples > CRDL and < 5 x CRDL (may use RPD < 35%, Diff < 2X CRDL for solids)	J(+)/UJ(-) in assoc samples if RPD > 20% or diff > CRDL	9
Laboratory Control Sample	Waters: One per matrix per batch %R (80-120%)	R(+/-) if MS/MSD & LCS %R outside limits J(+)/UJ(-) if %R = 50-79% J(+) if %R > 120% R(+/-) if %R < 50%	10
	Soils: One per matrix per batch Result within manufacturer's certified acceptance range	J(+)/UJ(-) if < LCL, J(+) if > UCL	10

**EcoChem Validation Guidelines (Based on Methods)
 Conventional Analyses**

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Field Blanks	taken on same day as samples	Action level is 5x blk conc. U(+) sample values < AL	6
Field Duplicates	Waters RPD < 35% Soils RPD < 50% for values > 5 x CRDL Diff < CRDL for samples >CRDL and <5 x CRDL (may use Diff < 2X CRDL for solids)	J(+)/UJ(-) in parent samples only	9



EcoChem, Inc.

Environmental Science and Chemistry

APPENDIX B
QUALIFIED DATA SUMMARY TABLE

QUALIFIED DATA SUMMARY TABLE
Port of Seattle Terminal 117

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Unit	Laboratory Qualifier	Validation Qualifier	Reason Code
IF10	T117-MW-2	05-10823-IF10A	BNASIM	Indeno(1,2,3-cd)pyrene	0.2	ug/L	U	UJ	5B
IF10	T117-MW-2	05-10823-IF10A	BNASIM	Dibenz(a,h)anthracene	0.2	ug/L	U	UJ	5B
IF10	T117-MW-2	05-10823-IF10A	BNASIM	Benzo(g,h,i)perylene	0.2	ug/L	U	UJ	5B
ID10	T117-SB18-06	05-9452-ID10F	SW8082	Aroclor 1254	19	ug/kg	U	UJ	5B
ID10	T117-SB18-07	05-9453-ID10G	SW8082	Aroclor 1254	20	ug/kg	U	UJ	5B
ID10	T117-SB17-03	05-9456-ID10J	SW8082	Aroclor 1254	43	ug/kg	U	UJ	5B
ID10	T117-SB17-04	05-9457-ID10K	SW8082	Aroclor 1254	19	ug/kg	U	UJ	5B
ID10	T117-SB17-05	05-9458-ID10L	SW8082	Aroclor 1254	39	ug/kg	U	UJ	5B
ID10	T117-SB17-06	05-9459-ID10M	SW8082	Aroclor 1254	68	ug/kg	Y	UJ	5B
ID10	T117-SB16-03	05-9465-ID10S	SW8082	Aroclor 1254	46	ug/kg	U	UJ	5B
ID44	T117-PD3-01	05-9766-ID44G	SW8082	Aroclor 1260	280	ug/kg	E	R	20
ID44	T117-PD3-01	05-9766-ID44GDL	SW8082	Aroclor 1016	59	ug/kg	U	R	11
ID44	T117-PD3-01	05-9766-ID44GDL	SW8082	Aroclor 1242	59	ug/kg	U	R	11
ID44	T117-PD3-01	05-9766-ID44GDL	SW8082	Aroclor 1248	59	ug/kg	U	R	11
ID44	T117-PD3-01	05-9766-ID44GDL	SW8082	Aroclor 1254	59	ug/kg	U	R	11
ID44	T117-PD3-01	05-9766-ID44GDL	SW8082	Aroclor 1221	59	ug/kg	U	R	11
ID44	T117-PD3-01	05-9766-ID44GDL	SW8082	Aroclor 1232	59	ug/kg	U	R	11
ID46	T117-PD5-01	05-9774-ID46A	SW8082	Aroclor 1260	130000	ug/kg		J	10
ID46	T117-PD5-02	05-9775-ID46B	SW8082	Aroclor 1260	9200	ug/kg		J	10
ID46	T117-PD5-03	05-9776-ID46C	SW8082	Aroclor 1260	18000	ug/kg		J	10
ID46	T117-PD6-01	05-9777-ID46D	SW8082	Aroclor 1254	810	ug/kg	E	R	20
ID46	T117-PD6-01	05-9777-ID46D	SW8082	Aroclor 1260	670	ug/kg	E	R	20
ID46	T117-PD6-01	05-9777-ID46DDL	SW8082	Aroclor 1016	250	ug/kg	U	R	11
ID46	T117-PD6-01	05-9777-ID46DDL	SW8082	Aroclor 1242	250	ug/kg	U	R	11
ID46	T117-PD6-01	05-9777-ID46DDL	SW8082	Aroclor 1248	250	ug/kg	U	R	11
ID46	T117-PD6-01	05-9777-ID46DDL	SW8082	Aroclor 1260	820	ug/kg		J	10
ID46	T117-PD6-01	05-9777-ID46DDL	SW8082	Aroclor 1221	250	ug/kg	U	R	11
ID46	T117-PD6-01	05-9777-ID46DDL	SW8082	Aroclor 1232	250	ug/kg	U	R	11
ID46	T117-PD6-02	05-9778-ID46E	SW8082	Aroclor 1260	310	ug/kg	E	R	20
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1016	69	ug/kg	U	R	11
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1242	69	ug/kg	U	R	11
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1248	69	ug/kg	U	R	11
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1254	130	ug/kg		R	11
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1260	290	ug/kg		J	10
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1221	69	ug/kg	U	R	11
ID46	T117-PD6-02	05-9778-ID46EDL	SW8082	Aroclor 1232	69	ug/kg	U	R	11
ID46	T117-PD7-01	05-9780-ID46G	SW8082	Aroclor 1260	2500	ug/kg	E	R	20
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1016	620	ug/kg	U	R	11
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1242	620	ug/kg	U	R	11
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1248	620	ug/kg	U	R	11
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1254	620	ug/kg	U	R	11
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1260	4100	ug/kg		J	10
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1221	620	ug/kg	U	R	11
ID46	T117-PD7-01	05-9780-ID46GDL	SW8082	Aroclor 1232	620	ug/kg	U	R	11
ID46	T117-PD8-01	05-9783-ID46J	SW8082	Aroclor 1260	240	ug/kg	E	R	20
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1016	51	ug/kg	U	R	11
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1242	51	ug/kg	U	R	11
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1248	51	ug/kg	U	R	11
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1254	100	ug/kg	Y	R	11

