



RTI Laboratories  
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Livonia, MI 48150  
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Tuesday, February 16, 2016

Pam Horner  
USACE- Detroit District  
Environmental Analysis Branch  
477 Michigan Ave.  
Detroit, MI 48226  
TEL: (313) 226-6748  
FAX:

RE: St Marys Sampling  
Work Order #: 1410A92  
Dear Pam Horner:

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

This report may only be reproduced in its entirety. Individual pages, reproduced without supporting documentation, do not contain related information and may be misinterpreted by other data reviewers.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Fred Hoitash". The signature is written in a cursive style with a large, stylized "F" and "H".

Fred Hoitash  
Director, Sales and Field Services

# RTI Laboratories - Workorder Sample Summary

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Project: St Marys Sampling

Lab Sample ID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1410A92-001A	SM-14-07		10/22/2014 1:41 PM	10/23/2014 11:00 AM	Soil
1410A92-001B	SM-14-07		10/22/2014 1:41 PM	10/23/2014 11:00 AM	Soil
1410A92-001C	SM-14-07		10/22/2014 1:41 PM	10/23/2014 11:00 AM	Soil
1410A92-002A	SM-14-08		10/22/2014 1:15 PM	10/23/2014 11:00 AM	Soil
1410A92-002B	SM-14-08		10/22/2014 1:15 PM	10/23/2014 11:00 AM	Soil
1410A92-002C	SM-14-08		10/22/2014 1:15 PM	10/23/2014 11:00 AM	Soil
1410A92-003A	SM-14-10		10/22/2014 12:34 PM	10/23/2014 11:00 AM	Soil
1410A92-003B	SM-14-10		10/22/2014 12:34 PM	10/23/2014 11:00 AM	Soil
1410A92-003C	SM-14-10		10/22/2014 12:34 PM	10/23/2014 11:00 AM	Soil
1410A92-004A	SM-14-11		10/22/2014 12:10 PM	10/23/2014 11:00 AM	Soil
1410A92-004B	SM-14-11		10/22/2014 12:10 PM	10/23/2014 11:00 AM	Soil
1410A92-004C	SM-14-11		10/22/2014 12:10 PM	10/23/2014 11:00 AM	Soil
1410A92-005A	SM-14-12		10/22/2014 11:40 AM	10/23/2014 11:00 AM	Soil
1410A92-005B	SM-14-12		10/22/2014 11:40 AM	10/23/2014 11:00 AM	Soil
1410A92-005C	SM-14-12		10/22/2014 11:40 AM	10/23/2014 11:00 AM	Soil
1410A92-006A	SM-14-13		10/21/2014 4:27 PM	10/23/2014 11:00 AM	Soil
1410A92-006B	SM-14-13		10/21/2014 4:27 PM	10/23/2014 11:00 AM	Soil
1410A92-006C	SM-14-13		10/21/2014 4:27 PM	10/23/2014 11:00 AM	Soil
1410A92-007A	SM-14-14		10/22/2014 10:55 AM	10/23/2014 11:00 AM	Soil
1410A92-007B	SM-14-14		10/22/2014 10:55 AM	10/23/2014 11:00 AM	Soil
1410A92-007C	SM-14-14		10/22/2014 10:55 AM	10/23/2014 11:00 AM	Soil
1410A92-008A	SM-14-15		10/21/2014 6:35 PM	10/23/2014 11:00 AM	Soil
1410A92-008B	SM-14-15		10/21/2014 6:35 PM	10/23/2014 11:00 AM	Soil
1410A92-008C	SM-14-15		10/21/2014 6:35 PM	10/23/2014 11:00 AM	Soil
1410A92-009A	SM-14-16		10/21/2014 6:07 PM	10/23/2014 11:00 AM	Soil
1410A92-009B	SM-14-16		10/21/2014 6:07 PM	10/23/2014 11:00 AM	Soil
1410A92-009C	SM-14-16		10/21/2014 6:07 PM	10/23/2014 11:00 AM	Soil
1410A92-010A	SM-14-17		10/21/2014 5:33 PM	10/23/2014 11:00 AM	Soil
1410A92-010B	SM-14-17		10/21/2014 5:33 PM	10/23/2014 11:00 AM	Soil
1410A92-010C	SM-14-17		10/21/2014 5:33 PM	10/23/2014 11:00 AM	Soil
1410A92-011A	SM-14-18		10/21/2014 5:05 PM	10/23/2014 11:00 AM	Soil
1410A92-011B	SM-14-18		10/21/2014 5:05 PM	10/23/2014 11:00 AM	Soil
1410A92-011C	SM-14-18		10/21/2014 5:05 PM	10/23/2014 11:00 AM	Soil
1410A92-012A	SM-14-19		10/21/2014 12:58 PM	10/23/2014 11:00 AM	Soil
1410A92-012B	SM-14-19		10/21/2014 12:58 PM	10/23/2014 11:00 AM	Soil
1410A92-012C	SM-14-19		10/21/2014 12:58 PM	10/23/2014 11:00 AM	Soil
1410A92-013A	SM-14-20		10/21/2014 12:27 PM	10/23/2014 11:00 AM	Soil
1410A92-013B	SM-14-20		10/21/2014 12:27 PM	10/23/2014 11:00 AM	Soil
1410A92-013C	SM-14-20		10/21/2014 12:27 PM	10/23/2014 11:00 AM	Soil
1410A92-014A	SM-14-21		10/21/2014 11:58 AM	10/23/2014 11:00 AM	Soil
1410A92-014B	SM-14-21		10/21/2014 11:58 AM	10/23/2014 11:00 AM	Soil
1410A92-014C	SM-14-21		10/21/2014 11:58 AM	10/23/2014 11:00 AM	Soil
1410A92-015A	SM-14-22		10/21/2014 11:12 AM	10/23/2014 11:00 AM	Soil
1410A92-015B	SM-14-22		10/21/2014 11:12 AM	10/23/2014 11:00 AM	Soil
1410A92-015C	SM-14-22		10/21/2014 11:12 AM	10/23/2014 11:00 AM	Soil

# RTI Laboratories - Workorder Sample Summary

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

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**Client:** USACE- Detroit District

**Project:** St Marys Sampling

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Lab Sample ID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1410A92-016A	SM-14-23		10/21/2014 10:40 AM	10/23/2014 11:00 AM	Soil
1410A92-016B	SM-14-23		10/21/2014 10:40 AM	10/23/2014 11:00 AM	Soil
1410A92-016C	SM-14-23		10/21/2014 10:40 AM	10/23/2014 11:00 AM	Soil
1410A92-017A	SM-14-24		10/21/2014 10:13 AM	10/23/2014 11:00 AM	Soil
1410A92-017B	SM-14-24		10/21/2014 10:13 AM	10/23/2014 11:00 AM	Soil
1410A92-017C	SM-14-24		10/21/2014 10:13 AM	10/23/2014 11:00 AM	Soil

**RTI Laboratories - Case Narrative**

**WO#: 1410A92**

**Date Reported: 2/16/2016**  
**Revision v3**

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**Client:** USACE- Detroit District

**Project:** St Marys Sampling

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Concentrations reported with a J flag in the Qual field are values below the reporting limit (RL) but greater than the established method detection limit (MDL). There is greater uncertainty associated with these results and data should be considered as estimated. These analytes are not routinely reviewed nor narrated below as to their potential for being laboratory artifacts.

Concentrations reported with an E flag in the Qual field are values that exceed the upper quantification range. There is greater uncertainty associated with these results and data should be considered as estimated.

Any comments or problems with the analytical events associated with this report are noted below.

**Sample Analysis:**

Samples were analyzed at the RTI Laboratories

- Particle Size Analysis - ASTM-D422
- Soil Density/Specific Gravity - ASTM D854
- Ammonia - EPA350.1
- TKN (Total Kjeldahl Nitrogen) - EPA351.2
- Chemical Oxygen Demand, COD - EPA410.4M
- Percent Moisture - ASTM-D2216
- Total, Fixed and Volatile Solids in Solids - SM2540G
- Total Phosphorus - A4500-P-F
- Metals, ICP/OES - SW6010C
- Mercury - SW7471A
- Organochlorine Pesticides - SW8081B
- Polychlorinated Biphenyls - SW8082A
- Semi-Volatile Organic Compounds - SW8270D
- Cyanide - SW9012B
- Organic Carbon - SW9060A
- Hexane Extractable Materials (HEM) - SW9071B

**Revision 02/15/16:**

The original data for cadmium was reported using the 226.502 wavelength on the ICP/AES instrument. All of the internal standards and associated QC responded in a fashion typical for dredged materials. This wavelength has been the primary wavelength for soils at RTI and has not previously had known positive bias from interferences.

During the client's review of the data a request was made for RTI to investigate the cadmium reported at the 226.502 wavelength. The data reported by RTI indicated positive concentrations at levels an order of magnitude higher than past data at this site.

The data, calibration curves and all associated QC was reprocessed using the 228.802 wavelength for cadmium. Several of the prepared samples were also analyzed on the ICP/MS instrument. The cadmium concentration of the data reprocessed at the 228.802 wavelength matched the concentrations from the ICP/MS analyses and the historic data.

Based on RTI's internal investigation and the historic data at this site, RTI has reprocessed all of the cadmium data, calibration and QC using the 228.802 wavelength. All of the cadmium data and QC in this work order has been revised.

For reference, the 228.802 wavelength was used to process the most recent round of Performance evaluation samples and both soil and water samples passed. RTI had previously passed all of these samples using the 226.502 wavelength.

**Revision 02/18/15:**

a) During the Level IV QA review, it was discovered that the data entries for the grain size plotting software did not have a leading sieve size entered for Sample ID 1410A92-005A. This is required for the software to plot 100% of the weight used. Some samples were originally reported with total weights of less than 100%. These have been corrected in the software and may have different % passing data than the original report.

b) During the Level IV QA review, it was discovered that the longitude and latitude data were missing from the original report generated. The data has been entered and is now appearing on the revised report.

**Revision 12/24/14:**

On data review it was noted that the original analysis for Zinc exhibited a QC exceedance on the batch QC for LCS-34936 (Batch ID 34936, Analytical Sequence ID 72985). All samples were re-prepped and reanalyzed with accepting QC. All Zinc data was similar to original analysis except for Sample IDs 1410A92-004C (Original analysis 6993; Secondary analysis 4188) and -005C (Original analysis 17990; Secondary analysis 24160).

Analytical Comments for Test SW\_6010S, Analytical RunNo 72985, Batch ID 34936:

Sample 1410A92-008CMS: Recoveries for several analytes exceeded control limits. Possible matrix interference for Chromium, Copper and Selenium.

Sample 1410A92-008CMSD: Recoveries for Barium, Iron, Manganese, Selenium exceeded control limits. Possible matrix interference for Chromium, Copper and Selenium.

Analytical Comments for Test SW\_6010S, Analytical RunNo 72985, Batch ID R72985:

Sample CRQL-110414: Recovery for Cadmium exceeded control limits..

Analytical Comments for Test SW\_8081S, Analytical RunNo 73329, Batch ID 34997:

Sample LCS-34997: Endosulfan II and endosulfan sulfate exceeded control limits.

Analytical Comments for Test SW\_8081S, Analytical RunNo 73329, Batch ID 35028:

Sample LCS-35028: Endosulfan II and endosulfan sulfate exceeded control limits.

Analytical Comments for Test SW\_8081S, Analytical RunNo 73498, Batch ID 34997:

Sample LCS-34997: Endosulfan sulfate exceeded control limits.

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/22/2014 1:41:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-001

Matrix: Soil

Client Sample ID: SM-14-07

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46 21.221					deg min		
Longitude	-084 12.910					deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	130	U	130	130	130 mg/Kg-dry		1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.88	U	0.71	0.88	2.2 µg/Kg-dry		1	11/13/2014 3:23 AM
4,4'-DDE	0.88	U	0.41	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
4,4'-DDT	0.88	U	0.46	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Aldrin	0.88	U	0.44	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
alpha-BHC	0.88	U	0.38	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
alpha-Chlordane	0.88	U	0.49	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
beta-BHC	0.88	U	0.47	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Chlordane (Technical)	17	U	4.6	17	22 µg/Kg-dry		1	11/13/2014 3:23 AM
delta-BHC	0.88	U	0.38	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Dieldrin	0.88	U	0.47	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Endosulfan I	0.88	U	0.49	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Endosulfan II	0.88	U	0.49	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Endosulfan sulfate	0.88	U	0.49	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Endrin	0.88	U	0.50	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Endrin aldehyde	0.88	U	0.51	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Endrin ketone	0.88	U	0.48	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
gamma-BHC	0.88	U	0.40	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
gamma-Chlordane	0.88	U	0.49	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Heptachlor	0.88	U	0.48	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Heptachlor epoxide	0.88	U	0.49	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Methoxychlor	0.88	U	0.50	0.88	1.1 µg/Kg-dry		1	11/13/2014 3:23 AM
Toxaphene	17	U	6.6	17	22 µg/Kg-dry		1	11/13/2014 3:23 AM
Surr: Decachlorobiphenyl	92.1			55-130	%Rec		1	11/13/2014 3:23 AM
Surr: Tetrachloro-m-xylene	81.9			42-129	%Rec		1	11/13/2014 3:23 AM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	8.8	U	3.9	8.8	43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1221		U	3.9		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1232		U	5.9		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1242		U	4.9		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1248		U	4.6		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1254		U	5.5		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1260	8.8	U	3.8	8.8	43 µg/Kg-dry		1	11/7/2014 5:10 AM
Aroclor 1262		U	5.2		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Total PCBs		U	3.8		43 µg/Kg-dry		1	11/7/2014 5:10 AM
Surr: Tetrachloro-m-xylene	80.1			44-130	%Rec		1	11/7/2014 5:10 AM
Surr: Decachlorobiphenyl	91.0			60-125	%Rec		1	11/7/2014 5:10 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 1:41:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-001	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-07		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	150		1.9	2.7	14 mg/Kg-dry		20	11/18/2014 8:57 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.67	U	0.44	0.67	1.3 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,100	J	650	900	1,800 µg/Kg-dry		1	11/4/2014 11:23 AM
Barium	12,000		270	4,500	9,000 µg/Kg-dry		1	11/4/2014 11:23 AM
Cadmium	25	J	22	33	170 µg/Kg		1	11/4/2014 11:23 AM
Chromium	5,300		74	360	450 µg/Kg-dry		1	11/4/2014 11:23 AM
Copper	5,200		370	900	4,500 µg/Kg-dry		1	11/4/2014 11:23 AM
Iron	4,200,000		28,000	45,000	130,000 µg/Kg-dry		10	11/4/2014 12:19 PM
Lead	1,200	J	560	900	4,500 µg/Kg-dry		1	11/4/2014 11:23 AM
Manganese	64,000		170	220	900 µg/Kg-dry		1	11/4/2014 11:23 AM
Nickel	3,600	J	250	900	4,500 µg/Kg-dry		1	11/4/2014 11:23 AM
Selenium	1,300	U	1,000	1,300	1,800 µg/Kg-dry		1	11/4/2014 11:23 AM
Silver	220	U	73	220	900 µg/Kg-dry		1	11/4/2014 11:23 AM
Zinc	7,200		360	460	4,600 µg/Kg-dry		1	12/23/2014 2:19 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	1.2	J	0.85	6.0	12 µg/Kg-dry		1	11/4/2014 7:22 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Acenaphthene	22	U	9.7	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Acenaphthylene	22	U	9.3	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Anthracene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Benzo(a)anthracene	22	U	14	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Benzo(a)pyrene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Benzo(b)fluoranthene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Benzo(g,h,i)perylene	22	U	15	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Benzo(k)fluoranthene	44	U	23	44	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Chrysene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Dibenzo (a,h) anthracene	44	U	35	44	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Fluoranthene	22	U	21	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Fluorene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Indeno(1,2,3-cd)pyrene	44	U	11	44	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Naphthalene	22	U	8.4	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Phenanthrene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Pyrene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 11:50 AM
Surr: 2-Fluorobiphenyl	87.0			44-115	%Rec		1	11/12/2014 11:50 AM
Surr: Nitrobenzene-d5	82.6			37-122	%Rec		1	11/12/2014 11:50 AM
Surr: Terphenyl-d14	96.4			54-127	%Rec		1	11/12/2014 11:50 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 1:41:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-001	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-07		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	25		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	2.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.2		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.2		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	0.20		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	1.7		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	96		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	2.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	23.2					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.79						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	16		5.1	5.1	5.1	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	61		25	25	25	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	1,400		230	320	650	mg/Kg-dry	24.038 46154	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	26		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	74		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.26		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,600	U	720	1,600	2,000	mg/Kg-dry	1	11/6/2014 10:06 AM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/22/2014 1:15:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-002

Matrix: Soil

Client Sample ID: SM-14-08

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46 21.174					deg min		
Longitude	-084 12.768					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	120	U	120	120	120 mg/Kg-dry		1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.80	U	0.65	0.80	2.0 µg/Kg-dry		1	11/13/2014 3:47 AM
4,4'-DDE	0.80	U	0.38	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
4,4'-DDT	0.80	U	0.42	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Aldrin	0.80	U	0.40	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
alpha-BHC	0.80	U	0.35	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
alpha-Chlordane	0.80	U	0.45	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
beta-BHC	0.80	U	0.43	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Chlordane (Technical)	16	U	4.2	16	20 µg/Kg-dry		1	11/13/2014 3:47 AM
delta-BHC	0.80	U	0.35	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Dieldrin	0.80	U	0.43	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Endosulfan I	0.80	U	0.45	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Endosulfan II	0.80	U	0.44	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Endosulfan sulfate	0.80	U	0.45	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Endrin	0.80	U	0.46	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Endrin aldehyde	0.80	U	0.47	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Endrin ketone	0.80	U	0.44	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
gamma-BHC	0.80	U	0.36	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
gamma-Chlordane	0.80	U	0.45	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Heptachlor	0.80	U	0.44	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Heptachlor epoxide	0.80	U	0.44	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Methoxychlor	0.80	U	0.46	0.80	0.99 µg/Kg-dry		1	11/13/2014 3:47 AM
Toxaphene	16	U	6.0	16	20 µg/Kg-dry		1	11/13/2014 3:47 AM
Surr: Decachlorobiphenyl	88.7			55-130	%Rec		1	11/13/2014 3:47 AM
Surr: Tetrachloro-m-xylene	80.0			42-129	%Rec		1	11/13/2014 3:47 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	8.0	U	3.6	8.0	39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1221		U	3.6		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1232		U	5.4		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1242		U	4.4		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1248		U	4.2		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1254		U	5.0		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1260	8.0	U	3.5	8.0	39 µg/Kg-dry		1	11/7/2014 5:34 AM
Aroclor 1262		U	4.7		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Total PCBs		U	3.5		39 µg/Kg-dry		1	11/7/2014 5:34 AM
Surr: Tetrachloro-m-xylene	74.5			44-130	%Rec		1	11/7/2014 5:34 AM
Surr: Decachlorobiphenyl	87.2			60-125	%Rec		1	11/7/2014 5:34 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 1:15:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-002	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-08		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	32		1.6	2.4	12 mg/Kg-dry		20	11/18/2014 8:57 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.62	U	0.40	0.62	1.2 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,200	J	550	750	1,500 µg/Kg-dry		1	11/4/2014 11:24 AM
Barium	12,000		220	3,800	7,500 µg/Kg-dry		1	11/4/2014 11:24 AM
Cadmium	40	J	20	31	150 µg/Kg		1	11/4/2014 11:24 AM
Chromium	6,400		62	300	380 µg/Kg-dry		1	11/4/2014 11:24 AM
Copper	5,700		310	750	3,800 µg/Kg-dry		1	11/4/2014 11:24 AM
Iron	5,000,000		24,000	38,000	110,000 µg/Kg-dry		10	11/4/2014 12:21 PM
Lead	1,700	J	470	750	3,800 µg/Kg-dry		1	11/4/2014 11:24 AM
Manganese	67,000		140	190	750 µg/Kg-dry		1	11/4/2014 11:24 AM
Nickel	4,000		210	750	3,800 µg/Kg-dry		1	11/4/2014 11:24 AM
Selenium	1,100	U	880	1,100	1,500 µg/Kg-dry		1	11/4/2014 11:24 AM
Silver	190	U	62	190	750 µg/Kg-dry		1	11/4/2014 11:24 AM
Zinc	9,100		340	440	4,400 µg/Kg-dry		1	12/23/2014 2:20 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	2.1	J	0.92	6.5	13 µg/Kg-dry		1	11/4/2014 7:23 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	20	U	9.8	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Acenaphthene	20	U	8.9	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Acenaphthylene	20	U	8.5	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Anthracene	20	U	9.7	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Benzo(a)anthracene	20	U	13	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Benzo(a)pyrene	20	U	12	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Benzo(b)fluoranthene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Benzo(g,h,i)perylene	20	U	14	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Benzo(k)fluoranthene	40	U	21	40	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Chrysene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Dibenzo (a,h) anthracene	40	U	32	40	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Fluoranthene	20	U	19	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Fluorene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Indeno(1,2,3-cd)pyrene	40	U	10	40	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Naphthalene	20	U	7.8	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Phenanthrene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Pyrene	20	U	12	20	190 µg/Kg-dry		1	11/12/2014 1:02 PM
Surr: 2-Fluorobiphenyl	81.0			44-115	%Rec		1	11/12/2014 1:02 PM
Surr: Nitrobenzene-d5	76.6			37-122	%Rec		1	11/12/2014 1:02 PM
Surr: Terphenyl-d14	90.0			54-127	%Rec		1	11/12/2014 1:02 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 1:15:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-002	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-08		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	99		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	97		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	93		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	29		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	4.8		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	2.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	2.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	1.0		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	5.7		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	88		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	4.8		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	23.6					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.83						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	15		4.8	4.8	4.8	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	63		23	23	23	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	2,000		170	240	480	mg/Kg-dry	19.455 25292	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	18		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	82		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.46		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,400	U	660	1,400	1,800	mg/Kg-dry	1	11/6/2014 10:34 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/22/2014 12:34:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-003

Matrix: Soil

Client Sample ID: SM-14-10

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46 20.420					deg min		
Longitude	-084 12.779					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	130	U	130	130	130 mg/Kg-dry		1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.85	U	0.69	0.85	2.2 µg/Kg-dry		1	11/13/2014 5:02 AM
4,4'-DDE	0.85	U	0.40	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
4,4'-DDT	0.85	U	0.45	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Aldrin	0.85	U	0.43	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
alpha-BHC	0.85	U	0.37	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
alpha-Chlordane	0.85	U	0.47	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
beta-BHC	0.85	U	0.45	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Chlordane (Technical)	17	U	4.4	17	21 µg/Kg-dry		1	11/13/2014 5:02 AM
delta-BHC	0.85	U	0.37	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Dieldrin	0.85	U	0.46	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Endosulfan I	0.85	U	0.48	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Endosulfan II	0.85	U	0.47	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Endosulfan sulfate	0.85	U	0.48	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Endrin	0.85	U	0.49	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Endrin aldehyde	0.85	U	0.50	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Endrin ketone	0.85	U	0.46	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
gamma-BHC	0.85	U	0.39	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
gamma-Chlordane	0.85	U	0.47	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Heptachlor	0.85	U	0.46	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Heptachlor epoxide	0.85	U	0.47	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Methoxychlor	0.85	U	0.49	0.85	1.1 µg/Kg-dry		1	11/13/2014 5:02 AM
Toxaphene	17	U	6.4	17	21 µg/Kg-dry		1	11/13/2014 5:02 AM
Surr: Decachlorobiphenyl	90.9			55-130	%Rec		1	11/13/2014 5:02 AM
Surr: Tetrachloro-m-xylene	75.3			42-129	%Rec		1	11/13/2014 5:02 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	8.5	U	3.8	8.5	42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1221		U	3.8		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1232		U	5.7		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1242		U	4.7		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1248		U	4.5		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1254		U	5.4		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1260	8.5	U	3.7	8.5	42 µg/Kg-dry		1	11/7/2014 5:58 AM
Aroclor 1262		U	5.0		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Total PCBs		U	3.7		42 µg/Kg-dry		1	11/7/2014 5:58 AM
Surr: Tetrachloro-m-xylene	66.6			44-130	%Rec		1	11/7/2014 5:58 AM
Surr: Decachlorobiphenyl	81.1			60-125	%Rec		1	11/7/2014 5:58 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 12:34:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-003	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-10		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	31		1.8	2.6	13 mg/Kg-dry		20	11/18/2014 8:57 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	1.5		0.42	0.64	1.3 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	970	J	490	680	1,400 µg/Kg-dry		1	11/4/2014 11:26 AM
Barium	9,600		200	3,400	6,800 µg/Kg-dry		1	11/4/2014 11:26 AM
Cadmium	79	J	17	26	130 µg/Kg		1	11/4/2014 11:26 AM
Chromium	5,100		56	270	340 µg/Kg-dry		1	11/4/2014 11:26 AM
Copper	4,800		280	680	3,400 µg/Kg-dry		1	11/4/2014 11:26 AM
Iron	4,700,000		21,000	34,000	100,000 µg/Kg-dry		10	11/4/2014 12:22 PM
Lead	1,500	J	420	680	3,400 µg/Kg-dry		1	11/4/2014 11:26 AM
Manganese	66,000		130	170	680 µg/Kg-dry		1	11/4/2014 11:26 AM
Nickel	3,400	J	190	680	3,400 µg/Kg-dry		1	11/4/2014 11:26 AM
Selenium	1,000	U	790	1,000	1,400 µg/Kg-dry		1	11/4/2014 11:26 AM
Silver	170	U	56	170	680 µg/Kg-dry		1	11/4/2014 11:26 AM
Zinc	6,600		400	510	5,100 µg/Kg-dry		1	12/23/2014 2:21 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	1.6	J	0.93	6.6	13 µg/Kg-dry		1	11/4/2014 7:25 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	21	U	10	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Acenaphthene	21	U	9.3	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Acenaphthylene	21	U	9.0	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Anthracene	21	U	10	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Benzo(a)anthracene	21	U	14	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Benzo(a)pyrene	21	U	13	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Benzo(b)fluoranthene	21	U	11	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Benzo(g,h,i)perylene	21	U	15	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Benzo(k)fluoranthene	42	U	22	42	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Chrysene	21	U	12	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Dibenzo (a,h) anthracene	42	U	33	42	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Fluoranthene	21	U	20	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Fluorene	21	U	12	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Indeno(1,2,3-cd)pyrene	42	U	11	42	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Naphthalene	21	U	8.2	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Phenanthrene	21	U	11	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Pyrene	21	U	13	21	200 µg/Kg-dry		1	11/12/2014 1:27 PM
Surr: 2-Fluorobiphenyl	92.1			44-115	%Rec		1	11/12/2014 1:27 PM
Surr: Nitrobenzene-d5	90.4			37-122	%Rec		1	11/12/2014 1:27 PM
Surr: Terphenyl-d14	94.5			54-127	%Rec		1	11/12/2014 1:27 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 12:34:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-003	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-10		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	99		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	95		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	9.5		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	0.50		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	0.30		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	0.30		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	0.70		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	3.9		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	95		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	0.50		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	24.9					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	3.00						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	11		5.1	5.1	5.1	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	32		25	25	25	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	1,600		200	280	570	mg/Kg-dry	21.929 82456	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	23		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	77		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.27		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,700	U	780	1,700	2,100	mg/Kg-dry	1	11/6/2014 10:43 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/22/2014 12:10:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-004

