

ATTACHMENT A
Field Data Records



Penobscot River Mercury Study - Phase III Engineering Evaluation
INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-104-INTA
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>KB, LT</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/14/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>13:19</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>0.85</u>	<u>1.3</u>	<u>1.2</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>57%</u>	<u>87%</u>	<u>80%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): No
 Salinity of Water at Mudline: 5 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.85	dark gray (7.5YR 4/1) CLAY with some silt (<10%), black mottling (0-0.4), no living organisms observed, medium plasticity, soft, no odor, no wood chips or organic matter observed
Notes	water depth 4', no lutoclines on any cores

Sample Collection
 Sample Collection Team: JP LT BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-104-INTA _ 072517 _SED_00-01	0945	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-104-INTA _ 072517 _SED_01-03	0946	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-104-INTA _ 072617 _SED_03-05	1018	Hg, TOC, OC	Triple Replicate	3 x 8 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-104-INTA _ 072617 _SED_05-10	1020	Hg, TOC, OC	None	3 x 8 oz Plastic	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office Geographic coordinates provided on Core/Grab log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-104-INTB
 WO: 4A-030 Wetland

Core Collection		Core Recovery		
Core Collection Team: <u>KB, JP, LT, FM, BW</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/27/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>15:17</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>0.9</u>	<u>1.1</u>	<u>1.0</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>60%</u>	<u>73%</u>	<u>67%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): No
 Salinity of Water at Mudline: 5 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0 - 1.1	Dark brown (7.5YR 3/4), SILT with some clay (< 15%), black (7.5YR 2.5/1) mottling from 0-0.45', no roots, decomposed vegetation (leaves), super saturated, low plasticity, soft, no odor, no wood chips observed
Notes	Water depth 11.5', falling tide, surface salinity - 0 PSU

Sample Collection
 Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-104-INTB _ 080117 _ SED_00-01	1420	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-104-INTB _ 080117 _ SED_01-03	1422	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-104-INTB _ 080317 _ SED_03-05	1514	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-104-INTB _ 080317 _ SED_05-10	1516	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office Geographic coordinates provided on Core/Grab log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-105-A
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery		
Core Collection Team: <u>FM, JP, LT, BW, KB</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>08:28</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.13</u>	<u>1.07</u>	<u>1.03</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>75%</u>	<u>71%</u>	<u>69%</u>

Core Log

Core Logger: FKM Woody Debris (Y/N): No
 Salinity of Water at Mudline: 20 PSU (o/00)

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.1	black (10YR 2/1) CLAY with some silt (<5%), lots of vegetation and root matter near the surface (0-0.4 ft.), vegetation matter scattered in rest of core during sample collection as core tube was pushed into the sediments, soft, low to medium plasticity, no living organisms observed, no wood chips observed, strong odor
Notes	Surface salinity 12 PSU; water depth 2.8'

No Photo Taken

Sample Collection

Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-105-A _ 072417 _ SED_00-01	1537	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-105-A _ 072417 _ SED_01-03	1538	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-105-A _ 072517 _ SED_03-05	1444	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-105-A _ 072517 _ SED_05-10	1446	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office Geographic coordinates provided on Core/Grab log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 2/1/2018



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-14-A
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, KB, LT</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/17/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>13:47</u>	Recovered Core Length in Decimal Feet: <u>1.4</u>		<u>1.4</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>93%</u>		<u>93%</u>

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Typha
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1400



Interval	Description
0.0-0.55	Dark gray (7.5Yr 4/1), saturated, SILT with some clay (20%), no plasticity, high density root mass from hair sized to 0.04'
0.55-1.1	Dark gray (7.5Yr 4/1), saturated, SILT with some clay (>45%), low plasticity, dead organic matter, low density hair sized roots.
	Water in hole bgs 0.4'

Sample Collection
 Sample Collection Team: JP LT BW FM Sample Collection Date: 7/25/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-14-A _ 072517 _SED_00-01	0849	MeHg, Hg, TOC, OC	Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-14-A _ 072517 _SED_01-03	0850	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-14-A _ 072517 _SED_03-05	1726	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-14-A _ 072517 _SED_05-10	1728	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-14-B
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, KB, LT</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/17/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>14:40</u>	Recovered Core Length in Decimal Feet: <u>1.32</u>		<u>1.35</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>88%</u>		<u>90%</u>

Test Pit Log

Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Typha
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440

Interval	Description color, grain size, odor, debris, roots, organisms, etc.	
<u>0.0-0.9</u>	<u>Very dark brown (7.5YR 2.5/3), moist, CLAY with some silt (<15%), low plasticity, soft, medium density roots, mostly hair like, occasional large roots 0.05'.</u>	No Photo Taken
<u>0.9-1.3</u>	<u>Dark brown (7.5 YR 3/4), (Observed during core processing)</u>	
	<u>No water in hole</u>	

Sample Collection

Sample Collection Team: JP LT BW FM Sample Collection Date: 7/25/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
<u>0.0 - 0.1</u>	<u>W-14-B _ 072517 _SED_00-01</u>	<u>0915</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>1 x 16 oz Plastic</u>	Lab Homogenize and Subsample
<u>0.1 - 0.3</u>	<u>W-14-B _ 072517 _SED_01-03</u>	<u>0917</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>2 x 16 oz Plastic</u>	
<u>0.3 - 0.5</u>	<u>W-14-B _ 072517 _SED_03-05</u>	<u>1736</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic 2 x 8 oz Amber Glass</u>	Field Lab Homogenize and Subsample
<u>0.5 - 1.0</u>	<u>W-14-B _ 072517 _SED_05-10</u>	<u>1738</u>	<u>Hg, TOC, OC</u>	<u>Triple Replicate</u>	<u>1 x 8 oz Plastic 2 x 8 oz Amber Glass</u>	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 2/1/2018



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-14-C
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, LT, KB</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/17/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>15:07</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.45</u>	<u>1.4</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>97%</u>	<u>93%</u>

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Typha (20%) carex (80%)
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 2000



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.35	Dark grayish brown (10YR 4/2), wet, organic, hydrogen sulfide odor, CLAY with some silt(25% silt), low plasticity, soft, high density root mass and dead organic matter.
	Water in hole bgs 0.34'
Notes	Wood chips observed in both cores from 1.35' bgs to unknown depth

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-14-C _ 072417 _SED_00-01	1332	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-14-C _ 072417 _SED_01-03	1335	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	W-14-C _ 072517 _SED_03-05	1620	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-14-C _ 072517 _SED_05-10	1622	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-27-A
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>JP,BW</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>08:52</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>0.82</u>	<u>0.9</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>55%</u>	<u>60%</u>

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Sedge, marsh grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.65	Very dark gray (10YR3/1), 85% SILT 15% sand, SILT with sand, high density roots of hair like to 0.02' diameter, plasticity NA due to roots, saturated, organic odor
0.65-1.4	Very dark grayish brown (10YR3/2), 80% SILT 20% fine grain sand, fine grain sandy SILT, medium density roots of hair like to 0.01' diameter, medium plasticity, organic odor
	Water depth 0.45' bgs

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	<u>W-27-A _ 072517 _SED_00-01</u>	<u>1239</u>	<u>MeHg, Hg, TOC, OC</u>	<u>Triple Replicate</u>	<u>1 x 16 oz Plastic</u>	<u>Lab Homogenize and Subsample</u>
0.1 - 0.3	<u>W-27-A _ 072517 _SED_01-03</u>	<u>1240</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>2 x 16 oz Plastic</u>	
0.3 - 0.5	<u>W-27-A _ 072617 _SED_03-05</u>	<u>0833</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	<u>Field Lab Homogenize and Subsample</u>
0.5 - 1.0	<u>W-27-A _ 072617 _SED_05-10</u>	<u>0835</u>	<u>Hg, TOC, OC</u>	<u>MS/MSD</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: *(Handwritten Signature)*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-100-A
 WO: 4A-030 Wetland

Core Collection			Core Recovery	
Core Collection Team: <u>BW, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet:	2.0	2.0
Core Collection Date: <u>07/31/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	1.5	1.5
Core Collection Time: <u>16:40</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	1.1	1.1
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	73%	73%

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 2000



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.5	Dark gray (10 YR 4/1), wet, strong biological odor, SILT with sand (10% fine sand), plasticity NA due to high density root mass, 0.01' root diameter
0.5-1.1	Very dark gray (10YR 3/1), saturated, strong biological odor, SILT with sand (15% fine sand), low plasticity, medium density hair like sized roots
	Water in hole bgs 0.8'

Sample Collection
 Sample Collection Team: LT BW Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-100-A _ 080117 _SED_00-01	1504	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-100-A _ 080117 _SED_01-03	1506	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-100-A _ 080317 _SED_03-05	1320	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-100-A _ 080317 _SED_05-10	1322	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-101-A
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: KB, LT
 Core Collection Date: 08/02/2017
 Core Collection Time: 17:17
 Instant Freeze (Y/N): Yes

Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 0.85
 % Recovery (Recovered Core/Depth Cored): 57%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	0.85	1.05
% Recovery (Recovered Core/Depth Cored):	57%	70%

Test Pit Log

Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 100



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.1	Very dark gray (10YR 3/1), wet, SILT with trace sand (5% fine sand) low plasticity, high density fine roots
0.1-0.8	Dark gray (10 YR 4/1), saturated, biological odor, SILT with sand (10% sand), no plasticity, high density roots, 0.02' root size, polychaete observed
0.8-1.3	Very dark grayish brown (10 YR 3/2), saturated, biological odor, SILT with sand (15% sand), medium plasticity, low density hair like roots
	Water in hole bgs 1.3'

Sample Collection

Sample Collection Team: KCB, BPW Sample Collection Date: 8/15/17 and 8/17/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-101-A _ 081517 _ SED_00-01	1445	MeHg, Hg, TOC, OC	None	2 x 8 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-101-A _ 081517 _ SED_01-03	1447	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-101-A _ 081717 _ SED_03-05	1807	Hg, TOC, OC	None	3 x 4 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-101-A _ 081717 _ SED_05-10	1810	Hg, TOC, OC	None	3 x 4 oz Plastic	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office.
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-101-B
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>KB, LT</u>		Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>08/02/2017</u>	Collection Method: <u>Slide Hammer</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>17:11</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Recovered Core Length in Decimal Feet: <u>1.05</u>	<u>0.9</u>
Instant Freeze (Y/N): <u>Yes</u>	Est. Volume: <u>47 oz/ft</u>	% Recovery (Recovered Core/Depth Cored): <u>70%</u>	<u>60%</u>

Test Pit Log
 Test Pit Logger: LT Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 50