QUALIFIED DATA SUMMARY TABLE
Port of Seattle Terminal 117

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Unit	Laboratory Qualifier	Validation Qualifier	Reason Code
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1260	260	ug/kg		J	10
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1221	51	ug/kg	U	R	11
ID46	T117-PD8-01	05-9783-ID46JDL	SW8082	Aroclor 1232	51	ug/kg	U	R	11
ID46	T117-PS1A-01	05-9786-ID46M	SW8082	Aroclor 1260	18000	ug/kg		J	10
ID46	T117-PS2A-01	05-9788-ID46O	SW8082	Aroclor 1260	39000	ug/kg		J	10
ID46	T117-PS2A-02	05-9789-ID46P	SW8082	Aroclor 1260	43000	ug/kg		J	10
ID46	T117-PS2A-03	05-9790-ID46Q	SW8082	Aroclor 1260	1600	ug/kg	E	R	20
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1016	280	ug/kg	U	R	11
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1242	280	ug/kg	U	R	11
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1248	280	ug/kg	U	R	11
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1254	280	ug/kg	U	R	11
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1260	2000	ug/kg		J	10
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1221	280	ug/kg	U	R	11
ID46	T117-PS2A-03	05-9790-ID46QDL	SW8082	Aroclor 1232	280	ug/kg	U	R	11
ID46	T117 DUPL-1	05-9791-ID46R	SW8082	Aroclor 1260	98000	ug/kg		J	10
ID46	T117 DUPL-2	05-9792-ID46S	SW8082	Aroclor 1260	52000	ug/kg	E	R	20
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1016	14000	ug/kg	U	R	11
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1242	14000	ug/kg	U	R	11
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1248	14000	ug/kg	U	R	11
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1254	14000	ug/kg	U	R	11
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1260	66000	ug/kg		J	10
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1221	14000	ug/kg	U	R	11
ID46	T117 DUPL-2	05-9792-ID46SDL	SW8082	Aroclor 1232	14000	ug/kg	U	R	11
IE77	T117-PS3-01	05-10649-IE77A	SW8082	Aroclor 1260	510000	ug/kg	E	R	20
IE77	T117-PS3-01	05-10649-IE77ADL	SW8082	Aroclor 1016	87000	ug/kg	U	R	11
IE77	T117-PS3-01	05-10649-IE77ADL	SW8082	Aroclor 1242	87000	ug/kg	U	R	11
IE77	T117-PS3-01	05-10649-IE77ADL	SW8082	Aroclor 1248	87000	ug/kg	U	R	11
IE77	T117-PS3-01	05-10649-IE77ADL	SW8082	Aroclor 1254	87000	ug/kg	U	R	11
IE77	T117-PS3-01	05-10649-IE77ADL	SW8082	Aroclor 1221	87000	ug/kg	U	R	11
IE77	T117-PS3-01	05-10649-IE77ADL	SW8082	Aroclor 1232	87000	ug/kg	U	R	11
IE77	T117-PS3-02	05-10650-IE77B	SW8082	Aroclor 1260	14000	ug/kg	E	R	20
IE77	T117-PS3-02	05-10650-IE77BDL	SW8082	Aroclor 1016	2600	ug/kg	U	R	11
IE77	T117-PS3-02	05-10650-IE77BDL	SW8082	Aroclor 1242	2600	ug/kg	U	R	11
IE77	T117-PS3-02	05-10650-IE77BDL	SW8082	Aroclor 1248	2600	ug/kg	U	R	11
IE77	T117-PS3-02	05-10650-IE77BDL	SW8082	Aroclor 1254	2600	ug/kg	U	R	11
IE77	T117-PS3-02	05-10650-IE77BDL	SW8082	Aroclor 1221	2600	ug/kg	U	R	11
IE77	T117-PS3-02	05-10650-IE77BDL	SW8082	Aroclor 1232	2600	ug/kg	U	R	11
IE77	T117-PS3-03	05-10651-IE77C	SW8082	Aroclor 1260	6000	ug/kg	E	R	20
IE77	T117-PS3-03	05-10651-IE77CDL	SW8082	Aroclor 1016	1300	ug/kg	U	R	11
IE77	T117-PS3-03	05-10651-IE77CDL	SW8082	Aroclor 1242	1300	ug/kg	U	R	11
IE77	T117-PS3-03	05-10651-IE77CDL	SW8082	Aroclor 1248	1300	ug/kg	U	R	11
IE77	T117-PS3-03	05-10651-IE77CDL	SW8082	Aroclor 1254	1300	ug/kg	U	R	11
IE77	T117-PS3-03	05-10651-IE77CDL	SW8082	Aroclor 1221	1300	ug/kg	U	R	11
IE77	T117-PS3-03	05-10651-IE77CDL	SW8082	Aroclor 1232	1300	ug/kg	U	R	11
IE77	T117-PS3-04	05-10652-IE77D	SW8082	Aroclor 1260	2400	ug/kg	E	R	20
IE77	T117-PS3-04	05-10652-IE77DDL	SW8082	Aroclor 1016	640	ug/kg	U	R	11
IE77	T117-PS3-04	05-10652-IE77DDL	SW8082	Aroclor 1242	640	ug/kg	U	R	11
IE77	T117-PS3-04	05-10652-IE77DDL	SW8082	Aroclor 1248	640	ug/kg	U	R	11
IE77	T117-PS3-04	05-10652-IE77DDL	SW8082	Aroclor 1254	640	ug/kg	U	R	11