Matrix: Soil

Client Sample ID: SM-14-11

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46 20.155					deg min		
Longitude	-084 12.848					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	120	U	120	120	120 mg/Kg-dry		1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.81	U	0.65	0.81	2.0 µg/Kg-dry		1	11/13/2014 5:27 AM
4,4'-DDE	0.81	U	0.38	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
4,4'-DDT	0.81	U	0.42	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Aldrin	0.81	U	0.41	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
alpha-BHC	0.81	U	0.35	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
alpha-Chlordane	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
beta-BHC	0.81	U	0.43	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Chlordane (Technical)	16	U	4.2	16	20 µg/Kg-dry		1	11/13/2014 5:27 AM
delta-BHC	0.81	U	0.35	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Dieldrin	0.81	U	0.43	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Endosulfan I	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Endosulfan II	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Endosulfan sulfate	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Endrin	0.81	U	0.46	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Endrin aldehyde	0.81	U	0.47	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Endrin ketone	0.81	U	0.44	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
gamma-BHC	0.81	U	0.37	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
gamma-Chlordane	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Heptachlor	0.81	U	0.44	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Heptachlor epoxide	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Methoxychlor	0.81	U	0.46	0.81	1.0 µg/Kg-dry		1	11/13/2014 5:27 AM
Toxaphene	16	U	6.0	16	20 µg/Kg-dry		1	11/13/2014 5:27 AM
Surr: Decachlorobiphenyl	92.5			55-130	%Rec		1	11/13/2014 5:27 AM
Surr: Tetrachloro-m-xylene	79.4			42-129	%Rec		1	11/13/2014 5:27 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	8.0	U	3.6	8.0	40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1221		U	3.6		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1232		U	5.4		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1242		U	4.5		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1248		U	4.2		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1254		U	5.1		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1260	8.0	U	3.5	8.0	40 µg/Kg-dry		1	11/7/2014 7:11 AM
Aroclor 1262		U	4.8		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Total PCBs		U	3.5		40 µg/Kg-dry		1	11/7/2014 7:11 AM
Surr: Tetrachloro-m-xylene	63.2			44-130	%Rec		1	11/7/2014 7:11 AM
Surr: Decachlorobiphenyl	80.4			60-125	%Rec		1	11/7/2014 7:11 AM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 12:10:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-004	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-11		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	38		1.7	2.4	12 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.62	U	0.41	0.62	1.2 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	2,000		620	860	1,700 µg/Kg-dry		1	11/4/2014 11:27 AM
Barium	6,200	J	260	4,300	8,600 µg/Kg-dry		1	11/4/2014 11:27 AM
Cadmium	49	J	23	35	170 µg/Kg		1	11/4/2014 11:27 AM
Chromium	3,500		71	340	430 µg/Kg-dry		1	11/4/2014 11:27 AM
Copper	4,900		360	860	4,300 µg/Kg-dry		1	11/4/2014 11:27 AM
Iron	3,200,000		27,000	43,000	130,000 µg/Kg-dry		10	11/4/2014 12:23 PM
Lead	1,300	J	530	860	4,300 µg/Kg-dry		1	11/4/2014 11:27 AM
Manganese	54,000		160	210	860 µg/Kg-dry		1	11/4/2014 11:27 AM
Nickel	2,600	J	240	860	4,300 µg/Kg-dry		1	11/4/2014 11:27 AM
Selenium	1,300	U	1,000	1,300	1,700 µg/Kg-dry		1	11/4/2014 11:27 AM
Silver	210	U	70	210	860 µg/Kg-dry		1	11/4/2014 11:27 AM
Zinc	4,200		280	370	3,700 µg/Kg-dry		1	12/23/2014 2:23 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	1.2	J	0.77	5.5	11 µg/Kg-dry		1	11/4/2014 7:27 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	20	U	9.9	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Acenaphthene	20	U	9.0	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Acenaphthylene	20	U	8.6	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Anthracene	20	U	9.9	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Benzo(a)anthracene	20	U	13	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Benzo(a)pyrene	20	U	12	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Benzo(b)fluoranthene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Benzo(g,h,i)perylene	20	U	14	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Benzo(k)fluoranthene	40	U	21	40	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Chrysene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Dibenzo (a,h) anthracene	40	U	32	40	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Fluoranthene	20	U	19	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Fluorene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Indeno(1,2,3-cd)pyrene	40	U	10	40	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Naphthalene	20	U	7.9	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Phenanthrene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Pyrene	20	U	12	20	190 µg/Kg-dry		1	11/12/2014 1:51 PM
Surr: 2-Fluorobiphenyl	95.3			44-115	%Rec		1	11/12/2014 1:51 PM
Surr: Nitrobenzene-d5	89.9			37-122	%Rec		1	11/12/2014 1:51 PM
Surr: Terphenyl-d14	98.6			54-127	%Rec		1	11/12/2014 1:51 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 12:10:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-004	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-11		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	5.6		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	0.20		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	0.10		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	0.10		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	2.3		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	98		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	0.20		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	26.3					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	3.16						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	12		4.8	4.8	4.8	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	31		24	24	24	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	520		180	250	490	mg/Kg-dry	20	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	19		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	81		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.24		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,500	U	700	1,500	1,900	mg/Kg-dry	1	11/6/2014 10:53 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/22/2014 11:40:00 AM

Project: St Marys Sampling

Lab ID: 1410A92-005

Matrix: Soil

Client Sample ID: SM-14-12

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46	19.825				deg min		
Longitude	-084	12.808				deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	140	U	140	140	140 mg/Kg-dry	1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.91	U	0.73	0.91	2.3 µg/Kg-dry	1	11/13/2014 5:52 AM
4,4'-DDE	0.91	U	0.43	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
4,4'-DDT	0.91	U	0.48	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Aldrin	0.91	U	0.46	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
alpha-BHC	0.91	U	0.40	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
alpha-Chlordane	0.91	U	0.51	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
beta-BHC	0.91	U	0.48	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Chlordane (Technical)	18	U	4.7	18	23 µg/Kg-dry	1	11/13/2014 5:52 AM
delta-BHC	0.91	U	0.40	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Dieldrin	0.91	U	0.49	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Endosulfan I	0.91	U	0.51	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Endosulfan II	0.91	U	0.50	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Endosulfan sulfate	0.91	U	0.51	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Endrin	0.91	U	0.52	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Endrin aldehyde	0.91	U	0.53	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Endrin ketone	0.91	U	0.49	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
gamma-BHC	0.91	U	0.41	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
gamma-Chlordane	0.91	U	0.51	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Heptachlor	0.91	U	0.50	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Heptachlor epoxide	0.91	U	0.50	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Methoxychlor	0.91	U	0.52	0.91	1.1 µg/Kg-dry	1	11/13/2014 5:52 AM
Toxaphene	18	U	6.8	18	23 µg/Kg-dry	1	11/13/2014 5:52 AM
Surr: Decachlorobiphenyl	96.1			55-130	%Rec	1	11/13/2014 5:52 AM
Surr: Tetrachloro-m-xylene	81.8			42-129	%Rec	1	11/13/2014 5:52 AM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	9.0	U	4.1	9.0	45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1221		U	4.0		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1232		U	6.1		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1242		U	5.0		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1248		U	4.8		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1254		U	5.7		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1260	9.0	U	4.0	9.0	45 µg/Kg-dry	1	11/7/2014 7:35 AM
Aroclor 1262		U	5.4		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Total PCBs		U	4.0		45 µg/Kg-dry	1	11/7/2014 7:35 AM
Surr: Tetrachloro-m-xylene	69.8			44-130	%Rec	1	11/7/2014 7:35 AM
Surr: Decachlorobiphenyl	88.0			60-125	%Rec	1	11/7/2014 7:35 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 11:40:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-005	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-12		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	46		1.9	2.7	14 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	1.1	J	0.45	0.68	1.4 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,700		510	710	1,400 µg/Kg-dry		1	11/4/2014 11:28 AM
Barium	54,000		210	3,500	7,100 µg/Kg-dry		1	11/4/2014 11:28 AM
Cadmium	110	J	17	26	130 µg/Kg		1	11/4/2014 11:28 AM
Chromium	18,000		58	280	350 µg/Kg-dry		1	11/4/2014 11:28 AM
Copper	10,000		290	710	3,500 µg/Kg-dry		1	11/4/2014 11:28 AM
Iron	15,000,000		22,000	35,000	110,000 µg/Kg-dry		10	11/4/2014 12:25 PM
Lead	3,500	J	440	710	3,500 µg/Kg-dry		1	11/4/2014 11:28 AM
Manganese	210,000		1,300	1,800	7,100 µg/Kg-dry		10	11/4/2014 12:25 PM
Nickel	12,000		200	710	3,500 µg/Kg-dry		1	11/4/2014 11:28 AM
Selenium	1,100	U	820	1,100	1,400 µg/Kg-dry		1	11/4/2014 11:28 AM
Silver	180	U	58	180	710 µg/Kg-dry		1	11/4/2014 11:28 AM
Zinc	24,000		470	600	6,000 µg/Kg-dry		1	12/23/2014 2:24 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	4.4	J	1.0	7.2	14 µg/Kg-dry		1	11/4/2014 10:07 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	23	U	11	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Acenaphthene	23	U	10	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Acenaphthylene	23	U	9.7	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Anthracene	23	U	11	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Benzo(a)anthracene	23	U	15	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Benzo(a)pyrene	23	U	14	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Benzo(b)fluoranthene	23	U	12	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Benzo(g,h,i)perylene	23	U	16	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Benzo(k)fluoranthene	45	U	24	45	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Chrysene	23	U	13	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Dibenzo (a,h) anthracene	45	U	36	45	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Fluoranthene	23	U	22	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Fluorene	23	U	13	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Indeno(1,2,3-cd)pyrene	45	U	12	45	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Naphthalene	23	U	8.8	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Phenanthrene	23	U	12	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Pyrene	23	U	14	23	220 µg/Kg-dry		1	11/12/2014 2:15 PM
Surr: 2-Fluorobiphenyl	80.9			44-115	%Rec		1	11/12/2014 2:15 PM
Surr: Nitrobenzene-d5	76.6			37-122	%Rec		1	11/12/2014 2:15 PM
Surr: Terphenyl-d14	91.6			54-127	%Rec		1	11/12/2014 2:15 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 11:40:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-005	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-12		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	97		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	86		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	73		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	60		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	7.9		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	2.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	2.9		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	11		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	26		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	57		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	2.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	22.3					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.67						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	16		5.4	5.4	5.4	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	80		25	25	25	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	4,200		210	290	580	mg/Kg-dry	21.097 04641	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	27		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	73		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.95		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,500	U	1,100	2,500	3,100	mg/Kg-dry	1	11/6/2014 11:02 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 4:27:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-006

Matrix: Soil

Client Sample ID: SM-14-13

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46	19.124				deg min		
Longitude	-084	12.931				deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	150	U	150	150	150 mg/Kg-dry		1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.99	U	0.80	0.99	2.5 µg/Kg-dry		1	11/13/2014 6:17 AM
4,4'-DDE	0.99	U	0.47	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
4,4'-DDT	0.99	U	0.52	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Aldrin	0.99	U	0.50	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
alpha-BHC	0.99	U	0.43	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
alpha-Chlordane	0.99	U	0.55	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
beta-BHC	0.99	U	0.53	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Chlordane (Technical)	20	U	5.2	20	25 µg/Kg-dry		1	11/13/2014 6:17 AM
delta-BHC	0.99	U	0.43	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Dieldrin	0.99	U	0.53	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Endosulfan I	0.99	U	0.56	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Endosulfan II	0.99	U	0.55	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Endosulfan sulfate	0.99	U	0.56	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Endrin	0.99	U	0.57	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Endrin aldehyde	0.99	U	0.58	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Endrin ketone	0.99	U	0.54	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
gamma-BHC	0.99	U	0.45	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
gamma-Chlordane	0.99	U	0.55	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Heptachlor	0.99	U	0.54	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Heptachlor epoxide	0.99	U	0.55	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Methoxychlor	0.99	U	0.57	0.99	1.2 µg/Kg-dry		1	11/13/2014 6:17 AM
Toxaphene	20	U	7.4	20	25 µg/Kg-dry		1	11/13/2014 6:17 AM
Surr: Decachlorobiphenyl	82.2			55-130	%Rec		1	11/13/2014 6:17 AM
Surr: Tetrachloro-m-xylene	75.4			42-129	%Rec		1	11/13/2014 6:17 AM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	9.9	U	4.4	9.9	49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1221		U	4.4		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1232		U	6.6		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1242		U	5.5		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1248		U	5.2		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1254		U	6.3		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1260	9.9	U	4.3	9.9	49 µg/Kg-dry		1	11/7/2014 7:59 AM
Aroclor 1262		U	5.9		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Total PCBs		U	4.3		49 µg/Kg-dry		1	11/7/2014 7:59 AM
Surr: Tetrachloro-m-xylene	60.2			44-130	%Rec		1	11/7/2014 7:59 AM
Surr: Decachlorobiphenyl	72.2			60-125	%Rec		1	11/7/2014 7:59 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 4:27:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-006	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-13		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	110		2.1	3.0	15 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.66	J	0.49	0.74	1.5 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	3,800		820	1,100	2,200 µg/Kg-dry		1	11/4/2014 11:30 AM
Barium	100,000		330	5,600	11,000 µg/Kg-dry		1	11/4/2014 11:30 AM
Cadmium	190	J	25	37	190 µg/Kg		1	11/4/2014 11:30 AM
Chromium	36,000		93	450	560 µg/Kg-dry		1	11/4/2014 11:30 AM
Copper	21,000		470	1,100	5,600 µg/Kg-dry		1	11/4/2014 11:30 AM
Iron	23,000,000		35,000	56,000	170,000 µg/Kg-dry		10	11/4/2014 12:26 PM
Lead	4,800	J	700	1,100	5,600 µg/Kg-dry		1	11/4/2014 11:30 AM
Manganese	420,000		2,100	2,800	11,000 µg/Kg-dry		10	11/4/2014 12:26 PM
Nickel	27,000		320	1,100	5,600 µg/Kg-dry		1	11/4/2014 11:30 AM
Selenium	1,700	U	1,300	1,700	2,200 µg/Kg-dry		1	11/4/2014 11:30 AM
Silver	280	U	92	280	1,100 µg/Kg-dry		1	11/4/2014 11:30 AM
Zinc	32,000		340	440	4,400 µg/Kg-dry		1	12/23/2014 2:25 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	11	J	0.98	7.0	14 µg/Kg-dry		1	11/4/2014 10:09 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	25	U	12	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Acenaphthene	25	U	11	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Acenaphthylene	25	U	10	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Anthracene	25	U	12	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Benzo(a)anthracene	25	U	16	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Benzo(a)pyrene	23	J	15	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Benzo(b)fluoranthene	25	U	13	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Benzo(g,h,i)perylene	25	U	17	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Benzo(k)fluoranthene	49	U	26	49	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Chrysene	25	U	14	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Dibenzo (a,h) anthracene	49	U	39	49	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Fluoranthene	25	U	24	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Fluorene	25	U	14	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Indeno(1,2,3-cd)pyrene	49	U	13	49	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Naphthalene	25	U	9.5	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Phenanthrene	25	U	13	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Pyrene	25	U	15	25	240 µg/Kg-dry		1	11/12/2014 2:39 PM
Surr: 2-Fluorobiphenyl	86.6			44-115	%Rec		1	11/12/2014 2:39 PM
Surr: Nitrobenzene-d5	81.8			37-122	%Rec		1	11/12/2014 2:39 PM
Surr: Terphenyl-d14	92.9			54-127	%Rec		1	11/12/2014 2:39 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 4:27:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-006	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-13		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	70		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	47		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	30		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	8.5		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	3.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	0.80		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	0.80		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	2.3		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	28		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	40		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	26		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	3.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	19.2					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.31						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	26		5.9	5.9	5.9	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	160		30	30	30	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	3,800		260	370	730	mg/Kg-dry	24.390 2439	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	34		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	66		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	1.7		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,400	U	1,100	2,400	3,000	mg/Kg-dry	1	11/6/2014 11:12 AM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/22/2014 10:55:00 AM

Project: St Marys Sampling

Lab ID: 1410A92-007

Matrix: Soil

Client Sample ID: SM-14-14

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46					deg min		
Longitude	-084					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	130	U	130	130	130	mg/Kg-dry	1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.86	U	0.70	0.86	2.2	µg/Kg-dry	1	11/13/2014 6:42 AM
4,4'-DDE	0.86	U	0.40	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
4,4'-DDT	0.86	U	0.45	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Aldrin	0.86	U	0.43	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
alpha-BHC	0.86	U	0.38	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
alpha-Chlordane	0.86	U	0.48	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
beta-BHC	0.86	U	0.46	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Chlordane (Technical)	17	U	4.5	17	21	µg/Kg-dry	1	11/13/2014 6:42 AM
delta-BHC	0.86	U	0.38	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Dieldrin	0.86	U	0.46	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Endosulfan I	0.86	U	0.48	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Endosulfan II	0.86	U	0.48	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Endosulfan sulfate	0.86	U	0.48	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Endrin	0.86	U	0.49	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Endrin aldehyde	0.86	U	0.50	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Endrin ketone	0.86	U	0.47	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
gamma-BHC	0.86	U	0.39	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
gamma-Chlordane	0.86	U	0.48	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Heptachlor	0.86	U	0.47	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Heptachlor epoxide	0.86	U	0.47	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Methoxychlor	0.86	U	0.49	0.86	1.1	µg/Kg-dry	1	11/13/2014 6:42 AM
Toxaphene	17	U	6.4	17	21	µg/Kg-dry	1	11/13/2014 6:42 AM
Surr: Decachlorobiphenyl	97.6			55-130		%Rec	1	11/13/2014 6:42 AM
Surr: Tetrachloro-m-xylene	87.4			42-129		%Rec	1	11/13/2014 6:42 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	8.5	U	3.9	8.5	42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1221		U	3.8		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1232		U	5.8		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1242		U	4.8		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1248		U	4.5		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1254		U	5.4		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1260	8.5	U	3.7	8.5	42	µg/Kg-dry	1	11/7/2014 8:23 AM
Aroclor 1262		U	5.1		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Total PCBs		U	3.7		42	µg/Kg-dry	1	11/7/2014 8:23 AM
Surr: Tetrachloro-m-xylene	77.7			44-130		%Rec	1	11/7/2014 8:23 AM
Surr: Decachlorobiphenyl	97.0			60-125		%Rec	1	11/7/2014 8:23 AM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 10:55:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-007	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-14		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	22		1.8	2.6	13 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.82	J	0.42	0.65	1.3 mg/Kg-dry		1	11/4/2014 2:53 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,400	J	620	850	1,700 µg/Kg-dry		1	11/4/2014 11:31 AM
Barium	4,300	J	250	4,300	8,500 µg/Kg-dry		1	11/4/2014 11:31 AM
Cadmium	52	J	22	33	160 µg/Kg		1	11/4/2014 11:31 AM
Chromium	2,000		70	340	430 µg/Kg-dry		1	11/4/2014 11:31 AM
Copper	5,100		350	850	4,300 µg/Kg-dry		1	11/4/2014 11:31 AM
Iron	1,800,000		2,700	4,300	13,000 µg/Kg-dry		1	11/4/2014 11:31 AM
Lead	910	J	530	850	4,300 µg/Kg-dry		1	11/4/2014 11:31 AM
Manganese	32,000		160	210	850 µg/Kg-dry		1	11/4/2014 11:31 AM
Nickel	1,400	J	240	850	4,300 µg/Kg-dry		1	11/4/2014 11:31 AM
Selenium	1,300	U	990	1,300	1,700 µg/Kg-dry		1	11/4/2014 11:31 AM
Silver	210	U	70	210	850 µg/Kg-dry		1	11/4/2014 11:31 AM
Zinc	3,200	J	310	400	4,000 µg/Kg-dry		1	12/23/2014 2:27 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	1.9	J	0.81	5.7	11 µg/Kg-dry		1	11/4/2014 10:10 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	21	U	10	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Acenaphthene	21	U	9.5	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Acenaphthylene	21	U	9.1	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Anthracene	21	U	10	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Benzo(a)anthracene	21	U	14	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Benzo(a)pyrene	21	U	13	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Benzo(b)fluoranthene	21	U	12	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Benzo(g,h,i)perylene	21	U	15	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Benzo(k)fluoranthene	43	U	22	43	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Chrysene	21	U	12	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Dibenzo (a,h) anthracene	43	U	34	43	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Fluoranthene	21	U	21	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Fluorene	21	U	12	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Indeno(1,2,3-cd)pyrene	43	U	11	43	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Naphthalene	21	U	8.3	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Phenanthrene	21	U	11	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Pyrene	21	U	13	21	210 µg/Kg-dry		1	11/12/2014 3:03 PM
Surr: 2-Fluorobiphenyl	91.1			44-115	%Rec		1	11/12/2014 3:03 PM
Surr: Nitrobenzene-d5	88.0			37-122	%Rec		1	11/12/2014 3:03 PM
Surr: Terphenyl-d14	97.8			54-127	%Rec		1	11/12/2014 3:03 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/22/2014 10:55:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-007	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-14		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	82		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	0.80		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	0.10		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	0.10		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	0.10		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	18		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	82		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	0.10		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	24.6					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.96						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	11		5.1	5.1	5.1	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	36		25	25	25	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	360	J	200	270	550	mg/Kg-dry	21.186 44068	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	23		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	77		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.10	U	0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,300	U	610	1,300	1,700	mg/Kg-dry	1	11/6/2014 11:20 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 6:35:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-008

Matrix: Soil

Client Sample ID: SM-14-15

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46					deg min		
Longitude	-084					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	180	U	180	180	180	mg/Kg-dry	1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	1.2	U	0.97	1.2	3.1	µg/Kg-dry	1	11/13/2014 7:07 AM
4,4'-DDE	1.2	U	0.57	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
4,4'-DDT	1.2	U	0.63	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Aldrin	1.2	U	0.61	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
alpha-BHC	1.2	U	0.53	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
alpha-Chlordane	1.2	U	0.67	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
beta-BHC	1.2	U	0.64	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Chlordane (Technical)	24	U	6.3	24	30	µg/Kg-dry	1	11/13/2014 7:07 AM
delta-BHC	1.2	U	0.53	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Dieldrin	1.2	U	0.65	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Endosulfan I	1.2	U	0.67	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Endosulfan II	1.2	U	0.67	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Endosulfan sulfate	1.2	U	0.67	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Endrin	1.2	U	0.69	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Endrin aldehyde	1.2	U	0.70	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Endrin ketone	1.2	U	0.66	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
gamma-BHC	1.2	U	0.55	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
gamma-Chlordane	1.2	U	0.67	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Heptachlor	1.2	U	0.66	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Heptachlor epoxide	1.2	U	0.66	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Methoxychlor	1.2	U	0.69	1.2	1.5	µg/Kg-dry	1	11/13/2014 7:07 AM
Toxaphene	24	U	9.0	24	30	µg/Kg-dry	1	11/13/2014 7:07 AM
Surr: Decachlorobiphenyl	91.1			55-130		%Rec	1	11/13/2014 7:07 AM
Surr: Tetrachloro-m-xylene	82.9			42-129		%Rec	1	11/13/2014 7:07 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	12	U	5.4	12	59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1221		U	5.4		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1232		U	8.1		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1242		U	6.7		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1248		U	6.3		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1254		U	7.6		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1260	12	U	5.3	12	59	µg/Kg-dry	1	11/7/2014 8:47 AM
Aroclor 1262		U	7.1		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Total PCBs		U	5.3		59	µg/Kg-dry	1	11/7/2014 8:47 AM
Surr: Tetrachloro-m-xylene	60.7			44-130		%Rec	1	11/7/2014 8:47 AM
Surr: Decachlorobiphenyl	72.4			60-125		%Rec	1	11/7/2014 8:47 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 6:35:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-008	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-15		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	200		2.4	3.5	17 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.89	U	0.58	0.89	1.8 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	5,500		1,000	1,400	2,900 µg/Kg-dry		1	11/4/2014 11:13 AM
Barium	150,000		420	7,100	14,000 µg/Kg-dry		1	11/4/2014 11:13 AM
Cadmium	190	J	47	71	360 µg/Kg-dry		1	11/4/2014 11:13 AM
Chromium	36,000		120	570	710 µg/Kg-dry		1	11/4/2014 11:13 AM
Copper	28,000		590	1,400	7,100 µg/Kg-dry		1	11/4/2014 11:13 AM
Iron	23,000,000		45,000	71,000	210,000 µg/Kg-dry		10	11/4/2014 12:18 PM
Lead	5,900	J	890	1,400	7,100 µg/Kg-dry		1	11/4/2014 11:13 AM
Manganese	440,000		2,600	3,600	14,000 µg/Kg-dry		10	11/4/2014 12:18 PM
Nickel	28,000		400	1,400	7,100 µg/Kg-dry		1	11/4/2014 11:13 AM
Selenium	2,100	U	1,700	2,100	2,900 µg/Kg-dry		1	11/4/2014 11:13 AM
Silver	360	U	120	360	1,400 µg/Kg-dry		1	11/4/2014 11:13 AM
Zinc	41,000		480	630	6,300 µg/Kg-dry		1	12/23/2014 2:10 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	10	J	1.4	9.9	20 µg/Kg-dry		1	11/4/2014 10:17 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	30	U	15	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Acenaphthene	30	U	13	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Acenaphthylene	30	U	13	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Anthracene	30	U	15	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Benzo(a)anthracene	30	U	20	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Benzo(a)pyrene	30	U	18	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Benzo(b)fluoranthene	30	U	16	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Benzo(g,h,i)perylene	30	U	21	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Benzo(k)fluoranthene	60	U	31	60	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Chrysene	30	U	17	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Dibenzo (a,h) anthracene	60	U	48	60	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Fluoranthene	30	U	29	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Fluorene	30	U	17	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Indeno(1,2,3-cd)pyrene	60	U	16	60	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Naphthalene	30	U	12	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Phenanthrene	30	U	16	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Pyrene	30	U	18	30	290 µg/Kg-dry		1	11/12/2014 3:27 PM
Surr: 2-Fluorobiphenyl	80.4			44-115	%Rec		1	11/12/2014 3:27 PM
Surr: Nitrobenzene-d5	76.8			37-122	%Rec		1	11/12/2014 3:27 PM
Surr: Terphenyl-d14	85.4			54-127	%Rec		1	11/12/2014 3:27 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 6:35:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-008	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-15		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	80		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	59		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	43		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	10		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	3.6		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	20		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	37		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	40		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	3.6		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	16.9					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.03						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	23		7.1	7.1	7.1	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	130		34	34	34	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	3,900		310	430	870	mg/Kg-dry	23.923 44498	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	45		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	55		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	1.7		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,500	U	1,100	2,500	3,100	mg/Kg-dry	1	11/6/2014 11:31 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 6:07:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-009

Matrix: Soil

Client Sample ID: SM-14-16

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46					deg min		
Longitude	-084					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	130	U	130	130	130	mg/Kg-dry	1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.85	U	0.68	0.85	2.1	µg/Kg-dry	1	11/13/2014 7:32 AM
4,4'-DDE	0.85	U	0.40	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
4,4'-DDT	0.85	U	0.44	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Aldrin	0.85	U	0.43	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
alpha-BHC	0.85	U	0.37	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
alpha-Chlordane	0.85	U	0.47	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
beta-BHC	0.85	U	0.45	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Chlordane (Technical)	17	U	4.4	17	21	µg/Kg-dry	1	11/13/2014 7:32 AM
delta-BHC	0.85	U	0.37	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Dieldrin	0.85	U	0.46	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Endosulfan I	0.85	U	0.47	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Endosulfan II	0.85	U	0.47	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Endosulfan sulfate	0.85	U	0.47	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Endrin	0.85	U	0.48	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Endrin aldehyde	0.85	U	0.49	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Endrin ketone	0.85	U	0.46	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
gamma-BHC	0.85	U	0.38	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
gamma-Chlordane	0.85	U	0.47	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Heptachlor	0.85	U	0.46	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Heptachlor epoxide	0.85	U	0.47	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Methoxychlor	0.85	U	0.48	0.85	1.0	µg/Kg-dry	1	11/13/2014 7:32 AM
Toxaphene	17	U	6.3	17	21	µg/Kg-dry	1	11/13/2014 7:32 AM
Surr: Decachlorobiphenyl	91.5			55-130		%Rec	1	11/13/2014 7:32 AM
Surr: Tetrachloro-m-xylene	83.0			42-129		%Rec	1	11/13/2014 7:32 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	8.4	U	3.8	8.4	42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1221		U	3.8		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1232		U	5.7		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1242		U	4.7		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1248		U	4.4		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1254		U	5.3		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1260	8.4	U	3.7	8.4	42	µg/Kg-dry	1	11/7/2014 9:12 AM
Aroclor 1262		U	5.0		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Total PCBs		U	3.7		42	µg/Kg-dry	1	11/7/2014 9:12 AM
Surr: Tetrachloro-m-xylene	73.0			44-130		%Rec	1	11/7/2014 9:12 AM
Surr: Decachlorobiphenyl	93.0			60-125		%Rec	1	11/7/2014 9:12 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 6:07:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-009	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-16		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	36		1.7	2.5	12 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.63	U	0.41	0.63	1.3 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,800		630	860	1,700 µg/Kg-dry		1	11/4/2014 11:32 AM
Barium	7,600	J	260	4,300	8,600 µg/Kg-dry		1	11/4/2014 11:32 AM
Cadmium	78	J	22	34	170 µg/Kg		1	11/4/2014 11:32 AM
Chromium	3,800		71	340	430 µg/Kg-dry		1	11/4/2014 11:32 AM
Copper	3,700	J	360	860	4,300 µg/Kg-dry		1	11/4/2014 11:32 AM
Iron	3,400,000		27,000	43,000	130,000 µg/Kg-dry		10	11/4/2014 12:29 PM
Lead	1,400	J	540	860	4,300 µg/Kg-dry		1	11/4/2014 11:32 AM
Manganese	51,000		160	220	860 µg/Kg-dry		1	11/4/2014 11:32 AM
Nickel	2,800	J	240	860	4,300 µg/Kg-dry		1	11/4/2014 11:32 AM
Selenium	1,300	U	1,000	1,300	1,700 µg/Kg-dry		1	11/4/2014 11:32 AM
Silver	220	U	70	220	860 µg/Kg-dry		1	11/4/2014 11:32 AM
Zinc	5,000		280	360	3,600 µg/Kg-dry		1	12/23/2014 2:28 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	1.3	J	1.1	7.5	15 µg/Kg-dry		1	11/4/2014 10:12 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	21	U	10	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Acenaphthene	21	U	9.4	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Acenaphthylene	21	U	9.0	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Anthracene	21	U	10	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Benzo(a)anthracene	21	U	14	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Benzo(a)pyrene	21	U	13	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Benzo(b)fluoranthene	21	U	11	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Benzo(g,h,i)perylene	21	U	15	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Benzo(k)fluoranthene	42	U	22	42	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Chrysene	21	U	12	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Dibenzo (a,h) anthracene	42	U	33	42	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Fluoranthene	21	U	20	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Fluorene	21	U	12	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Indeno(1,2,3-cd)pyrene	42	U	11	42	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Naphthalene	21	U	8.2	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Phenanthrene	21	U	11	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Pyrene	21	U	13	21	200 µg/Kg-dry		1	11/12/2014 3:51 PM
Surr: 2-Fluorobiphenyl	81.2			44-115	%Rec		1	11/12/2014 3:51 PM
Surr: Nitrobenzene-d5	79.2			37-122	%Rec		1	11/12/2014 3:51 PM
Surr: Terphenyl-d14	92.5			54-127	%Rec		1	11/12/2014 3:51 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 6:07:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-009	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-16		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	97		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	7.5		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	0.20		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	0.10		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	0.10		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	0.20		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	3.1		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	96		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	0.20		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	25.1					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	3.01						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	11		5.0	5.0	5.0	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	52		25	25	25	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	730		190	260	520	mg/Kg-dry	20.408 16327	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	22		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	78		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.20		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,600	U	710	1,600	1,900	mg/Kg-dry	1	11/6/2014 11:43 AM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 5:33:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-010

