ANNEX E
SEDIMENT DATA SHEETS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 46613
Site: Richardson Hill Road Landfill
Number of Samples: 9 (Sediment)
Analysis: PCB

SDG No.: BD6S4
Laboratory: Shealy Environmental Services, Inc
Sampling dates: 10/18/2016-10/19/2016
Validation SOP: HW-37A (Rev 0)

QAPP: Not available.

SUMMARY OF DEFINITIONS:
Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:
None.

Major Findings:
PCB: Samples BD6S6, BD6S7 and BD6T0 have analytes that have been qualified "J", "J+" or "J-".

Minor Findings:
None.

COMMENTS: QAPP was not available at the time of validation.

Reviewer Name(s): Dorina Christina Alliu

Approver's Signature:

Date: 03/09/17

Name: Russell Arnone

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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J–	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present 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 its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

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DATA ASSESSMENT

ANALYSIS: PCB

The current SOP HW-37A (Revision 0) July 2015, USEPA Region II for the evaluation of PCB data generated through Statement of Work SOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. **HOLDING TIME:**

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". Use professional judgment to qualify the non-detects (sample quantitation limits), if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. **SURROGATES:**

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate recovery were outside Table 5 of the SOP HW-37A (Revision 0), qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):**

MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

The following matrix/matrix spike duplicate samples have percent recoveries greater than the primary maximum criteria. Detected compounds are qualified J. Non-detected compounds are not qualified.

Aroclor-1016 BD6S4MSD, BD6S4MS, BD6S4

4. **Laboratory Control Samples (LCS):**

LCS data provides information on the accuracy of the analytical method and laboratory performance. If LCS recoveries fell outside of the acceptable limits, qualifications were applied to the associated samples and compounds as shown below.

No problems were found for this criterion.

5. **BLANK CONTAMINATION:**

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects U. Qualifications were applied to the samples and analytes as shown below.

A) **Method blank contamination:**

No problems were found for this criterion.

B) **Field or rinse blank contamination:**

Not applicable.

6. **CALIBRATION:**

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) **Percent Relative Standard Deviation (%RSD):**

For the PCB fraction, if %RSD exceeds 20% for all analytes and the two surrogates, qualify all associated positive results "J" and use professional judgment to qualify non-detects. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) **Percent Difference (%D):**

For opening CCV, or closing CCV that is used as an opening CCV for the next 12-hour period, if %D exceeds 25% for analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

For closing CCV, if %D exceeds 50% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. **FIELD DUPLICATES:**

No problems were found for this criterion.

8. **COMPOUND IDENTIFICATION:**

A) **PCB Fraction:**

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

Percent Differences	**Qualifier**
0% - 25%	No qualification
26% - 200%	Professional Judgment
101% - 200% (interference detected, either column)	JN
> 50% (pesticide value < CRQL, value raised to CRQL)	U
> 200%	R

The following samples were qualified for % difference on the two columns.

BD6T0, BD6S7

9. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

The following soil samples have percent solids greater than or euqal to 10% but less than or equal to 30%. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

BD6S6, BD6S7

12. DILUTIONS, RE-EXTRACTIONS & RE-ANALYSIS:

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used. See summary report and EDD for applicable samples and analytes.