QUALIFIED DATA SUMMARY TABLE
Port of Seattle Terminal 117

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Unit	Laboratory Qualifier	Validation Qualifier	Reason Code
IE77	T117-PS5-04	05-10660-IE77LDL	SW8082	Aroclor 1232	2200	ug/kg	U	R	11
IE77	T117-PS6-01	05-10661-IE77M	SW8082	Aroclor 1260	620000	ug/kg	EP	R	20
IE77	T117-PS6-01	05-10661-IE77MDL	SW8082	Aroclor 1016	220000	ug/kg	U	R	11
IE77	T117-PS6-01	05-10661-IE77MDL	SW8082	Aroclor 1242	220000	ug/kg	U	R	11
IE77	T117-PS6-01	05-10661-IE77MDL	SW8082	Aroclor 1248	220000	ug/kg	U	R	11
IE77	T117-PS6-01	05-10661-IE77MDL	SW8082	Aroclor 1254	220000	ug/kg	U	R	11
IE77	T117-PS6-01	05-10661-IE77MDL	SW8082	Aroclor 1221	220000	ug/kg	U	R	11
IE77	T117-PS6-01	05-10661-IE77MDL	SW8082	Aroclor 1232	220000	ug/kg	U	R	11
IE77	T117-PS6-02	05-10662-IE77N	SW8082	Aroclor 1260	230	ug/kg	E	R	20
IE77	T117-PS6-02	05-10662-IE77NDL	SW8082	Aroclor 1016	58	ug/kg	U	R	11
IE77	T117-PS6-02	05-10662-IE77NDL	SW8082	Aroclor 1242	58	ug/kg	U	R	11
IE77	T117-PS6-02	05-10662-IE77NDL	SW8082	Aroclor 1248	58	ug/kg	U	R	11
IE77	T117-PS6-02	05-10662-IE77NDL	SW8082	Aroclor 1254	58	ug/kg	U	R	11
IE77	T117-PS6-02	05-10662-IE77NDL	SW8082	Aroclor 1221	58	ug/kg	U	R	11
IE77	T117-PS6-02	05-10662-IE77NDL	SW8082	Aroclor 1232	58	ug/kg	U	R	11
IE77	T117-PS6-03	05-10663-IE77O	SW8082	Aroclor 1260	1900	ug/kg	E	R	20
IE77	T117-PS6-03	05-10663-IE77ODL	SW8082	Aroclor 1016	330	ug/kg	U	R	11
IE77	T117-PS6-03	05-10663-IE77ODL	SW8082	Aroclor 1242	330	ug/kg	U	R	11
IE77	T117-PS6-03	05-10663-IE77ODL	SW8082	Aroclor 1248	330	ug/kg	U	R	11
IE77	T117-PS6-03	05-10663-IE77ODL	SW8082	Aroclor 1254	330	ug/kg	U	R	11
IE77	T117-PS6-03	05-10663-IE77ODL	SW8082	Aroclor 1221	330	ug/kg	U	R	11
IE77	T117-PS6-03	05-10663-IE77ODL	SW8082	Aroclor 1232	330	ug/kg	U	R	11
IE77	T117-PS6-04	05-10664-IE77P	SW8082	Aroclor 1260	860	ug/kg	E	R	20
IE77	T117-PS6-04	05-10664-IE77PDL	SW8082	Aroclor 1016	190	ug/kg	U	R	11
IE77	T117-PS6-04	05-10664-IE77PDL	SW8082	Aroclor 1242	190	ug/kg	U	R	11
IE77	T117-PS6-04	05-10664-IE77PDL	SW8082	Aroclor 1248	190	ug/kg	U	R	11
IE77	T117-PS6-04	05-10664-IE77PDL	SW8082	Aroclor 1254	190	ug/kg	U	R	11
IE77	T117-PS6-04	05-10664-IE77PDL	SW8082	Aroclor 1221	190	ug/kg	U	R	11
IE77	T117-PS6-04	05-10664-IE77PDL	SW8082	Aroclor 1232	190	ug/kg	U	R	11
IE77	T117-PS7-01	05-10665-IE77Q	SW8082	Aroclor 1260	680000	ug/kg	E	R	20
IE77	T117-PS7-01	05-10665-IE77QDL	SW8082	Aroclor 1016	220000	ug/kg	U	R	11
IE77	T117-PS7-01	05-10665-IE77QDL	SW8082	Aroclor 1242	220000	ug/kg	U	R	11
IE77	T117-PS7-01	05-10665-IE77QDL	SW8082	Aroclor 1248	220000	ug/kg	U	R	11
IE77	T117-PS7-01	05-10665-IE77QDL	SW8082	Aroclor 1254	220000	ug/kg	U	R	11
IE77	T117-PS7-01	05-10665-IE77QDL	SW8082	Aroclor 1221	220000	ug/kg	U	R	11
IE77	T117-PS7-01	05-10665-IE77QDL	SW8082	Aroclor 1232	220000	ug/kg	U	R	11
IE77	T117-PS7-02	05-10666-IE77R	SW8082	Aroclor 1260	3700	ug/kg	E	R	20
IE77	T117-PS7-02	05-10666-IE77RDL	SW8082	Aroclor 1016	650	ug/kg	U	R	11
IE77	T117-PS7-02	05-10666-IE77RDL	SW8082	Aroclor 1242	650	ug/kg	U	R	11
IE77	T117-PS7-02	05-10666-IE77RDL	SW8082	Aroclor 1248	650	ug/kg	U	R	11
IE77	T117-PS7-02	05-10666-IE77RDL	SW8082	Aroclor 1254	650	ug/kg	U	R	11
IE77	T117-PS7-02	05-10666-IE77RDL	SW8082	Aroclor 1221	650	ug/kg	U	R	11
IE77	T117-PS7-02	05-10666-IE77RDL	SW8082	Aroclor 1232	650	ug/kg	U	R	11
IE77	T117-PS7-04	05-10668-IE77T	SW8082	Aroclor 1260	93000	ug/kg	E	R	20
IE77	T117-PS7-04	05-10668-IE77TDL	SW8082	Aroclor 1016	18000	ug/kg	U	R	11
IE77	T117-PS7-04	05-10668-IE77TDL	SW8082	Aroclor 1242	18000	ug/kg	U	R	11
IE77	T117-PS7-04	05-10668-IE77TDL	SW8082	Aroclor 1248	18000	ug/kg	U	R	11
IE77	T117-PS7-04	05-10668-IE77TDL	SW8082	Aroclor 1254	18000	ug/kg	U	R	11
IE77	T117-PS7-04	05-10668-IE77TDL	SW8082	Aroclor 1221	18000	ug/kg	U	R	11
IE77	T117-PS7-04	05-10668-IE77TDL	SW8082	Aroclor 1232	18000	ug/kg	U	R	11



EcoChem, Inc.