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.05	Black (10YR 2/1), saturated, strong biological odor, organic SILT with sand (<5% silt), plasticity NA due to moisture, no roots
0.05-1.0	Dark gray (10YR 4/1), biological black mottling, saturated, strong biological odor, SILT with trace sand (5% fine sand), plasticity NA due to moisture, medium root density, roots 0.01' in size
	Water in hole 0.65' bgs

Sample Collection
 Sample Collection Team: KCB, BPW Sample Collection Date: 8/15/17 and 8/17/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-101-B _ 081517 _ SED_00-01	1518	MeHg, Hg, TOC, OC	None	2 x 8 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-101-B _ 081517 _ SED_01-03	1520	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-101-B _ 081717 _ SED_03-05	1825	Hg, TOC, OC	None	3 x 4 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-101-B _ 081717 _ SED_05-10	1828	Hg, TOC, OC	Triple Replicate	3 x 4 oz Plastic	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office with windows closed. Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-103-A
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, KB, LT</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/17/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>11:56</u>	Recovered Core Length in Decimal Feet: <u>0.9</u>		<u>1.0</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>60%</u>		<u>67%</u>

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Typha
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1400



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.1	Brown (7.5YR 4/2), moist, SILT (20-40%), heavy root mass from hair size to 0.05', non plastic Water hole bgs 0.6'

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-103-A _ 072417 _ SED_00-01	1518	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-103-A _ 072417 _ SED_01-03	1519	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-103-A _ 072517 _ SED_03-05	1440	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-103-A _ 072517 _ SED_05-10	1442	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-104-A
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>KB, LT</u>		Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/14/2017</u>	Collection Method: <u>Slide Hammer</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>13:58</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Recovered Core Length in Decimal Feet: <u>1.0</u>	<u>0.85</u>
Instant Freeze (Y/N): <u>Yes</u>	Est. Volume: <u>47 oz/ft</u>	% Recovery (Recovered Core/Depth Cored): <u>67%</u>	<u>57%</u>

Test Pit Log
 Test Pit Logger: KB Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Bull rushes
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 10



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.0	Dark greenish gray (5YG 4/1), Black (10YR 2/1) mottling around 0.05' diameter root, reddish brown (5YR 4/4) mottling (2-5%) around very fine roots, dry, CLAY with trace fine sand (<5% fine sand), very low plasticity, very stiff, low density fine roots (0.01' diameter) until 0.4', no organism
	No water in hole

Sample Collection
 Sample Collection Team: BW, JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-104-A _ 071817 _ SED_00-01	14:35	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-104-A _ 071817 _ SED_01-03	14:36	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-104-A _ 071917 _ SED_03-05	13:02	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-104-A _ 071917 _ SED_05-10	13:05	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-104-B
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>KB JP</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/26/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>10:48</u>	Recovered Core Length in Decimal Feet: <u>1.0</u>		<u>1.5</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>67%</u>		<u>100%</u>

Test Pit Log
 Test Pit Logger: KB Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Bull rush
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 432



Interval	Description
	color, grain size, odor, debris, roots, organisms, etc.
0-1.25	Very dark gray (10YR3/1) some black (10YR2/1) organic staining at 0.65', SILT with some clay (10%), low plasticity, competent, medium density roots of hair like diameter, faint sulphur odor at surface, saturated, firm, some dead leaf litter on surface, no organisms observed
	Water in hole 0.6' bgs

Sample Collection
 Sample Collection Team: LT BW Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-104-B _ 080117 _SED_00-01	1514	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-104-B _ 080117 _SED_01-03	1516	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-104-B _ 080317 _SED_03-05	1420	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-104-B _ 080317 _SED_05-10	1422	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-106-A
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>BW, LT</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/31/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>15:54</u>	Recovered Core Length in Decimal Feet: <u>1.25</u>		<u>0.95</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>83%</u>		<u>63%</u>

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh sedges and grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1400



Interval	Description
0.0-0.8	Very dark grayish brown (10YR 3/2), saturated, strong biological odor, SILT with sand (10% fine sand), plasticity NA due to moisture and medium density root mass, root size 0.02' diameter
0.8-1.2	Very dark grayish brown (10YR 3/2), saturated, strong biological odor, sandy SILT (20% fine sand), low plasticity, low density root mass, hair like sized roots.
	Water in hole 0.7'

Sample Collection
 Sample Collection Team: LT BW Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-106-A _ 080117 _SED_00-01	1250	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-106-A _ 080117 _SED_01-03	1255	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-106-A _ 080317 _SED_03-05	1336	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-106-A _ 080317 _SED_05-10	1338	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-107-A
 WO: 4A-030 Wetland

Core Collection			Core Recovery	
Core Collection Team: <u>KB, DL</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet:	2.0	2.0
Core Collection Date: <u>07/31/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	1.5	1.5
Core Collection Time: <u>17:13</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	0.78	0.82
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	52%	55%

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 100



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.8	Dark grayish brown (10YR 4/2), saturated, SILT with sand (5% fine sand), low plasticity, high density root mass, root size 0.02'
	No water in hole, test pit and push cores to refusal

Sample Collection
 Sample Collection Team: LT BW Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-107-A _ 080117 _SED_00-01	1605	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-107-A _ 080117 _SED_01-03	1607	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-107-A _ 080317 _SED_03-05	1312	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-107-A _ 080317 _SED_05-10	1314	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River **Location ID:** W-109-A
Project Number: 3616166052 **WO:** 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM JP</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/27/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>11:01</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.1</u>	<u>1.45</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>73%</u>	<u>97%</u>

Test Pit Log
Test Pit Logger: FM **Woody Debris (Y/N):** No
Digging Method: Shooter Shovel **Vegetation Type:** Marsh grasses
Test Pit Dimensions: 6" x 6" x 18" **Approx. # Stems/ft²:** 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.2	Reddish black (2.5YR2.5/1), SILT with clay (< 5%), moist, no odor, nonplastic, low density roots of hair like to 0.1' diameter, no living organisms observed
0.2-0.55	Light red (2.5YR6/8), Decomposed wood/tree trunk (not woodchips) with silt (< 10%), moist, no odor, nonplastic, no roots, no living organisms observed
0.55-1.2	Gray (10YR5/1), CLAY with some silt (30%), layer of gravel and pebbles at 0.75' with size ranging from fine to coarse more angular to rounded in shape, very moist, no odor, low plasticity, soft, no roots, no living organisms observed
	Water depth 0.9' bgs

Sample Collection
Sample Collection Team: LT BW KB **Sample Collection Date:** 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-109-A _ 080117 _ SED_00-01	1530	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-109-A _ 080117 _ SED_01-03	1531	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-109-A _ 080317 _ SED_03-05	1356	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-109-A _ 080317 _ SED_05-10	1358	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-110-A
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection			Core Recovery	
Core Collection Team: <u>BW, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet:	2.0	2.0
Core Collection Date: <u>07/27/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	1.5	1.5
Core Collection Time: <u>10:59</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	1.3	1.25
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	87%	83%

Test Pit Log

Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 2000



Interval	Description
	color, grain size, odor, debris, roots, organisms, etc.
0.0-0.3	Very dark grayish brown (10YR 3/2), saturated, sandy SILT (20% fine sand), plasticity NA due to saturation and high density root mass, 0.01' root diameter,
0.3-0.7	Dark brown (10YR 3/3), saturated, biologic odor, SILT wth sand (10% fine sand), low plasticity, high density roots, 0.01' root diameter
0.7-0.95	Dark grayish brown (10YR 4/2), saturated, biological odor, SILT with sand (10% poorly graded sand), medium plasticity, low density hair like roots
0.95-1.2	Dark gray (10YR 4/1), saturated, biological odor, CLAY with sand (10% poorly graded sand), high plasticity, stiff, competent, very low density hair like roots
	Water at surface

Sample Collection

Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-110-A _ 080117 _SED_00-01	1543	MeHg, Hg, TOC, OC	Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-110-A _ 080117 _SED_01-03	1545	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-110-A _ 080317 _SED_03-05	1342	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-110-A _ 080317 _SED_05-10	1344	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-01
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: FM, LT
 Core Collection Date: 07/18/2017
 Core Collection Time: 10:04
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.05
 % Recovery (Recovered Core/Depth Cored): 70%

Core Recovery

	2.0	2.0
	1.5	1.5
	1.05	1.1
	70%	73%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): Yes
 Vegetation Type: Carex
 Approx. # Stems/ft²: 1500



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.3	Brown (7.5YR 4/4) from 0.0-0.9, 0.9-1.3 Gray (7.5YR 5/1), Black mottling and wood chips from 0.0-0.01', wet, hydrogen sulfide odor, CLAY with some silt (25% silt), non plastic, high density root mass, from hair like to 0.01' diameter
	Water in hole bgs 0.5'

Sample Collection

Sample Collection Team: LT JP BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-01 _ 072517 _SED_00-01	1047	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-01 _ 072517 _SED_01-03	1048	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-01 _ 072617 _SED_03-05	1008	Hg, TOC, OC	None	3 x 8 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-01 _ 072617 _SED_05-10	1010	Hg, TOC, OC	None	3 x 8 oz Plastic	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-02
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: LT, KB, FM
 Core Collection Date: 07/18/2017
 Core Collection Time: 17:18
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.19
 % Recovery (Recovered Core/Depth Cored): 79%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.19	1.14
% Recovery (Recovered Core/Depth Cored):	79%	76%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): No
 Vegetation Type: P grass (90%), cord grass (10%)
 Approx. # Stems/ft²: 2000



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.3	Strong brown (7.5 YR 4/6), wet, SILT with some clay (25% clay), low plasticity, high density root mass, hair like to over 0.01' up to 0.9', 0.9' to end very low density hair like roots, dead organic matter
	Water entering hole at 0.90' bgs

Sample Collection

Sample Collection Team: LT JP BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-02 _ 072517 _SED_00-01	1009	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-02 _ 072517 _SED_01-03	1010	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-02 _ 072617 _SED_03-05	1030	Hg, TOC, OC	None	3 x 8 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-02 _ 072617 _SED_05-10	1032	Hg, TOC, OC	None	3 x 8 oz Plastic	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-03
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>JP, LT, BW, KB, FM</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/11/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>11:18</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>0.95</u>	<u>0.75</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>63%</u>	<u>50%</u>

Test Pit Log

Test Pit Logger: BW, FM Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Seed and grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.05	Black, heavy roots, ground surface covered in thin layer of water
0.05-0.35	Brown [10YR4/3], SILT with sand, 90% silt, 10% fine sands, organic odor, predominantly roots
0.35-0.9	Very dark gray [10YR3/1], SILT with sand, less root material, increasing silt, no living organisms, wood chips at 0.8
0.9-1.25	Dark brown [10YR3/3], SILT with sand, less root material, increasing silt, low plasticity, wood chips at 1.1
Notes	3rd attempt had zero recovery, align stratification for sampling