Matrix: Soil

Client Sample ID: SM-14-17

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46					deg min		
Longitude	-084					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	130	U	130	130	130	mg/Kg-dry	1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.89	U	0.72	0.89	2.2	µg/Kg-dry	1	11/13/2014 7:57 AM
4,4'-DDE	0.89	U	0.42	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
4,4'-DDT	0.89	U	0.46	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Aldrin	0.89	U	0.45	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
alpha-BHC	0.89	U	0.39	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
alpha-Chlordane	0.89	U	0.49	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
beta-BHC	0.89	U	0.47	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Chlordane (Technical)	18	U	4.6	18	22	µg/Kg-dry	1	11/13/2014 7:57 AM
delta-BHC	0.89	U	0.39	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Dieldrin	0.89	U	0.48	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Endosulfan I	0.89	U	0.50	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Endosulfan II	0.89	U	0.49	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Endosulfan sulfate	0.89	U	0.50	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Endrin	0.89	U	0.51	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Endrin aldehyde	0.89	U	0.52	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Endrin ketone	0.89	U	0.48	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
gamma-BHC	0.89	U	0.40	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
gamma-Chlordane	0.89	U	0.49	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Heptachlor	0.89	U	0.48	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Heptachlor epoxide	0.89	U	0.49	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Methoxychlor	0.89	U	0.51	0.89	1.1	µg/Kg-dry	1	11/13/2014 7:57 AM
Toxaphene	18	U	6.6	18	22	µg/Kg-dry	1	11/13/2014 7:57 AM
Surr: Decachlorobiphenyl	92.9			55-130		%Rec	1	11/13/2014 7:57 AM
Surr: Tetrachloro-m-xylene	85.7			42-129		%Rec	1	11/13/2014 7:57 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	8.8	U	4.0	8.8	44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1221		U	4.0		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1232		U	5.9		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1242		U	4.9		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1248		U	4.6		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1254		U	5.6		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1260	8.8	U	3.9	8.8	44	µg/Kg-dry	1	11/7/2014 9:36 AM
Aroclor 1262		U	5.2		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Total PCBs		U	3.9		44	µg/Kg-dry	1	11/7/2014 9:36 AM
Surr: Tetrachloro-m-xylene	79.6			44-130		%Rec	1	11/7/2014 9:36 AM
Surr: Decachlorobiphenyl	98.5			60-125		%Rec	1	11/7/2014 9:36 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 5:33:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-010	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-17		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	40		1.8	2.6	13 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.67	U	0.44	0.67	1.3 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,600		450	620	1,200 µg/Kg-dry		1	11/4/2014 11:34 AM
Barium	24,000		180	3,100	6,200 µg/Kg-dry		1	11/4/2014 11:34 AM
Cadmium	110	J	15	23	120 µg/Kg		1	11/4/2014 11:34 AM
Chromium	11,000		51	250	310 µg/Kg-dry		1	11/4/2014 11:34 AM
Copper	6,700		260	620	3,100 µg/Kg-dry		1	11/4/2014 11:34 AM
Iron	7,500,000		19,000	31,000	93,000 µg/Kg-dry		10	11/4/2014 12:30 PM
Lead	3,300		390	620	3,100 µg/Kg-dry		1	11/4/2014 11:34 AM
Manganese	100,000		110	160	620 µg/Kg-dry		1	11/4/2014 11:34 AM
Nickel	7,200		180	620	3,100 µg/Kg-dry		1	11/4/2014 11:34 AM
Selenium	930	U	720	930	1,200 µg/Kg-dry		1	11/4/2014 11:34 AM
Silver	160	U	51	160	620 µg/Kg-dry		1	11/4/2014 11:34 AM
Zinc	12,000		310	400	4,000 µg/Kg-dry		1	12/23/2014 2:30 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	4.0	J	0.88	6.2	12 µg/Kg-dry		1	11/4/2014 10:22 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Acenaphthene	22	U	9.7	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Acenaphthylene	22	U	9.3	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Anthracene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Benzo(a)anthracene	22	U	14	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Benzo(a)pyrene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Benzo(b)fluoranthene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Benzo(g,h,i)perylene	22	U	15	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Benzo(k)fluoranthene	44	U	23	44	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Chrysene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Dibenzo (a,h) anthracene	44	U	35	44	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Fluoranthene	22	U	21	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Fluorene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Indeno(1,2,3-cd)pyrene	44	U	11	44	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Naphthalene	22	U	8.5	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Phenanthrene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Pyrene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 4:15 PM
Surr: 2-Fluorobiphenyl	84.3			44-115	%Rec		1	11/12/2014 4:15 PM
Surr: Nitrobenzene-d5	78.7			37-122	%Rec		1	11/12/2014 4:15 PM
Surr: Terphenyl-d14	96.3			54-127	%Rec		1	11/12/2014 4:15 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 5:33:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-010	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-17		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	94		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	90		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	41		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	8.3		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	4.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	4.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	1.6		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	8.5		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	82		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	8.3		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	20.5					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.47						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	18		5.2	5.2	5.2	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	76		26	26	26	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	1,600		200	280	560	mg/Kg-dry	21.008 40336	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	25		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	75		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.50		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,600	U	710	1,600	1,900	mg/Kg-dry	1	11/6/2014 11:53 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 5:05:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-011

Matrix: Soil

Client Sample ID: SM-14-18

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46	17.329				deg min		
Longitude	-084	12.799				deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	130	U	130	130	130 mg/Kg-dry	1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.90	U	0.73	0.90	2.3 µg/Kg-dry	1	11/13/2014 9:12 AM
4,4'-DDE	0.90	U	0.43	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
4,4'-DDT	0.90	U	0.47	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Aldrin	0.90	U	0.45	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
alpha-BHC	0.90	U	0.39	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
alpha-Chlordane	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
beta-BHC	0.90	U	0.48	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Chlordane (Technical)	18	U	4.7	18	22 µg/Kg-dry	1	11/13/2014 9:12 AM
delta-BHC	0.90	U	0.39	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Dieldrin	0.90	U	0.49	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Endosulfan I	0.90	U	0.51	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Endosulfan II	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Endosulfan sulfate	0.90	U	0.51	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Endrin	0.90	U	0.52	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Endrin aldehyde	0.90	U	0.53	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Endrin ketone	0.90	U	0.49	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
gamma-BHC	0.90	U	0.41	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
gamma-Chlordane	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Heptachlor	0.90	U	0.49	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Heptachlor epoxide	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Methoxychlor	0.90	U	0.52	0.90	1.1 µg/Kg-dry	1	11/13/2014 9:12 AM
Toxaphene	18	U	6.7	18	22 µg/Kg-dry	1	11/13/2014 9:12 AM
Surr: Decachlorobiphenyl	88.7			55-130	%Rec	1	11/13/2014 9:12 AM
Surr: Tetrachloro-m-xylene	76.3			42-129	%Rec	1	11/13/2014 9:12 AM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	9.0	U	4.0	9.0	44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1221		U	4.0		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1232		U	6.0		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1242		U	5.0		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1248		U	4.7		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1254		U	5.7		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1260	9.0	U	3.9	9.0	44 µg/Kg-dry	1	11/7/2014 11:44 AM
Aroclor 1262		U	5.3		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Total PCBs		U	3.9		44 µg/Kg-dry	1	11/7/2014 11:44 AM
Surr: Tetrachloro-m-xylene	71.6			44-130	%Rec	1	11/7/2014 11:44 AM
Surr: Decachlorobiphenyl	92.3			60-125	%Rec	1	11/7/2014 11:44 AM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 5:05:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-011	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-18		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	64		1.9	2.7	13 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.68	U	0.44	0.68	1.4 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,600		520	710	1,400 µg/Kg-dry		1	11/4/2014 11:41 AM
Barium	17,000		210	3,600	7,100 µg/Kg-dry		1	11/4/2014 11:41 AM
Cadmium	110	J	17	26	130 µg/Kg		1	11/4/2014 11:41 AM
Chromium	9,200		59	280	360 µg/Kg-dry		1	11/4/2014 11:41 AM
Copper	7,100		300	710	3,600 µg/Kg-dry		1	11/4/2014 11:41 AM
Iron	6,600,000		22,000	36,000	110,000 µg/Kg-dry		10	11/4/2014 12:37 PM
Lead	2,400	J	440	710	3,600 µg/Kg-dry		1	11/4/2014 11:41 AM
Manganese	93,000		130	180	710 µg/Kg-dry		1	11/4/2014 11:41 AM
Nickel	5,900		200	710	3,600 µg/Kg-dry		1	11/4/2014 11:41 AM
Selenium	1,100	U	830	1,100	1,400 µg/Kg-dry		1	11/4/2014 11:41 AM
Silver	180	U	58	180	710 µg/Kg-dry		1	11/4/2014 11:41 AM
Zinc	10,000		330	430	4,300 µg/Kg-dry		1	12/23/2014 2:36 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	5.4	J	1.1	7.6	15 µg/Kg-dry		1	11/4/2014 10:24 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Acenaphthene	22	U	9.9	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Acenaphthylene	22	U	9.5	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Anthracene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Benzo(a)anthracene	22	U	15	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Benzo(a)pyrene	22	U	14	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Benzo(b)fluoranthene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Benzo(g,h,i)perylene	22	U	16	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Benzo(k)fluoranthene	45	U	23	45	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Chrysene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Dibenzo (a,h) anthracene	45	U	35	45	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Fluoranthene	22	U	21	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Fluorene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Indeno(1,2,3-cd)pyrene	45	U	12	45	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Naphthalene	22	U	8.7	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Phenanthrene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Pyrene	22	U	14	22	210 µg/Kg-dry		1	11/12/2014 4:40 PM
Surr: 2-Fluorobiphenyl	81.3			44-115	%Rec		1	11/12/2014 4:40 PM
Surr: Nitrobenzene-d5	77.2			37-122	%Rec		1	11/12/2014 4:40 PM
Surr: Terphenyl-d14	96.4			54-127	%Rec		1	11/12/2014 4:40 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 5:05:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-011	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-18		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	99		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	95		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	92		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	50		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	12		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	6.1		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	6.1		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	1.3		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	7.0		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	80		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	12		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	21.3					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.56						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	25		5.2	5.2	5.2	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	180		26	26	26	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	2,300		220	310	620	mg/Kg-dry	22.831 05023	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	26		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	74		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.82		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,600		900	2,000	2,500	mg/Kg-dry	1	11/6/2014 12:11 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 12:58:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-012

Matrix: Soil

Client Sample ID: SM-14-19

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46					deg min		
Longitude	-084					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	160	U	160	160	160	mg/Kg-dry	1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	1.1	U	0.86	1.1	2.7	µg/Kg-dry	1	11/13/2014 10:59 AM
4,4'-DDE	1.1	U	0.50	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
4,4'-DDT	1.1	U	0.56	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Aldrin	1.1	U	0.54	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
alpha-BHC	1.1	U	0.47	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
alpha-Chlordane	1.1	U	0.59	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
beta-BHC	1.1	U	0.57	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Chlordane (Technical)	21	U	5.5	21	27	µg/Kg-dry	1	11/13/2014 10:59 AM
delta-BHC	1.1	U	0.47	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Dieldrin	1.1	U	0.57	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Endosulfan I	1.1	U	0.60	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Endosulfan II	1.1	U	0.59	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Endosulfan sulfate	1.1	U	0.60	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Endrin	1.1	U	0.61	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Endrin aldehyde	1.1	U	0.62	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Endrin ketone	1.1	U	0.58	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
gamma-BHC	1.1	U	0.48	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
gamma-Chlordane	1.1	U	0.59	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Heptachlor	1.1	U	0.58	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Heptachlor epoxide	1.1	U	0.59	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Methoxychlor	1.1	U	0.61	1.1	1.3	µg/Kg-dry	1	11/13/2014 10:59 AM
Toxaphene	21	U	8.0	21	27	µg/Kg-dry	1	11/13/2014 10:59 AM
Surr: Decachlorobiphenyl	90.7			55-130		%Rec	1	11/13/2014 10:59 AM
Surr: Tetrachloro-m-xylene	84.4			42-129		%Rec	1	11/13/2014 10:59 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	11	U	4.8	11	52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1221		U	4.8		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1232		U	7.1		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1242		U	5.9		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1248		U	5.6		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1254		U	6.7		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1260	11	U	4.6	11	52	µg/Kg-dry	1	11/7/2014 12:08 PM
Aroclor 1262		U	6.3		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Total PCBs		U	4.6		52	µg/Kg-dry	1	11/7/2014 12:08 PM
Surr: Tetrachloro-m-xylene	82.1			44-130		%Rec	1	11/7/2014 12:08 PM
Surr: Decachlorobiphenyl	114			60-125		%Rec	1	11/7/2014 12:08 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 12:58:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-012	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-19		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	140		2.1	3.1	15 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.79	U	0.52	0.79	1.6 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	5,400		780	1,100	2,100 µg/Kg-dry		1	11/4/2014 11:42 AM
Barium	220,000		320	5,300	11,000 µg/Kg-dry		1	11/4/2014 11:42 AM
Cadmium	210		22	33	170 µg/Kg		1	11/4/2014 11:42 AM
Chromium	73,000		88	430	530 µg/Kg-dry		1	11/4/2014 11:42 AM
Copper	46,000		440	1,100	5,300 µg/Kg-dry		1	11/4/2014 11:42 AM
Iron	41,000,000		330,000	530,000	1,600,000 µg/Kg-dry		100	11/4/2014 12:57 PM
Lead	9,500		670	1,100	5,300 µg/Kg-dry		1	11/4/2014 11:42 AM
Manganese	740,000		2,000	2,700	11,000 µg/Kg-dry		10	11/4/2014 12:39 PM
Nickel	57,000		300	1,100	5,300 µg/Kg-dry		1	11/4/2014 11:42 AM
Selenium	1,600	U	1,200	1,600	2,100 µg/Kg-dry		1	11/4/2014 11:42 AM
Silver	270	U	87	270	1,100 µg/Kg-dry		1	11/4/2014 11:42 AM
Zinc	82,000		420	540	5,400 µg/Kg-dry		1	12/23/2014 2:37 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	26		1.3	9.4	19 µg/Kg-dry		1	11/4/2014 10:25 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	27	U	13	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Acenaphthene	27	U	12	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Acenaphthylene	27	U	11	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Anthracene	27	U	13	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Benzo(a)anthracene	27	U	17	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Benzo(a)pyrene	27	U	16	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Benzo(b)fluoranthene	27	U	14	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Benzo(g,h,i)perylene	27	U	19	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Benzo(k)fluoranthene	53	U	28	53	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Chrysene	27	U	15	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Dibenzo (a,h) anthracene	53	U	42	53	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Fluoranthene	27	U	25	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Fluorene	27	U	15	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Indeno(1,2,3-cd)pyrene	53	U	14	53	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Naphthalene	27	U	10	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Phenanthrene	27	U	14	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Pyrene	27	U	16	27	250 µg/Kg-dry		1	11/12/2014 5:04 PM
Surr: 2-Fluorobiphenyl	80.6			44-115	%Rec		1	11/12/2014 5:04 PM
Surr: Nitrobenzene-d5	76.0			37-122	%Rec		1	11/12/2014 5:04 PM
Surr: Terphenyl-d14	95.5			54-127	%Rec		1	11/12/2014 5:04 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 12:58:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-012	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-19		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	94		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	54		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	29		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	17		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	7.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	3.0		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.7		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.7		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	6.5		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	39		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	37		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	14		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	3.0		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	17.9					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.15						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	31		6.4	6.4	6.4	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	290		29	29	29	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	6,200		260	360	710	mg/Kg-dry	22.222 22222	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	38		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	62		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	2.0		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,800	J	1,200	2,600	3,200	mg/Kg-dry	1	11/6/2014 12:41 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 12:27:00 PM

Project: St Marys Sampling

Lab ID: 1410A92-013

Matrix: Soil

Client Sample ID: SM-14-20

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46	20.805				deg min		
Longitude	-084	16.271				deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	130	U	130	130	130 mg/Kg-dry	1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.90	U	0.73	0.90	2.3 µg/Kg-dry	1	11/13/2014 11:24 AM
4,4'-DDE	0.90	U	0.42	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
4,4'-DDT	0.90	U	0.47	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Aldrin	0.90	U	0.45	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
alpha-BHC	0.90	U	0.39	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
alpha-Chlordane	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
beta-BHC	0.90	U	0.48	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Chlordane (Technical)	18	U	4.7	18	22 µg/Kg-dry	1	11/13/2014 11:24 AM
delta-BHC	0.90	U	0.39	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Dieldrin	0.90	U	0.48	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Endosulfan I	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Endosulfan II	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Endosulfan sulfate	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Endrin	0.90	U	0.51	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Endrin aldehyde	0.90	U	0.52	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Endrin ketone	0.90	U	0.49	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
gamma-BHC	0.90	U	0.41	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
gamma-Chlordane	0.90	U	0.50	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Heptachlor	0.90	U	0.49	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Heptachlor epoxide	0.90	U	0.49	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Methoxychlor	0.90	U	0.51	0.90	1.1 µg/Kg-dry	1	11/13/2014 11:24 AM
Toxaphene	18	U	6.7	18	22 µg/Kg-dry	1	11/13/2014 11:24 AM
Surr: Decachlorobiphenyl	87.9			55-130	%Rec	1	11/13/2014 11:24 AM
Surr: Tetrachloro-m-xylene	78.5			42-129	%Rec	1	11/13/2014 11:24 AM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	8.9	U	4.0	8.9	44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1221		U	4.0		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1232		U	6.0		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1242		U	5.0		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1248		U	4.7		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1254		U	5.7		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1260	8.9	U	3.9	8.9	44 µg/Kg-dry	1	11/7/2014 12:32 PM
Aroclor 1262		U	5.3		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Total PCBs		U	3.9		44 µg/Kg-dry	1	11/7/2014 12:32 PM
Surr: Tetrachloro-m-xylene	78.3			44-130	%Rec	1	11/7/2014 12:32 PM
Surr: Decachlorobiphenyl	102			60-125	%Rec	1	11/7/2014 12:32 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 12:27:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-013	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-20		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	120		1.9	2.7	13 mg/Kg-dry		20	11/18/2014 9:02 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.67	U	0.44	0.67	1.3 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	2,800		650	900	1,800 µg/Kg-dry		1	11/4/2014 11:44 AM
Barium	86,000		270	4,500	9,000 µg/Kg-dry		1	11/4/2014 11:44 AM
Cadmium	160	J	22	33	160 µg/Kg		1	11/4/2014 11:44 AM
Chromium	32,000		74	360	450 µg/Kg-dry		1	11/4/2014 11:44 AM
Copper	19,000		370	900	4,500 µg/Kg-dry		1	11/4/2014 11:44 AM
Iron	20,000,000		28,000	45,000	130,000 µg/Kg-dry		10	11/4/2014 12:40 PM
Lead	4,200	J	560	900	4,500 µg/Kg-dry		1	11/4/2014 11:44 AM
Manganese	440,000		1,700	2,200	9,000 µg/Kg-dry		10	11/4/2014 12:40 PM
Nickel	25,000		250	900	4,500 µg/Kg-dry		1	11/4/2014 11:44 AM
Selenium	1,300	U	1,000	1,300	1,800 µg/Kg-dry		1	11/4/2014 11:44 AM
Silver	220	U	73	220	900 µg/Kg-dry		1	11/4/2014 11:44 AM
Zinc	30,000		300	390	3,900 µg/Kg-dry		1	12/23/2014 2:38 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	12	J	1.0	7.1	14 µg/Kg-dry		1	11/4/2014 10:27 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Acenaphthene	22	U	9.9	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Acenaphthylene	22	U	9.5	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Anthracene	22	U	11	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Benzo(a)anthracene	22	U	15	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Benzo(a)pyrene	22	U	14	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Benzo(b)fluoranthene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Benzo(g,h,i)perylene	22	U	16	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Benzo(k)fluoranthene	45	U	23	45	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Chrysene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Dibenzo (a,h) anthracene	45	U	35	45	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Fluoranthene	22	U	22	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Fluorene	22	U	13	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Indeno(1,2,3-cd)pyrene	45	U	12	45	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Naphthalene	22	U	8.7	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Phenanthrene	22	U	12	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Pyrene	22	U	14	22	210 µg/Kg-dry		1	11/12/2014 5:28 PM
Surr: 2-Fluorobiphenyl	77.7			44-115	%Rec		1	11/12/2014 5:28 PM
Surr: Nitrobenzene-d5	72.6			37-122	%Rec		1	11/12/2014 5:28 PM
Surr: Terphenyl-d14	86.4			54-127	%Rec		1	11/12/2014 5:28 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 12:27:00 PM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-013	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-20		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	74		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	45		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	29		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	14		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	7.5		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.6		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.6		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	1.8		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	24		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	45		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	21		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	7.5		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	18.4					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.21						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	20		5.3	5.3	5.3	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	180		27	27	27	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	3,400		200	280	550	mg/Kg-dry	20.080 32129	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	27		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	73		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	1.5		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,600	U	1,200	2,600	3,300	mg/Kg-dry	1	11/6/2014 12:53 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 11:58:00 AM

Project: St Marys Sampling

Lab ID: 1410A92-014

Matrix: Soil

Client Sample ID: SM-14-21

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Field Parameters</b>			<b>Method:</b>			<b>Analyst:</b>		
Latitude	46					deg min		
Longitude	-084					deg min		
<b>Hexane Extractable Materials (HEM)</b>			<b>Method: SW9071B</b>			<b>SW3540C</b>		<b>Analyst: NS1</b>
Oil & Grease, Total	150	U	150	150	150	mg/Kg-dry	1	11/3/2014 10:00 AM
<b>Organochlorine Pesticides</b>			<b>Method: SW8081B</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
4,4'-DDD	0.98	U	0.79	0.98	2.5	µg/Kg-dry	1	11/13/2014 11:49 AM
4,4'-DDE	0.98	U	0.46	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
4,4'-DDT	0.98	U	0.51	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Aldrin	0.98	U	0.49	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
alpha-BHC	0.98	U	0.43	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
alpha-Chlordane	0.98	U	0.54	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
beta-BHC	0.98	U	0.52	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Chlordane (Technical)	19	U	5.1	19	24	µg/Kg-dry	1	11/13/2014 11:49 AM
delta-BHC	0.98	U	0.43	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Dieldrin	0.98	U	0.53	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Endosulfan I	0.98	U	0.55	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Endosulfan II	0.98	U	0.54	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Endosulfan sulfate	0.98	U	0.55	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Endrin	0.98	U	0.56	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Endrin aldehyde	0.98	U	0.57	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Endrin ketone	0.98	U	0.53	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
gamma-BHC	0.98	U	0.44	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
gamma-Chlordane	0.98	U	0.54	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Heptachlor	0.98	U	0.53	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Heptachlor epoxide	0.98	U	0.54	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Methoxychlor	0.98	U	0.56	0.98	1.2	µg/Kg-dry	1	11/13/2014 11:49 AM
Toxaphene	19	U	7.3	19	24	µg/Kg-dry	1	11/13/2014 11:49 AM
Surr: Decachlorobiphenyl	94.5			55-130		%Rec	1	11/13/2014 11:49 AM
Surr: Tetrachloro-m-xylene	87.7			42-129		%Rec	1	11/13/2014 11:49 AM
<b>Polychlorinated Biphenyls</b>			<b>Method: SW8082A</b>			<b>SW3550C</b>		<b>Analyst: JD1</b>
Aroclor 1016	9.7	U	4.4	9.7	48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1221		U	4.4		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1232		U	6.5		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1242		U	5.4		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1248		U	5.1		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1254		U	6.2		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1260	9.7	U	4.3	9.7	48	µg/Kg-dry	1	11/7/2014 12:57 PM
Aroclor 1262		U	5.8		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Total PCBs		U	4.3		48	µg/Kg-dry	1	11/7/2014 12:57 PM
Surr: Tetrachloro-m-xylene	87.5			44-130		%Rec	1	11/7/2014 12:57 PM
Surr: Decachlorobiphenyl	113			60-125		%Rec	1	11/7/2014 12:57 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 11:58:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-014	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-21		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	110		2.0	2.9	15 mg/Kg-dry		20	11/18/2014 9:03 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.75	U	0.49	0.75	1.5 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	4,300		790	1,100	2,200 µg/Kg-dry		1	11/4/2014 11:45 AM
Barium	170,000		320	5,500	11,000 µg/Kg-dry		1	11/4/2014 11:45 AM
Cadmium	190		24	36	180 µg/Kg		1	11/4/2014 11:45 AM
Chromium	54,000		90	440	550 µg/Kg-dry		1	11/4/2014 11:45 AM
Copper	34,000		450	1,100	5,500 µg/Kg-dry		1	11/4/2014 11:45 AM
Iron	30,000,000		340,000	550,000	1,600,000 µg/Kg-dry		100	11/4/2014 12:58 PM
Lead	7,500		680	1,100	5,500 µg/Kg-dry		1	11/4/2014 11:45 AM
Manganese	560,000		2,000	2,700	11,000 µg/Kg-dry		10	11/4/2014 12:41 PM
Nickel	40,000		310	1,100	5,500 µg/Kg-dry		1	11/4/2014 11:45 AM
Selenium	1,600	U	1,300	1,600	2,200 µg/Kg-dry		1	11/4/2014 11:45 AM
Silver	270	U	89	270	1,100 µg/Kg-dry		1	11/4/2014 11:45 AM
Zinc	68,000		550	710	7,100 µg/Kg-dry		1	12/23/2014 2:40 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	16	J	1.3	9.6	19 µg/Kg-dry		1	11/4/2014 10:29 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	25	U	12	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Acenaphthene	25	U	11	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Acenaphthylene	25	U	11	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Anthracene	25	U	12	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Benzo(a)anthracene	25	U	16	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Benzo(a)pyrene	25	U	15	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Benzo(b)fluoranthene	25	U	14	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Benzo(g,h,i)perylene	25	U	18	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Benzo(k)fluoranthene	50	U	26	50	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Chrysene	25	U	14	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Dibenzo (a,h) anthracene	50	U	39	50	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Fluoranthene	25	U	24	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Fluorene	25	U	14	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Indeno(1,2,3-cd)pyrene	50	U	13	50	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Naphthalene	25	U	9.7	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Phenanthrene	25	U	13	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Pyrene	25	U	15	25	240 µg/Kg-dry		1	11/12/2014 5:52 PM
Surr: 2-Fluorobiphenyl	72.6			44-115	%Rec		1	11/12/2014 5:52 PM
Surr: Nitrobenzene-d5	69.4			37-122	%Rec		1	11/12/2014 5:52 PM
Surr: Terphenyl-d14	81.4			54-127	%Rec		1	11/12/2014 5:52 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 11:58:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-014	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-21		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	76		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	54		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	36		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	11		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	4.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	2.0		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	2.0		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	2.0		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	22		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	40		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	32		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	4.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	17.1					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.05						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	19		5.8	5.8	5.8	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	150		29	29	29	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	4,300		240	330	660	mg/Kg-dry	21.929 82456	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	33		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	67		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	1.1		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,300	U	1,100	2,300	2,900	mg/Kg-dry	1	11/6/2014 1:03 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 11:12:00 AM