Environmental Science and Chemistry

TRANSMITTAL

DATE: August 16, 2005

PROJECT NO.: C22002-7

TO: Patrick Gibbons
Windward Environmental LLC
200 West Mercer Street, Suite 401
Seattle, WA 98119-3958

FROM: Chris Ransom
EcoChem, Inc.
405 Westland Building
100 South King Street
Seattle, WA 98104

577-1290

cransom@ecochem.net

VIA: U.S. Mail

WE ARE SENDING THE FOLLOWING MATERIALS:

Data Validation report for metals for the POS Terminal 117 SDGs: IE78 & IE79.

Sincerely,

Chris Ransom
Project Manager
EcoChem, Inc.

Copies: Project files
Chron



EcoChem, Inc.

Environmental Science and Chemistry

DATA VALIDATION REPORT

PORT OF SEATTLE TERMINAL 117

SDGs: IE78 & IE79

Prepared for:

Windward Environmental, LLC
200 West Mercer Street, Suite 401
Seattle, Washington 98119

Prepared by:

EcoChem, Inc.
405 Westland Building
100 South King Street
Seattle, Washington 98104-2885

EcoChem Project: C22001-7

August 15, 2005

Approved for Release:

Christine Ransom
Project Manager
EcoChem, Inc.

PROJECT NARRATIVE

Basis for the Data Validation

This report summarizes the results of the validation performed on thirteen sediment samples, two water samples, and one rinsate blank. A **SAMPLE INDEX** is provided, followed by the validation report.

Samples were analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. The analytical methods and EcoChem project chemists are listed in the table below.

ANALYSIS METHODS AND ECOCHEM CHEMISTS

Analysis	Method	Primary Review	Secondary Review
PCB – Aroclors	SW8082	Mark Lybeer	John Mitchell
Conventionals: Total Organic Carbon	EPA 415.1	Patricia Lambrecht	Christine Ransom
Total Solids	EPA 160.3		
Total Suspended Solids	EPA 160.2		

The data were reviewed using guidance and quality control criteria documented in the analytical methods; the project quality assurance project plan (QAPP) (*Port of Seattle, Lower Duwamish Waterway Superfund Site, Terminal 117 Early Action Area, December 2003*), and *National Functional Guidelines for Inorganic (USEPA 1999 & 2002) and Organic Data Review (USEPA 1999)*.

Data qualifier definitions, reason codes, and validation criteria are included as **APPENDIX A**. **APPENDIX B** contains the Qualified Data Summary Table. Data validation worksheets will be kept on file at EcoChem.

SAMPLE INDEX
Port of Seattle Terminal 117
SDG IE78

Sample ID	Laboratory ID	PCB	Total Solids	Total Suspended Solids	TOC
T117-PS8-01	05-10669-IE78A	✓	✓		✓
T117-PS8-02	05-10670-IE78B	✓	✓		✓
T117-PS8-03	05-10671-IE78C	✓	✓		✓
T117-PS8-04	05-10672-IE78D	✓	✓		✓
T117-PS10-01	05-10673-IE78E	✓	✓		✓
T117-PS10-02	05-10674-IE78F	✓	✓		✓
T117-PS10-03	05-10675-IE78G	✓	✓		✓
T117-PS10-04	05-10676-IE78H	✓	✓		✓
T117-PS12-01	05-10677-IE78I	✓	✓		✓
T117-PS12-02	05-10678-IE78J	✓	✓		✓
T117-PS12-03	05-10679-IE78K	✓	✓		✓
T117-PS12-04	05-10680-IE78L	✓	✓		✓
T117-DUPL 3	05-10681-IE78M	✓	✓		✓
T117-PS5RB	05-10682-IE78N	✓			✓

SAMPLE INDEX
Port of Seattle Terminal 117
SDG IE79

Sample ID	Laboratory ID	PCB	Total Solids	Total Suspended Solids	TOC
T117-MW-4	05-10647-IE79A	✓		✓	✓
T117-MW-2	05-10648-IE79B	✓		✓	✓

DATA VALIDATION REPORT
Port of Seattle Terminal 117
Polychlorinated Biphenyl (PCB) Aroclors
SW846 Method 8082
SDGs: IE78 and IE79

This report documents the review of the data from the analysis of thirteen soil samples, two water samples, and one rinsate blank for PCB Aroclors. Samples were analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. Refer to the **Sample Index** for a list of samples reviewed.

I. DELIVERABLES/DOCUMENTATION

The laboratory provided all necessary data and documentation to meet project quality assurance program plan (QAPP) requirements. Good documentation practices were observed by the laboratory in the following areas: manual integrations, changes and corrections were struck out by a single line with the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the data; and proper units for numerical values were used.

II. FIELD QUALITY CONTROL

SDG IE78: One field duplicate, T117-DUPL-3, was included with this sample delivery group (SDG). The parent sample, T117-PS4-04, was analyzed with SDG IE77. The relative percent difference (RPD) between duplicate results for Aroclor 1260 exceeded the soil control limit of 75%. Qualification of results is not required for field duplicate RPD outliers, however data users should take field precision into account when interpreting sample data.

III. TECHNICAL DATA VALIDATION

1.0 Holding Times and Sample Receipt: ACCEPTABLE/With the following discussion:

Qualified Data: None

Discussion:

Field chain-of-custody (COC) forms were present and complete. No problems with sample receipt conditions were indicated on the field COC forms, with the exceptions below.

SDG IE78: The cooler temperatures upon arrival at the laboratory were greater than the control limit of 6°C. The samples were received and placed in storage by the laboratory on the date of sampling, so no action was required.

SDG IE79: The cooler temperature upon arrival at the laboratory was greater than the control limit of 6°C. The samples were received and placed in storage by the laboratory on the date of sampling, so no action was required.

All samples were extracted and analyzed within the established holding time criteria.

2.0 Initial and Continuing Calibration: ACCEPTABLE/All criteria met.

Five-point initial calibrations (ICAL) were performed on both columns. The percent relative standard deviation (%RSD) values were calculated correctly, and were acceptable.

Continuing calibrations (CCAL) were analyzed at the proper frequency. The percent difference (%D) values were calculated correctly and were within the acceptance criterion of 25%.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Method blanks were extracted and analyzed at the proper frequency. No Aroclors were detected in the method blanks at concentrations greater than or equal to the reporting limits.