Sample Collection
 Sample Collection Team: BW, JP Sample Collection Date: 7/17/17 and 7/18/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-03 _ 071717 _SED_00-01	17:26	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-03 _ 071717 _SED_01-03	17:28	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-03 _ 071817 _SED_03-05	9:40	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-03 _ 071817 _SED_05-10	9:48	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-04
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: BW KB LT FM JP
 Core Collection Date: 07/11/2017
 Core Collection Time: 09:51
 Instant Freeze (Y/N): Yes

Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 0.9
 % Recovery (Recovered Core/Depth Cored): 60%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	0.9	1.4
% Recovery (Recovered Core/Depth Cored):	60%	93%

Test Pit Log

Test Pit Logger: BW FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: sedge and grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.6	dark grayish brown [10YR4/2] sandy SILT, 85% fines, 15% fine grain sand, uniform in color, heavy roots, nonplastic
0.6-1.2	Roots decreasing, high in organic matter, same color, slight plasticity increasing with depth

Sample Collection

Sample Collection Team: BW, JP

Sample Collection Date: 7/17/17 and 7/18/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-04 _ 071717 _SED_00-01	17:06	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-04 _ 071717 _SED_01-03	17:07	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-04 _ 071817 _SED_03-05	9:58	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-04 _ 071817 _SED_05-10	10:02	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-06
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>BW,JP,LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/13/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>16:52</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.4</u>	<u>1.5</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>93%</u>	<u>100%</u>

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: "A" type grass, p grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1872



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.3	Very dark gray (10YR 3/1), saturated, SILT with fine sand (85% SILT 15% fine sand), plasticity NA due to high root density, 0.015' diameter roots
0.3-0.7	dark gray (10YR 4/1), saturated, SILT with fine sand (95% SILT 5% fine sand), medium plasticity, medium to high root density, hair like to 0.01' diameter
0.7-1.2	dark grayish brown (10YR 4/2), saturated, SILT with fine sand (95% SILT 5% fine sand), medium plasticity, medium root density but hair like sized, non component roots
	Water in hole bgs 1.3'

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	<u>W-MM-06 _ 072417 _SED_00-01</u>	<u>1555</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>1 x 16 oz Plastic</u>	<u>Lab Homogenize and Subsample</u>
0.1 - 0.3	<u>W-MM-06 _ 072417 _SED_01-03</u>	<u>1556</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>2 x 16 oz Plastic</u>	
0.3 - 0.5	<u>W-MM-06 _ 072517 _SED_03-05</u>	<u>1700</u>	<u>Hg, TOC, OC</u>	<u>Triple Replicate</u>	<u>1 x 8 oz Plastic 2 x 8 oz Amber Glass</u>	<u>Field Lab Homogenize and Subsample</u>
0.5 - 1.0	<u>W-MM-06 _ 072517 _SED_05-10</u>	<u>1702</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic 2 x 8 oz Amber Glass</u>	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-07
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>BW, JP, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/13/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>16:10</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.35</u>	<u>1.5</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>90%</u>	<u>100%</u>

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: P grass, a grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1296



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.4	Very dark grayish brown (10YR3/2), saturated, no odor, SILT with sand 90% SILT 10% sand, plasticity NA due to roots, high density roots, 0.01 ft diameter roots
0.4-1	Dark brown (10YR3/3), saturated, no odor, SILT with sand, 80% SILT 20% sand, plasticity NA due to roots, hair like roots high density
1-1.3	Dark gray (10YR4/1), saturated, organic odor, SILT with sand 85% SILT 15% sand, medium plasticity, low to medium density hair like roots
	Water in hole 0.85 ft bgs

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-07 _ 072517 _ SED_00-01	0839	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-07 _ 072517 _ SED_01-03	0840	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-07 _ 072617 _ SED_03-05	0847	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-07 _ 072617 _ SED_05-10	0849	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: *Julie Pallozzi*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-08
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: BW, JP, LT
 Core Collection Date: 07/13/2017
 Core Collection Time: 11:01
 Instant Freeze (Y/N): Yes

Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.15
 % Recovery (Recovered Core/Depth Cored): 77%

Core Recovery

	2.0	2.0
	1.5	1.5
	1.15	1.5
	77%	100%

Test Pit Log

Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses, morning glories
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 450



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.1	black (10YR 2/1), wet, organic odor, SILT with sand (85% SILT 15% fine sand), low plasticity, medium dense roots present, 0.02 diameter
0.1-0.6	Very dark gray (10YR 3/1), wet, sandy SILT (80% SILT 20% fine sand), low plasticity, medium dense roots present, 0.02 diameter
0.6-1.2	Dark gray (10YR 4/1), wet, SILT with sand (85% SILT 15% fine sand), medium plasticity, low density hair sized roots
1.2-1.5	Dark gray (10YR 4/1), wet, SILT with sand (85% SILT 15% fine sand), low plasticity, low density fine hair roots
	Depth to water bgs 1.4'

Sample Collection

Sample Collection Team: BW, JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-08 _ 071817 _ SED_00-01	15:23	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-08 _ 071817 _ SED_01-03	15:26	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-08 _ 071917 _ SED_03-05	9:15	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-08 _ 071917 _ SED_05-10	9:25	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: *Julie Pallozzi*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-09
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: FM JP
 Core Collection Date: 07/27/2017
 Core Collection Time: 09:28
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.37
 % Recovery (Recovered Core/Depth Cored): 91%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.37	1.5
% Recovery (Recovered Core/Depth Cored):	91%	100%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): No
 Vegetation Type: Marsh grass
 Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.3	Reddish brown (5YR4/3) with shades of dark reddish gray (5YR4/2), SILT with clay (<15%), wet, organic odor, nonplastic, high density roots of hair like diameter to 0.9' then medium density to 1.3', no living organisms observed, decomposed vegetation
	Water in hole 0.15' bags

Sample Collection

Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-09 _ 080117 _SED_00-01	1316	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-09 _ 080117 _SED_01-03	1318	MeHg, Hg, TOC, OC	MS/MSD	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-09 _ 080317 _SED_03-05	1404	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-09 _ 080317 _SED_05-10	1406	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Palozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-10
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>BW, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/27/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>09:34</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>0.85</u>	<u>0.65</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>57%</u>	<u>43%</u>

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Typha
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 100



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.2	Very dark brown (10YR 2/2), saturated, SILT with sand (10% fine sand), plasticity and stiffness NA due to the high root density, 0.05' root diameter,
0.2-0.5	Dark brown (10 YR 3/3) some biological black mottling (0.05' diameter), saturated, SILT with sand (5% fine sand), plasticity and stiffness NA due to the high root density, 0.05' root diameter,
0.5-0.7	Very dark gray (10YR 3/1), black biological mottling (0.05' diameter), saturated, SILT with sand (10% fine sand), low plasticity, medium density root mass, hair like roots
0.7-1.0	Very dark grayish brown (10YR 3/2), saturated, biological odor, SILT with fine sand (15% fine sand), low plasticity, medium density hair like roots
1.0-1.3	Very dark gray, (10YR 3/1), saturated, SILT with sand (15% fine sand), no plasticity, low density root mass, hair like roots
	Water at surface, low core recovery due to high density root mass

Sample Collection
 Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-10 _ 080117 _ SED_00-01	1615	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-10 _ 080117 _ SED_01-03	1617	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-10 _ 080317 _ SED_03-05	1304	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-10 _ 080317 _ SED_05-10	1306	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-11
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, JP</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/12/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>12:30</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.0</u>	<u>0.95</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>67%</u>	<u>63%</u>

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.2	Very dark brown [7.5YR2.5/3], saturated, SILT < 20%, dense root mass, hair like thickness to 0.1ft, nonplastic, soft, no organisms observed
0.2-0.4	Strong brown [7.5YR4/6] and strong brown to brown [7.5YR4/2], saturated, SILT < 20%, dense root mass, hair like thickness to 0.1ft, nonplastic, soft, no organisms observed
0.4-1.1	Brown [7.5YR4/4], saturated, increasing SILT with clay 20%, dense root mass, hair like thickness to 0.1ft, nonplastic, soft, no organisms observed
	Water depth 0.55 ft bgs

Sample Collection
 Sample Collection Team: BW, JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-11 _ 071817 _SED_00-01	11:14	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-11 _ 071817 _SED_01-03	11:17	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-11 _ 071917 _SED_03-05	9:55	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-11 _ 071917 _SED_05-10	10:00	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-MM-12
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, JP</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>	
Core Collection Date: <u>07/12/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>	
Core Collection Time: <u>14:31</u>	Recovered Core Length in Decimal Feet: <u>1.25</u>	<u>1.25</u>	
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>83%</u>	<u>83%</u>	
Collection Method: <u>Slide Hammer</u>			
Liner Type: <u>3" D x 24" L Plastic</u>			
Est. Volume: <u>47 oz/ft</u>			

Test Pit Log

Test Pit Logger: FM Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440

Interval	Description
0-0.15	Very dark gray [7.5YR3/1], moist, dense root mass with varying thickness from hair size to 0.01 ft, SILT <25%, nonplastic, stiffness NA, no odor, no observed organisms
0.15-1	Brown [7.5YR4/3], very moist, no odor, SILT increases with depth, predominantly decomposed root mass and organic matter with SILT < 35%, nonplastic, no organisms observed, 0.3-0.5' single 0.075' woodchip observed
1-1.3	Brown [7.5YR4/2], very moist, no odor, more SILT content < 45%, decomposed organic matter, nonplastic, soft, hair like roots, no organisms observed
	No water observed in test pit



Sample Collection
 Sample Collection Team: BW JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-12 _ 071817 _SED_00-01	17:33	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-12 _ 071817 _SED_01-03	17:35	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-12 _ 071917 _SED_03-05	11:19	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-12 _ 071917 _SED_05-10	11:23	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-13
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, JP</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/12/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>16:12</u>	Recovered Core Length in Decimal Feet: <u>1.2</u>		<u>1.1</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>80%</u>		<u>73%</u>
Collection Method: <u>Slide Hammer</u>			
Liner Type: <u>3" D x 24" L Plastic</u>			
Est. Volume: <u>47 oz/ft</u>			

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Cat tails
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 432



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.6	Dark reddish brown [5YR3/4], decomposed cat tails and organic matter with CLAY < 10%, saturated, odorless, nonplastic, stiffness NA, roots abundant from hair like to 0.03 ft thickness, no organisms observed, 0.3-0.5' wood chips up to 0.01' in length
0.6-0.7	Dark gray [5YR4/1], decomposed organic matter with CLAY < 15%, no odor, nonplastic, stiffness NA, same roots throughout, no organisms observed
0.7-1.3	Dark reddish brown [5YR3/4], same as first interval with increasing CLAY content 30 %
	Water depth 0.4 ft bgs