Project: St Marys Sampling

Lab ID: 1410A92-015

Matrix: Soil

Client Sample ID: SM-14-22

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46	26.786				deg min		
Longitude	-084	15.914				deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	170	U	170	170	170 mg/Kg-dry	1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	1.2	U	0.93	1.2	2.9 µg/Kg-dry	1	11/13/2014 12:16 PM
4,4'-DDE	1.2	U	0.54	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
4,4'-DDT	1.2	U	0.60	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Aldrin	1.2	U	0.58	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
alpha-BHC	1.2	U	0.50	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
alpha-Chlordane	1.2	U	0.64	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
beta-BHC	1.2	U	0.61	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Chlordane (Technical)	23	U	6.0	23	29 µg/Kg-dry	1	11/13/2014 12:16 PM
delta-BHC	1.2	U	0.50	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Dieldrin	1.2	U	0.62	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Endosulfan I	1.2	U	0.65	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Endosulfan II	1.2	U	0.64	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Endosulfan sulfate	1.2	U	0.65	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Endrin	1.2	U	0.66	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Endrin aldehyde	1.2	U	0.67	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Endrin ketone	1.2	U	0.63	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
gamma-BHC	1.2	U	0.52	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
gamma-Chlordane	1.2	U	0.64	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Heptachlor	1.2	U	0.63	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Heptachlor epoxide	1.2	U	0.64	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Methoxychlor	1.2	U	0.66	1.2	1.4 µg/Kg-dry	1	11/13/2014 12:16 PM
Toxaphene	23	U	8.6	23	29 µg/Kg-dry	1	11/13/2014 12:16 PM
Surr: Decachlorobiphenyl	90.5			55-130	%Rec	1	11/13/2014 12:16 PM
Surr: Tetrachloro-m-xylene	84.4			42-129	%Rec	1	11/13/2014 12:16 PM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	11	U	5.2	11	57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1221		U	5.1		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1232		U	7.7		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1242		U	6.4		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1248		U	6.0		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1254		U	7.3		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1260	11	U	5.0	11	57 µg/Kg-dry	1	11/7/2014 1:21 PM
Aroclor 1262		U	6.8		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Total PCBs		U	5.0		57 µg/Kg-dry	1	11/7/2014 1:21 PM
Surr: Tetrachloro-m-xylene	80.6			44-130	%Rec	1	11/7/2014 1:21 PM
Surr: Decachlorobiphenyl	106			60-125	%Rec	1	11/7/2014 1:21 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 11:12:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-015	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-22		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	170		2.4	3.5	17 mg/Kg-dry		20	11/18/2014 9:03 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	1.0	J	0.56	0.86	1.7 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	6,500		860	1,200	2,400 µg/Kg-dry		1	11/4/2014 11:46 AM
Barium	270,000		350	5,900	12,000 µg/Kg-dry		1	11/4/2014 11:46 AM
Cadmium	230		22	34	170 µg/Kg		1	11/4/2014 11:46 AM
Chromium	78,000		98	480	590 µg/Kg-dry		1	11/4/2014 11:46 AM
Copper	49,000		490	1,200	5,900 µg/Kg-dry		1	11/4/2014 11:46 AM
Iron	41,000,000		370,000	590,000	1,800,000 µg/Kg-dry		100	11/4/2014 1:00 PM
Lead	10,000		740	1,200	5,900 µg/Kg-dry		1	11/4/2014 11:46 AM
Manganese	740,000		2,200	3,000	12,000 µg/Kg-dry		10	11/4/2014 12:43 PM
Nickel	60,000		340	1,200	5,900 µg/Kg-dry		1	11/4/2014 11:46 AM
Selenium	1,800	U	1,400	1,800	2,400 µg/Kg-dry		1	11/4/2014 11:46 AM
Silver	300	U	97	300	1,200 µg/Kg-dry		1	11/4/2014 11:46 AM
Zinc	81,000		430	560	5,600 µg/Kg-dry		1	12/23/2014 2:41 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	22		1.4	9.9	20 µg/Kg-dry		1	11/4/2014 10:30 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	29	U	14	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Acenaphthene	29	U	13	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Acenaphthylene	29	U	12	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Anthracene	29	U	14	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Benzo(a)anthracene	29	U	19	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Benzo(a)pyrene	29	U	18	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Benzo(b)fluoranthene	29	U	16	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Benzo(g,h,i)perylene	29	U	21	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Benzo(k)fluoranthene	58	U	30	58	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Chrysene	29	U	16	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Dibenzo (a,h) anthracene	58	U	46	58	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Fluoranthene	29	U	28	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Fluorene	29	U	16	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Indeno(1,2,3-cd)pyrene	58	U	15	58	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Naphthalene	29	U	11	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Phenanthrene	29	U	15	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Pyrene	29	U	18	29	280 µg/Kg-dry		1	11/12/2014 6:16 PM
Surr: 2-Fluorobiphenyl	85.2			44-115	%Rec		1	11/12/2014 6:16 PM
Surr: Nitrobenzene-d5	82.8			37-122	%Rec		1	11/12/2014 6:16 PM
Surr: Terphenyl-d14	94.1			54-127	%Rec		1	11/12/2014 6:16 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 11:12:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-015	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-22		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	95		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	59		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	31		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	18		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	6.9		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	2.8		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.4		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.4		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	4.7		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	37		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	40		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	15		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	2.8		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	16.6					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	2.00						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	31		6.8	6.8	6.8	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	180		33	33	33	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	5,000		310	430	870	mg/Kg-dry	24.875 62189	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	43		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	57		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	2.1		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	2,400	U	1,100	2,400	3,000	mg/Kg-dry	1	11/6/2014 1:13 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 10:40:00 AM

Project: St Marys Sampling

Lab ID: 1410A92-016

Matrix: Soil

Client Sample ID: SM-14-23

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46 25.151					deg min		
Longitude	-084 15.385					deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	130	U	130	130	130 mg/Kg-dry		1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.86	U	0.70	0.86	2.2 µg/Kg-dry		1	11/13/2014 12:42 PM
4,4'-DDE	0.86	U	0.41	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
4,4'-DDT	0.86	U	0.45	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Aldrin	0.86	U	0.43	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
alpha-BHC	0.86	U	0.38	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
alpha-Chlordane	0.86	U	0.48	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
beta-BHC	0.86	U	0.46	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Chlordane (Technical)	17	U	4.5	17	22 µg/Kg-dry		1	11/13/2014 12:42 PM
delta-BHC	0.86	U	0.38	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Dieldrin	0.86	U	0.46	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Endosulfan I	0.86	U	0.48	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Endosulfan II	0.86	U	0.48	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Endosulfan sulfate	0.86	U	0.48	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Endrin	0.86	U	0.49	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Endrin aldehyde	0.86	U	0.50	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Endrin ketone	0.86	U	0.47	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
gamma-BHC	0.86	U	0.39	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
gamma-Chlordane	0.86	U	0.48	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Heptachlor	0.86	U	0.47	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Heptachlor epoxide	0.86	U	0.48	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Methoxychlor	0.86	U	0.49	0.86	1.1 µg/Kg-dry		1	11/13/2014 12:42 PM
Toxaphene	17	U	6.5	17	22 µg/Kg-dry		1	11/13/2014 12:42 PM
Surr: Decachlorobiphenyl	82.2			55-130	%Rec		1	11/13/2014 12:42 PM
Surr: Tetrachloro-m-xylene	74.8			42-129	%Rec		1	11/13/2014 12:42 PM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	8.6	U	3.9	8.6	43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1221		U	3.9		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1232		U	5.8		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1242		U	4.8		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1248		U	4.5		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1254		U	5.4		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1260	8.6	U	3.8	8.6	43 µg/Kg-dry		1	11/7/2014 1:45 PM
Aroclor 1262		U	5.1		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Total PCBs		U	3.8		43 µg/Kg-dry		1	11/7/2014 1:45 PM
Surr: Tetrachloro-m-xylene	75.7			44-130	%Rec		1	11/7/2014 1:45 PM
Surr: Decachlorobiphenyl	94.3			60-125	%Rec		1	11/7/2014 1:45 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 10:40:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-016	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-23		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	20		1.9	2.7	13 mg/Kg-dry		20	11/18/2014 9:03 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.65	U	0.43	0.65	1.3 mg/Kg-dry		1	11/4/2014 2:59 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,400	J	590	810	1,600 µg/Kg-dry		1	11/4/2014 11:48 AM
Barium	21,000		240	4,000	8,100 µg/Kg-dry		1	11/4/2014 11:48 AM
Cadmium	130	J	20	31	150 µg/Kg		1	11/4/2014 11:48 AM
Chromium	12,000		67	320	400 µg/Kg-dry		1	11/4/2014 11:48 AM
Copper	8,700		340	810	4,000 µg/Kg-dry		1	11/4/2014 11:48 AM
Iron	9,200,000		25,000	40,000	120,000 µg/Kg-dry		10	11/4/2014 12:44 PM
Lead	5,400		500	810	4,000 µg/Kg-dry		1	11/4/2014 11:48 AM
Manganese	110,000		150	200	810 µg/Kg-dry		1	11/4/2014 11:48 AM
Nickel	6,700		230	810	4,000 µg/Kg-dry		1	11/4/2014 11:48 AM
Selenium	1,200	U	940	1,200	1,600 µg/Kg-dry		1	11/4/2014 11:48 AM
Silver	200	U	66	200	810 µg/Kg-dry		1	11/4/2014 11:48 AM
Zinc	20,000		300	390	3,900 µg/Kg-dry		1	12/23/2014 2:43 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	21		1.2	8.6	17 µg/Kg-dry		1	11/4/2014 10:32 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	13	J	11	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Acenaphthene	21	U	9.5	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Acenaphthylene	21	U	9.2	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Anthracene	16	J	10	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Benzo(a)anthracene	52	J	14	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Benzo(a)pyrene	46	J	13	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Benzo(b)fluoranthene	57	Jm	12	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Benzo(g,h,i)perylene	35	J	15	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Benzo(k)fluoranthene	28	Jm	22	43	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Chrysene	55	J	12	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Dibenzo (a,h) anthracene	43	U	34	43	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Fluoranthene	96	J	21	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Fluorene	21	U	12	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Indeno(1,2,3-cd)pyrene	28	J	11	43	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Naphthalene	65	J	8.3	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Phenanthrene	61	J	11	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Pyrene	78	J	13	21	210 µg/Kg-dry		1	11/12/2014 6:41 PM
Surr: 2-Fluorobiphenyl	96.2			44-115	%Rec		1	11/12/2014 6:41 PM
Surr: Nitrobenzene-d5	93.0			37-122	%Rec		1	11/12/2014 6:41 PM
Surr: Terphenyl-d14	97.8			54-127	%Rec		1	11/12/2014 6:41 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 10:40:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-016	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-23		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	90		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	84		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	29		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	6.5		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	3.6		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	3.6		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	2.1		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	14		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	78		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	6.5		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	34.1					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	4.09						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	15		5.1	5.1	5.1	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	140		25	25	25	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	2,500		200	270	550	mg/Kg-dry	20.920 50209	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	24		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	76		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	1.1		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	5,400		750	1,600	2,000	mg/Kg-dry	1	11/6/2014 1:37 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

Client: USACE- Detroit District

Collection Date: 10/21/2014 10:13:00 AM

Project: St Marys Sampling

Lab ID: 1410A92-017

Matrix: Soil

Client Sample ID: SM-14-24

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
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Field Parameters	Method:				Analyst:			
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Latitude	46	25.905				deg min		
Longitude	-084	15.437				deg min		

Hexane Extractable Materials (HEM)	Method: SW9071B				SW3540C		Analyst: NS1	
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Oil & Grease, Total	120	U	120	120	120 mg/Kg-dry		1	11/3/2014 10:00 AM
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Organochlorine Pesticides	Method: SW8081B				SW3550C		Analyst: JD1	
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4,4'-DDD	0.81	U	0.66	0.81	2.1 µg/Kg-dry		1	11/13/2014 1:07 PM
4,4'-DDE	0.81	U	0.38	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
4,4'-DDT	0.81	U	0.43	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Aldrin	0.81	U	0.41	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
alpha-BHC	0.81	U	0.35	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
alpha-Chlordane	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
beta-BHC	0.81	U	0.43	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Chlordane (Technical)	16	U	4.2	16	20 µg/Kg-dry		1	11/13/2014 1:07 PM
delta-BHC	0.81	U	0.35	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Dieldrin	0.81	U	0.44	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Endosulfan I	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Endosulfan II	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Endosulfan sulfate	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Endrin	0.81	U	0.46	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Endrin aldehyde	0.81	U	0.47	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Endrin ketone	0.81	U	0.44	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
gamma-BHC	0.81	U	0.37	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
gamma-Chlordane	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Heptachlor	0.81	U	0.44	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Heptachlor epoxide	0.81	U	0.45	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Methoxychlor	0.81	U	0.46	0.81	1.0 µg/Kg-dry		1	11/13/2014 1:07 PM
Toxaphene	16	U	6.1	16	20 µg/Kg-dry		1	11/13/2014 1:07 PM
Surr: Decachlorobiphenyl	83.7			55-130	%Rec		1	11/13/2014 1:07 PM
Surr: Tetrachloro-m-xylene	77.5			42-129	%Rec		1	11/13/2014 1:07 PM

Polychlorinated Biphenyls	Method: SW8082A				SW3550C		Analyst: JD1	
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Aroclor 1016	8.1	U	3.6	8.1	40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1221		U	3.6		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1232		U	5.4		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1242		U	4.5		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1248		U	4.3		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1254		U	5.1		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1260	8.1	U	3.5	8.1	40 µg/Kg-dry		1	11/7/2014 2:09 PM
Aroclor 1262		U	4.8		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Total PCBs		U	3.5		40 µg/Kg-dry		1	11/7/2014 2:09 PM
Surr: Tetrachloro-m-xylene	81.6			44-130	%Rec		1	11/7/2014 2:09 PM
Surr: Decachlorobiphenyl	102			60-125	%Rec		1	11/7/2014 2:09 PM

# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 10:13:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-017	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-24		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Total Phosphorus</b>			<b>Method: A4500-P-F</b>			<b>Analyst: AB2</b>		
Phosphorus, Total (As P)	24		1.6	2.3	12 mg/Kg-dry		20	11/18/2014 9:03 AM
<b>Cyanide</b>			<b>Method: SW9012B</b>			<b>Analyst: AB2</b>		
Cyanide, Total	0.61	U	0.40	0.61	1.2 mg/Kg-dry		1	11/4/2014 3:04 PM
<b>Metals, ICP/OES</b>			<b>Method: SW6010C</b>		<b>SW3050B</b>	<b>Analyst: MK</b>		
Arsenic	1,400	J	530	730	1,500 µg/Kg-dry		1	11/4/2014 11:49 AM
Barium	11,000		220	3,700	7,300 µg/Kg-dry		1	11/4/2014 11:49 AM
Cadmium	93	J	20	30	150 µg/Kg		1	11/4/2014 11:49 AM
Chromium	5,700		60	290	370 µg/Kg-dry		1	11/4/2014 11:49 AM
Copper	4,200		300	730	3,700 µg/Kg-dry		1	11/4/2014 11:49 AM
Iron	4,400,000		23,000	37,000	110,000 µg/Kg-dry		10	11/4/2014 12:45 PM
Lead	2,500	J	460	730	3,700 µg/Kg-dry		1	11/4/2014 11:49 AM
Manganese	110,000		140	180	730 µg/Kg-dry		1	11/4/2014 11:49 AM
Nickel	3,700		210	730	3,700 µg/Kg-dry		1	11/4/2014 11:49 AM
Selenium	1,100	U	850	1,100	1,500 µg/Kg-dry		1	11/4/2014 11:49 AM
Silver	180	U	60	180	730 µg/Kg-dry		1	11/4/2014 11:49 AM
Zinc	7,400		370	480	4,800 µg/Kg-dry		1	12/23/2014 2:44 PM
<b>Mercury</b>			<b>Method: SW7471A</b>		<b>SW7471B</b>	<b>Analyst: AB2</b>		
Mercury	4.0	J	0.99	7.0	14 µg/Kg-dry		1	11/4/2014 10:33 AM
<b>Polynuclear Aromatic Hydrocarbons Semi-Volatile Organic Compounds</b>			<b>Method: SW8270D</b>		<b>SW3550C</b>	<b>Analyst: JH1</b>		
2-Methylnaphthalene	20	U	9.8	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Acenaphthene	20	U	8.9	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Acenaphthylene	20	U	8.5	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Anthracene	20	U	9.8	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Benzo(a)anthracene	20	U	13	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Benzo(a)pyrene	20	U	12	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Benzo(b)fluoranthene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Benzo(g,h,i)perylene	20	U	14	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Benzo(k)fluoranthene	40	U	21	40	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Chrysene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Dibenzo (a,h) anthracene	40	U	32	40	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Fluoranthene	20	U	19	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Fluorene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Indeno(1,2,3-cd)pyrene	40	U	10	40	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Naphthalene	20	U	7.8	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Phenanthrene	20	U	11	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Pyrene	20	U	12	20	190 µg/Kg-dry		1	11/12/2014 7:05 PM
Surr: 2-Fluorobiphenyl	80.8			44-115	%Rec		1	11/12/2014 7:05 PM
Surr: Nitrobenzene-d5	75.3			37-122	%Rec		1	11/12/2014 7:05 PM
Surr: Terphenyl-d14	93.8			54-127	%Rec		1	11/12/2014 7:05 PM



# RTI Laboratories - Analytical Report

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

<b>Client:</b>	USACE- Detroit District	<b>Collection Date:</b>	10/21/2014 10:13:00 AM
<b>Project:</b>	St Marys Sampling		
<b>Lab ID:</b>	1410A92-017	<b>Matrix:</b>	Soil
<b>Client Sample ID:</b>	SM-14-24		

Analysis	Result	Qual	DL	LOD	LOQ	Units	DF	Date Analyzed
<b>Particle Size Analysis</b>			<b>Method: ASTM-D422</b>			<b>Analyst: EL</b>		
No. 4 (4.75-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.10 (2-mm)	100		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.20 (850-um)	98		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.40 (425-um)	89		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.100 (150-um)	28		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No.200 (75-um)	3.9		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
No. 270 (53-um)	1.9		0.10	0.10	0.10	% Finer	1	11/5/2014 9:50 AM
Non-retained material	1.9		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Gravel	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Coarse Sand	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Medium Sand	11		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Fine Sand	85		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Silt	3.9		0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
Clay	0.10	U	0.10	0.10	0.10	%	1	11/5/2014 9:50 AM
<b>Soil Density/Specific Gravity</b>			<b>Method: ASTM D854</b>			<b>Analyst: EL</b>		
Density	25.0					lbs/gal	1	11/6/2014 2:30 PM
Density Temperature	22.0					°C	1	11/6/2014 2:30 PM
Specific Gravity at 20 deg. C	3.01						1	11/6/2014 2:30 PM
<b>Ammonia</b>			<b>Method: EPA350.1</b>			<b>Analyst: NK</b>		
Nitrogen, Ammonia	13		4.7	4.7	4.7	mg/Kg-dry	1	11/3/2014 2:00 PM
<b>TKN (Total Kjeldahl Nitrogen)</b>			<b>Method: EPA351.2</b>			<b>Analyst: NK</b>		
Nitrogen, Kjeldahl, Total	76		23	23	23	mg/Kg-dry	1	11/5/2014 4:00 PM
<b>Chemical Oxygen Demand, COD</b>			<b>Method: EPA410.4M</b>			<b>Analyst: NK</b>		
Chemical Oxygen Demand	1,400		150	210	410	mg/Kg-dry	16.835 01684	11/6/2014 10:30 AM
<b>Percent Moisture</b>			<b>Method: ASTM-D2216</b>			<b>Analyst: NK</b>		
Percent Moisture	18		1.0	1.0	1.0	wt%	1	10/27/2014 3:00 PM
<b>Total, Fixed and Volatile Solids in Solids</b>			<b>Method: SM2540G</b>			<b>Analyst: NK</b>		
Total Solids	82		0.10	0.20	0.50	%	1	10/27/2014 3:00 PM
Total Volatile Solids	0.23		0.10	0.10	0.10	%	1	10/27/2014 3:00 PM
<b>Organic Carbon</b>			<b>Method: SW9060A</b>			<b>Analyst: NK</b>		
Organic Carbon, Total	1,600	U	740	1,600	2,000	mg/Kg-dry	1	11/6/2014 1:48 PM



# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-001A	SM-14-07	10/22/2014 1:41 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-001B	SM-14-07	10/22/2014 1:41 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 3:23 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/19/2014 3:17 PM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/19/2014 3:17 PM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 5:10 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 11:50 AM
1410A92-001C	SM-14-07	10/22/2014 1:41 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:53 PM
				SW_7471S-Mercury		11/3/2014 7:22 AM	11/4/2014 7:22 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:23 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:19 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:19 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 10:06 AM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 8:57 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				1410A92-002A	SM-14-08	10/22/2014 1:15 PM	Soil
ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM				
ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM				
1410A92-002B	SM-14-08	10/22/2014 1:15 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 3:47 AM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-002B	SM-14-08	10/22/2014 1:15 PM	Soil	SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 5:34 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 1:02 PM
1410A92-002C	SM-14-08	10/22/2014 1:15 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:53 PM
				SW_7471S-Mercury		11/3/2014 7:22 AM	11/4/2014 7:23 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:24 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:21 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:20 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 10:34 AM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 8:57 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
1410A92-003A	SM-14-10	10/22/2014 12:34 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-003B	SM-14-10	10/22/2014 12:34 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 5:02 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 5:58 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 1:27 PM
1410A92-003C	SM-14-10	10/22/2014 12:34 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:53 PM
				SW_7471S-Mercury		11/3/2014 7:22 AM	11/4/2014 7:25 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:26 AM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-003C	SM-14-10	10/22/2014 12:34 PM	Soil	SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 12:22 PM
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM		12/23/2014 2:21 PM
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM		11/6/2014 10:43 AM
				PMOIST-Percent Moisture	10/27/2014 3:00 PM		10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)	10/31/2014 10:22 AM		11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus	11/7/2014 9:33 AM		11/18/2014 8:57 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids	10/27/2014 3:00 PM		10/27/2014 3:00 PM
1410A92-004A	SM-14-11	10/22/2014 12:10 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis	11/5/2014 9:50 AM		11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity	11/6/2014 2:30 PM		11/6/2014 2:30 PM
1410A92-004B	SM-14-11	10/22/2014 12:10 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)	10/29/2014 11:32 AM		11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides	11/4/2014 7:43 AM		11/13/2014 5:27 AM
				SW_8082S-Polychlorinated Biphenyls	11/4/2014 7:44 AM		11/7/2014 7:11 AM
				SW_8270S-Semi-Volatile Organic Compounds	11/4/2014 7:41 AM		11/12/2014 1:51 PM
1410A92-004C	SM-14-11	10/22/2014 12:10 PM	Soil	EPA_350.1-S-Ammonia	10/31/2014 10:20 AM		11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD	11/6/2014 10:30 AM		11/6/2014 10:30 AM
				SW_9012S-Cyanide	11/4/2014 8:27 AM		11/4/2014 2:53 PM
				SW_7471S-Mercury	11/3/2014 7:22 AM		11/4/2014 7:27 AM
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 11:27 AM
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 12:23 PM
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM		12/23/2014 2:23 PM
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM		11/6/2014 10:53 AM
				PMOIST-Percent Moisture	10/27/2014 3:00 PM		10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)	10/31/2014 10:22 AM		11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus	11/7/2014 9:33 AM		11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids	10/27/2014 3:00 PM		10/27/2014 3:00 PM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-005A	SM-14-12	10/22/2014 11:40 AM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-005B	SM-14-12	10/22/2014 11:40 AM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 5:52 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 7:35 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 2:15 PM
1410A92-005C	SM-14-12	10/22/2014 11:40 AM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:53 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:07 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:28 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:25 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:24 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 11:02 AM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM
SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM				
1410A92-006A	SM-14-13	10/21/2014 4:27 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-006B	SM-14-13	10/21/2014 4:27 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 6:17 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 7:59 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 2:39 PM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-006C	SM-14-13	10/21/2014 4:27 PM	Soil	EPA_350.1-S-Ammonia	10/31/2014 10:20 AM		11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD	11/6/2014 10:30 AM		11/6/2014 10:30 AM
				SW_9012S-Cyanide	11/4/2014 8:27 AM		11/4/2014 2:53 PM
				SW_7471S-Mercury	11/3/2014 10:01 AM		11/4/2014 10:09 AM
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 11:30 AM
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 12:26 PM
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM		12/23/2014 2:25 PM
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM		11/6/2014 11:12 AM
				PMOIST-Percent Moisture	10/27/2014 3:00 PM		10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)	10/31/2014 10:22 AM		11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus	11/7/2014 9:33 AM		11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids	10/27/2014 3:00 PM		10/27/2014 3:00 PM
				1410A92-007A	SM-14-14	10/22/2014 10:55 AM	Soil
ASTM-D422-Particle Size Analysis	11/5/2014 9:50 AM		11/5/2014 9:50 AM				
ASTM-D854-Soil Density/Specific Gravity	11/6/2014 2:30 PM		11/6/2014 2:30 PM				
1410A92-007B	SM-14-14	10/22/2014 10:55 AM	Soil	SW_9071-Hexane Extractable Materials (HEM)	10/29/2014 11:32 AM		11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides	11/4/2014 7:43 AM		11/13/2014 6:42 AM
				SW_8082S-Polychlorinated Biphenyls	11/4/2014 7:44 AM		11/7/2014 8:23 AM
				SW_8270S-Semi-Volatile Organic Compounds	11/4/2014 7:41 AM		11/12/2014 3:03 PM
1410A92-007C	SM-14-14	10/22/2014 10:55 AM	Soil	EPA_350.1-S-Ammonia	10/31/2014 10:20 AM		11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD	11/6/2014 10:30 AM		11/6/2014 10:30 AM
				SW_9012S-Cyanide	11/4/2014 8:27 AM		11/4/2014 2:53 PM
				SW_7471S-Mercury	11/3/2014 10:01 AM		11/4/2014 10:10 AM
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 11:31 AM
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM		11/4/2014 12:27 PM
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM		12/23/2014 2:27 PM
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM		11/6/2014 11:20 AM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-007C	SM-14-14	10/22/2014 10:55 AM	Soil	PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
1410A92-008A	SM-14-15	10/21/2014 6:35 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-008B	SM-14-15	10/21/2014 6:35 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 7:07 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 8:47 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 3:27 PM
1410A92-008C	SM-14-15	10/21/2014 6:35 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:59 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:17 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:13 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:18 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:10 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 11:31 AM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				1410A92-009A	SM-14-16	10/21/2014 6:07 PM	Soil
ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM				
ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM				

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-009B	SM-14-16	10/21/2014 6:07 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)	10/29/2014 11:32 AM	11/3/2014 10:00 AM	
				SW_8081S-Organochlorine Pesticides	11/4/2014 7:43 AM	11/13/2014 7:32 AM	
				SW_8082S-Polychlorinated Biphenyls	11/4/2014 7:44 AM	11/7/2014 9:12 AM	
				SW_8270S-Semi-Volatile Organic Compounds	11/4/2014 7:41 AM	11/12/2014 3:51 PM	
1410A92-009C	SM-14-16	10/21/2014 6:07 PM	Soil	EPA_350.1-S-Ammonia	10/31/2014 10:20 AM	11/3/2014 2:00 PM	
				EPA_410.4-S-Chemical Oxygen Demand, COD	11/6/2014 10:30 AM	11/6/2014 10:30 AM	
				SW_9012S-Cyanide	11/4/2014 8:27 AM	11/4/2014 2:59 PM	
				SW_7471S-Mercury	11/3/2014 10:01 AM	11/4/2014 10:12 AM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 11:32 AM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 12:29 PM	
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM	12/23/2014 2:28 PM	
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM	11/6/2014 11:43 AM	
				PMOIST-Percent Moisture	10/27/2014 3:00 PM	10/27/2014 3:00 PM	
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)	10/31/2014 10:22 AM	11/5/2014 4:00 PM	
				SM_4500-P-FS-Total Phosphorus	11/7/2014 9:33 AM	11/18/2014 9:02 AM	
				SM_2540G-Total, Fixed and Volatile Solids in Solids	10/27/2014 3:00 PM	10/27/2014 3:00 PM	
				1410A92-010A	SM-14-17	10/21/2014 5:33 PM	Soil
ASTM-D422-Particle Size Analysis	11/5/2014 9:50 AM	11/5/2014 9:50 AM					
ASTM-D854-Soil Density/Specific Gravity	11/6/2014 2:30 PM	11/6/2014 2:30 PM					
1410A92-010B	SM-14-17	10/21/2014 5:33 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)	10/29/2014 11:32 AM	11/3/2014 10:00 AM	
				SW_8081S-Organochlorine Pesticides	11/4/2014 7:43 AM	11/13/2014 7:57 AM	
				SW_8082S-Polychlorinated Biphenyls	11/4/2014 7:44 AM	11/7/2014 9:36 AM	
				SW_8270S-Semi-Volatile Organic Compounds	11/4/2014 7:41 AM	11/12/2014 4:15 PM	
1410A92-010C	SM-14-17	10/21/2014 5:33 PM	Soil	EPA_350.1-S-Ammonia	10/31/2014 10:20 AM	11/3/2014 2:00 PM	
				EPA_410.4-S-Chemical Oxygen Demand, COD	11/6/2014 10:30 AM	11/6/2014 10:30 AM	
				SW_9012S-Cyanide	11/4/2014 8:27 AM	11/4/2014 2:59 PM	