Sample Summary Report

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: ABLK02	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1221	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1232	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1242	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1248	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1254	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1260	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1262	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1268	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: ALCS02	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Spike	31	J	ug/kg	31	J	1.0	Yes	S3VEM
Aroclor-1221	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1232	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1242	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1248	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1254	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1260	Spike	37		ug/kg	37		1.0	Yes	S3VEM
Aroclor-1262	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM
Aroclor-1268	Target	33	U	ug/kg	33	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S4	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location: SOUTH POND	pH:	Sample Date: 10/18/2016	Sample Time: 10:20:00
% Moisture :		% Solids : 40.9	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1221	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1232	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1242	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1248	Target	550		ug/kg	550		1.0	Yes	S3VEM
Aroclor-1254	Target	220		ug/kg	220		1.0	Yes	S3VEM
Aroclor-1260	Target	45	J	ug/kg	45	J	1.0	Yes	S3VEM
Aroclor-1262	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1268	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S4MS	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date: 10/18/2016	Sample Time: 10:20:00
% Moisture :		% Solids : 40.9	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Spike	690	J	ug/kg	690		1.0	Yes	S3VEM
Aroclor-1221	Target	81	U	ug/kg	81	U	1.0	Yes	S3VEM
Aroclor-1232	Target	81	U	ug/kg	81	U	1.0	Yes	S3VEM
Aroclor-1242	Target	81	U	ug/kg	81	U	1.0	Yes	S3VEM
Aroclor-1248	Target	690		ug/kg	690		1.0	Yes	S3VEM
Aroclor-1254	Target	300		ug/kg	300		1.0	Yes	S3VEM
Aroclor-1260	Spike	290		ug/kg	290		1.0	Yes	S3VEM
Aroclor-1262	Target	81	U	ug/kg	81	U	1.0	Yes	S3VEM
Aroclor-1268	Target	81	U	ug/kg	81	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S4MSD	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date: 10/18/2016	Sample Time: 10:20:00
% Moisture :		% Solids : 40.9	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Spike	710	J	ug/kg	710		1.0	Yes	S3VEM
Aroclor-1221	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1232	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1242	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1248	Target	710		ug/kg	710		1.0	Yes	S3VEM
Aroclor-1254	Target	310		ug/kg	310		1.0	Yes	S3VEM
Aroclor-1260	Spike	310		ug/kg	310		1.0	Yes	S3VEM
Aroclor-1262	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM
Aroclor-1268	Target	80	U	ug/kg	80	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S5	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location: SOUTH POND	pH:	Sample Date: 10/18/2016	Sample Time: 10:22:00
% Moisture :		% Solids : 49.6	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	65	U	ug/kg	65	U	1.0	Yes	S3VEM
Aroclor-1221	Target	65	U	ug/kg	65	U	1.0	Yes	S3VEM
Aroclor-1232	Target	65	U	ug/kg	65	U	1.0	Yes	S3VEM
Aroclor-1242	Target	65	U	ug/kg	65	U	1.0	Yes	S3VEM
Aroclor-1248	Target	790		ug/kg	790		1.0	Yes	S3VEM
Aroclor-1254	Target	310		ug/kg	310		1.0	Yes	S3VEM
Aroclor-1260	Target	53	J	ug/kg	53	J	1.0	Yes	S3VEM
Aroclor-1262	Target	65	U	ug/kg	65	U	1.0	Yes	S3VEM
Aroclor-1268	Target	65	U	ug/kg	65	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S6	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location: HERRICK CREEK	pH:	Sample Date: 10/19/2016	Sample Time: 16:25:00
% Moisture :		% Solids : 25.2	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	130	UJ	ug/kg	130	U	1.0	Yes	S3VEM
Aroclor-1221	Target	130	UJ	ug/kg	130	U	1.0	Yes	S3VEM
Aroclor-1232	Target	130	UJ	ug/kg	130	U	1.0	Yes	S3VEM
Aroclor-1242	Target	130	UJ	ug/kg	130	U	1.0	Yes	S3VEM
Aroclor-1248	Target	110	J	ug/kg	110	J	1.0	Yes	S3VEM
Aroclor-1254	Target	77	J	ug/kg	77	J	1.0	Yes	S3VEM
Aroclor-1260	Target	18	J	ug/kg	18	J	1.0	Yes	S3VEM
Aroclor-1262	Target	130	UJ	ug/kg	130	U	1.0	Yes	S3VEM
Aroclor-1268	Target	130	UJ	ug/kg	130	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S7	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location: HERRICK CREEK	pH:	Sample Date: 10/19/2016	Sample Time: 14:20:00
% Moisture :		% Solids : 27.9	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	120	UJ	ug/kg	120	U	1.0	Yes	S3VEM
Aroclor-1221	Target	120	UJ	ug/kg	120	U	1.0	Yes	S3VEM
Aroclor-1232	Target	120	UJ	ug/kg	120	U	1.0	Yes	S3VEM
Aroclor-1242	Target	120	UJ	ug/kg	120	U	1.0	Yes	S3VEM
Aroclor-1248	Target	66	J	ug/kg	66	J	1.0	Yes	S3VEM
Aroclor-1254	Target	63	J	ug/kg	63	J	1.0	Yes	S3VEM
Aroclor-1260	Target	16	J	ug/kg	16	JP	1.0	Yes	S3VEM
Aroclor-1262	Target	120	UJ	ug/kg	120	U	1.0	Yes	S3VEM
Aroclor-1268	Target	120	UJ	ug/kg	120	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S8	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location: HERRICK CREEK	pH:	Sample Date: 10/18/2016	Sample Time: 11:15:00
% Moisture :		% Solids : 60.1	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1221	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1232	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1242	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1248	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1254	Target	11	J	ug/kg	11	J	1.0	Yes	S3VEM
Aroclor-1260	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1262	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM
Aroclor-1268	Target	54	U	ug/kg	54	U	1.0	Yes	S3VEM

Case No: 46613	Contract: EPW14035	SDG No: BD6S4	Lab Code: EQI
Sample Number: BD6S9	Method: Aroclors	Matrix: Soil	MA Number:
Sample Location: HERRICK CREEK	pH:	Sample Date: 10/19/2016	Sample Time: 09:45:00
% Moisture :		% Solids : 54.7	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM
Aroclor-1221	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM
Aroclor-1232	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM
Aroclor-1242	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM
Aroclor-1248	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM
Aroclor-1254	Target	32	J	ug/kg	32	J	1.0	Yes	S3VEM
Aroclor-1260	Target	8.3	J	ug/kg	8.3	J	1.0	Yes	S3VEM
Aroclor-1262	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM
Aroclor-1268	Target	60	U	ug/kg	60	U	1.0	Yes	S3VEM

Case No:	46613	Contract:	EPW14035	SDG No:	BD6S4	Lab Code:	EQI
Sample Number:	BD6T0	Method:	Aroclors	Matrix:	Soil	MA Number:	
Sample Location:	HERRICK CREEK	pH:		Sample Date:	10/18/2016	Sample Time:	15:35:00
% Moisture :				% Solids :	71.7		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aroclor-1016	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM
Aroclor-1221	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM
Aroclor-1232	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM
Aroclor-1242	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM
Aroclor-1248	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM
Aroclor-1254	Target	410		ug/kg	410		1.0	Yes	S3VEM
Aroclor-1260	Target	120	J	ug/kg	120	P	1.0	Yes	S3VEM
Aroclor-1262	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM
Aroclor-1268	Target	46	U	ug/kg	46	U	1.0	Yes	S3VEM