Sample Collection
 Sample Collection Team: BW, JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-13 _ 071817 _ SED_00-01	10:33	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-13 _ 071817 _ SED_01-03	10:35	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-13 _ 071917 _ SED_03-05	10:43	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-13 _ 071917 _ SED_05-10	10:46	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(S50 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-14
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>LT, BW</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/12/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>10:06</u>	Recovered Core Length in Decimal Feet: <u>1.2</u>		<u>1.1</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>80%</u>		<u>73%</u>

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses, p grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440 stems/sq ft



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.7	Very dark grayish brown (10 YR 3/2), saturated, SILT with sand, (85% SILT, 15% fine sand) plasticity NA due to heavy root mat structure, fine roots,
0.7-1.2	Very dark gray(10 YR 3/1), saturated, sandy SILT, (75% SILT 25% fine grained sand), decreasing roots, finer roots, low plasticity
	Water depth bgs 0.8'

Sample Collection
 Sample Collection Team: BW JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-14 _ 071817 _SED_00-01	17:59	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-14 _ 071817 _SED_01-03	18:00	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-14 _ 071917 _SED_03-05	12:40	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-14 _ 071917 _SED_05-10	12:43	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-15
 WO: 4A-030 Wetland

Core Collection			Core Recovery	
Core Collection Team: <u>BW, LT, DL</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet:	2.0	2.0
Core Collection Date: <u>08/01/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	1.5	1.5
Core Collection Time: <u>10:13</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	1.07	0.8
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	71%	53%

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Typha 20%, marsh grasses 80%
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1000



Interval	Description
0.0-0.8	Brown (10YR 4/2), saturated, biological odor, SILT with sand (10% fine sand), plasticity NA due to High density root mass, roots 0.03' in diameter, one large 0.45' piece of woody debris
0.8-1.3	Dark gray (10 4/1), saturated, biological odor, SILT with sand (5% sand), medium plasticity, medium density hair like sized roots
	Water in hole bgs 0.6'

Sample Collection
 Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-15 _ 080117 _SED_00-01	1640	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-15 _ 080117 _SED_01-03	1642	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-15 _ 080317 _SED_03-05	1256	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-15 _ 080317 _SED_05-10	1258	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-MM-16
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>DL, LT, BW</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>08/01/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>09:34</u>	Recovered Core Length in Decimal Feet: <u>0.9</u>		<u>1.13</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>60%</u>		<u>75%</u>
Collection Method: <u>Slide Hammer</u>			
Liner Type: <u>3" D x 24" L Plastic</u>			
Est. Volume: <u>47 oz/ft</u>			

Test Pit Log

Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 2000



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.6	Dark grayish brown (10 YR 4/2), saturated, SILT with sand (5% fine sand), plasticity NA due to high density roots, root size 0.002'
0.6-1.2	Dark gray (10 YR 4/1), saturated, strong biological odor, SILT with sand (10% fine sand), medium density hair like sized roots
Water in hole bgs 0.35'	

Sample Collection

Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	<u>W-MM-16 _ 080117 _SED_00-01</u>	<u>1627</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>1 x 16 oz Plastic</u>	<u>Lab Homogenize and Subsample</u>
0.1 - 0.3	<u>W-MM-16 _ 080117 _SED_01-03</u>	<u>1629</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>2 x 16 oz Plastic</u>	
0.3 - 0.5	<u>W-MM-16 _ 080317 _SED_03-05</u>	<u>1524</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	<u>Field Lab Homogenize and Subsample</u>
0.5 - 1.0	<u>W-MM-16 _ 080317 _SED_05-10</u>	<u>1526</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-17
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: FM, JP
 Core Collection Date: 07/19/2017
 Core Collection Time: 12:27
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.05
 % Recovery (Recovered Core/Depth Cored): 70%

Core Recovery

2.0	2.0
1.5	1.5
1.05	1.2
70%	80%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): No
 Vegetation Type: Marsh grass, cat tails
 Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.2	Strong brown (7.5YR4/6), wet, slight organic odor, SILT with clay < 10%, no plastic, high density roots (0-0.4' about 15% soil 85% roots), roots range from hair like to 0.01' diameter, no organisms observed
	Water depth 0.45' bgs

Sample Collection

Sample Collection Team: LT JP BW FM
 Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-17 _ 072517 _SED_00-01	1025	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-17 _ 072517 _SED_01-03	1026	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-17 _ 072617 _SED_03-05	1023	Hg, TOC, OC	MS/MSD, Triple Replicate	3 x 8 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-17 _ 072617 _SED_05-10	1025	Hg, TOC, OC	None	3 x 8 oz Plastic	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: [Signature]

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-18
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, JP</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/19/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>13:38</u>	Recovered Core Length in Decimal Feet: <u>1.4</u>		<u>1.25</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>93%</u>		<u>83%</u>
Collection Method: <u>Slide Hammer</u>			
Liner Type: <u>3" D x 24" L Plastic</u>			
Est. Volume: <u>47 oz/ft</u>			

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.3	Strong brown (7.5YR5/8), wet, no odor, SILT 10-15%, high density root ,ass 90%, fine hair roots, nonplastic, no organisms observed
0.3-1.1	Gray (7.5YR5/1) to dark brown (7.5YR3/3), wet, no odor, CLAY with silt 25%), low plasticity, medium density roots of hair like diameter, no organisms observed, heavy dead organic matter
	Water depth 0.7' bgs

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/25/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	<u>W-MM-18 _ 072517 _SED_00-01</u>	<u>0829</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>1 x 16 oz Plastic</u>	<u>Lab Homogenize and Subsample</u>
0.1 - 0.3	<u>W-MM-18 _ 072517 _SED_01-03</u>	<u>0830</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>2 x 16 oz Plastic</u>	
0.3 - 0.5	<u>W-MM-18 _ 072517 _SED_03-05</u>	<u>1744</u>	<u>Hg, TOC, OC</u>	<u>Triple Replicate</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	<u>Field Lab Homogenize and Subsample</u>
0.5 - 1.0	<u>W-MM-18 _ 072517 _SED_05-10</u>	<u>1746</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-19
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, JP</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/19/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>16:50</u>	Recovered Core Length in Decimal Feet: <u>1.2</u>		<u>1.5</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>80%</u>		<u>100%</u>
Collection Method: <u>Slide Hammer</u>			
Liner Type: <u>3" D x 24" L Plastic</u>			
Est. Volume: <u>47 oz/ft</u>			

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: See photo
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.45	Dark brown (7.5YR3/2), moist, no odor, SILT with clay 30%, no plastic, high density roots of hair like diameter, no observed organisms
0.45-1.2	Strong brown (7.5YR5/6), moist, no odor, CLAY with silt < 10%, low plasticity, medium to high density roots of hair like diameter, no organisms observed
	No water in hole

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	<u>W-MM-19 _ 072417 _SED_00-01</u>	<u>1817</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>1 x 16 oz Plastic</u>	<u>Lab Homogenize and Subsample</u>
0.1 - 0.3	<u>W-MM-19 _ 072417 _SED_01-03</u>	<u>1818</u>	<u>MeHg, Hg, TOC, OC</u>	<u>None</u>	<u>2 x 16 oz Plastic</u>	
0.3 - 0.5	<u>W-MM-19 _ 072517 _SED_03-05</u>	<u>1650</u>	<u>Hg, TOC, OC</u>	<u>None</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	<u>Field Lab Homogenize and Subsample</u>
0.5 - 1.0	<u>W-MM-19 _ 072517 _SED_05-10</u>	<u>1652</u>	<u>Hg, TOC, OC</u>	<u>Triple Replicate</u>	<u>1 x 8 oz Plastic</u> <u>2 x 8 oz Amber Glass</u>	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-20
 WO: 4A-030 Wetland, 4A-050 Biota Co-Located

Core Collection

Core Collection Team: FM JP
 Core Collection Date: 07/27/2017
 Core Collection Time: 12:45
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.0
 % Recovery (Recovered Core/Depth Cored): 67%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.0	1.1
% Recovery (Recovered Core/Depth Cored):	67%	73%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): No
 Vegetation Type: Sedge
 Approx. # Stems/ft²: 3.144



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.25	Dark gray (10YR4/1), CLAY with silt (< 10%), saturated, no odor, nonplastic, high density roots of hair like diameter to 0.65' then sharp decrease to low density, decomposed vegetation, no living organisms observed
	Water depth 0.4' bgs

Sample Collection

Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-20 _ 080117 _SED_00-01	1555	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-20 _ 080117 _SED_01-03	1557	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-20 _ 080317 _SED_03-05	1326	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-20 _ 080317 _SED_05-10	1328	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-21
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>LT, BW</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/27/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>12:25</u>	Recovered Core Length in Decimal Feet: <u>1.4</u>		<u>1.5</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>93%</u>		<u>100%</u>
Collection Method: <u>Slide Hammer</u>			
Liner Type: <u>3" D x 24" L Plastic</u>			
Est. Volume: <u>47 oz/ft</u>			

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: 90% Typha, 10% marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 500



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.2	Very dark brown (10 YR 3/2), saturated, SILT with sand (5% fine sand), plasticity NA due to high density root mass, 0.05' typha roots and hairlike marsh grass roots
0.2-0.8	Dark grayish brown (10YR 4/2), black biological mottling, saturated, SILT with sand (10% fine sand), low plasticity, high density root mass, 0.05' typha roots and hairlike marsh grass roots
0.8-1.3	Dark gray (10YR 4/1), saturated, biological odor, SILT with sand (15% fine sand), medium plasticity, high density root mass, hair like sized roots
	Water in hole bgs 0.6'

Sample Collection
 Sample Collection Team: LT BW KB Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-21 _ 080117 _SED_00-01	1354	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-21 _ 080117 _SED_01-03	1356	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-21 _ 080317 _SED_03-05	1442	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-21 _ 080317 _SED_05-10	1444	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-22
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: FM, JP
 Core Collection Date: 07/19/2017
 Core Collection Time: 09:53
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.25
 % Recovery (Recovered Core/Depth Cored): 83%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.25	1.4
% Recovery (Recovered Core/Depth Cored):	83%	93%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): No
 Vegetation Type: See photo
 Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.1	Strong brown (7.5YR4/6), wet, no odor, SILT with clay < 25%, low plasticity, high density root mass, hair like to 0.04' root diameter, no organisms observed Water depth 0.6' bgs

Sample Collection

Sample Collection Team: LT JP BW FM
 Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-22 _ 072417 _ SED_00-01	1739	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-22 _ 072417 _ SED_01-03	1741	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-22 _ 072517 _ SED_03-05	1437	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-22 _ 072517 _ SED_05-10	1439	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: *Julie Pallozzi*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-23
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: FM, JP
 Core Collection Date: 07/19/2017
 Core Collection Time: 09:01
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.45
 % Recovery (Recovered Core/Depth Cored): 97%