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-010C	SM-14-17	10/21/2014 5:33 PM	Soil	SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:22 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:34 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:30 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:30 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 11:53 AM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
1410A92-011A	SM-14-18	10/21/2014 5:05 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-011B	SM-14-18	10/21/2014 5:05 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 9:12 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 11:44 AM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 4:40 PM
1410A92-011C	SM-14-18	10/21/2014 5:05 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:59 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:24 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:41 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:37 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:36 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 12:11 PM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM



# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-011C	SM-14-18	10/21/2014 5:05 PM	Soil	SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
1410A92-012A	SM-14-19	10/21/2014 12:58 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-012B	SM-14-19	10/21/2014 12:58 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 10:59 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 12:08 PM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 5:04 PM
1410A92-012C	SM-14-19	10/21/2014 12:58 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:59 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:25 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:42 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:39 PM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:57 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:37 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 12:41 PM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
1410A92-013A	SM-14-20	10/21/2014 12:27 PM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-013B	SM-14-20	10/21/2014 12:27 PM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-013B	SM-14-20	10/21/2014 12:27 PM	Soil	SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 11:24 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 12:32 PM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 5:28 PM
1410A92-013C	SM-14-20	10/21/2014 12:27 PM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:59 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:27 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:44 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:40 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:38 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 12:53 PM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:02 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				1410A92-014A	SM-14-21	10/21/2014 11:58 AM	Soil
ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM				
ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM				
1410A92-014B	SM-14-21	10/21/2014 11:58 AM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 11:49 AM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 12:57 PM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 5:52 PM
1410A92-014C	SM-14-21	10/21/2014 11:58 AM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:59 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:29 AM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-014C	SM-14-21	10/21/2014 11:58 AM	Soil	SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 11:45 AM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 12:41 PM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 12:58 PM	
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM	12/23/2014 2:40 PM	
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM	11/6/2014 1:03 PM	
				PMOIST-Percent Moisture	10/27/2014 3:00 PM	10/27/2014 3:00 PM	
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)	10/31/2014 10:22 AM	11/5/2014 4:00 PM	
				SM_4500-P-FS-Total Phosphorus	11/7/2014 9:33 AM	11/18/2014 9:03 AM	
				SM_2540G-Total, Fixed and Volatile Solids in Solids	10/27/2014 3:00 PM	10/27/2014 3:00 PM	
1410A92-015A	SM-14-22	10/21/2014 11:12 AM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis	11/5/2014 9:50 AM	11/5/2014 9:50 AM	
				ASTM-D854-Soil Density/Specific Gravity	11/6/2014 2:30 PM	11/6/2014 2:30 PM	
1410A92-015B	SM-14-22	10/21/2014 11:12 AM	Soil	SW_9071-Hexane Extractable Materials (HEM)	10/29/2014 11:32 AM	11/3/2014 10:00 AM	
				SW_8081S-Organochlorine Pesticides	11/4/2014 7:43 AM	11/13/2014 12:16 PM	
				SW_8082S-Polychlorinated Biphenyls	11/4/2014 7:44 AM	11/7/2014 1:21 PM	
				SW_8270S-Semi-Volatile Organic Compounds	11/4/2014 7:41 AM	11/12/2014 6:16 PM	
1410A92-015C	SM-14-22	10/21/2014 11:12 AM	Soil	EPA_350.1-S-Ammonia	10/31/2014 10:20 AM	11/3/2014 2:00 PM	
				EPA_410.4-S-Chemical Oxygen Demand, COD	11/6/2014 10:30 AM	11/6/2014 10:30 AM	
				SW_9012S-Cyanide	11/4/2014 8:27 AM	11/4/2014 2:59 PM	
				SW_7471S-Mercury	11/3/2014 10:01 AM	11/4/2014 10:30 AM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 11:46 AM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 12:43 PM	
				SW_6010S-Metals, ICP/OES	10/29/2014 11:45 AM	11/4/2014 1:00 PM	
				SW_6010S-Metals, ICP/OES	12/23/2014 11:27 AM	12/23/2014 2:41 PM	
				SW_9060S-Organic Carbon	11/5/2014 1:49 PM	11/6/2014 1:13 PM	
				PMOIST-Percent Moisture	10/27/2014 3:00 PM	10/27/2014 3:00 PM	
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)	10/31/2014 10:22 AM	11/5/2014 4:00 PM	

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-015C	SM-14-22	10/21/2014 11:12 AM	Soil	SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:03 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
1410A92-016A	SM-14-23	10/21/2014 10:40 AM	Soil	Field-Field Parameters			
				ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM
				ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM
1410A92-016B	SM-14-23	10/21/2014 10:40 AM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM
				SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 12:42 PM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 1:45 PM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 6:41 PM
1410A92-016C	SM-14-23	10/21/2014 10:40 AM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 2:59 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:32 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:48 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:44 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:43 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 1:37 PM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:03 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				1410A92-017A	SM-14-24	10/21/2014 10:13 AM	Soil
ASTM-D422-Particle Size Analysis		11/5/2014 9:50 AM	11/5/2014 9:50 AM				
ASTM-D854-Soil Density/Specific Gravity		11/6/2014 2:30 PM	11/6/2014 2:30 PM				
1410A92-017B	SM-14-24	10/21/2014 10:13 AM	Soil	SW_9071-Hexane Extractable Materials (HEM)		10/29/2014 11:32 AM	11/3/2014 10:00 AM

# RTI Laboratories - DATES REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1410A92-017B	SM-14-24	10/21/2014 10:13 AM	Soil	SW_8081S-Organochlorine Pesticides		11/4/2014 7:43 AM	11/13/2014 1:07 PM
				SW_8082S-Polychlorinated Biphenyls		11/4/2014 7:44 AM	11/7/2014 2:09 PM
				SW_8270S-Semi-Volatile Organic Compounds		11/4/2014 7:41 AM	11/12/2014 7:05 PM
1410A92-017C	SM-14-24	10/21/2014 10:13 AM	Soil	EPA_350.1-S-Ammonia		10/31/2014 10:20 AM	11/3/2014 2:00 PM
				EPA_410.4-S-Chemical Oxygen Demand, COD		11/6/2014 10:30 AM	11/6/2014 10:30 AM
				SW_9012S-Cyanide		11/4/2014 8:27 AM	11/4/2014 3:04 PM
				SW_7471S-Mercury		11/3/2014 10:01 AM	11/4/2014 10:33 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 11:49 AM
				SW_6010S-Metals, ICP/OES		10/29/2014 11:45 AM	11/4/2014 12:45 PM
				SW_6010S-Metals, ICP/OES		12/23/2014 11:27 AM	12/23/2014 2:44 PM
				SW_9060S-Organic Carbon		11/5/2014 1:49 PM	11/6/2014 1:48 PM
				PMOIST-Percent Moisture		10/27/2014 3:00 PM	10/27/2014 3:00 PM
				EPA_351.2-S-TKN (Total Kjeldahl Nitrogen)		10/31/2014 10:22 AM	11/5/2014 4:00 PM
				SM_4500-P-FS-Total Phosphorus		11/7/2014 9:33 AM	11/18/2014 9:03 AM
				SM_2540G-Total, Fixed and Volatile Solids in Solids		10/27/2014 3:00 PM	10/27/2014 3:00 PM



# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34936

Sample ID:	<b>MB-34936</b>	Samp Type:	<b>MBLK</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>72985</b>
Client ID:	<b>PBS</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1419071</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Arsenic	2,000	2,000									U
Barium	340	10,000									J
Chromium	130	500									J
Copper	5,000	5,000									U
Iron	4,500	15,000									J
Lead	5,000	5,000									U
Manganese	1,000	1,000									U
Nickel	5,000	5,000									U
Selenium	2,000	2,000									U
Silver	180	1,000									J

Sample ID:	<b>1410A92-008CMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>72985</b>
Client ID:	<b>SM-14-15MS1</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1419074</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Arsenic	34,000	2,700	33,340	5,500	86.3	82	111				
Barium	210,000	13,000	33,340	146,400	203	83	113				S
Chromium	74,000	670	33,340	35,590	115	85	113				S
Copper	68,000	6,700	33,340	27,950	120	81	117				S
Iron	23,000,000	20,000	333,400	20,840,000	682	81	118				ES
Lead	36,000	6,700	33,340	5,877	90.4	81	112				
Manganese	460,000	1,300	33,340	392,300	190	84	114				ES
Nickel	70,000	6,700	33,340	28,480	123	83	113				S
Selenium	19,000	2,700	33,340	0	55.5	78	111				S
Silver	32,000	1,300	33,340	0	95.4	82	112				

Sample ID:	<b>1410A92-008CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>72985</b>
Client ID:	<b>SM-14-15SD1</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1419075</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Arsenic	37,000	2,800	34,880	5,500	89.3	82	111	34,270	6.68	20	
Barium	200,000	14,000	34,880	146,400	145	83	113	214,100	8.37	20	S

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34936

Sample ID:	<b>1410A92-008CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>72985</b>
Client ID:	<b>SM-14-15SD1</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>	Analysis Date:		<b>11/4/2014</b>	SeqNo:	<b>1419075</b>	
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chromium	73,000	700	34,880	35,590	108	85	113	73,830	0.828	20	
Copper	66,000	7,000	34,880	27,950	109	81	117	68,000	3.02	20	
Iron	22,000,000	21,000	348,800	20,840,000	291	81	118	23,120,000	5.59	20	ES
Lead	37,000	7,000	34,880	5,877	89.7	81	112	36,030	3.07	20	
Manganese	440,000	1,400	34,880	392,300	145	84	114	455,700	2.85	20	ES
Nickel	67,000	7,000	34,880	28,480	110	83	113	69,540	4.10	20	
Selenium	21,000	2,800	34,880	0	61.5	78	111	18,510	14.7	20	S
Silver	33,000	1,400	34,880	0	93.5	82	112	31,800	2.52	20	

Sample ID:	<b>LCS-34936</b>	Samp Type:	<b>LCS</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>72985</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>	Analysis Date:		<b>11/4/2014</b>	SeqNo:	<b>1419897</b>	
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Arsenic	27,000	2,000	25,000	0	107	82	111				
Barium	26,000	10,000	25,000	0	105	83	113				
Chromium	27,000	500	25,000	0	109	85	113				
Copper	29,000	5,000	25,000	0	117	81	117				
Iron	260,000	15,000	250,000	0	105	81	118				
Lead	27,000	5,000	25,000	0	108	81	112				
Manganese	28,000	1,000	25,000	0	113	84	114				
Nickel	26,000	5,000	25,000	0	102	83	113				
Selenium	27,000	2,000	25,000	0	106	78	111				
Silver	24,000	1,000	25,000	0	98.0	82	112				

Sample ID:	<b>MB-34936</b>	Samp Type:	<b>MBLK</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>78540</b>
Client ID:	<b>PBS</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>	Analysis Date:		<b>11/4/2014</b>	SeqNo:	<b>1522268</b>	
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Cadmium	250	250									U



# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34936

Sample ID:	<b>LCS-34936</b>	Samp Type:	<b>LCS</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>78540</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1522269</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Cadmium	27,000	250	25,000	0	109	82	113				

Sample ID:	<b>1410A92-008CMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>78540</b>
Client ID:	<b>SM-14-15MS1</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1522271</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Cadmium	33,000	330	33,340	185.3	99.7	82	113				

Sample ID:	<b>1410A92-008CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_6010S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>10/29/2014</b>	RunNo:	<b>78540</b>
Client ID:	<b>SM-14-15SD1</b>	Batch ID:	<b>34936</b>	TestNo:	<b>SW6010B SW3050B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1522272</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Cadmium	34,000	350	34,880	185.3	96.4	82	113	33,430	1.13	20	



# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34969

Sample ID: <b>LCS-34969</b>	Samp Type: <b>LCS</b>	Test Code: <b>EPA_351.2-S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>10/31/2014</b>	RunNo: <b>73028</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>34969</b>	TestNo: <b>E351.2</b>	Analysis Date: <b>11/5/2014</b>	SeqNo: <b>1420040</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Nitrogen, Kjeldahl, Total	200	20	200.0	0	98.0	80	120				
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Sample ID: <b>MB-34969</b>	Samp Type: <b>MBLK</b>	Test Code: <b>EPA_351.2-S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>10/31/2014</b>	RunNo: <b>73028</b>						
Client ID: <b>PBS</b>	Batch ID: <b>34969</b>	TestNo: <b>E351.2</b>	Analysis Date: <b>11/5/2014</b>	SeqNo: <b>1420041</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Nitrogen, Kjeldahl, Total	20	20									U
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Sample ID: <b>1410A92-002CDUP</b>	Samp Type: <b>DUP</b>	Test Code: <b>EPA_351.2-S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>10/31/2014</b>	RunNo: <b>73028</b>						
Client ID: <b>SM-14-08LR1</b>	Batch ID: <b>34969</b>	TestNo: <b>E351.2</b>	Analysis Date: <b>11/5/2014</b>	SeqNo: <b>1420044</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Nitrogen, Kjeldahl, Total	62	23						62.93	0.998	25	
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34982

Sample ID:	<b>MB-34982</b>	Samp Type:	<b>MBLK</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72949</b>
Client ID:	<b>PBS</b>	Batch ID:	<b>34982</b>	TestNo:	<b>SW7471A SW7471B</b>	Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418516</b>		
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	1.1	12									J

Sample ID:	<b>LCS-34982</b>	Samp Type:	<b>LCS</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72949</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>34982</b>	TestNo:	<b>SW7471A SW7471B</b>	Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418517</b>		
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	61	12	60.00	0	101	80	124				

Sample ID:	<b>1410A40-001CMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72949</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>34982</b>	TestNo:	<b>SW7471A SW7471B</b>	Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418520</b>		
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	310	27	135.9	170.6	99.4	80	124				

Sample ID:	<b>1410A40-001CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72949</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>34982</b>	TestNo:	<b>SW7471A SW7471B</b>	Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418521</b>		
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	300	28	141.1	170.6	94.8	80	124	305.7	0.426	20	

Sample ID:	<b>1410A40-015CMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72949</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>34982</b>	TestNo:	<b>SW7471A SW7471B</b>	Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418534</b>		
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	250	21	102.9	174.3	76.9	80	124				S

Sample ID:	<b>1410A40-015CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72949</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>34982</b>	TestNo:	<b>SW7471A SW7471B</b>	Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418535</b>		
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	380	21	105.9	174.3	192	80	124	253.4	39.4	20	RS

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34988

Sample ID:	<b>1410A92-008CMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72950</b>
Client ID:	<b>SM-14-15MS1</b>	Batch ID:	<b>34988</b>	TestNo:	<b>SW7471A SW7471B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418819</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	110	21	102.7	10.29	99.5	80	124				

Sample ID:	<b>1410A92-008CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72950</b>
Client ID:	<b>SM-14-15SD1</b>	Batch ID:	<b>34988</b>	TestNo:	<b>SW7471A SW7471B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418820</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	120	20	100.8	10.29	108	80	124	112.4	5.86	20	

Sample ID:	<b>MB-34988</b>	Samp Type:	<b>MBLK</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72950</b>
Client ID:	<b>PBS</b>	Batch ID:	<b>34988</b>	TestNo:	<b>SW7471A SW7471B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418843</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	1.9	12									J

Sample ID:	<b>LCS-34988</b>	Samp Type:	<b>LCS</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72950</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>34988</b>	TestNo:	<b>SW7471A SW7471B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418844</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	61	12	60.00	0	101	80	124				

Sample ID:	<b>1410A61-004AMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72950</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>34988</b>	TestNo:	<b>SW7471A SW7471B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418846</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	320	17	84.33	224.3	118	80	124				

Sample ID:	<b>1410A61-004AMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_7471S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/3/2014</b>	RunNo:	<b>72950</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>34988</b>	TestNo:	<b>SW7471A SW7471B</b>			Analysis Date:	<b>11/4/2014</b>	SeqNo:	<b>1418847</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Mercury	280	16	79.14	224.3	65.8	80	124	323.9	15.8	20	S

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34995

Sample ID: <b>MB-34995</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_8270S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73294</b>						
Client ID: <b>PBS</b>	Batch ID: <b>34995</b>	TestNo: <b>SW8270C SW3550C</b>	Analysis Date: <b>11/12/2014</b>	SeqNo: <b>1425721</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
2-Methylnaphthalene	160	160									U
Acenaphthene	160	160									U
Acenaphthylene	160	160									U
Anthracene	160	160									U
Benzo(a)anthracene	160	160									U
Benzo(a)pyrene	160	160									U
Benzo(b)fluoranthene	160	160									U
Benzo(g,h,i)perylene	160	160									U
Benzo(k)fluoranthene	160	160									U
Chrysene	160	160									U
Dibenzo (a,h) anthracene	160	160									U
Fluoranthene	160	160									U
Fluorene	160	160									U
Indeno(1,2,3-cd)pyrene	160	160									U
Naphthalene	160	160									U
Phenanthrene	160	160									U
Pyrene	160	160									U
Surr: 2-Fluorobiphenyl	710		821.0		87.1	44	115				
Surr: Nitrobenzene-d5	670		821.0		81.8	37	122				
Surr: Terphenyl-d14	770		821.0		93.3	54	127				

Sample ID: <b>LCS-34995</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_8270S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73294</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>34995</b>	TestNo: <b>SW8270C SW3550C</b>	Analysis Date: <b>11/12/2014</b>	SeqNo: <b>1425722</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
2-Methylnaphthalene	610	160	663.4	0	91.2	38	122				
Acenaphthene	610	160	663.4	0	92.5	40	123				
Acenaphthylene	630	160	663.4	0	94.2	32	132				
Anthracene	620	160	663.4	0	93.4	47	123				
Benzo(a)anthracene	630	160	663.4	0	95.7	49	126				
Benzo(a)pyrene	670	160	663.4	0	100	45	129				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34995

Sample ID: <b>LCS-34995</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_8270S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73294</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>34995</b>	TestNo: <b>SW8270C SW3550C</b>	Analysis Date: <b>11/12/2014</b>	SeqNo: <b>1425722</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	650	160	663.4	0	97.6	45	132				m
Benzo(g,h,i)perylene	710	160	663.4	0	107	43	134				
Benzo(k)fluoranthene	740	160	663.4	0	111	47	132				
Chrysene	650	160	663.4	0	97.8	50	124				
Dibenzo (a,h) anthracene	710	160	663.4	0	107	45	134				
Fluoranthene	640	160	663.4	0	95.9	50	127				
Fluorene	630	160	663.4	0	94.4	43	125				
Indeno(1,2,3-cd)pyrene	710	160	663.4	0	106	45	133				
Naphthalene	600	160	663.4	0	90.6	35	123				
Phenanthrene	630	160	663.4	0	95.0	50	121				
Pyrene	680	160	663.4	0	102	47	127				
Surr: 2-Fluorobiphenyl	790		829.2		95.0	44	115				
Surr: Nitrobenzene-d5	750		829.2		91.0	37	122				
Surr: Terphenyl-d14	850		829.2		102	54	127				

Sample ID: <b>1410A92-001BMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_8270S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73294</b>						
Client ID: <b>SM-14-07MS1</b>	Batch ID: <b>34995</b>	TestNo: <b>SW8270C SW3550C</b>	Analysis Date: <b>11/12/2014</b>	SeqNo: <b>1425724</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
2-Methylnaphthalene	730	210	875.3	0	83.3	38	122				
Acenaphthene	770	210	875.3	0	87.5	40	123				
Acenaphthylene	770	210	875.3	0	88.0	32	132				
Anthracene	820	210	875.3	0	93.6	47	123				
Benzo(a)anthracene	840	210	875.3	0	95.7	49	126				
Benzo(a)pyrene	870	210	875.3	0	99.6	45	129				
Benzo(b)fluoranthene	830	210	875.3	0	94.7	45	132				
Benzo(g,h,i)perylene	850	210	875.3	0	96.5	43	134				
Benzo(k)fluoranthene	930	210	875.3	0	107	47	132				m
Chrysene	790	210	875.3	0	90.1	50	124				
Dibenzo (a,h) anthracene	860	210	875.3	0	98.1	45	134				
Fluoranthene	830	210	875.3	0	95.3	50	127				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34995

Sample ID:	<b>1410A92-001BMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_8270S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73294</b>
Client ID:	<b>SM-14-07MS1</b>	Batch ID:	<b>34995</b>	TestNo:	<b>SW8270C</b>	<b>SW3550C</b>		Analysis Date:	<b>11/12/2014</b>	SeqNo:	<b>1425724</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Fluorene	790	210	875.3	0	90.3	43	125				
Indeno(1,2,3-cd)pyrene	860	210	875.3	0	98.3	45	133				
Naphthalene	710	210	875.3	0	80.8	35	123				
Phenanthrene	810	210	875.3	0	92.1	50	121				
Pyrene	850	210	875.3	0	96.7	47	127				
Surr: 2-Fluorobiphenyl	950		1,094		86.6	44	115				
Surr: Nitrobenzene-d5	900		1,094		82.4	37	122				
Surr: Terphenyl-d14	1,100		1,094		99.8	54	127				

Sample ID:	<b>1410A92-001BMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_8270S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73294</b>
Client ID:	<b>SM-14-07SD1</b>	Batch ID:	<b>34995</b>	TestNo:	<b>SW8270C</b>	<b>SW3550C</b>		Analysis Date:	<b>11/12/2014</b>	SeqNo:	<b>1425725</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
2-Methylnaphthalene	660	210	888.9	0	74.6	38	122	729.6	9.54	25	
Acenaphthene	690	210	888.9	0	77.5	40	123	766.3	10.6	25	
Acenaphthylene	710	210	888.9	0	80.1	32	132	770.3	7.80	25	
Anthracene	760	210	888.9	0	85.3	47	123	819.7	7.79	25	
Benzo(a)anthracene	780	210	888.9	0	87.2	49	126	837.7	7.70	25	
Benzo(a)pyrene	830	210	888.9	0	93.3	45	129	872.2	5.04	25	
Benzo(b)fluoranthene	800	210	888.9	0	89.7	45	132	828.9	3.83	25	
Benzo(g,h,i)perylene	850	210	888.9	0	95.6	43	134	845.1	0.606	25	
Benzo(k)fluoranthene	910	210	888.9	0	102	47	132	933.5	3.06	25	m
Chrysene	770	210	888.9	0	87.0	50	124	789.1	1.96	25	
Dibenzo (a,h) anthracene	860	210	888.9	0	96.3	45	134	858.7	0.310	25	
Fluoranthene	770	210	888.9	0	86.8	50	127	834.2	7.74	25	
Fluorene	720	210	888.9	0	81.0	43	125	790.8	9.31	25	
Indeno(1,2,3-cd)pyrene	850	210	888.9	0	95.2	45	133	860.4	1.61	25	
Naphthalene	650	210	888.9	0	73.4	35	123	707.7	8.05	25	
Phenanthrene	750	210	888.9	0	84.6	50	121	806.1	6.95	25	
Pyrene	810	210	888.9	0	91.4	47	127	846.8	4.15	25	
Surr: 2-Fluorobiphenyl	880		1,111		78.8	44	115		0	25	



# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

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Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34995

Sample ID:	<b>1410A92-001BMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_8270S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73294</b>	
Client ID:	<b>SM-14-07SD1</b>	Batch ID:	<b>34995</b>	TestNo:	<b>SW8270C</b>		<b>SW3550C</b>	Analysis Date:	<b>11/12/2014</b>	SeqNo:	<b>1425725</b>	
Analyte		Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5		840		1,111		75.3	37	122		0	25	
Surr: Terphenyl-d14		1,100		1,111		95.0	54	127		0	25	

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Sample ID: <b>MB-34997</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73329</b>						
Client ID: <b>PBS</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/13/2014</b>	SeqNo: <b>1427068</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	1.7	1.7									U
4,4'-DDE	0.81	0.81									U
4,4'-DDT	0.81	0.81									U
Aldrin	0.81	0.81									U
alpha-BHC	0.81	0.81									U
alpha-Chlordane	0.81	0.81									U
beta-BHC	0.81	0.81									U
Chlordane (Technical)	16	16									U
delta-BHC	0.81	0.81									U
Dieldrin	0.81	0.81									U
Endosulfan I	0.81	0.81									U
Endosulfan II	0.81	0.81									U
Endosulfan sulfate	0.81	0.81									U
Endrin	0.81	0.81									U
Endrin aldehyde	0.81	0.81									U
Endrin ketone	0.81	0.81									U
gamma-BHC	0.81	0.81									U
gamma-Chlordane	0.81	0.81									U
Heptachlor	0.81	0.81									U
Heptachlor epoxide	0.81	0.81									U
Methoxychlor	0.81	0.81									U
Toxaphene	16	16									U
Surr: Decachlorobiphenyl	7.9		8.063		97.7	55	130				
Surr: Tetrachloro-m-xylene	7.2		8.063		89.5	42	129				

Sample ID: <b>1410A92-002BMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73329</b>						
Client ID: <b>SM-14-08MS1</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/13/2014</b>	SeqNo: <b>1427071</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	9.9	2.0	9.838	0	100	56	139				
4,4'-DDE	9.6	0.98	9.838	0	98.0	56	134				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDT	10	0.98	9.838	0	102	50	141				
Aldrin	9.2	0.98	9.838	0	93.1	45	136				
alpha-BHC	8.8	0.98	9.838	0	89.0	45	137				
alpha-Chlordane	9.3	0.98	9.838	0	94.9	54	133				
beta-BHC	9.3	0.98	9.838	0	94.1	50	136				
Chlordane (Technical)	20	20		0	0	43	149				U
delta-BHC	9.2	0.98	9.838	0	93.8	47	139				
Dieldrin	9.5	0.98	9.838	0	96.4	56	136				
Endosulfan I	9.5	0.98	9.838	0	96.2	53	132				
Endosulfan II	9.7	0.98	9.838	0	99.0	53	134				
Endosulfan sulfate	10	0.98	9.838	0	102	55	136				
Endrin	11	0.98	9.838	0	107	57	140				
Endrin aldehyde	10	0.98	9.838	0	102	35	137				
Endrin ketone	9.8	0.98	9.838	0	100	55	136				
gamma-BHC	9.3	0.98	9.838	0	94.6	49	135				
gamma-Chlordane	8.8	0.98	9.838	0	89.6	53	135				m
Heptachlor	9.4	0.98	9.838	0	95.2	47	136				
Heptachlor epoxide	9.3	0.98	9.838	0	94.7	52	136				
Methoxychlor	10	0.98	9.838	0	106	52	143				
Toxaphene	20	20		0	0	33	141				U
Surr: Decachlorobiphenyl	10		9.838		101	55	130				
Surr: Tetrachloro-m-xylene	8.4		9.838		85.4	42	129				

Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	11	2.0	9.880	0	107	56	139	9.857	6.85	25	
4,4'-DDE	10	0.99	9.880	0	102	56	134	9.638	4.63	25	
4,4'-DDT	11	0.99	9.880	0	110	50	141	10.06	7.32	25	
Aldrin	9.7	0.99	9.880	0	98.2	45	136	9.162	5.68	25	