SDG IE78: One rinsate blank (T117-PS5RB) was included with this SDG. No Aroclors were detected in this rinsate blank.

4.0 Surrogate Recovery: ACCEPTABLE/All criteria met.

All samples were spiked with decachlorobiphenyl (DCBP) and tetrachloro-m-xylene (TCMX) prior to extraction. The surrogate percent recovery (%R) values for all sample analyses met the acceptance criteria.

5.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

A laboratory control sample (LCS) was analyzed at the proper frequency of one per analytical batch. All %R values were within the acceptance limits of 30% to 160%.

6.0 Matrix Spike/Matrix Spike Duplicate Sample Analyses: ACCEPTABLE/With the following discussion:

Qualified Data: None

Discussion:

SDG IE78: Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed with the samples in this SDG using Samples T117-PS12-02 and T117-PS12-03. All %R and RPD values were within the acceptance limits of 30% to 160% for the spiked compounds Aroclors 1016 and 1260.

SDG IE79: There was no MS/MSD analysis performed with the samples in this SDG. Laboratory control sample/laboratory control sample duplicate (LCSD/LCSD) were analyzed with these samples and the RPD used to evaluate laboratory precision. All RPD values were acceptable.

7.0 Compound Identification: ACCEPTABLE/All criteria met.

All compound identifications were reviewed and are acceptable. No false positives or negatives were found.

8.0 Reporting Limits: ACCEPTABLE/With the following exceptions:

Qualified Data: None

Discussion:

SDG IE78: The results for Aroclor 1260 exceeded the linear range of the calibration in the initial analyses of Samples T117-PS8-01, T117-PS8-02, T117-PS8-03, T117-PS8-04, T117-PS10-02, T117-PS10-03, T117-PS12-01, T117-PS12-02, and T117-DUPL 3. The samples were re-analyzed at appropriate dilutions and results for Aroclor 1260 were acceptable. Aroclor 1260 results in the initial analyses were rejected (R-20). Results and reporting limits for the other Aroclors were qualified as rejected (R-11) in the diluted analyses to indicate which results should be used.

Reporting limits for Aroclors 1016, 1242, 1248, 1221, and 1232 in Sample T117-PS5RB were raised and flagged as "Y" by the laboratory due to chromatographic interferences.

SDG IE79: The reporting limit for Aroclor 1232 in Sample T117-MW-4, and the reporting limits for Aroclors 1248 and 1232 in Sample T117-MW-2 were raised and flagged as "Y" by the laboratory due to chromatographic interferences.

10.0 System Performance: ACCEPTABLE/With the following discussion.

Qualified Data: None.

Discussion:

SDG IE78: The area of internal standard bromo-nitrobenzene was less than the lower control limit on the second column (ZB-35). Since the laboratory reported results from the column that passed all internal standard criteria (CLP-PEST), no action was taken.

IV. OVERALL ASSESSMENT

Accuracy was acceptable, as demonstrated by the LCS, MS/MSD, and surrogate %R results, with the above exceptions. Precision was acceptable, as demonstrated by the MS/MSD, LCS/LCSD, and field duplicate RPD values, with the exceptions previously noted.

Results were qualified as rejected to indicate which result should be used from multiple reported results. An acceptable result was provided for each analyte for every sample.

Rejected results should not be used for any purpose. All other data, as reported, are acceptable for use.

DATA VALIDATION REPORT
Port of Seattle Terminal 117
Wet Chemistry Analyses
SDGs: IE78, IE79

This report documents the review of the data from the analysis of four water samples and thirteen sediment samples for the general chemistry parameters listed below. Samples were analyzed by Analytical Resources, Inc. (ARI), Seattle, Washington. Refer to the **Sample Index** for a list of samples reviewed. The analytical tests that were performed are summarized below:

Parameter	Method
Total Organic Carbon (TOC)	Plumb, 1981 & EPA 415.1(water)
Total Solids	EPA 160.3
Total Suspended Solids	EPA 160.2

I. DELIVERABLES/DOCUMENTATION

The laboratory provided all necessary data and documentation to meet project quality assurance program plan (QAPP) requirements. Good documentation practices were observed by the laboratory in the following areas: manual integrations, changes and corrections were struck out by a single line with the entry initialed and dated by the analyst; correction fluid or tape was not found on any of the data; and proper units for numerical values were used.

II. FIELD QUALITY CONTROL

SDG IE78: One field duplicate, T117-DUPL-3, was submitted and analyzed for total solids and total organic carbon. The corresponding field sample, T117-PS4-04, was submitted in sample delivery group (SDG) IE77. The relative percent difference (RPD) values were less than the QAPP specified control limit of 75%. Field precision was acceptable.

See **Section 3.0** for a discussion of field blanks.

III. TECHNICAL DATA VALIDATION

Holding Times and Sample Receipt Conditions: ACCEPTABLE/ With the following discussion:

Qualified Data: None

Discussion:

The recommended holding times are as follows: seven days for total solids and total suspended solids and twenty-eight days for TOC. All holding times were met.

SDG IE78: The samples arrived with cooler temperatures of 8.5 °C and 17.6 °C, which were greater than the recommended temperature range of 4° C +/- 2 °C. The data were judged to be unaffected by the temperature outliers and no action was taken on this basis.

The field sampler failed to check the TOC analysis for Sample T117-PS5-RB. The laboratory confirmed with the client that TOC was requested, and analyzed accordingly.

SDG IE79: The samples arrived with a cooler temperature of 8.0°C, which was greater than the recommended temperature range of 4° C +/- 2 °C. The data was judged to be unaffected by the temperature outlier and no action was taken on this basis.

2.0 Initial and Continuing Calibration: ACCEPTABLE/All criteria met.

Instrument calibration only applies to the TOC analyses. Initial calibrations were performed and calibration factors or calibration curves were calculated correctly, and were acceptable.

Continuing calibrations were analyzed at the proper frequency. The percent recovery (%R) values were calculated correctly, and were acceptable.

3.0 Blank Analyses: ACCEPTABLE/All criteria met.

Method blanks were analyzed at the proper frequency. No analytes were detected in the method blanks at concentrations greater than or equal to the reporting limit.