Core Recovery

Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.45	1.5
% Recovery (Recovered Core/Depth Cored):	97%	100%

Test Pit Log

Test Pit Logger: FM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): Yes
 Vegetation Type: See picture
 Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.35	Dark gray (7.5YR4/1), moist, no odor, CLAY with silt < 10%, medium plasticity, dense root mass from 0-0.85' diameter range from hairy to 0.01', low density fine roots down to bottom, no organisms observed, brown (7.5YR5/3) mottling from 0-0.6, woody debris on surface
	No water in hole

Sample Collection

Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-23 _ 072417 _SED_00-01	1303	MeHg, Hg, TOC, OC	Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-23 _ 072417 _SED_01-03	1305	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-23 _ 072517 _SED_03-05	1522	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-23 _ 072517 _SED_05-10	1524	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-24
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>FM, JP</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>07/19/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>07:49</u>	Recovered Core Length in Decimal Feet: <u>1.4</u>		<u>1.35</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>93%</u>		<u>90%</u>

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: See picture
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1440



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.45	Dark grayish brown (10YR4/2), moist, no odor, CLAY with <10% silt, medium plasticity, medium density roots from 0-0.8, very low density roots to end, no organisms observed, some decomposed organic matter
	No water in hole

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-24 _ 072417 _SED_00-01	1805	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-24 _ 072417 _SED_01-03	1806	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-24 _ 072517 _SED_03-05	1636	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-24 _ 072517 _SED_05-10	1638	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: *Julie Pallozzi*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-14-INTA
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>KB, FM, LT</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/17/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>12:57</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>0.61</u>	<u>0.85</u>	<u>0.49</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>41%</u>	<u>57%</u>	<u>33%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 0 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.4	dark gray SILT with medium to coarse sand (<25%) near the surface (0-0.1), interlayered with thin seams of fine wood chips between 0.1 and 0.4 ft depth interval, no odor, no plasticity, medium soft, no living organisms observed
Notes	salinity at surface 0 PSU, 0.0-0.3 competent, then break, no ludocline on cores

Sample Collection
 Sample Collection Team: JP LT FM BW Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No lutocline sample	NA	NA	NA	NA	
0.0 - 0.1	W-14-INTA _ 072517 _SED_00-01	1250	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-14-INTA _ 072517 _SED_01-03	1251	MeHg, Hg, TOC, OC	MS/MSD	2 x 16 oz Plastic	
0.3 - 0.5	W-14-INTA _ 072617 _SED_03-05	0838	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-14-INTA _ 072617 _SED_05-10	0840	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	AmeC FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 Interval 0.0 = Determined by light disappearance test
 Samples were processed/ sectioned in the Winterport field office.
 Geographic coordinates provided on Core/Grab log.
 Core collected for logging was only .4 ft. Core collected for sample was 1 ft.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-27-INTA
 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>FM, LT, KB</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>08:51</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>0.77</u>	<u>0.98</u>	<u>1.13</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>51%</u>	<u>65%</u>	<u>75%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): No
 Salinity of Water at Mudline: 20 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.7	very dark brown (7.5YR 2.5/2) CLAY with some silt (10 %) with a shade of black at 0.1 to 0.25 ft. depth interval. 3 small clams observed, slight odor, low plasticity, soft, no wood chips observed
Notes	Surface salinity = 10 PSU, water depth of 5.5', just passed high tide, falling

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-27-INTA _ 072417 _SED_00-01	1619	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-27-INTA _ 072417 _SED_01-03	1620	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-27-INTA _ 072517 _SED_03-05	1423	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-27-INTA _ 072517 _SED_05-10	1426	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab log. Core collected for logging was only .7 ft. Core collected for sample was 1 ft.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-102-A
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>DL, LT</u>		Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>08/03/2017</u>	Collection Method: <u>Slide Hammer</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>10:17</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Recovered Core Length in Decimal Feet: <u>0.97</u>	<u>0.87</u>
Instant Freeze (Y/N): <u>Yes</u>	Est. Volume: <u>47 oz/ft</u>	% Recovery (Recovered Core/Depth Cored): <u>65%</u>	<u>58%</u>

Test Pit Log
 Test Pit Logger: LT Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Typha and marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1500



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.3	Dark brown (10 YR 3/3), saturated, SILT with sand (5% fine sand), low plasticity, high density root mass, roots sized 0.01' until 0.55', then hair sized. Alternating layers of 90% woodchips, bands from 0.85-0.9', 0.95-1.5'
	Water in hole bgs 0.4'

Sample Collection
 Sample Collection Team: KCB, BPW Sample Collection Date: 8/15/15 and 8/17/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-102-A _ 081517 _SED_00-01	1435	MeHg, Hg, TOC, OC	None	2 x 8 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-102-A _ 081517 _SED_01-03	1437	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-102-A _ 081717 _SED_03-05	1757	Hg, TOC, OC	None	3 x 4 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-102-A _ 081717 _SED_05-10	1800	Hg, TOC, OC	None	3 x 4 oz Plastic	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-102-B
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>DL, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>08/03/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>09:45</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.1</u>	<u>0.9</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>73%</u>	<u>60%</u>

Test Pit Log
 Test Pit Logger: LT Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses and 20% typha
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 2000



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.35	Dark brown (10YR 3/3), saturated, SILT with sand (10% fine sand), plasticity NA due to high density root mass (0.01' sized) and wood chips
0.35-0.65	Very dark grayish brown (10YR 3/2), saturated, SILT with sand (5% fine sand), plasticity NA due to high density root mass (0.01' to hair like) and woodchips, large wood piece, 0.3' long at 0.6', lense of 90%
0.65-1.2	Dark gray (10YR 4/1), saturated, SILT with sand (5% fine sand), non plastic, low density root mass, hair like roots, lenses of 90% woodchips at 0.7', 0.9', 1'

Sample Collection
 Sample Collection Team: KCB,BPW Sample Collection Date: 8/15/17 and 8/17/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-102-B _ 081517 _ SED_00-01	1423	MeHg, Hg, TOC, OC	None	2 x 8 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-102-B _ 081517 _ SED_01-03	1425	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-102-B _ 081717 _ SED_03-05	1744	Hg, TOC, OC	None	3 x 4 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-102-B _ 081717 _ SED_05-10	1747	Hg, TOC, OC	None	3 x 4 oz Plastic	

Sample Analysis Information				Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-102-C
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>DL, LT</u>	Sleeve Length in Decimal Feet: <u>2.0</u>		<u>2.0</u>
Core Collection Date: <u>08/03/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>		<u>1.5</u>
Core Collection Time: <u>09:24</u>	Recovered Core Length in Decimal Feet: <u>1.25</u>		<u>0.6</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>83%</u>		<u>40%</u>

Test Pit Log
 Test Pit Logger: LT Woody Debris (Y/N): Yes
 Digging Method: Shooter Shovel Vegetation Type: Marsh grasses
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1000



Interval	Description
0.0-0.65	Dark grayish brown (10YR 4/2), black biological mottling, saturated, SILT with sand (10% fine sand), plasticity NA due to high density root mass, root size 0.02'
0.65-1.2	Dark yellowish brown (10 YR 4/4), saturated, woodchips with silt and fine sand (90% woodchips, 10% silt and fine sand), no plasticity, high density roots, 0.01' roots
	Water in hole bgs 0.6'

Sample Collection
 Sample Collection Team: KCB, BPW Sample Collection Date: 8/15/15 and 8/17/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	<u>W-102-C _ 081517 _ SED_00-01</u>	<u>1535</u>	<u>MeHg, Hg, TOC, OC</u>	<u>MS/MSD</u>	<u>2 x 8 oz Plastic</u>	<u>Lab Homogenize and Subsample</u>
0.1 - 0.3	<u>W-102-C _ 081517 _ SED_01-03</u>	<u>1537</u>	<u>MeHg, Hg, TOC, OC</u>	<u>MS/MSD</u>	<u>2 x 16 oz Plastic</u>	
0.3 - 0.5	<u>W-102-C _ 081717 _ SED_03-05</u>	<u>1830</u>	<u>Hg, TOC, OC</u>	<u>MS/MSD</u>	<u>3 x 4 oz Plastic</u>	<u>Field Lab Homogenize and Subsample</u>
0.5 - 1.0	<u>W-102-C _ 081717 _ SED_05-10</u>	<u>1832</u>	<u>Hg, TOC, OC</u>	<u>MS/MSD</u>	<u>3 x 4 oz Plastic</u>	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab Log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Pallozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-103-B
 WO: 4A-030 Wetland

Core Collection		Core Recovery	
Core Collection Team: <u>KB, FM, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/17/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>11:20</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.25</u>	<u>1.35</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>83%</u>	<u>90%</u>

Test Pit Log
 Test Pit Logger: FM Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Typha (10%), angiafolia, carex sp. (
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 1500



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.6	Dark reddish brown (5YR 3/4), very moist, SILT, dead organic matter with low to high density roots (>40%), from high size to 0.01' diameter, non plastic
0.6-1.35	Dark gray (7.5YR 4/1), very moist, SILT with clay (20% clay), very low plasticity, low density roots, from high size to 0.01' diameter
	No water in hole

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-103-B _ 072417 _ SED_00-01	1247	MeHg, Hg, TOC, OC	Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-103-B _ 072417 _ SED_01-03	1250	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-103-B _ 072517 _ SED_03-05	1536	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-103-B _ 072517 _ SED_05-10	1538	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: W-108-A
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection			Core Recovery	
Core Collection Team: <u>BW, LT</u>	Collection Method: <u>Slide Hammer</u>	Sleeve Length in Decimal Feet:	2.0	2.0
Core Collection Date: <u>08/02/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	1.5	1.5
Core Collection Time: <u>15:18</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	1.35	1.45
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	90%	97%

Test Pit Log
 Test Pit Logger: BW Woody Debris (Y/N): No
 Digging Method: Shooter Shovel Vegetation Type: Marsh grass
 Test Pit Dimensions: 6" x 6" x 18" Approx. # Stems/ft²: 200



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.35	Very dark grayish brown (10YR 3/2), wet, SILT with sand (5% fine sand), medium plasticity, high density root mass, root size 0.03'
0.35-0.8	Dark gray (10YR 4/1), wet, sandy SILT (25% fine sand), low plasticity, high density root mass, root size 0.02'
0.8-1.1	Very dark grayish brown (10YR 3/2), wet, sandy SILT (30% poorly graded sand), low plasticity, high density root mass, root size 0.02'