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Sample ID:	1410A92-002BMSD	Samp Type:	MSD	Test Code:	SW_8081S	Units:	µg/Kg-dry	Prep Date:	11/4/2014	RunNo:	73329
Client ID:	SM-14-08SD1	Batch ID:	34997	TestNo:	SW8081A	SW3550C		Analysis Date:	11/13/2014	SeqNo:	1427072
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
alpha-BHC	9.5	0.99	9.880	0	96.5	45	137	8.758	8.45	25	
alpha-Chlordane	9.8	0.99	9.880	0	99.2	54	133	9.334	4.87	25	
beta-BHC	9.7	0.99	9.880	0	97.7	50	136	9.260	4.17	25	
Chlordane (Technical)	20	20		0	0	43	149	0	0	25	U
delta-BHC	9.8	0.99	9.880	0	99.5	47	139	9.227	6.36	25	
Dieldrin	10	0.99	9.880	0	101	56	136	9.485	4.79	25	m
Endosulfan I	9.9	0.99	9.880	0	99.8	53	132	9.465	4.10	25	
Endosulfan II	10	0.99	9.880	0	105	53	134	9.743	6.45	25	
Endosulfan sulfate	11	0.99	9.880	0	110	55	136	9.989	7.97	25	
Endrin	11	0.99	9.880	0	111	57	140	10.55	3.70	25	
Endrin aldehyde	11	0.99	9.880	0	113	35	137	10.00	11.3	25	
Endrin ketone	11	0.99	9.880	0	108	55	136	9.838	7.97	25	
gamma-BHC	9.6	0.99	9.880	0	97.4	49	135	9.303	3.42	25	
gamma-Chlordane	9.8	0.99	9.880	0	99.4	53	135	8.813	10.8	25	m
Heptachlor	9.8	0.99	9.880	0	99.3	47	136	9.369	4.57	25	
Heptachlor epoxide	9.7	0.99	9.880	0	97.8	52	136	9.313	3.69	25	
Methoxychlor	11	0.99	9.880	0	116	52	143	10.39	9.45	25	
Toxaphene	20	20		0	0	33	141	0	0	25	U
Surr: Decachlorobiphenyl	11		9.880		108	55	130		0	25	
Surr: Tetrachloro-m-xylene	8.7		9.880		88.4	42	129		0	25	

Sample ID:	MB-34997	Samp Type:	MBLK	Test Code:	SW_8081S	Units:	µg/Kg	Prep Date:	11/4/2014	RunNo:	73330
Client ID:	PBS	Batch ID:	34997	TestNo:	SW8081A	SW3550C		Analysis Date:	11/13/2014	SeqNo:	1427124
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	1.7	1.7									U
4,4'-DDE	0.81	0.81									U
4,4'-DDT	0.81	0.81									U
Aldrin	0.81	0.81									U
alpha-BHC	0.81	0.81									U
alpha-Chlordane	0.81	0.81									U

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Sample ID: <b>MB-34997</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73330</b>						
Client ID: <b>PBS</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/13/2014</b>	SeqNo: <b>1427124</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
beta-BHC	0.81	0.81									U
Chlordane (Technical)	16	16									U
delta-BHC	0.81	0.81									U
Dieldrin	0.81	0.81									U
Endosulfan I	0.81	0.81									U
Endosulfan II	0.81	0.81									U
Endosulfan sulfate	0.81	0.81									U
Endrin	0.81	0.81									U
Endrin aldehyde	0.81	0.81									U
Endrin ketone	0.81	0.81									U
gamma-BHC	0.81	0.81									U
gamma-Chlordane	0.81	0.81									U
Heptachlor	0.81	0.81									U
Heptachlor epoxide	0.81	0.81									U
Methoxychlor	0.81	0.81									U
Toxaphene	16	16									U
Surr: Decachlorobiphenyl	7.8		8.063		96.8	55	130				
Surr: Tetrachloro-m-xylene	6.8		8.063		84.5	42	129				

Sample ID: <b>1410A92-002BMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73330</b>						
Client ID: <b>SM-14-08MS1</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/13/2014</b>	SeqNo: <b>1427127</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	9.7	2.0	9.838	0	98.2	56	139				
4,4'-DDE	9.4	0.98	9.838	0	95.5	56	134				
4,4'-DDT	9.8	0.98	9.838	0	99.9	50	141				
Aldrin	9.0	0.98	9.838	0	91.2	45	136				
alpha-BHC	8.7	0.98	9.838	0	88.7	45	137				
alpha-Chlordane	9.3	0.98	9.838	0	94.2	54	133				
beta-BHC	9.3	0.98	9.838	0	94.7	50	136				
Chlordane (Technical)	20	20		0	0	43	149				U

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Sample ID: <b>1410A92-002BMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73330</b>						
Client ID: <b>SM-14-08MS1</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/13/2014</b>	SeqNo: <b>1427127</b>						
delta-BHC	9.1	0.98	9.838	0	92.7	47	139				
Dieldrin	9.3	0.98	9.838	0	95.0	56	136				
Endosulfan I	9.2	0.98	9.838	0	93.7	53	132				
Endosulfan II	9.6	0.98	9.838	0	97.6	53	134				
Endosulfan sulfate	9.5	0.98	9.838	0	97.0	55	136				
Endrin	10	0.98	9.838	0	105	57	140				
Endrin aldehyde	9.9	0.98	9.838	0	101	35	137				
Endrin ketone	9.7	0.98	9.838	0	98.6	55	136				
gamma-BHC	9.0	0.98	9.838	0	91.7	49	135				
gamma-Chlordane	9.2	0.98	9.838	0	93.9	53	135				
Heptachlor	9.1	0.98	9.838	0	92.4	47	136				
Heptachlor epoxide	9.2	0.98	9.838	0	93.9	52	136				
Methoxychlor	10	0.98	9.838	0	104	52	143				
Toxaphene	20	20		0	0	33	141				U
Surr: Decachlorobiphenyl	9.8		9.838		99.9	55	130				
Surr: Tetrachloro-m-xylene	8.0		9.838		81.2	42	129				

Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Sample ID: <b>1410A92-002BMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73330</b>						
Client ID: <b>SM-14-08SD1</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/13/2014</b>	SeqNo: <b>1427128</b>						
4,4'-DDD	10	2.0	9.880	0	104	56	139	9.660	6.44	25	
4,4'-DDE	9.9	0.99	9.880	0	100	56	134	9.400	4.96	25	
4,4'-DDT	11	0.99	9.880	0	107	50	141	9.825	7.05	25	
Aldrin	9.3	0.99	9.880	0	94.6	45	136	8.975	4.06	25	
alpha-BHC	9.2	0.99	9.880	0	92.9	45	137	8.724	5.04	25	
alpha-Chlordane	9.6	0.99	9.880	0	97.6	54	133	9.269	3.98	25	
beta-BHC	9.4	0.99	9.880	0	95.1	50	136	9.317	0.832	25	
Chlordane (Technical)	20	20		0	0	43	149	0	0	25	U
delta-BHC	9.7	0.99	9.880	0	97.9	47	139	9.122	5.81	25	
Dieldrin	9.8	0.99	9.880	0	98.8	56	136	9.343	4.41	25	

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Sample ID:	<b>1410A92-002BMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_8081S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73330</b>
Client ID:	<b>SM-14-08SD1</b>	Batch ID:	<b>34997</b>	TestNo:	<b>SW8081A</b>	<b>SW3550C</b>		Analysis Date:	<b>11/13/2014</b>	SeqNo:	<b>1427128</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Endosulfan I	9.6	0.99	9.880	0	97.5	53	132	9.223	4.30	25	
Endosulfan II	10	0.99	9.880	0	103	53	134	9.606	6.17	25	
Endosulfan sulfate	10	0.99	9.880	0	106	55	136	9.539	9.12	25	
Endrin	11	0.99	9.880	0	108	57	140	10.29	3.78	25	
Endrin aldehyde	11	0.99	9.880	0	113	35	137	9.943	11.7	25	
Endrin ketone	11	0.99	9.880	0	106	55	136	9.704	7.94	25	
gamma-BHC	9.4	0.99	9.880	0	95.0	49	135	9.022	3.90	25	
gamma-Chlordane	9.7	0.99	9.880	0	97.8	53	135	9.236	4.50	25	
Heptachlor	9.5	0.99	9.880	0	95.8	47	136	9.095	4.03	25	
Heptachlor epoxide	9.6	0.99	9.880	0	97.1	52	136	9.243	3.75	25	
Methoxychlor	11	0.99	9.880	0	114	52	143	10.20	9.97	25	
Toxaphene	20	20		0	0	33	141	0	0	25	U
Surr: Decachlorobiphenyl	10		9.880		105	55	130		0	25	
Surr: Tetrachloro-m-xylene	8.4		9.880		84.7	42	129		0	25	

Sample ID:	<b>LCS-34997</b>	Samp Type:	<b>LCS</b>	Test Code:	<b>SW_8081S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73498</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>34997</b>	TestNo:	<b>SW8081A</b>	<b>SW3550C</b>		Analysis Date:	<b>11/19/2014</b>	SeqNo:	<b>1430748</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	8.6	1.7	8.221	0	104	56	139				
4,4'-DDE	8.3	0.82	8.221	0	100	56	134				
4,4'-DDT	8.7	0.82	8.221	0	106	50	141				
Aldrin	8.1	0.82	8.221	0	98.6	45	136				
alpha-BHC	8.1	0.82	8.221	0	99.0	45	137				
alpha-Chlordane	8.1	0.82	8.221	0	98.3	54	133				
beta-BHC	8.2	0.82	8.221	0	99.5	50	136				
Chlordane (Technical)	17	17		0	0	43	149				U
delta-BHC	7.9	0.82	8.221	0	96.1	47	139				
Dieldrin	8.2	0.82	8.221	0	99.3	56	136				
Endosulfan I	8.1	0.82	8.221	0	98.6	53	132				
Endosulfan II	4.7	0.82	8.221	0	57.3	53	134				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Sample ID:	LCS-34997	Samp Type:	LCS	Test Code:	SW_8081S	Units:	µg/Kg	Prep Date:	11/4/2014	RunNo:	73498
Client ID:	LCSS	Batch ID:	34997	TestNo:	SW8081A	SW3550C		Analysis Date:	11/19/2014	SeqNo:	1430748
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Endosulfan sulfate	4.5	0.82	8.221	0	54.2	55	136				S
Endrin	9.4	0.82	8.221	0	114	57	140				
Endrin aldehyde	3.5	0.82	8.221	0	42.0	35	137				
Endrin ketone	7.4	0.82	8.221	0	89.6	55	136				
gamma-BHC	8.3	0.82	8.221	0	101	49	135				
gamma-Chlordane	8.3	0.82	8.221	0	101	53	135				
Heptachlor	8.3	0.82	8.221	0	101	47	136				
Heptachlor epoxide	8.0	0.82	8.221	0	97.8	52	136				
Methoxychlor	6.5	0.82	8.221	0	78.9	52	143				
Toxaphene	17	17		0	0	33	141				U
Surr: Decachlorobiphenyl	8.9		8.221		108	55	130				
Surr: Tetrachloro-m-xylene	7.6		8.221		92.1	42	129				

Sample ID:	LCS-34997	Samp Type:	LCS	Test Code:	SW_8081S	Units:	µg/Kg	Prep Date:	11/4/2014	RunNo:	73499
Client ID:	LCSS	Batch ID:	34997	TestNo:	SW8081A	SW3550C		Analysis Date:	11/19/2014	SeqNo:	1430793
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
4,4'-DDD	8.6	1.7	8.221	0	105	56	139				
4,4'-DDE	8.4	0.82	8.221	0	102	56	134				
4,4'-DDT	8.8	0.82	8.221	0	107	50	141				
Aldrin	8.1	0.82	8.221	0	98.4	45	136				
alpha-BHC	8.1	0.82	8.221	0	99.1	45	137				
alpha-Chlordane	8.3	0.82	8.221	0	101	54	133				
beta-BHC	8.6	0.82	8.221	0	104	50	136				
Chlordane (Technical)	17	17		0	0	43	149				U
delta-BHC	8.0	0.82	8.221	0	96.9	47	139				
Dieldrin	8.4	0.82	8.221	0	102	56	136				
Endosulfan I	8.3	0.82	8.221	0	101	53	132				
Endosulfan II	4.6	0.82	8.221	0	56.4	53	134				
Endosulfan sulfate	4.5	0.82	8.221	0	55.3	55	136				
Endrin	9.5	0.82	8.221	0	115	57	140				



# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34997

Sample ID: <b>LCS-34997</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_8081S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73499</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>34997</b>	TestNo: <b>SW8081A</b>	<b>SW3550C</b>	Analysis Date: <b>11/19/2014</b>	SeqNo: <b>1430793</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Endrin aldehyde	3.2	0.82	8.221	0	38.9	35	137				
Endrin ketone	7.6	0.82	8.221	0	92.4	55	136				
gamma-BHC	8.2	0.82	8.221	0	99.6	49	135				
gamma-Chlordane	8.3	0.82	8.221	0	101	53	135				
Heptachlor	8.4	0.82	8.221	0	102	47	136				
Heptachlor epoxide	8.2	0.82	8.221	0	99.9	52	136				
Methoxychlor	6.6	0.82	8.221	0	80.6	52	143				
Toxaphene	17	17		0	0	33	141				U
Surr: Decachlorobiphenyl	8.7		8.221		106	55	130				
Surr: Tetrachloro-m-xylene	7.3		8.221		89.4	42	129				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34998

Sample ID:	<b>1410A92-003BMS</b>	Samp Type:	<b>MS</b>	Test Code:	<b>SW_8082S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73304</b>
Client ID:	<b>SM-14-10MS1</b>	Batch ID:	<b>34998</b>	TestNo:	<b>SW8082</b>	<b>SW3550C</b>		Analysis Date:	<b>11/7/2014</b>	SeqNo:	<b>1425914</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Aroclor 1016	190	42	212.3	0	88.2	46	129				
Aroclor 1260	190	42	212.3	0	91.6	45	134				
Surr: Tetrachloro-m-xylene	7.9		10.62		74.5	44	130				
Surr: Decachlorobiphenyl	9.8		10.62		92.0	40	135				

Sample ID:	<b>1410A92-003BMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>SW_8082S</b>	Units:	<b>µg/Kg-dry</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73304</b>
Client ID:	<b>SM-14-10SD1</b>	Batch ID:	<b>34998</b>	TestNo:	<b>SW8082</b>	<b>SW3550C</b>		Analysis Date:	<b>11/7/2014</b>	SeqNo:	<b>1425915</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Aroclor 1016	180	42	212.4	0	86.9	46	129	187.2	1.39	25	
Aroclor 1260	190	42	212.4	0	89.4	45	134	194.5	2.37	25	
Surr: Tetrachloro-m-xylene	7.7		10.62		72.7	44	130		0	25	
Surr: Decachlorobiphenyl	9.7		10.62		91.7	40	135		0	25	

Sample ID:	<b>LCS-34998</b>	Samp Type:	<b>LCS</b>	Test Code:	<b>SW_8082S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73304</b>
Client ID:	<b>LCSS</b>	Batch ID:	<b>34998</b>	TestNo:	<b>SW8082</b>	<b>SW3550C</b>		Analysis Date:	<b>11/7/2014</b>	SeqNo:	<b>1425942</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Aroclor 1016	160	32	162.7	0	95.5	46	129				
Aroclor 1260	150	32	162.7	0	93.3	45	134				
Surr: Tetrachloro-m-xylene	6.6		8.133		81.2	44	130				
Surr: Decachlorobiphenyl	8.0		8.133		98.6	40	135				

Sample ID:	<b>MB-34998</b>	Samp Type:	<b>MBLK</b>	Test Code:	<b>SW_8082S</b>	Units:	<b>µg/Kg</b>	Prep Date:	<b>11/4/2014</b>	RunNo:	<b>73304</b>
Client ID:	<b>PBS</b>	Batch ID:	<b>34998</b>	TestNo:	<b>SW8082</b>	<b>SW3550C</b>		Analysis Date:	<b>11/7/2014</b>	SeqNo:	<b>1425944</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Aroclor 1016	32	32									U
Aroclor 1221	32	32									U
Aroclor 1232	32	32									U
Aroclor 1242	32	32									U
Aroclor 1248	32	32									U

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34998

Sample ID: <b>MB-34998</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_8082S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73304</b>						
Client ID: <b>PBS</b>	Batch ID: <b>34998</b>	TestNo: <b>SW8082</b>	<b>SW3550C</b>	Analysis Date: <b>11/7/2014</b>	SeqNo: <b>1425944</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Aroclor 1254	32	32									U
Aroclor 1260	32	32									U
Aroclor 1262	32	32									U
Total PCBs	32	32									U
Surr: Tetrachloro-m-xylene	6.9		8.096		84.8	44	130				
Surr: Decachlorobiphenyl	8.0		8.096		98.9	60	125				

Sample ID: <b>1410A92-003BMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_8082S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73305</b>						
Client ID: <b>SM-14-10MS1</b>	Batch ID: <b>34998</b>	TestNo: <b>SW8082</b>	<b>SW3550C</b>	Analysis Date: <b>11/7/2014</b>	SeqNo: <b>1425965</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Aroclor 1016	190	42	212.3	0	89.7	46	129				
Aroclor 1260	200	42	212.3	0	95.0	45	134				
Surr: Tetrachloro-m-xylene	9.2		10.62		86.6	44	130				
Surr: Decachlorobiphenyl	10		10.62		94.7	40	135				

Sample ID: <b>1410A92-003BMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SW_8082S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73305</b>						
Client ID: <b>SM-14-10SD1</b>	Batch ID: <b>34998</b>	TestNo: <b>SW8082</b>	<b>SW3550C</b>	Analysis Date: <b>11/7/2014</b>	SeqNo: <b>1425966</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Aroclor 1016	190	42	212.4	0	88.2	46	129	187.2	0.118	25	
Aroclor 1260	200	42	212.4	0	92.7	45	134	194.5	1.17	25	
Surr: Tetrachloro-m-xylene	8.5		10.62		80.3	44	130		0	25	
Surr: Decachlorobiphenyl	10		10.62		94.1	40	135		0	25	

Sample ID: <b>LCS-34998</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_8082S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73305</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>34998</b>	TestNo: <b>SW8082</b>	<b>SW3550C</b>	Analysis Date: <b>11/7/2014</b>	SeqNo: <b>1425994</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Aroclor 1016	160	32	162.7	0	96.4	46	129				
Aroclor 1260	160	32	162.7	0	96.5	45	134				
Surr: Tetrachloro-m-xylene	7.2		8.133		88.4	44	130				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 34998

Sample ID: <b>LCS-34998</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_8082S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73305</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>34998</b>	TestNo: <b>SW8082</b>	<b>SW3550C</b>	Analysis Date: <b>11/7/2014</b>	SeqNo: <b>1425994</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	8.2		8.133		100	40	135				

Sample ID: <b>MB-34998</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_8082S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>73305</b>						
Client ID: <b>PBS</b>	Batch ID: <b>34998</b>	TestNo: <b>SW8082</b>	<b>SW3550C</b>	Analysis Date: <b>11/7/2014</b>	SeqNo: <b>1425996</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Aroclor 1016	32	32									U
Aroclor 1221	32	32									U
Aroclor 1232	32	32									U
Aroclor 1242	32	32									U
Aroclor 1248	32	32									U
Aroclor 1254	32	32									U
Aroclor 1260	32	32									U
Aroclor 1262	32	32									U
Total PCBs	32	32									U
Surr: Tetrachloro-m-xylene	7.3		8.096		89.7	44	130				
Surr: Decachlorobiphenyl	8.0		8.096		99.3	60	125				

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 35002

Sample ID: <b>MB-35002</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_9012S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>72979</b>						
Client ID: <b>PBS</b>	Batch ID: <b>35002</b>	TestNo: <b>SW9012A</b>	Analysis Date: <b>11/4/2014</b>	SeqNo: <b>1419240</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Cyanide, Total	1.0	1.0									U
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Sample ID: <b>LCS-35002</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_9012S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>72979</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>35002</b>	TestNo: <b>SW9012A</b>	Analysis Date: <b>11/4/2014</b>	SeqNo: <b>1419241</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Cyanide, Total	1.6	1.0	2.000	0	78.6	76	120				
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Sample ID: <b>1410A92-001CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_9012S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>72979</b>						
Client ID: <b>SM-14-07MS1</b>	Batch ID: <b>35002</b>	TestNo: <b>SW9012A</b>	Analysis Date: <b>11/4/2014</b>	SeqNo: <b>1419261</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Cyanide, Total	6.4	1.3	6.720	0	95.2	76	120				
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Sample ID: <b>1410A92-001CMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SW_9012S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/4/2014</b>	RunNo: <b>72979</b>						
Client ID: <b>SM-14-07SD1</b>	Batch ID: <b>35002</b>	TestNo: <b>SW9012A</b>	Analysis Date: <b>11/4/2014</b>	SeqNo: <b>1419264</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Cyanide, Total	7.2	1.3	6.720	0	107	76	120	6.398	12.0	25	
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 35024

Sample ID: <b>MB-35024</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_9060S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/5/2014</b>	RunNo: <b>73065</b>						
Client ID: <b>PBS</b>	Batch ID: <b>35024</b>	TestNo: <b>SW9060</b>		Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1420667</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Organic Carbon, Total	2,000	2,000									U
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Sample ID: <b>LCS-35024</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_9060S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/5/2014</b>	RunNo: <b>73065</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>35024</b>	TestNo: <b>SW9060</b>		Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1420668</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Organic Carbon, Total	21,000	2,000	20,000	0	103	80	120				
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Sample ID: <b>1410A92-001CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_9060S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/5/2014</b>	RunNo: <b>73065</b>						
Client ID: <b>SM-14-07MS1</b>	Batch ID: <b>35024</b>	TestNo: <b>SW9060</b>		Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1420672</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Organic Carbon, Total	22,000	1,900	19,370	0	112	70	130				
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Sample ID: <b>1410A92-001CMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SW_9060S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/5/2014</b>	RunNo: <b>73065</b>						
Client ID: <b>SM-14-07SD1</b>	Batch ID: <b>35024</b>	TestNo: <b>SW9060</b>		Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1420673</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Organic Carbon, Total	22,000	2,000	19,570	0	113	70	130	21,660	2.38	25	
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Sample ID: <b>1410A92-011CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_9060S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/5/2014</b>	RunNo: <b>73065</b>						
Client ID: <b>SM-14-18MS1</b>	Batch ID: <b>35024</b>	TestNo: <b>SW9060</b>		Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1420685</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Organic Carbon, Total	30,000	2,500	24,690	2,605	112	70	130				
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Sample ID: <b>1410A92-011CMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SW_9060S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/5/2014</b>	RunNo: <b>73065</b>						
Client ID: <b>SM-14-18SD1</b>	Batch ID: <b>35024</b>	TestNo: <b>SW9060</b>		Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1420686</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Organic Carbon, Total	35,000	2,500	24,670	2,605	130	70	130	30,160	13.7	25	
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 35061

Sample ID: <b>MB-35061</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SM_4500-P-FS</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/7/2014</b>	RunNo: <b>73558</b>						
Client ID: <b>PBS</b>	Batch ID: <b>35061</b>	TestNo: <b>A4500-P-F</b>		Analysis Date: <b>11/18/2014</b>	SeqNo: <b>1431971</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Phosphorus, Total (As P)	0.50	0.50									U
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Sample ID: <b>LCS-35061</b>	Samp Type: <b>LCS</b>	Test Code: <b>SM_4500-P-FS</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/7/2014</b>	RunNo: <b>73558</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>35061</b>	TestNo: <b>A4500-P-F</b>		Analysis Date: <b>11/18/2014</b>	SeqNo: <b>1431972</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Phosphorus, Total (As P)	8.9	0.49	9.709	0	91.8	80	120				
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Sample ID: <b>1410A40-015CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SM_4500-P-FS</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/7/2014</b>	RunNo: <b>73558</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>35061</b>	TestNo: <b>A4500-P-F</b>		Analysis Date: <b>11/18/2014</b>	SeqNo: <b>1431974</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Phosphorus, Total (As P)	550	24	235.4	225.6	136	75	125				S
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Sample ID: <b>1410A40-015CMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SM_4500-P-FS</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/7/2014</b>	RunNo: <b>73558</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>35061</b>	TestNo: <b>A4500-P-F</b>		Analysis Date: <b>11/18/2014</b>	SeqNo: <b>1431975</b>						
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Phosphorus, Total (As P)	540	24	235.4	225.6	132	75	125	545.7	1.90	25	S
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** 35459

Sample ID: <b>MB-35459</b>	Samp Type: <b>MBLK</b>	Test Code: <b>SW_6010S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>12/23/2014</b>	RunNo: <b>74265</b>						
Client ID: <b>PBS</b>	Batch ID: <b>35459</b>	TestNo: <b>SW6010B SW3050B</b>	Analysis Date: <b>12/23/2014</b>	SeqNo: <b>1444800</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Zinc	5,000	5,000									U
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Sample ID: <b>LCS-35459</b>	Samp Type: <b>LCS</b>	Test Code: <b>SW_6010S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>12/23/2014</b>	RunNo: <b>74265</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>35459</b>	TestNo: <b>SW6010B SW3050B</b>	Analysis Date: <b>12/23/2014</b>	SeqNo: <b>1444801</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Zinc	28,000	5,000	25,000	0	112	82	113				
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Sample ID: <b>1410A92-008CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>SW_6010S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>12/23/2014</b>	RunNo: <b>74265</b>						
Client ID: <b>SM-14-15MS1</b>	Batch ID: <b>35459</b>	TestNo: <b>SW6010B SW3050B</b>	Analysis Date: <b>12/23/2014</b>	SeqNo: <b>1444803</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Zinc	74,000	6,500	32,390	41,490	101	82	113				
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Sample ID: <b>1410A92-008CMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>SW_6010S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>12/23/2014</b>	RunNo: <b>74265</b>						
Client ID: <b>SM-14-15SD1</b>	Batch ID: <b>35459</b>	TestNo: <b>SW6010B SW3050B</b>	Analysis Date: <b>12/23/2014</b>	SeqNo: <b>1444804</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Zinc	72,000	6,000	30,030	41,490	102	82	113	74,270	3.13	20	
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R72725

Sample ID:	<b>1410A92-001CDUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>PMOIST</b>	Units:	<b>wt%</b>	Prep Date:	<b>10/27/2014</b>	RunNo:	<b>72725</b>
Client ID:	<b>SM-14-07LR1</b>	Batch ID:	<b>R72725</b>	TestNo:	<b>D2216</b>			Analysis Date:	<b>10/27/2014</b>	SeqNo:	<b>1414570</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Percent Moisture	26	1.0						25.60	0.606	20	

Sample ID:	<b>1410A92-011CDUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>PMOIST</b>	Units:	<b>wt%</b>	Prep Date:	<b>10/27/2014</b>	RunNo:	<b>72725</b>
Client ID:	<b>SM-14-18LR1</b>	Batch ID:	<b>R72725</b>	TestNo:	<b>D2216</b>			Analysis Date:	<b>10/27/2014</b>	SeqNo:	<b>1414581</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Percent Moisture	27	1.0						26.48	1.98	20	

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R72727

Sample ID:	<b>1410A92-001CDUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>SM_2540G</b>	Units:	<b>%</b>	Prep Date:	<b>10/27/2014</b>	RunNo:	<b>72727</b>											
Client ID:	<b>SM-14-07LR1</b>	Batch ID:	<b>R72727</b>	TestNo:	<b>A2540G</b>			Analysis Date:	<b>10/27/2014</b>	SeqNo:	<b>1414606</b>											
Analyte		Result		LOQ		SPK value		SPK Ref Val		%REC		Low Limit		High Limit		RPD Ref Value		%RPD		RPDLimit		Qual

Total Solids		74		0.50								74.40				0.209				20		
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Sample ID:	<b>1410A92-011CDUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>SM_2540G</b>	Units:	<b>%</b>	Prep Date:	<b>10/27/2014</b>	RunNo:	<b>72727</b>											
Client ID:	<b>SM-14-18LR1</b>	Batch ID:	<b>R72727</b>	TestNo:	<b>A2540G</b>			Analysis Date:	<b>10/27/2014</b>	SeqNo:	<b>1414617</b>											
Analyte		Result		LOQ		SPK value		SPK Ref Val		%REC		Low Limit		High Limit		RPD Ref Value		%RPD		RPDLimit		Qual

Total Solids		73		0.50								73.53				0.724				20		
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R72812

Sample ID:	<b>1410A92-001CDUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>SM_2540G</b>	Units:	<b>%</b>	Prep Date:	<b>10/27/2014</b>	RunNo:	<b>72812</b>											
Client ID:	<b>SM-14-07LR1</b>	Batch ID:	<b>R72812</b>	TestNo:	<b>A2540G</b>			Analysis Date:	<b>10/27/2014</b>	SeqNo:	<b>1416101</b>											
Analyte		Result		LOQ		SPK value		SPK Ref Val		%REC		Low Limit		High Limit		RPD Ref Value		%RPD		RPDLimit		Qual