For TOC, calibration blanks (ICB and CCB) were also analyzed. The required frequency of one calibration blank at the beginning and one every ten samples was met by the laboratory. No contaminants were detected in these blanks at concentrations greater than or equal to the reporting limit.

SDG ID78: One rinsate blank, T117-PS5RB, was submitted with this SDG. The samples were analyzed for TOC only; no positive results were reported.

4.0 Laboratory Control Sample Analyses: ACCEPTABLE/All criteria met.

Laboratory control samples (LCS) and standard reference materials (SRM) were analyzed for TOC only. Analyses were done at the proper frequency of one per analytical batch. All %R values were within the acceptance limits.

5.0 Matrix Spike Sample Analyses: ACCEPTABLE/All criteria met.

The analysis of matrix spike is required only for the TOC analyses. Matrix spikes were analyzed at the proper frequency of one per analytical batch. The %R values were within acceptance limits of 75%-125%.

6.0 Laboratory Duplicate Sample Analyses (Relative Standard Deviation Values):
ACCEPTABLE/All criteria met.

A duplicate sample was analyzed at the proper frequency of one per analytical batch. All relative percent difference (RPD) values were within the control limit of 20%.

7.0 Contract-Required Reporting Limit and Sample Quantitation:
ACCEPTABLE/All criteria met.

All laboratory reporting limits met the QAPP-required reporting limits.

IV. OVERALL ASSESSMENT OF THE DATA

As determined by this evaluation, the laboratory followed the specified analytical methods. The laboratory and field duplicate RPD values indicated acceptable precision. Accuracy was also acceptable, as demonstrated by the matrix spike, LCS and SRM %R values.

All data, as reported, are acceptable for use.



EcoChem, Inc.

Environmental Science and Chemistry

APPENDIX A
DATA QUALIFIER DEFINITIONS AND
VALIDATION CRITERIA

DATA VALIDATION QUALIFIER CODES National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification”.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Not detected, quantitation limit may be inaccurate or imprecise.
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DATA QUALIFIER REASON CODES

1	Holding Time/Sample Preservation
2	Chromatographic pattern in sample does not match pattern of calibration standard.
3	Compound Confirmation
4	Tentatively Identified Compound (TIC) (associated with NJ only)
5A	Calibration (initial)
5B	Calibration (continuing)
6	Field Blank Contamination
7	Lab Blank Contamination (e.g., method blank, instrument, etc.)
8	Matrix Spike(MS & MSD) Recoveries
9	Precision (all replicates)
10	Laboratory Control Sample Recoveries
11	A more appropriate result is reported (associated with "R" and "DNR" only)
12	Reference Material
13	Surrogate Spike Recoveries (a.k.a., labeled compounds & recovery standards)
14	Other (define in validation report)
15	GFAA Post Digestion Spike Recoveries
16	ICP Serial Dilution % Difference
17	ICP Interference Check Standard Recovery
18	Trip Blank Contamination
19	Internal Standard Performance (e.g., area, retention time, recovery)
20	Linear Range Exceeded
21	Potential False Positives

DATA VALIDATION CRITERIA

Table No.: NFG-Pest PCB

Revision No.: 0

Last Rev. Date: 10/16/00

Page: 1 of 2

National Functional Guidelines (1994 & 1999) Pesticides/PCBs by GC/ECD

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C±2°C	J(+)/UJ(-) using Professional Judgement	2
Holding Time	Water: 7 days from collection Soil: 14 days from collection Analysis: 40 days from extraction	J(+)/UJ(-) if ext/analyzed > HT J(+)/R(-) if ext/analyzed > 3X HT (Prof. Judgement)	1
Resolution Check	Beginning of ICAL Sequence Within RTW Resolution >90%	Narrate (Use Professional Judgement to qualify)	14
Instrument Performance (Breakdown)	DDT Breakdown: < 20% Endrin Breakdown: <20% Combined Breakdown: <30% Compounds within RTW	J(+) DDT NJ(+) DDD and/or DDE R(-) DDT - If (+) for either DDE or DDD J(+) Endrin NJ(+) EK and/or EA R(-) Endrin - If (+) for either EK or EA	14
Retention Times	Surrogates: TCX (+/- 0.05); DCB (+/- 0.10) Target compounds: elute before heptachlor epoxide (+/- 0.05) elute after heptachlor epoxide (+/- 0.07)	NJ(+)/R(-) results for analytes with RT shifts For full DV, use PJ based on examination of raw data	5B
Initial Calibration	Pesticides: Low=CRQL, Mid=4X, High=16X Multiresponse - one point Calibration %RSD<20% %RSD<30% for surr; two comp. may exceed if <30% Resolution in Mix A and Mix B >90%	J(+)/UJ(-)	5A
Continuing Calibration	Alternating PEM standard and INDA/INDB standards every 12 hours (each preceded by an inst. Blank) %D < 25% Resolution >90% in IND mixes; 100% for PEM	J(+)/UJ(-) J(+)/R(-) if %D > 90% Professional Judgement for resolution	5B
Method Blank	One per matrix per batch No results > CRQL	U(+) if sample result is < CRQL and < 5X rule (raise sample value to CRQL)	7
		UJ(+) if sample result is > or equal to CRQL and < 5X rule (at reported sample value)	7

DATA VALIDATION CRITERIA

Table No.: NFG-Pest PCB
 Revision No.: 0
 Last Rev. Date: 10/16/00
 Page: 2 of 2

National Functional Guidelines (1994 & 1999) Pesticides/PCBs by GC/ECD

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Instrument Blanks	Analyzed at the beginning of every 12 hour sequence No analyte > 1/2 CRQL	Same as Method Blank	7
Field Blanks	Not addressed by NFG No results > CRQL	Apply 5X rule; U(+) < action level	6
MS/MSD	One per matrix per batch Method Acceptance Criteria (CLP/SOW OLM03.2 Form III)	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL; J(+)/UJ(-) if both %R < LCL J(+) if RPD > CL PJ if only one %R outlier	8
LCS	One per SDG Method Acceptance Criteria (CLP/SOW OLM03.2 Form III)	J(+) if %R > UCL J(+)/R(-) if %R < LCL J(+)/R(-) if > 1/2 of %R outside of the QC limits	10
Surrogates	TCX and DCB added to every sample %R = 30-150%	J(+)/UJ(-) if both %R = 10 - 60% J(+) if both > 150% J(+)/R(-) if any %R < 10%	13
Quantitation/ Identification	Analyte within RTW on both columns Quantitated using CCV or ICAL CF Lowest value from either column reported %D between columns (25%)	J(+) if %D = 25-50% JN(+) if %D = 50-90% R(+) using PJ if %D > 90%	14
Two analyses for one sample	Report only one result per analyte	"DNR" results that should not be used to avoid reporting two results for one sample	14
Sample Clean-up	GPC required for soil samples Florisil required for all samples Sulfur is optional Clean-up standard check %R within CLP limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL	14
Field Duplicates	Water: RPD < 35% Soil: RPD < 50%	Narrate (Use Professional Judgement to qualify)	9