Sample Collection
 Sample Collection Team: KCB,BPW Sample Collection Date: 8/15/17 and 8/17/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-108-A _ 81517 _SED_00-01	1350	MeHg, Hg, TOC, OC	None	2 x 8 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-108-A _ 81517 _SED_01-03	1351	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-108-A _ 81717 _SED_03-05	1735	Hg, TOC, OC	None	3 x 4 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-108-A _ 81717 _SED_05-10	1738	Hg, TOC, OC	None	3 x 4 oz Plastic	

Analyte	Method	Preservative	Lab	Notes:
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon 0.0 = Scalp Samples were processed/sectioned in the Winterport field office with windows closed. Geographic coordinates provided on Core/Grab Log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-MM-05
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: KCB FKM
 Core Collection Date: 07/13/2017
 Core Collection Time: 16:58
 Instant Freeze (Y/N): Yes
 Collection Method: Slide Hammer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet:
 Depth Cored in Decimal Feet:
 Recovered Core Length in Decimal Feet:
 % Recovery (Recovered Core/Depth Cored):

Core Recovery	
Sleeve Length in Decimal Feet:	2.0
Depth Cored in Decimal Feet:	1.5
Recovered Core Length in Decimal Feet:	1.1
% Recovery (Recovered Core/Depth Cored):	73%

Test Pit Log

Test Pit Logger: FKM
 Digging Method: Shooter Shovel
 Test Pit Dimensions: 6" x 6" x 18"
 Woody Debris (Y/N): No
 Vegetation Type: Typha angustifolia
 Approx. # Stems/ft²: 15



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.00-0.15	10YR4/2 dark grey brown, silty clay, very moist, low plasticity, soft
0.15-1.2	10YR4/1 dark grey. Clay with organic matter fine hairy roots. Soft medium plasticity

Sample Collection

Sample Collection Team: BW, JP Sample Collection Date: 7/18/17 and 7/19/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-MM-05 _ 071817 _ SED_00-01	15:47	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-MM-05 _ 071817 _ SED_01-03	15:48	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-MM-05 _ 071917 _ SED_03-05	12:18	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-MM-05 _ 071917 _ SED_05-10	12:22	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 0.0 = Scalp
 Samples were processed/sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation
INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: OR-01-01
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>FM, KB, BW, LT, JP</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>07:32</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>0.86</u>	<u>0.85</u>	<u>1.4</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>57%</u>	<u>57%</u>	<u>93%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 18 PSU (o/00)



Interval	Description
0-1.35	very dark brown (7.5YR 2.5/3) CLAY with some silt (<10%), black mottling between 0.3-0.45 ft. depth interval, fine wood chips dispersed between 0.4 and 0.75 ft. depth interval, no living organisms observed, strong odor, medium plasticity, soft
Notes	Salinity at surface 7 PSU, Water depth 5'

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-01-01 _ 072417 _ SED_00-01	1752	MeHg, Hg, TOC, OC	MS/MSD, Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-01-01 _ 072417 _ SED_01-03	1753	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	OR-01-01 _ 072517 _ SED_03-05	1504	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-01-01 _ 072517 _ SED_05-10	1506	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 Interval 0.0 = Determined by light disappearance test
 Samples were processed/ sectioned in the Winterport field office.
 Geographic coordinates provided on Core/Grab log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: *Julie Pallozzi*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

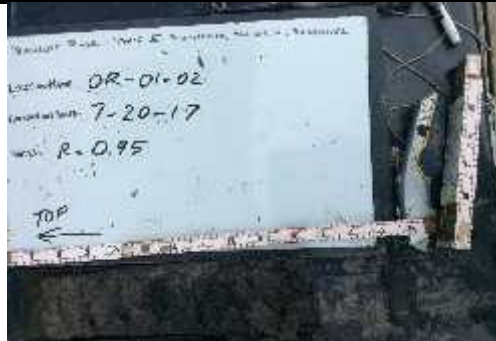
INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: OR-01-02
 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>FM, LT, BW, KB, JP</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>08:04</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>1.08</u>	<u>1.08</u>	<u>1.09</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>72%</u>	<u>72%</u>	<u>73%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): No
 Salinity of Water at Mudline: 20 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.95	dark brown (10YR 3/3) SILT with some clay (<10%), strong odor, a black seam of organic matter (twigs) between 0.4 and 0.55 ft. depth interval, soft, no living organisms observed, no wood chips observed
Notes	Salinity at surface 5 PSU; water depth 5'

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-01-02 _ 072417 _ SED_00-01	1235	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-01-02 _ 072417 _ SED_01-03	1237	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	OR-01-02 _ 072517 _ SED_03-05	1542	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-01-02 _ 072517 _ SED_05-10	1544	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: OR-01-03
 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>LT, JP, KB, FM, BW</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>09:42</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>1.25</u>	<u>1.33</u>	<u>1.25</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>83%</u>	<u>89%</u>	<u>83%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 22 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0 - 0.4	black (10YR 2/1) CLAY with some silt (<10%), soft, very fine wood chips throughout the depth interval, strong odor, no living organisms observed
0.4 - 1.15	dark brown, (10YR 3/3) CLAY with some silt (<10%), soft, very fine wood chips dispersed throughout the depth interval, strong odor, no living organisms observed
Notes	Surface water salinity 15 PSU; water depth 3.7'

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-01-03 _ 072417 _ SED_00-01	1715	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-01-03 _ 072417 _ SED_01-03	1716	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	OR-01-03 _ 072517 _ SED_03-05	1624	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-01-03 _ 072517 _ SED_05-10	1626	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Analyte	Method	Preservative	Lab	Notes: Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature: [Handwritten Signature]

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: OR-01-04
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>FM, KB, BW, JP, LT</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>10:07</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>1.16</u>	<u>1.15</u>	<u>1.3</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>77%</u>	<u>77%</u>	<u>87%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 21 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.4	black (7.5YR 2.5/1) SILT with some clay (<15%), a few whole clam shells, some very fine wood chips observed, no odor, no living organisms
0.4-1.2	dark brown (7.5YR 3/2) SILT with some clay (<10%), very fine wood chips dispersed throughout the core interval, no living organisms observed, some odor, soft, low plasticity
Notes	Surface water salinity 19 PSU, water depth 3'

Sample Collection
 Sample Collection Team: JP LT FM Sample Collection Date: 7/25/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-01-04 _ 072517 _ SED_00-01	0900	MeHg, Hg, TOC, OC	Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-01-04 _ 072517 _ SED_01-03	0901	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	OR-01-04 _ 072517 _ SED_03-05	1716	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-01-04 _ 072517 _ SED_05-10	1718	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-5-6a Sediment Sampling, SOP-5-7 Soil Descriptions, SOP-5-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Palfozzi

QA/QC by: Lauren Tierney

Technician Signature: *Julie Palfozzi*

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: OR-01-05
 WO: 4A-030 Wetland

Core Collection		Core Recovery		
Core Collection Team: <u>FM, BW, LT, JP, KB</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>10:24</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet: <u>1.07</u>	<u>1.36</u>	<u>1.17</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored): <u>71%</u>	<u>91%</u>	<u>78%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 22 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.25	very dark brown (7.5YR 2.5/2) SILT with some clay (<15%) and a shade of black near the surface (between 0.1 and 0.2 ft.), 2 small clams and a few weathered clam shells, strong odor, very fine wood chips throughout the core
Notes	Surface salinity 20 PSU; water depth 4.4'

Sample Collection
 Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-01-05 _ 072417 _ SED_00-01	1727	MeHg, Hg, TOC, OC	Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-01-05 _ 072417 _ SED_01-03	1729	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	OR-01-05 _ 072517 _ SED_03-05	1508	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-01-05 _ 072517 _ SED_05-10	1510	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: OR-02-01
 WO: 4A-030 Wetland

Core Collection		Core Recovery			
Core Collection Team: <u>FM, LT, BW, KB, JP</u>	Collection Method: <u>Push Corer</u>	Sleeve Length in Decimal Feet:	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Liner Type: <u>3" D x 24" L Plastic</u>	Depth Cored in Decimal Feet:	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>07:48</u>	Est. Volume: <u>47 oz/ft</u>	Recovered Core Length in Decimal Feet:	<u>1.0</u>	<u>1.2</u>	<u>1.25</u>
Instant Freeze (Y/N): <u>Yes</u>		% Recovery (Recovered Core/Depth Cored):	<u>67%</u>	<u>80%</u>	<u>83%</u>

Core Log
 Core Logger: FKM Woody Debris (Y/N): No
 Salinity of Water at Mudline: 18 PSU (o/00)

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.2	dark brown (7.5YR 3/2) CLAY with some silt (<10%), a black interlayer between 0.3 and 0.45 ft., low plasticity, soft, no living organisms, no odor, no wood chips observed
Notes	Salinity at surface 8 PSU; water depth 5'

No Photo Taken

Sample Collection
 Sample Collection Team: LT JP FM BW Sample Collection Date: 7/24/17 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-02-01 _ 072417 _ SED_00-01	1210	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-02-01 _ 072417 _ SED_01-03	1210	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	OR-02-01 _ 072517 _ SED_03-05	1516	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-02-01 _ 072517 _ SED_05-10	1518	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information			
Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 Interval 0.0 = Determined by light disappearance test
 Samples were processed/ sectioned in the Winterport field office.
 Geographic coordinates provided on Core/Grab log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 2/1/2018



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052

Location ID: OR-02-02
WO: 4A-030 Wetland

Core Collection		Core Recovery		
Core Collection Team: <u>LT, FM</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
Core Collection Date: <u>07/20/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
Core Collection Time: <u>09:32</u>	Recovered Core Length in Decimal Feet: <u>0.99</u>	<u>1.29</u>	<u>1.32</u>	<u>1.32</u>
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>66%</u>	<u>86%</u>	<u>88%</u>	<u>88%</u>

Core Log	
Core Logger: <u>FKM</u>	Woody Debris (Y/N): <u>Yes</u>
	Salinity of Water at Mudline: <u>10</u> PSU (o/00)
Interval	Description
0-0.95	very dark grayish brown (10YR 3/2) CLAY with some silt (*<10%), with a shade of very dark brown (10YR 2/2) between 0.1 and 0.4 ft depth interval, slight odor, very fine wood chips, soft, low-medium plasticity, some clam shells observed, no living organisms observed
Notes	Water depth = 12.9', falling tide, surface salinity = 0.99 PSU

No Photo Taken


Sample Collection Team: LT JP BW FM Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-02-02 _ 072417 _SED_00-01	1700	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-02-02 _ 072417 _SED_01-03	1701	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	OR-02-02 _ 072517 _SED_03-05	1448	Hg, TOC, OC	Triple Replicate	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-02-02 _ 072517 _SED_05-10	1450	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	
Methyl Mercury (MeHg)	1630	Freeze	EFGS	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office. Geographic coordinates provided on Core/Grab log.
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature: 