Total Volatile Solids		0.27		0.10												0.2562		5.19		20		
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Sample ID:	<b>1410A92-011CDUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>SM_2540G</b>	Units:	<b>%</b>	Prep Date:	<b>10/27/2014</b>	RunNo:	<b>72812</b>											
Client ID:	<b>SM-14-18LR1</b>	Batch ID:	<b>R72812</b>	TestNo:	<b>A2540G</b>			Analysis Date:	<b>10/27/2014</b>	SeqNo:	<b>1416125</b>											
Analyte		Result		LOQ		SPK value		SPK Ref Val		%REC		Low Limit		High Limit		RPD Ref Value		%RPD		RPDLimit		Qual

Total Volatile Solids		0.97		0.10												0.8230		16.8		20		
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R73072

Sample ID: <b>MB-110614</b>	Samp Type: <b>MBLK</b>	Test Code: <b>EPA_410.4-S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/6/2014</b>	RunNo: <b>73072</b>						
Client ID: <b>PBS</b>	Batch ID: <b>R73072</b>	TestNo: <b>E410.4</b>	Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1421037</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Chemical Oxygen Demand	20	20									U
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Sample ID: <b>LCS-110614</b>	Samp Type: <b>LCS</b>	Test Code: <b>EPA_410.4-S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/6/2014</b>	RunNo: <b>73072</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>R73072</b>	TestNo: <b>E410.4</b>	Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1421038</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Chemical Oxygen Demand	100	20	100.0	0	103	80	120				
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Sample ID: <b>1410A92-001CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>EPA_410.4-S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/6/2014</b>	RunNo: <b>73072</b>						
Client ID: <b>SM-14-07MS1</b>	Batch ID: <b>R73072</b>	TestNo: <b>E410.4</b>	Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1421041</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Chemical Oxygen Demand	17,000	650	16,150	646.2	101	70	130				
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Sample ID: <b>1410A92-001CMSD</b>	Samp Type: <b>MSD</b>	Test Code: <b>EPA_410.4-S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/6/2014</b>	RunNo: <b>73072</b>						
Client ID: <b>SM-14-07SD1</b>	Batch ID: <b>R73072</b>	TestNo: <b>E410.4</b>	Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1421042</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Chemical Oxygen Demand	17,000	650	16,150	646.2	100	70	130	16,900	0.191	25	
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Sample ID: <b>MB-2-110614</b>	Samp Type: <b>MBLK</b>	Test Code: <b>EPA_410.4-S</b>	Units: <b>mg/Kg</b>	Prep Date: <b>11/6/2014</b>	RunNo: <b>73072</b>						
Client ID: <b>PBS</b>	Batch ID: <b>R73072</b>	TestNo: <b>E410.4</b>	Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1421053</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Chemical Oxygen Demand	20	20									U
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Sample ID: <b>1410A92-011CMS</b>	Samp Type: <b>MS</b>	Test Code: <b>EPA_410.4-S</b>	Units: <b>mg/Kg-dry</b>	Prep Date: <b>11/6/2014</b>	RunNo: <b>73072</b>						
Client ID: <b>SM-14-18MS1</b>	Batch ID: <b>R73072</b>	TestNo: <b>E410.4</b>	Analysis Date: <b>11/6/2014</b>	SeqNo: <b>1421056</b>							
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Chemical Oxygen Demand	17,000	620	15,530	1,180	104	70	130				
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# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R73072

Sample ID:	<b>1410A92-011CMSD</b>	Samp Type:	<b>MSD</b>	Test Code:	<b>EPA_410.4-S</b>	Units:	<b>mg/Kg-dry</b>	Prep Date:	<b>11/6/2014</b>	RunNo:	<b>73072</b>
Client ID:	<b>SM-14-18SD1</b>	Batch ID:	<b>R73072</b>	TestNo:	<b>E410.4</b>			Analysis Date:	<b>11/6/2014</b>	SeqNo:	<b>1421057</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chemical Oxygen Demand	17,000	620	15,530	1,180	102	70	130	17,300	1.99	25	

Sample ID:	<b>MB-3-110614</b>	Samp Type:	<b>MBLK</b>	Test Code:	<b>EPA_410.4-S</b>	Units:	<b>mg/Kg</b>	Prep Date:	<b>11/6/2014</b>	RunNo:	<b>73072</b>
Client ID:	<b>PBS</b>	Batch ID:	<b>R73072</b>	TestNo:	<b>E410.4</b>			Analysis Date:	<b>11/6/2014</b>	SeqNo:	<b>1421065</b>
Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chemical Oxygen Demand	20	20									U

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R73091

Sample ID:	<b>1410A92-017ADUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>ASTM-D854</b>	Units:	<b>lbs/gal</b>	Prep Date:	<b>11/6/2014</b>	RunNo:	<b>73091</b>
Client ID:	<b>SM-14-24LR1</b>	Batch ID:	<b>R73091</b>	TestNo:	<b>D854</b>			Analysis Date:	<b>11/6/2014</b>	SeqNo:	<b>1421465</b>

Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Density	29.6							25.05	16.7	20	
Density Temperature	22.0							22.00	0	20	
Specific Gravity at 20 deg. C	3.56							3.008	16.7	20	

# RTI Laboratories - QC SUMMARY REPORT

WO#: 1410A92

Date Reported: 2/16/2016

Revision v3

**Client:** USACE- Detroit District

**Project:** St Marys Sampling

**Batch ID:** R73092

Sample ID:	<b>1410A92-017ADUP</b>	Samp Type:	<b>DUP</b>	Test Code:	<b>ASTM-D422</b>	Units:	<b>% Finer</b>	Prep Date:	<b>11/5/2014</b>	RunNo:	<b>73092</b>
Client ID:	<b>SM-14-24LR1</b>	Batch ID:	<b>R73092</b>	TestNo:	<b>ASTM-D422</b>			Analysis Date:	<b>11/5/2014</b>	SeqNo:	<b>1421485</b>

Analyte	Result	LOQ	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
No. 4 (4.75-mm)	100	0.10						100.0	0	25	
No.10 (2-mm)	100	0.10						100.0	0	25	
No.20 (850-um)	99	0.10						98.30	0.305	25	
No.40 (425-um)	89	0.10						88.80	0	25	
No.100 (150-um)	28	0.10						27.90	0.719	25	
No.200 (75-um)	4.2	0.10						3.900	7.41	25	
No. 270 (53-um)	2.1	0.10						1.900	10.0	25	
Non-retained material	2.1	0.10						1.900	10.0	25	
Coarse Gravel	0.10	0.10						0	0	25	U
Fine Gravel	0.10	0.10						0	0	25	U
Coarse Sand	0.10	0.10						0	0	25	U
Medium Sand	11	0.10						11.20	0	25	
Fine Sand	85	0.10						84.90	0.354	25	
Silt	4.2	0.10						3.900	7.41	25	
Clay	0.10	0.10						0	0	25	U





**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-07

**Sample Number:** 1410A92-001A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
111.40	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	455.50	455.30	99.8
		#20	474.80	474.50	99.6
		#40	477.90	476.30	98.1
		#100	438.40	357.40	25.4
		#200	340.40	314.80	2.4
		#270	392.30	390.90	1.2

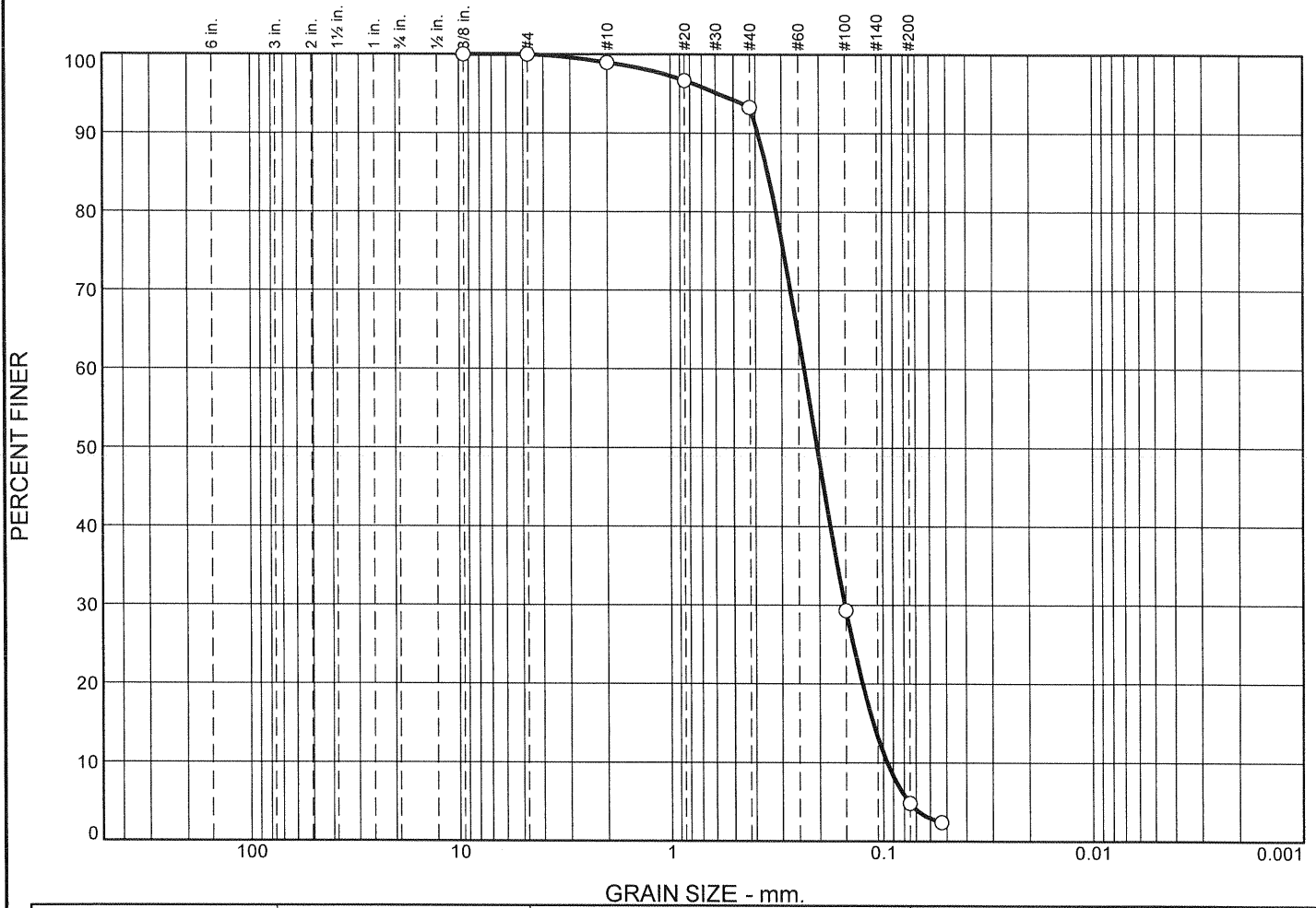
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	1.7	95.7	97.6			2.4

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1081	0.1231	0.1365	0.1609	0.2091	0.2361	0.3052	0.3283	0.3563	0.3928

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
0.97	2.18	1.01

# Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	1.0	5.7	88.5	4.8	

	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○			0.3483	0.2354	0.2048	0.1517	0.1114	0.0959	1.02	2.46

Material Description	USCS	AASHTO
○		

<b>Project No.</b> DC04 <b>Project:</b> St. Marys Sampling  <b>Source of Sample:</b> SM-14-08	<b>Client:</b> USACE-Detroit District  <b>Sample Number:</b> 1410A92-002A	<b>Remarks:</b> ○ 11/05/2014
<b>RTI LABORATORIES</b> Livonia, Michigan		Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-08

**Sample Number:** 1410A92-002A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
144.90	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	456.80	455.30	99.0
		#20	477.80	474.50	96.7
		#40	481.20	476.30	93.3
		#100	450.10	357.40	29.3
		#200	350.30	314.80	4.8
		#270	394.40	390.90	2.4

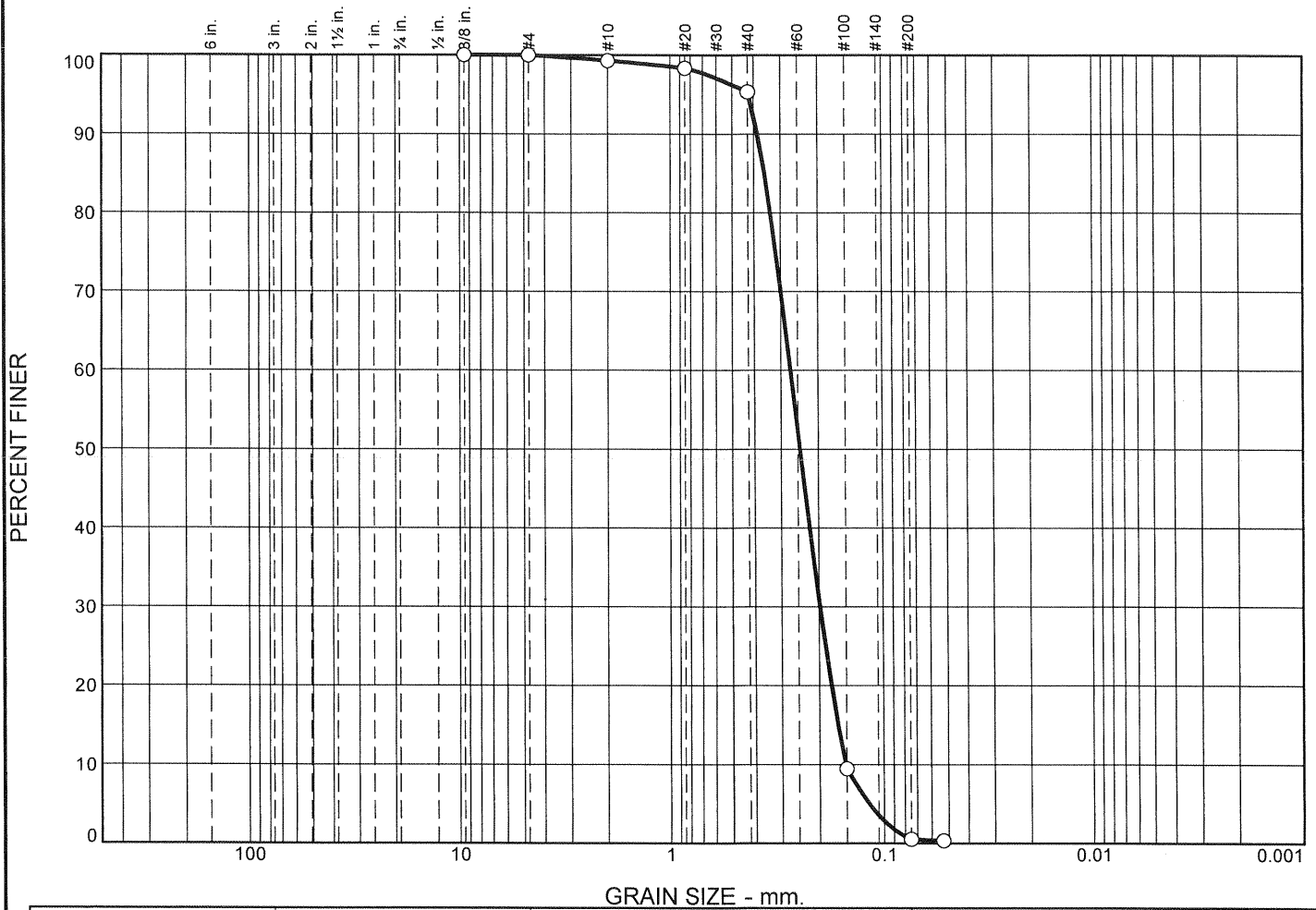
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.0	5.7	88.5	95.2			4.8

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0959	0.1114	0.1254	0.1517	0.2048	0.2354	0.3182	0.3483	0.3877	0.5808

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.02	2.46	1.02

# Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	0.0	0.7	3.9	94.9	0.5			
<input checked="" type="checkbox"/>	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
<input type="radio"/>			0.3584	0.2701	0.2441	0.1982	0.1644	0.1515	0.96	1.78

Material Description	USCS	AASHTO
<input type="radio"/>		

Project No. DC04	Client: USACE-Detroit District	Remarks: <input type="radio"/> 11/05/2014
Project: St. Marys Sampling		
<input type="radio"/> Source of Sample: SM-14-10	Sample Number: 1410A92-003A	
<b>RTI LABORATORIES</b>		Figure
Livonia, Michigan		

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-10

**Sample Number:** 1410A92-003A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
116.40	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	456.10	455.30	99.3
		#20	475.60	474.50	98.4
		#40	479.80	476.30	95.4
		#100	457.40	357.40	9.5
		#200	325.20	314.80	0.5
		#270	391.10	390.90	0.3

**Fractional Components**

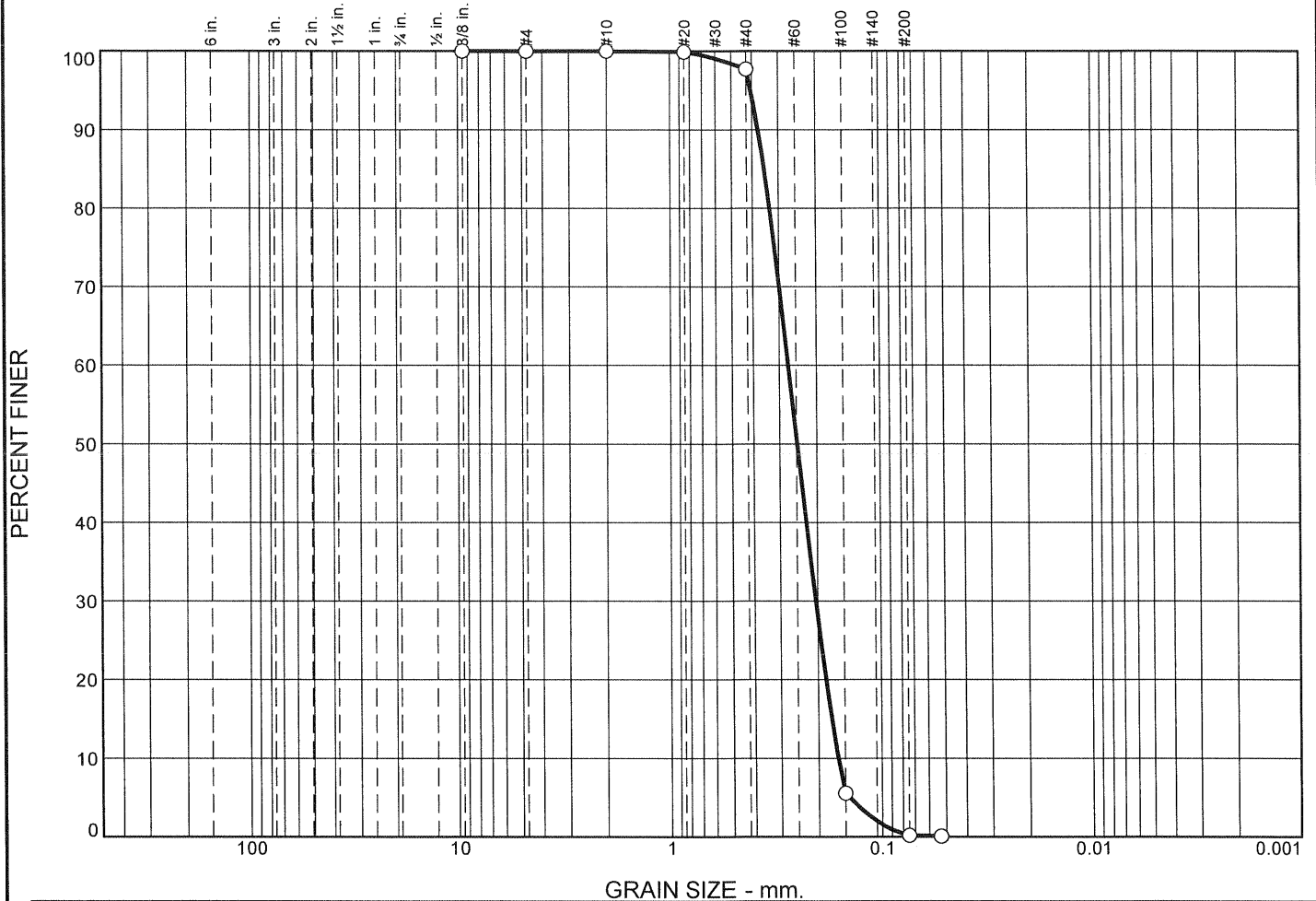
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.7	3.9	94.9	99.5			0.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1515	0.1644	0.1760	0.1982	0.2441	0.2701	0.3362	0.3584	0.3853	0.4217

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.25	1.78	0.96



# Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines		
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
0.0		0.0	0.0	0.0	2.3	97.5	0.2		
LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.3518	0.2720	0.2477	0.2046	0.1730	0.1616	0.95	1.68

Material Description	USCS	AASHTO

<p><b>Project No.</b> DC04      <b>Client:</b> USACE-Detroit District</p> <p><b>Project:</b> St. Marys Sampling</p> <p><b>Source of Sample:</b> SM-14-11      <b>Sample Number:</b> 1410A92-004A</p>	<p><b>Remarks:</b> ○ 11/05/2014</p>
<p><b>RTI LABORATORIES</b></p> <p><b>Livonia, Michigan</b></p>	

Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-11

**Sample Number:** 1410A92-004A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
114.90	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	455.30	455.30	100.0
		#20	474.60	474.50	99.9
		#40	478.80	476.30	97.7
		#100	463.30	357.40	5.6
		#200	321.00	314.80	0.2
		#270	391.00	390.90	0.1

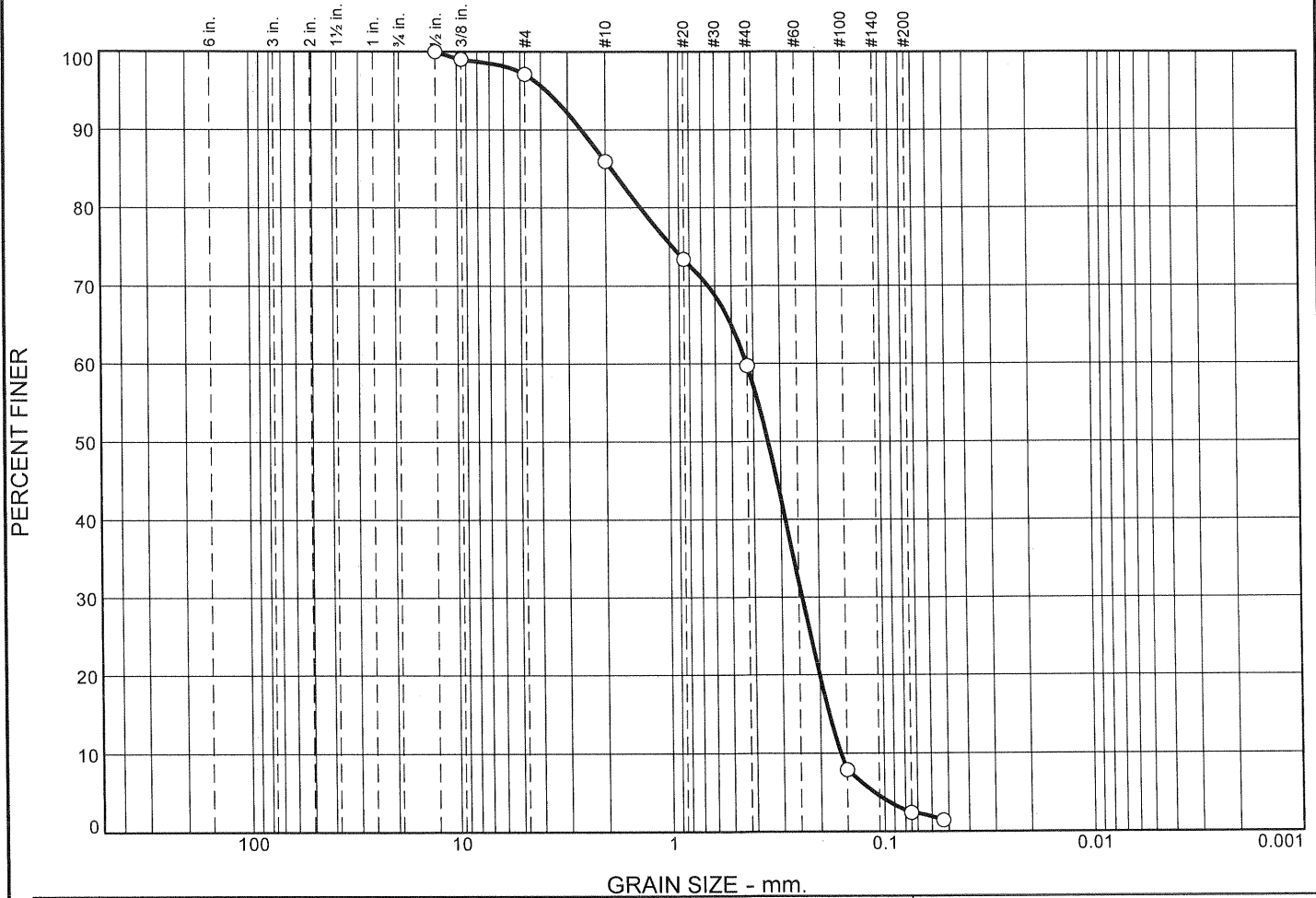
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	2.3	97.5	99.8			0.2

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1616	0.1730	0.1838	0.2046	0.2477	0.2720	0.3323	0.3518	0.3750	0.4041

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.25	1.68	0.95

# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	2.9	11.2	26.1	57.4	2.4			
<input checked="" type="checkbox"/>	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
<input type="radio"/>			1.8846	0.4276	0.3434	0.2411	0.1811	0.1601	0.85	2.67

Material Description	USCS	AASHTO
<input type="radio"/>		

<b>Project No.</b> DC04 <b>Client:</b> USACE-Detroit District <b>Project:</b> St. Marys Sampling  <input type="radio"/> <b>Source of Sample:</b> SM-14-12 <b>Sample Number:</b> 1410A92-005 A	<b>Remarks:</b> <input type="radio"/> 11/05/2014
<b>RTI LABORATORIES</b>  <b>Livonia, Michigan</b>	

Figure

Tested By: EL



**GRAIN SIZE DISTRIBUTION TEST DATA**

2/18/2015

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-12  
 Sample Number: 1410A92-005A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
103.90	0.00	.5	1.00	1.00	100.0
		.375	543.00	542.00	99.0
		#4	500.20	498.20	97.1
		#10	466.90	455.30	85.9
		#20	487.50	474.50	73.4
		#40	490.50	476.30	59.8
		#100	411.30	357.40	7.9
		#200	320.50	314.80	2.4
		#270	391.90	390.90	1.4

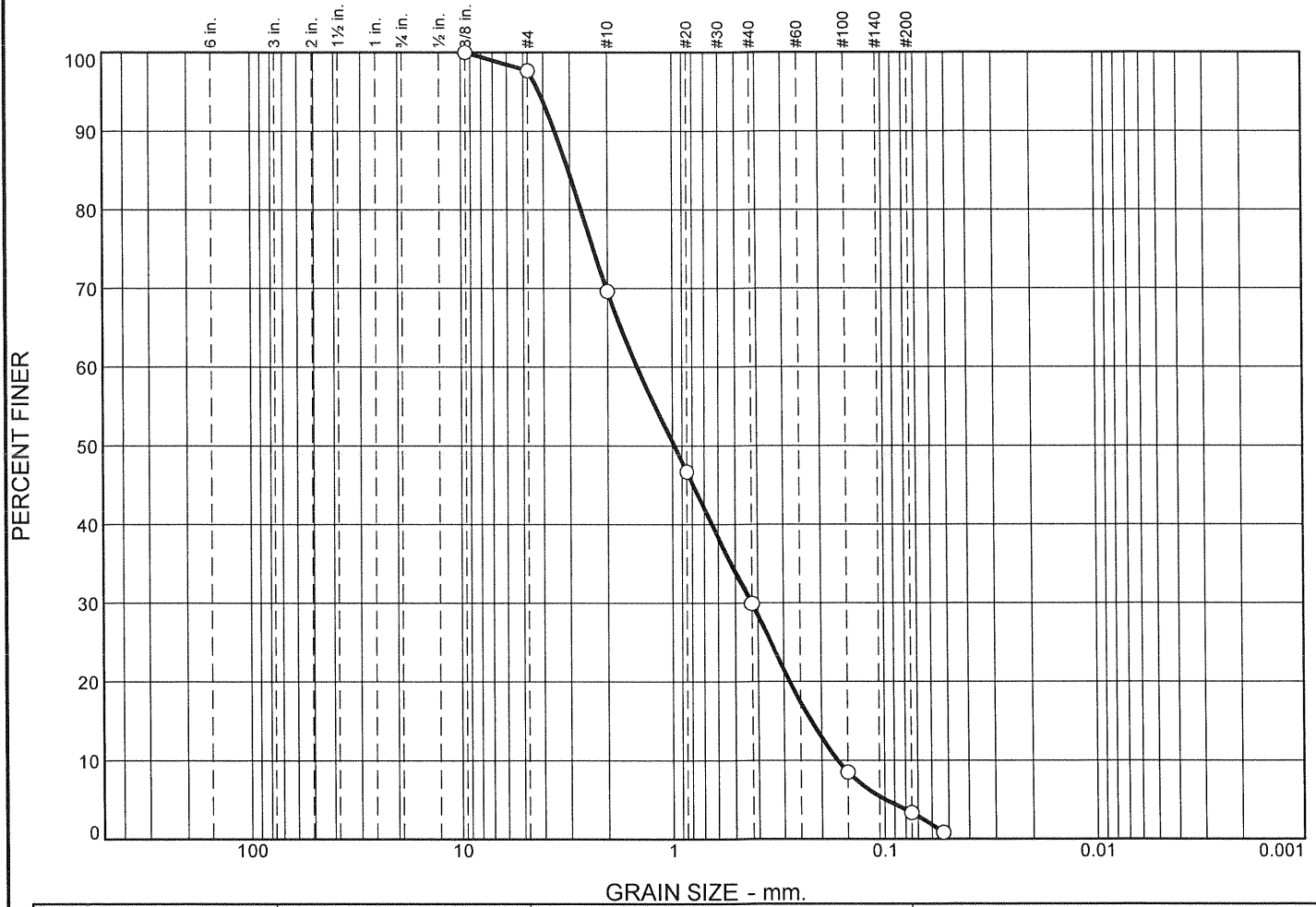
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.9	2.9	11.2	26.1	57.4	94.7			2.4