EcoChem Validation Guidelines (Based on Methods)
 Conventional Analyses

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature and Preservation	4°C ±2° Water: NaOH to pH > 12 (for CN)	J(+)/UJ(-) if preservation requirements not met EcoChem PJ	1
Holding Time	Method Specific	Professional Judgment J(+)/UJ(-) if holding time exceeded J(+)/R(-) if HT exceeded by > 3X	1
Initial Calibration	Method specific once every 24 hours One at CRDL r>0.995	Professional judgment J(+)/UJ(-) for r < 0.995	5A
Initial Calibration Verification (ICV)	Independent source analyzed immediately after cal. %R method specific	R(+/-) if %R sig < LCL J(+)/UJ(-) if %R < LCL J(+) if %R > UCL R(+) if %R sig > UCL	5A
Continuing Cal Verification (CCV)	Every ten samples, immed. following ICV/ICB and end of run %R method specific	R(+/-) if %R sig < LCL J(+)/UJ(-) if %R < LCL J(+) if %R > UCL R(+) if %R sig > UCL	5B
Initial and Continuing Cal Blanks (ICB/CCB)	After each ICV and CCV every ten samples and end of run blank < +/- IDL	For positive blk results: UJ(+) < 5X blk contamination For negative blk results: J(+)/UJ(-) < abs. value of 5X blk contamination	7
Prep Blank	One per matrix per batch (not to exceed 20 samples)	For positive blk results: UJ(+) < 5X blk contamination For negative blk results: J(+)/UJ(-) < abs. value of 5X blk contamination	7
Matrix Spike	One per matrix per batch; 5% frequency 75-125% for samples less than 4 x spike level	J(+) if %R > 125% or < 75% UJ(-) if %R = 30-74% R(+/-) results < IDL if %R < 30%	8
Laboratory Duplicate	One per matrix per batch RPD <20% for samples > 5x CRDL Diff < CRDL for samples >CRDL and <5 x CRDL (may use RPD < 35%, Diff < 2X CRDL for solids)	J(+)/UJ(-) in assoc samples if RPD > 20% or diff > CRDL	9
Laboratory Control Sample	Waters: One per matrix per batch %R (80-120%)	R(+/-) if MS/MSD & LCS %R outside limits J(+)/UJ(-) if %R = 50-79% J(+) if %R > 120% R(+/-) if %R < 50%	10
	Soils: One per matrix per batch Result within manufacturer's certified acceptance range	J(+)/UJ(-) if < LCL, J(+) if > UCL	10

EcoChem Validation Guidelines (Based on Methods)
 Conventional Analyses

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Field Blanks	taken on same day as samples	Action level is 5x blk conc. U(+) sample values < AL	6
Field Duplicates	Waters RPD < 35% Soils RPD < 50% for values > 5 x CRDL Diff < CRDL for samples >CRDL and <5 x CRDL (may use Diff < 2X CRDL for solids)	J(+)/JJ(-) in parent samples only	9



EcoChem, Inc.