QA/QC Date: 2/1/2018



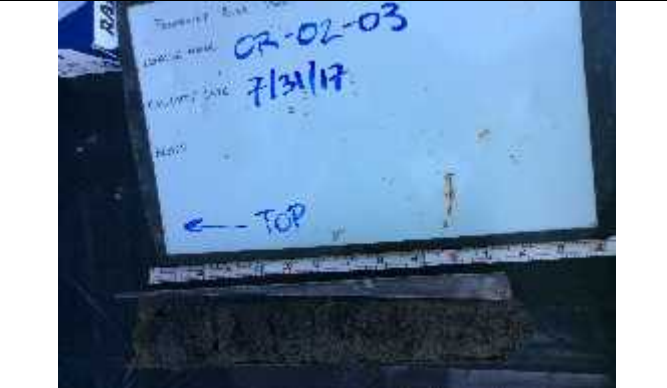
Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River Location ID: OR-02-03
 Project Number: 3616166052 WO: 4A-030 Wetland

Core Collection		Core Recovery		
Core Collection Team: <u>KB, LT</u>	Sleeve Length in Decimal Feet: <u>2.0</u>	<u>2.0</u>	<u>2.0</u>	
Core Collection Date: <u>07/31/2017</u>	Depth Cored in Decimal Feet: <u>1.5</u>	<u>1.5</u>	<u>1.5</u>	
Core Collection Time: <u>15:11</u>	Recovered Core Length in Decimal Feet: <u>1.1</u>	<u>1.05</u>	<u>1.07</u>	
Instant Freeze (Y/N): <u>Yes</u>	% Recovery (Recovered Core/Depth Cored): <u>73%</u>	<u>70%</u>	<u>71%</u>	

Core Log
 Core Logger: BPW Woody Debris (Y/N): N
 Salinity of Water at Mudline: 23 PSU (o/00)



Interval	Description
0.0-0.05	10yr 4/2 dark grayish brown, Silt with sand 95% silt, 5% fine grained sand, saturated, biological odor, no plasticity, no roots, small clam .03 diameter.
0.05-0.8	10yr 3/2 very dark gray, Silt with sand 95% silt, 5% fine grained sand, saturated, biological odor, low plasticity, no roots.
0.8-1.1	10yr 3/2 very dark grayish brown, Silt with sand, 95% silt, 5% fine grained sand, saturated, biological odor, medium plasticity, no roots.
Notes	Water depth 4', rising tide, surface salinity - 23 PSU, wood chips observed during core collection on exterior of core in sediment 0.5' down to bottom of core.

Sample Collection
 Sample Collection Team: LT BW Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	OR-02-03 _ 080117 _ SED_00-01	1447	MeHg, Hg, TOC, OC	MS/MSD, Triple Replicate	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	OR-02-03 _ 080117 _ SED_01-03	1449	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	OR-02-03 _ 080317 _ SED_03-05	1500	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	OR-02-03 _ 080317 _ SED_05-10	1502	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information				Notes:
Analyte	Method	Preservative	Lab	Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon Interval 0.0 = Determined by light disappearance test Samples were processed/ sectioned in the Winterport field office Geographic coordinates provided on Core/Grab log.
Methyl Mercury (MeHg)	1630	Freeze	EFGS	
Mercury (Hg)	1631	4 C	EFGS	
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha	
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW	

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-101-INTA
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: KB, LT, BW, DL
 Core Collection Date: 07/31/2017
 Core Collection Time: 17:38
 Instant Freeze (Y/N): Yes

Collection Method: Push Corer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.19
 % Recovery (Recovered Core/Depth Cored): 79%

Core Recovery

2.0	2.0	2.0
1.5	1.5	1.5
1.19	1.18	1.25
79%	79%	83%

Core Log

Core Logger: BPW Woody Debris (Y/N): N
 Salinity of Water at Mudline: 20 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.1	10yr 4/1 dark gray, Silt with sand, 99% silt, 15% fine grained sand, saturated, biological odor, no plasticity, no roots.
0.1-0.7	10yr 3/1 very dark gray with black modeling, silt with sand, 95% silt 5% fine grained sand, clam @ .2, saturated, biological odor, medium plasticity, no roots.
0.7-1.2	10yr 3/2 very dark grayish brown, silt with sand, 90% silt, 10% fine grained sand, saturated, biological odor, medium plasticity, no roots.
Notes	Water depth - 4', surface salinity - 20 PSU

Sample Collection

Sample Collection Team: LT BW Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-101-INTA _ 080117 _SED_00-01	1303	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-101-INTA _ 080117 _SED_01-03	1305	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	W-101-INTA _ 080317 _SED_03-05	1428	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-101-INTA _ 080317 _SED_05-10	1430	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP: SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 Interval 0.0 = Determined by light disappearance test
 Samples were processed/ sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab log.

Technician Name: Lauren Tierney

QA/QC by: Julie Palozzi

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-102-INTA
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: KB, LT, FM
 Core Collection Date: 07/17/2017
 Core Collection Time: 17:01
 Instant Freeze (Y/N): Yes

Collection Method: Push Corer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.2
 % Recovery (Recovered Core/Depth Cored): 80%

Core Recovery

	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
	<u>1.2</u>	<u>1.25</u>	<u>1.2</u>
	<u>80%</u>	<u>83%</u>	<u>80%</u>

Core Log

Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 15 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.35	dark gray (2.5 Y 4/1) CLAY, medium plasticity, soft, no living organism observed, fine wood chips dispersed throughout the core, stinking -hydrogen sulfide odor?
Notes	Surface water salinity 10 PSU, very fine wood chips observed at surface, no lutocline in any cores

Sample Collection

Sample Collection Team: JP LT BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-102-INTA _ 072517 _ SED_00-01	0929	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-102-INTA _ 072517 _ SED_01-03	0930	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-102-INTA _ 072617 _ SED_03-05	1042	Hg, TOC, OC	None	3 x 8 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-102-INTA _ 072617 _ SED_05-10	1044	Hg, TOC, OC	Triple Replicate	3 x 8 oz Plastic	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 Interval 0.0 = Determined by light disappearance test
 Samples were processed/ sectioned in the Winterport field office.
 Geographic coordinates provided on Core/Grab log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017



Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
 Project Number: 3616166052

Location ID: W-103-INTA
 WO: 4A-030 Wetland

Core Collection

Core Collection Team: FM, KB, LT
 Core Collection Date: 07/17/2017
 Core Collection Time: 15:54
 Instant Freeze (Y/N): Yes

Collection Method: Push Corer
 Liner Type: 3" D x 24" L Plastic
 Est. Volume: 47 oz/ft

Sleeve Length in Decimal Feet: 2.0
 Depth Cored in Decimal Feet: 1.5
 Recovered Core Length in Decimal Feet: 1.01
 % Recovery (Recovered Core/Depth Cored): 67%

Core Recovery

2.0	2.0	2.0
1.5	1.5	1.5
1.01	1.05	1.0
67%	70%	67%

Core Log

Core Logger: FKM Woody Debris (Y/N): Yes
 Salinity of Water at Mudline: 5 PSU (o/00)



Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-1.3	dark gray (2.5 Y 4/1) CLAY, medium plasticity, soft, no living organism observed, occasional fine wood chips, a layer of decomposed leaves between 0.6 and 0.7 ft. interval, stinking -hydrogen sulfide odor?
Notes	No lutoclines on any cores, fine shell fragments on sediment surface, Water surface salinity 0 PSU

Sample Collection

Sample Collection Team: JP LT BW FM Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
NA	No Lutocline Sample	NA	NA	NA	NA	
0.0 - 0.1	W-103-INTA _ 072517 _ SED_00-01	1148	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-103-INTA _ 072517 _ SED_01-03	1149	MeHg, Hg, TOC, OC	Triple Replicate	2 x 16 oz Plastic	
0.3 - 0.5	W-103-INTA _ 072617 _ SED_03-05	0947	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-103-INTA _ 072617 _ SED_05-10	0949	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
 Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
 SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
 Interval 0.0 = Determined by light disappearance test
 Samples were processed/ sectioned in the Winterport field office
 Geographic coordinates provided on Core/Grab log.

Technician Name: Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

QA/QC Date: 10/6/2017

ATTACHMENT B
Photographs of Field Sampling Activities

Penobscot River Phase III – Engineering Study
Penobscot River, Maine
 Photographic Log



	<p>Client: United States District Court District of Maine</p> <p>Location: W-MM-04</p> <p>Project No.: 3616166052</p> <p>Date: 7/11/2017</p> <p>Photo No.: 1</p> <p>Photographer: Julie Pallozzi</p> <p>Description: Wetland core collection at W-MM-04 using slide hammer method with stainless steel core barrel and core liner.</p>
	<p>Client: United States District Court District of Maine</p> <p>Location: W-MM-04</p> <p>Project No.: 3616166052</p> <p>Date: 7/11/2017</p> <p>Photo No.: 2</p> <p>Photographer: Julie Pallozzi</p> <p>Description: Stainless steel core barrel and core liner used during wetland core collection.</p>

Penobscot River Phase III – Engineering Study
Penobscot River, Maine
 Photographic Log



	Client: United States District Court District of Maine
	Location: W-MM-04
	Project No.: 3616166052
	Date: 7/11/2017
	Photo No.: 3
	Photographer: Julie Pallozzi
Description: Sediment core #1 from W-MM-04 before core liner cut down, cap, and dry ice instant freeze.	

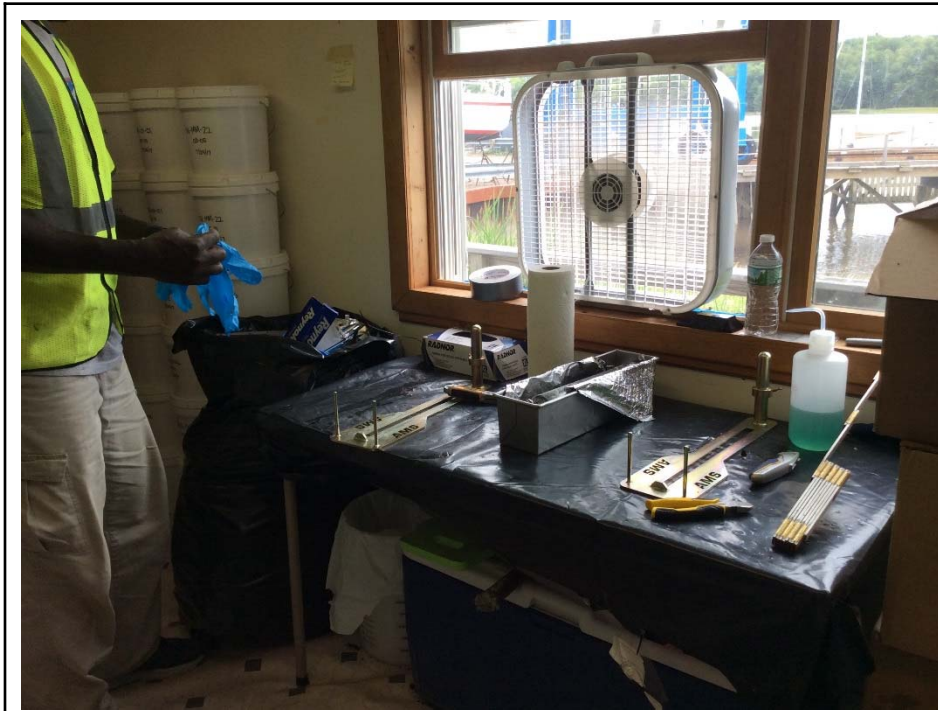
	Client: United States District Court District of Maine
	Location: W-100-A
	Project No.: 3616166052
	Date: 7/11/2017
	Photo No.: 4
	Photographer: Julie Pallozzi
Description: Wetland test pit cut open with bread knife and logged at W-100-A.	

Penobscot River Phase III – Engineering Study
Penobscot River, Maine
 Photographic Log



	<p>Client: United States District Court District of Maine</p>
	<p>Location: Frankfort, ME</p>
	<p>Project No.: 3616166052</p>
	<p>Date: 7/27/2017</p>
	<p>Photo No.: 5</p>
	<p>Photographer: Brad Wolfe</p>
<p>Description: Wetland stainless steel core barrels decontaminated with potable water and Liquinox, formula 409, and deionized water.</p>	
	<p>Client: United States District Court District of Maine</p>
	<p>Location: Mendall Marsh</p>
	<p>Project No.: 3616166052</p>
	<p>Date: 7/27/2017</p>
	<p>Photo No.: 6</p>
	<p>Photographer: Lauren Tierney</p>
<p>Description: Using R1 hand held GPS unit to locate proposed wetland sediment sampling locations.</p>	

Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/25/2017
Photo No.: 7
Photographer: Lauren Tierney
Description: Sample processing clean room with negative air pressure.



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/18/2017
Photo No.: 8
Photographer: Julie Palozzi
Description: Cutting into frozen sediment core with hook blade in sample processing clean room.

Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log

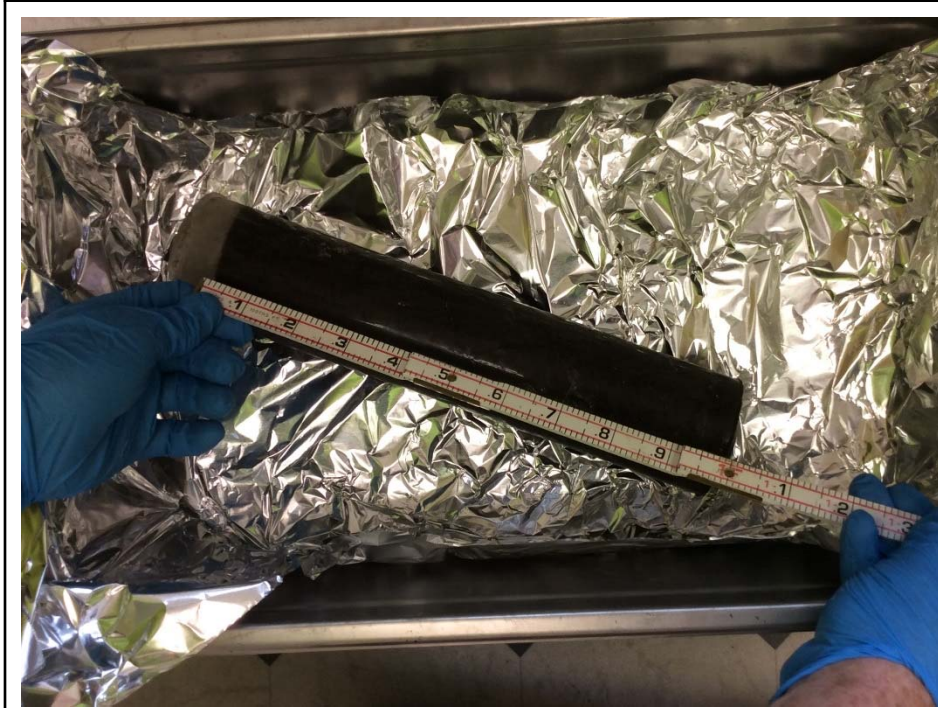


Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/18/2017
Photo No.: 9
Photographer: Julie Pallozzi
Description: Transferring frozen sediment core from core liner to aluminum foil lined cutting tray.



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/24/2017
Photo No.:
Photographer: Lauren Tierney
Description: Example of frozen water at top end of frozen intertidal sediment core. Frozen water removed, depth measurements begin from top of sediment.

Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/24/2017
Photo No.: 11
Photographer: Lauren Tierney
Description: Example of frozen water at top end of frozen intertidal sediment core. Frozen water removed, depth measurements begin from top of sediment.



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/18/2017
Photo No.: 12
Photographer: Julie Pallozzi
Description: Engineer's rule used to measure sample intervals on frozen sediment core. Hatchet and hammer used to cut sediment core into sample intervals.

Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log



Client:
 United States District Court District of Maine

Location:
 Winterport Field Office

Project No.:
 3616166052

Date:
 7/18/2017

Photo No.:
 13

Photographer:
 Julie Pallozzi

Description:
 Hatchet and hammer used to cut sediment core into sample intervals.



Client:
 United States District Court District of Maine

Location:
 Winterport Field Office

Project No.:
 3616166052

Date:
 7/18/2017

Photo No.:
 14

Photographer:
 Julie Pallozzi

Description:
 0.1-0.3' sediment core sample interval.

Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log



Client:
 United States District Court District of Maine

Location:
 Winterport Field Office

Project No.:
 3616166052

Date:
 7/18/2017

Photo No.:
 15

Photographer:
 Julie Pallozzi

Description:
 0.3-0.5' and 0.5-1.0' sediment core sample intervals being cut with hatcher and hammer.



Client:
 United States District Court District of Maine

Location:
 Winterport Field Office

Project No.:
 3616166052

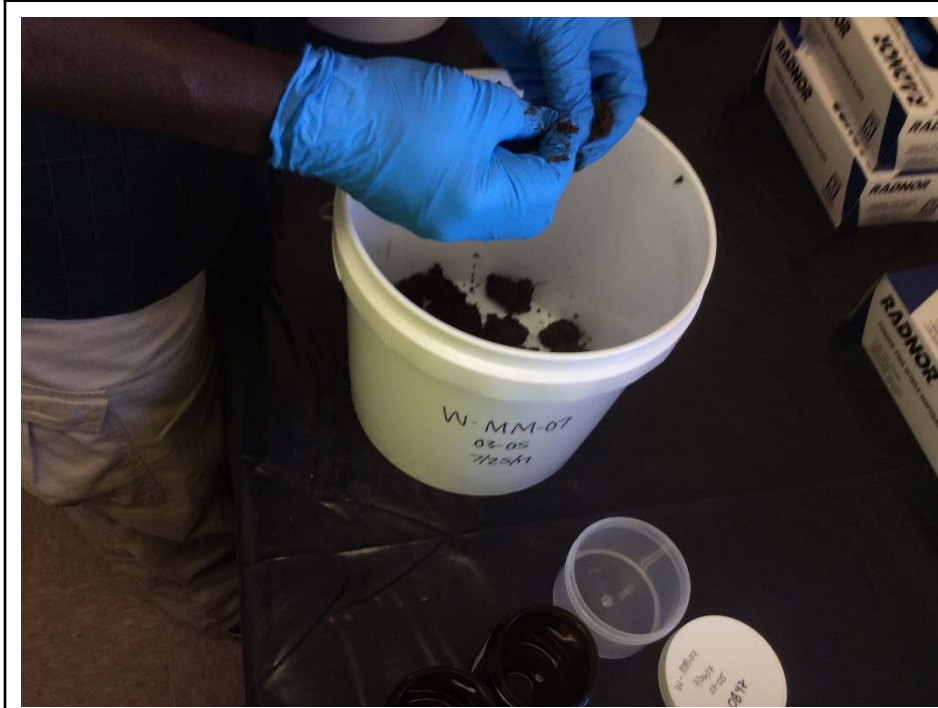
Date:
 7/18/2017

Photo No.:
 16

Photographer:
 Julie Pallozzi

Description:
 0.3-0.5' and 0.5-1.0' sediment core sample intervals placed into clean 3 gallon buckets and allowed to thaw for 24-48 hours before homogenization.

Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/26/2017
Photo No.: 17
Photographer: Lauren Tierney
Description: Interval 0.3-0.5' of W-MM-07 sediment core being homogenized by hand in 3 gallon bucket and placed into sample jars.



Client: United States District Court District of Maine
Location: Winterport Field Office
Project No.: 3616166052
Date: 7/19/2017
Photo No.: 18
Photographer: Lauren Tierney
Description: Sediment core being hand homogenized after thawing.


Penobscot River Phase III – Engineering Study
 Penobscot River, Maine
 Photographic Log




	<p>Client: United States District Court District of Maine</p> <p>Location: Winterport Field Office</p> <p>Project No.: 3616166052</p> <p>Date: 7/19/2017</p> <p>Photo No.: 19</p> <p>Photographer: Lauren Tierney</p> <p>Description: Interval 0.5-1.0' of W-65-Low sediment core being homogenized by hand in 3 gallon bucket and placed into sample jars.</p>
	<p>Client: United States District Court District of Maine</p> <p>Location: Winterport Field Office</p> <p>Project No.: 3616166052</p> <p>Date: 7/20/2017</p> <p>Photo No.: 20</p> <p>Photographer: Brad Wolfe</p> <p>Description: 9 sample bottles from 4 sample intervals associated with sediment core location W-101-A.</p>

Penobscot River Phase III – Engineering Study
Penobscot River, Maine
 Photographic Log



	Client: United States District Court District of Maine
	Location: Winterport Field Office
	Project No.: 3616166052
	Date: 8/1/2017
	Photo No.: 21
	Photographer: Lauren Tierney
	Description: Sediment samples organized by location getting packed into coolers for shipment to laboratories.

	Client: United States District Court District of Maine
	Location: Winterport Field Office
	Project No.: 3616166052
	Date: 8/18/2017
	Photo No.: 22
	Photographer: Brad Wolfe
	Description: Sediment samples after processing stored in freezer before shipment to laboratories.