Environmental Science and Chemistry

APPENDIX B
QUALIFIED DATA SUMMARY TABLE

QUALIFIED DATA SUMMARY TABLE
Port of Seattle Terminal 117

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Unit	Laboratory Qualifier	Validation Qualifier	Reason Code
IE78	T117-PS8-01	05-10669-IE78A	SW8082	Aroclor 1260	230000	ug/kg	E	R	20
IE78	T117-PS8-01	05-10669-IE78ADL	SW8082	Aroclor 1016	43000	ug/kg	U	R	11
IE78	T117-PS8-01	05-10669-IE78ADL	SW8082	Aroclor 1242	43000	ug/kg	U	R	11
IE78	T117-PS8-01	05-10669-IE78ADL	SW8082	Aroclor 1248	43000	ug/kg	U	R	11
IE78	T117-PS8-01	05-10669-IE78ADL	SW8082	Aroclor 1254	43000	ug/kg	U	R	11
IE78	T117-PS8-01	05-10669-IE78ADL	SW8082	Aroclor 1221	43000	ug/kg	U	R	11
IE78	T117-PS8-01	05-10669-IE78ADL	SW8082	Aroclor 1232	43000	ug/kg	U	R	11
IE78	T117-PS8-02	05-10670-IE78B	SW8082	Aroclor 1260	27000	ug/kg	E	R	20
IE78	T117-PS8-02	05-10670-IE78BDL	SW8082	Aroclor 1016	5300	ug/kg	U	R	11
IE78	T117-PS8-02	05-10670-IE78BDL	SW8082	Aroclor 1242	5300	ug/kg	U	R	11
IE78	T117-PS8-02	05-10670-IE78BDL	SW8082	Aroclor 1248	5300	ug/kg	U	R	11
IE78	T117-PS8-02	05-10670-IE78BDL	SW8082	Aroclor 1254	5300	ug/kg	U	R	11
IE78	T117-PS8-02	05-10670-IE78BDL	SW8082	Aroclor 1221	5300	ug/kg	U	R	11
IE78	T117-PS8-02	05-10670-IE78BDL	SW8082	Aroclor 1232	5300	ug/kg	U	R	11
IE78	T117-PS8-03	05-10671-IE78C	SW8082	Aroclor 1260	1300	ug/kg	E	R	20
IE78	T117-PS8-03	05-10671-IE78CDL	SW8082	Aroclor 1016	320	ug/kg	U	R	11
IE78	T117-PS8-03	05-10671-IE78CDL	SW8082	Aroclor 1242	320	ug/kg	U	R	11
IE78	T117-PS8-03	05-10671-IE78CDL	SW8082	Aroclor 1248	320	ug/kg	U	R	11
IE78	T117-PS8-03	05-10671-IE78CDL	SW8082	Aroclor 1254	320	ug/kg	U	R	11
IE78	T117-PS8-03	05-10671-IE78CDL	SW8082	Aroclor 1221	320	ug/kg	U	R	11
IE78	T117-PS8-03	05-10671-IE78CDL	SW8082	Aroclor 1232	320	ug/kg	U	R	11
IE78	T117-PS8-04	05-10672-IE78D	SW8082	Aroclor 1260	310	ug/kg	E	R	20
IE78	T117-PS8-04	05-10672-IE78DDL	SW8082	Aroclor 1016	58	ug/kg	U	R	11
IE78	T117-PS8-04	05-10672-IE78DDL	SW8082	Aroclor 1242	58	ug/kg	U	R	11
IE78	T117-PS8-04	05-10672-IE78DDL	SW8082	Aroclor 1248	58	ug/kg	U	R	11
IE78	T117-PS8-04	05-10672-IE78DDL	SW8082	Aroclor 1254	58	ug/kg	U	R	11
IE78	T117-PS8-04	05-10672-IE78DDL	SW8082	Aroclor 1221	58	ug/kg	U	R	11
IE78	T117-PS8-04	05-10672-IE78DDL	SW8082	Aroclor 1232	58	ug/kg	U	R	11
IE78	T117-PS10-02	05-10674-IE78F	SW8082	Aroclor 1260	51000	ug/kg	E	R	20
IE78	T117-PS10-02	05-10674-IE78FDL	SW8082	Aroclor 1016	13000	ug/kg	U	R	11
IE78	T117-PS10-02	05-10674-IE78FDL	SW8082	Aroclor 1242	13000	ug/kg	U	R	11
IE78	T117-PS10-02	05-10674-IE78FDL	SW8082	Aroclor 1248	13000	ug/kg	U	R	11
IE78	T117-PS10-02	05-10674-IE78FDL	SW8082	Aroclor 1254	13000	ug/kg	U	R	11
IE78	T117-PS10-02	05-10674-IE78FDL	SW8082	Aroclor 1221	13000	ug/kg	U	R	11
IE78	T117-PS10-02	05-10674-IE78FDL	SW8082	Aroclor 1232	13000	ug/kg	U	R	11
IE78	T117-PS10-03	05-10675-IE78G	SW8082	Aroclor 1260	180000	ug/kg	E	R	20
IE78	T117-PS10-03	05-10675-IE78GDL	SW8082	Aroclor 1016	45000	ug/kg	U	R	11
IE78	T117-PS10-03	05-10675-IE78GDL	SW8082	Aroclor 1242	45000	ug/kg	U	R	11
IE78	T117-PS10-03	05-10675-IE78GDL	SW8082	Aroclor 1248	45000	ug/kg	U	R	11
IE78	T117-PS10-03	05-10675-IE78GDL	SW8082	Aroclor 1254	45000	ug/kg	U	R	11
IE78	T117-PS10-03	05-10675-IE78GDL	SW8082	Aroclor 1221	45000	ug/kg	U	R	11
IE78	T117-PS10-03	05-10675-IE78GDL	SW8082	Aroclor 1232	45000	ug/kg	U	R	11
IE78	T117-PS12-01	05-10677-IE78I	SW8082	Aroclor 1260	11000	ug/kg	E	R	20
IE78	T117-PS12-01	05-10677-IE78IDL	SW8082	Aroclor 1016	2300	ug/kg	U	R	11
IE78	T117-PS12-01	05-10677-IE78IDL	SW8082	Aroclor 1242	2300	ug/kg	U	R	11
IE78	T117-PS12-01	05-10677-IE78IDL	SW8082	Aroclor 1248	2300	ug/kg	U	R	11
IE78	T117-PS12-01	05-10677-IE78IDL	SW8082	Aroclor 1254	2300	ug/kg	U	R	11
IE78	T117-PS12-01	05-10677-IE78IDL	SW8082	Aroclor 1221	2300	ug/kg	U	R	11

QUALIFIED DATA SUMMARY TABLE
Port of Seattle Terminal 117

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Unit	Laboratory Qualifier	Validation Qualifier	Reason Code
IE78	T117-PS12-01	05-10677-IE78IDL	SW8082	Aroclor 1232	2300	ug/kg	U	R	11
IE78	T117-PS12-02	05-10678-IE78J	SW8082	Aroclor 1260	12000	ug/kg	E	R	20
IE78	T117-PS12-02	05-10678-IE78JDL	SW8082	Aroclor 1016	2600	ug/kg	U	R	11
IE78	T117-PS12-02	05-10678-IE78JDL	SW8082	Aroclor 1242	2600	ug/kg	U	R	11
IE78	T117-PS12-02	05-10678-IE78JDL	SW8082	Aroclor 1248	2600	ug/kg	U	R	11
IE78	T117-PS12-02	05-10678-IE78JDL	SW8082	Aroclor 1254	2600	ug/kg	U	R	11
IE78	T117-PS12-02	05-10678-IE78JDL	SW8082	Aroclor 1221	2600	ug/kg	U	R	11
IE78	T117-PS12-02	05-10678-IE78JDL	SW8082	Aroclor 1232	2600	ug/kg	U	R	11
IE78	T117-DUPL 3	05-10681-IE78M	SW8082	Aroclor 1260	1300	ug/kg	EP	R	20
IE78	T117-DUPL 3	05-10681-IE78MDL	SW8082	Aroclor 1016	220	ug/kg	U	R	11
IE78	T117-DUPL 3	05-10681-IE78MDL	SW8082	Aroclor 1242	220	ug/kg	U	R	11
IE78	T117-DUPL 3	05-10681-IE78MDL	SW8082	Aroclor 1248	220	ug/kg	U	R	11
IE78	T117-DUPL 3	05-10681-IE78MDL	SW8082	Aroclor 1254	220	ug/kg	U	R	11
IE78	T117-DUPL 3	05-10681-IE78MDL	SW8082	Aroclor 1221	220	ug/kg	U	R	11
IE78	T117-DUPL 3	05-10681-IE78MDL	SW8082	Aroclor 1232	220	ug/kg	U	R	11