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1601	0.1811	0.2008	0.2411	0.3434	0.4276	1.3685	1.8846	2.5884	3.7566

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
2.18	2.67	0.85

# Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	2.3	28.1	39.7	26.5	3.4			
<input checked="" type="checkbox"/>	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
<input type="radio"/>			3.0482	1.4568	0.9776	0.4259	0.2230	0.1678	0.74	8.68

Material Description	USCS	AASHTO
<input type="radio"/>		

<b>Project No.</b> DC04 <b>Client:</b> USACE-Detroit District <b>Project:</b> St. Marys Sampling  <input type="radio"/> <b>Source of Sample:</b> SM-14-13 <b>Sample Number:</b> 1410A92-006A	<b>Remarks:</b> <input type="radio"/> 11/05/2014
<b>RTI LABORATORIES</b>  <b>Livonia, Michigan</b>	

Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-13  
 Sample Number: 1410A92-006A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
95.50	0.00	.375	542.00	542.00	100.0
		#4	500.40	498.20	97.7
		#10	482.10	455.30	69.6
		#20	496.40	474.50	46.7
		#40	492.30	476.30	29.9
		#100	377.90	357.40	8.5
		#200	319.70	314.80	3.4
		#270	393.30	390.90	0.8

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.3	2.3	28.1	39.7	26.5	94.3			3.4

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1678	0.2230	0.2811	0.4259	0.9776	1.4568	2.6603	3.0482	3.5276	4.1939

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
3.04	8.68	0.74



**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-14

**Sample Number:** 1410A92-007A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
152.90	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	455.30	455.30	100.0
		#20	474.70	474.50	99.9
		#40	503.80	476.30	81.9
		#100	481.40	357.40	0.8
		#200	315.80	314.80	0.1
		#270	391.00	390.90	0.1

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	18.1	81.8	99.9			0.1

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1789	0.1922	0.2050	0.2305	0.2866	0.3199	0.4125	0.4488	0.4993	0.5827

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.49	1.79	0.93





**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-15  
 Sample Number: 1410A92-008A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
115.80	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	478.40	455.30	80.1
		#20	498.50	474.50	59.3
		#40	494.70	476.30	43.4
		#100	395.70	357.40	10.4
		#200	322.60	314.80	3.6
		#270	393.50	390.90	1.4

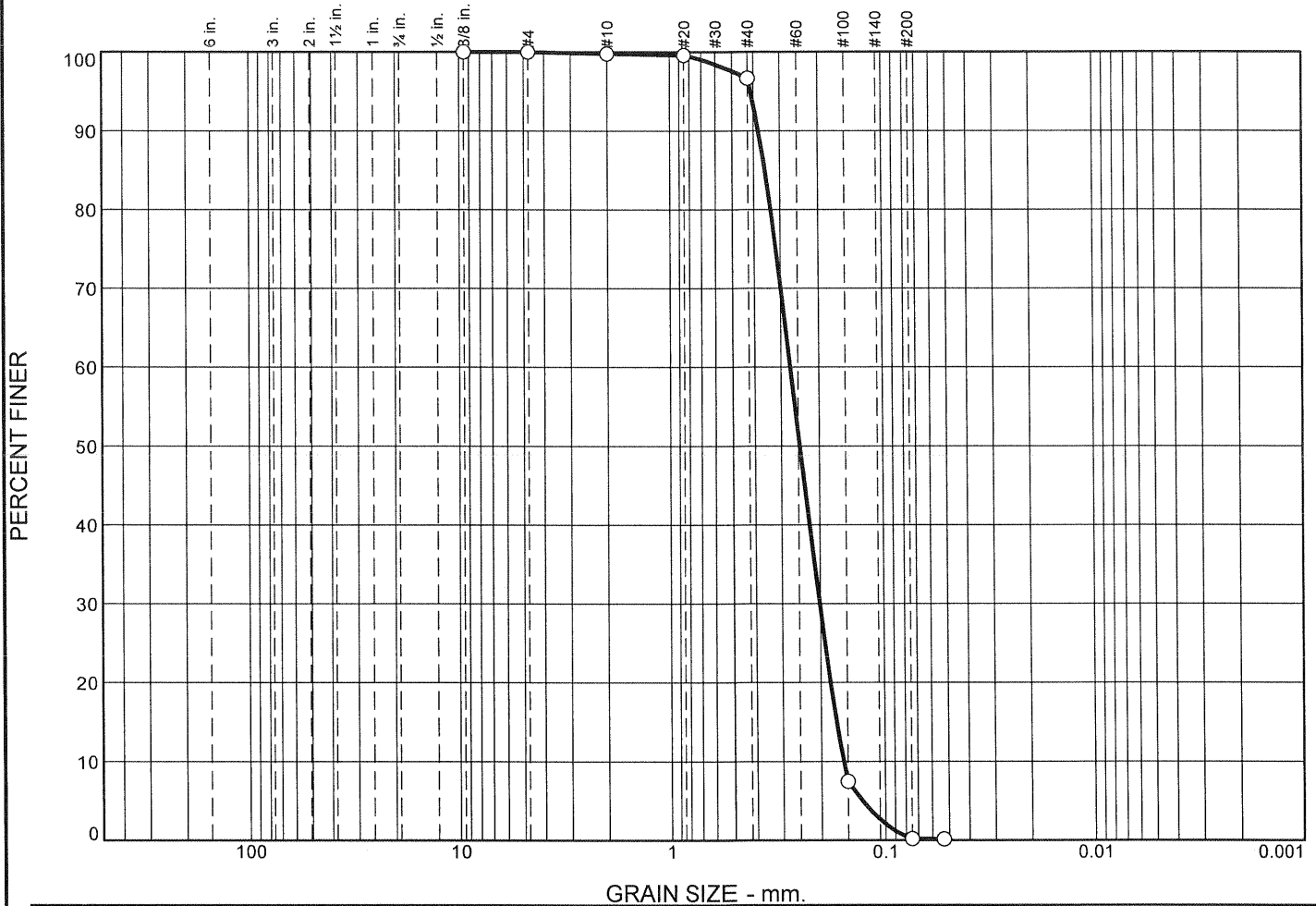
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	19.9	36.7	39.8	96.4			3.6

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1473	0.1814	0.2136	0.2848	0.5473	0.8776	1.9962	2.3885	2.8696	3.5261

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
2.54	5.96	0.63

# Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	0.0	0.0	0.2	3.1	96.5	0.2			
×	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○			0.3547	0.2711	0.2460	0.2015	0.1689	0.1568	0.96	1.73

Material Description	USCS	AASHTO
○		

<b>Project No.</b> DC04 <b>Client:</b> USACE-Detroit District <b>Project:</b> St. Marys Sampling  ○ <b>Source of Sample:</b> SM-14-16 <b>Sample Number:</b> 1410A92-009A	<b>Remarks:</b> ○ 11/05/2014
<b>RTI LABORATORIES</b>  <b>Livonia, Michigan</b>	
<b>Figure</b>	

Tested By: EL



**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-16

**Sample Number:** 1410A92-009A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
147.20	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	455.60	455.30	99.8
		#20	474.80	474.50	99.6
		#40	480.60	476.30	96.7
		#100	488.70	357.40	7.5
		#200	325.50	314.80	0.2
		#270	391.00	390.90	0.1

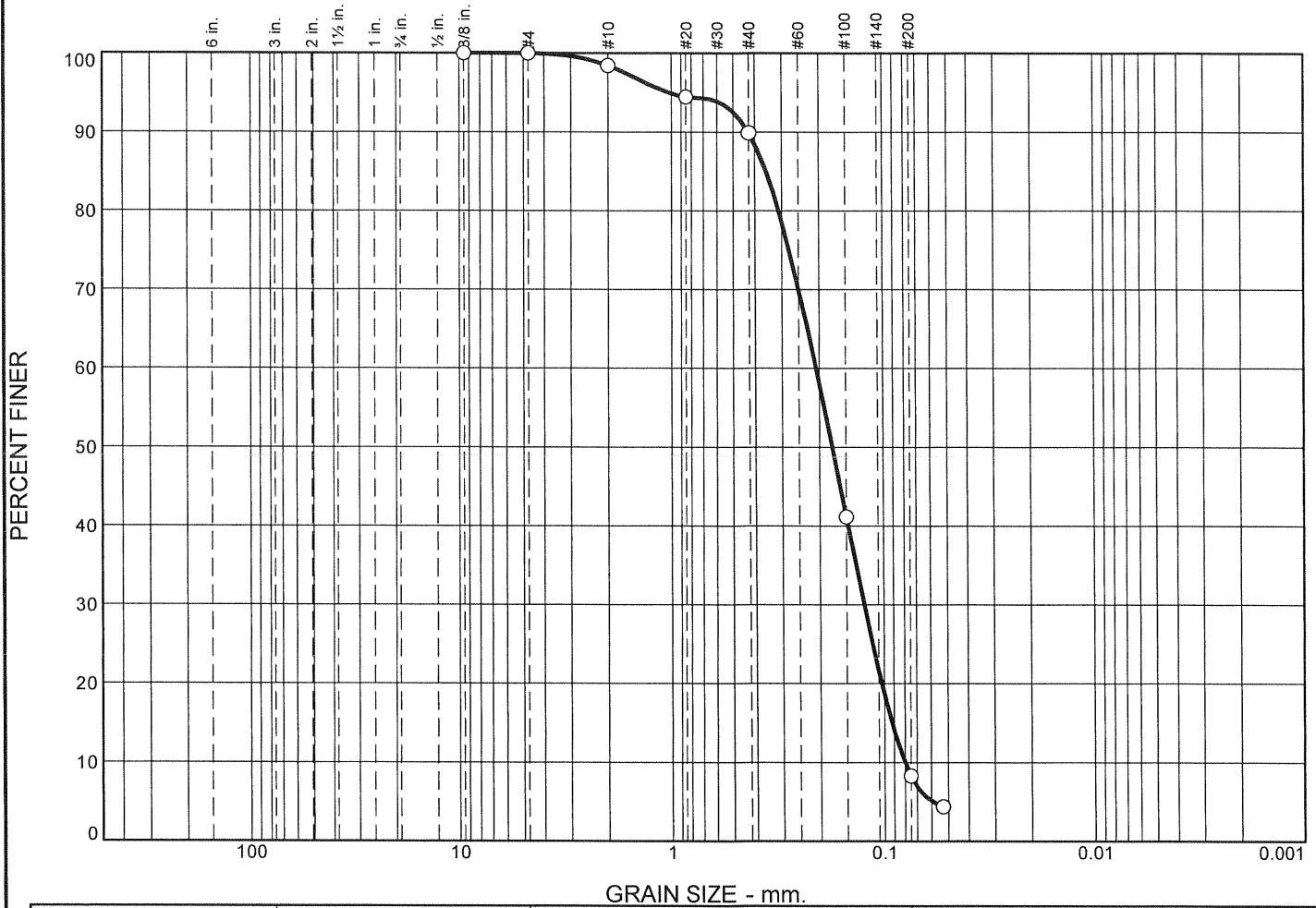
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.2	3.1	96.5	99.8			0.2

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1568	0.1689	0.1801	0.2015	0.2460	0.2711	0.3339	0.3547	0.3794	0.4113

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.24	1.73	0.96

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.6	8.5	81.6	8.3	

LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		0.3560	0.2074	0.1742	0.1240	0.0919	0.0799	0.93	2.59

Material Description	USCS	AASHTO

<b>Project No.</b> DC04 <b>Project:</b> St. Marys Sampling  <input type="checkbox"/> <b>Source of Sample:</b> SM-14-17	<b>Client:</b> USACE-Detroit District  <b>Sample Number:</b> 1410A92-010A	<b>Remarks:</b> <input type="checkbox"/> 11/05/2014
<b>RTI LABORATORIES</b> Livonia, Michigan		Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-17  
 Sample Number: 1410A92-010A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
140.70	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	457.50	455.30	98.4
		#20	480.10	474.50	94.5
		#40	482.70	476.30	89.9
		#100	426.00	357.40	41.2
		#200	361.00	314.80	8.3
		#270	396.40	390.90	4.4

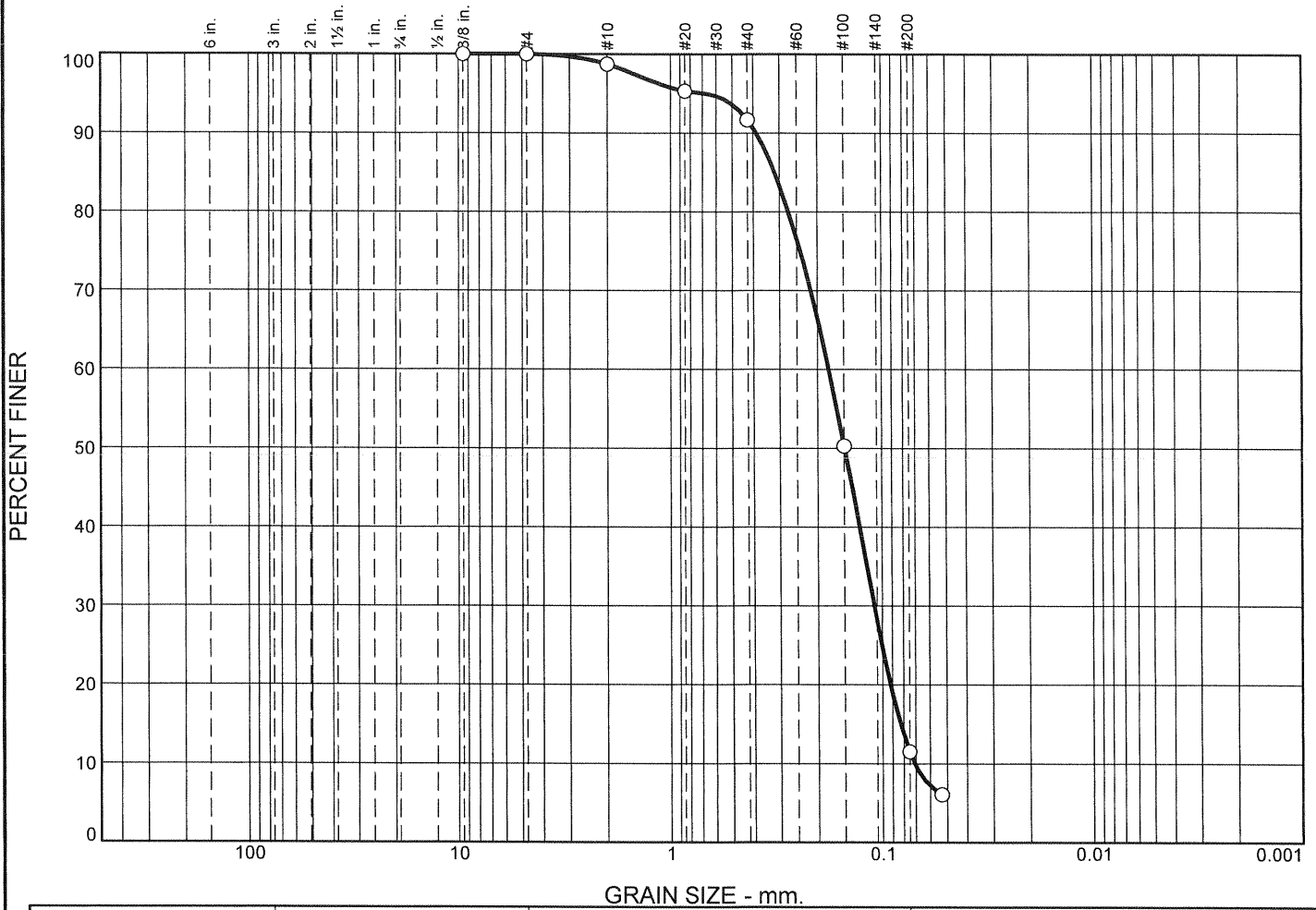
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.6	8.5	81.6	91.7			8.3

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0799	0.0919	0.1027	0.1240	0.1742	0.2074	0.3112	0.3560	0.4268	1.0282

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
0.92	2.59	0.93

# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	0.0	0.0	1.3	7.0	80.2	11.5			
⊗	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○			0.3169	0.1770	0.1493	0.1092	0.0825	0.0709	0.95	2.50

Material Description	USCS	AASHTO
○		

<p><b>Project No.</b> DC04      <b>Client:</b> USACE-Detroit District</p> <p><b>Project:</b> St. Marys Sampling</p> <p>○ <b>Source of Sample:</b> SM-14-18      <b>Sample Number:</b> 1410A92-011A</p>	<p><b>Remarks:</b> ○ 11/05/2014</p>
<p><b>RTI LABORATORIES</b></p> <p><b>Livonia, Michigan</b></p>	

Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-18  
 Sample Number: 1410A92-011A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
167.40	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	457.40	455.30	98.7
		#20	480.20	474.50	95.3
		#40	482.40	476.30	91.7
		#100	426.70	357.40	50.3
		#200	379.70	314.80	11.5
		#270	400.00	390.90	6.1

**Fractional Components**

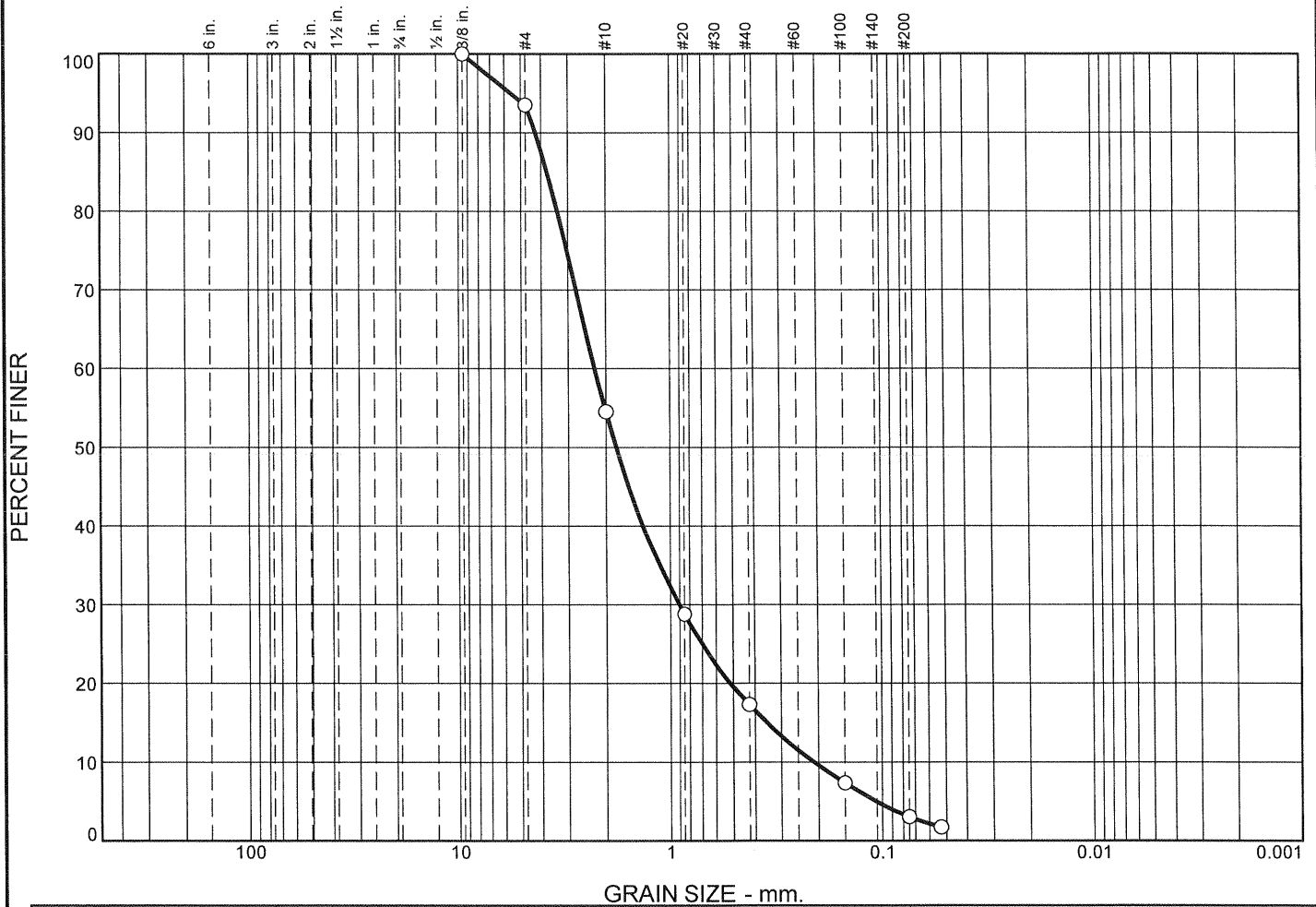
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	1.3	7.0	80.2	88.5			11.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0709	0.0825	0.0918	0.1092	0.1493	0.1770	0.2728	0.3169	0.3867	0.6745

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
0.76	2.50	0.95



# Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	6.5	39.0	37.2	14.3	3.0	

☒	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○			3.7550	2.2495	1.7945	0.9010	0.3515	0.2103	1.72	10.70

Material Description	USCS	AASHTO
○		

<b>Project No.</b> DC04 <b>Client:</b> USACE-Detroit District <b>Project:</b> St. Marys Sampling  ○ <b>Source of Sample:</b> SM-14-19 <b>Sample Number:</b> 1410A92-012A	<b>Remarks:</b> ○ 11/05/2014
<b>RTI LABORATORIES</b>  <b>Livonia, Michigan</b>	

Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

**Client:** USACE-Detroit District

**Project:** St. Marys Sampling

**Project Number:** DC04

**Location:** SM-14-19

**Sample Number:** 1410A92-012A

**Testing Remarks:** 11/05/2014

**Tested by:** EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
46.20	0.00	.375	542.00	542.00	100.0
		#4	501.20	498.20	93.5
		#10	473.30	455.30	54.5
		#20	486.40	474.50	28.8
		#40	481.60	476.30	17.3
		#100	362.00	357.40	7.4
		#200	316.80	314.80	3.0
		#270	391.50	390.90	1.7

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	6.5	6.5	39.0	37.2	14.3	90.5			3.0

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.2103	0.3515	0.5153	0.9010	1.7945	2.2495	3.3628	3.7550	4.2591	5.5743

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
3.65	10.70	1.72





**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-20  
 Sample Number: 1410A92-013A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
49.50	0.00	.375	542.00	542.00	100.0
		#4	499.10	498.20	98.2
		#10	467.30	455.30	73.9
		#20	489.00	474.50	44.6
		#40	484.20	476.30	28.7
		#100	364.50	357.40	14.3
		#200	318.20	314.80	7.5
		#270	393.80	390.90	1.6

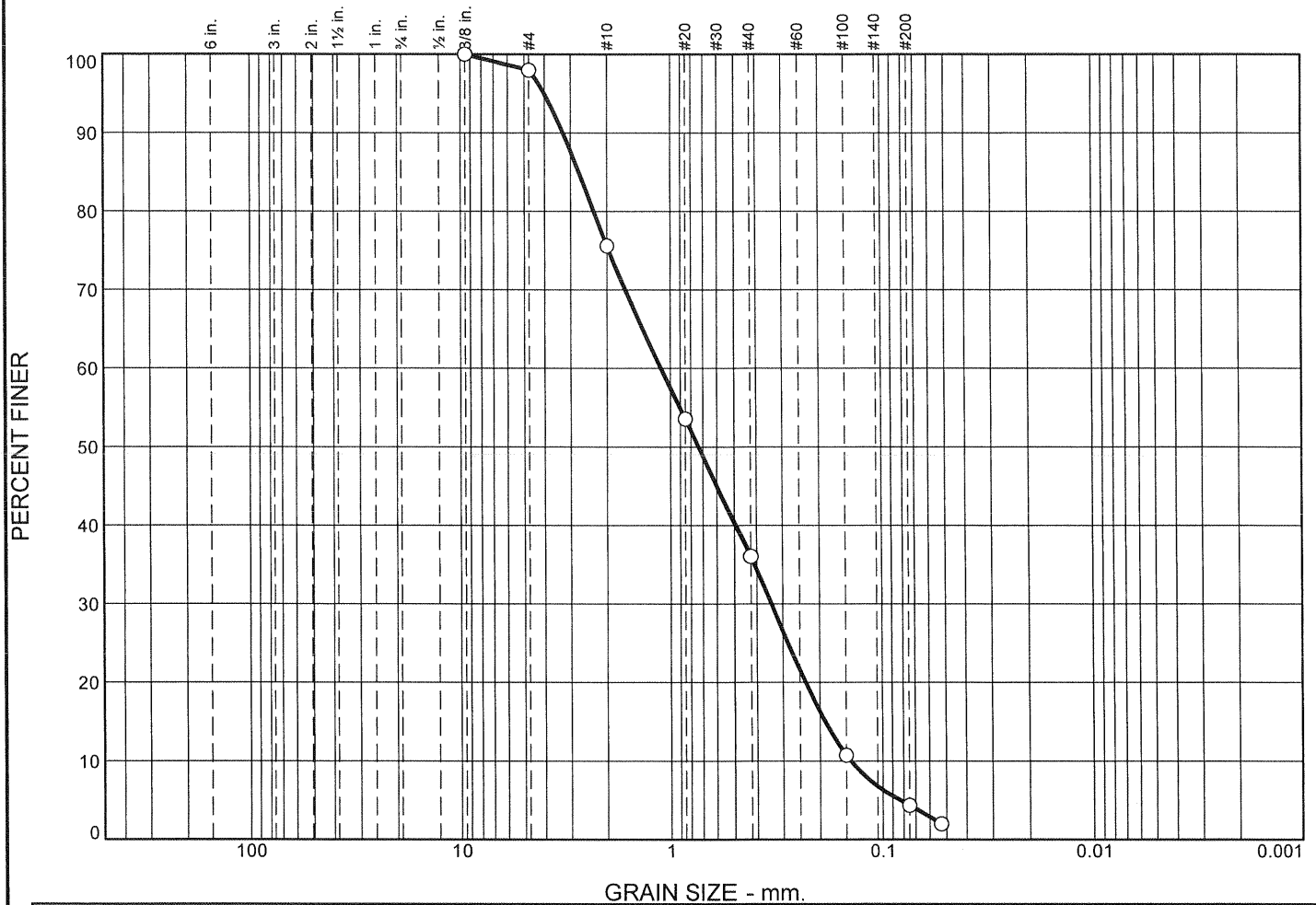
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.8	1.8	24.3	45.2	21.2	90.7			7.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0923	0.1607	0.2468	0.4557	1.0128	1.3594	2.3727	2.7545	3.2487	3.9686

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
2.94	14.73	1.66

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.0	22.4	39.5	31.7	4.4	

LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
		2.7367	1.1083	0.7345	0.3406	0.1887	0.1426	0.73	7.77

Material Description	USCS	AASHTO

<b>Project No.</b> DC04 <b>Client:</b> USACE-Detroit District <b>Project:</b> St. Marys Sampling  <b>Source of Sample:</b> SM-14-21 <b>Sample Number:</b> 1410A92-014A	<b>Remarks:</b> ○ 11/05/2014
<b>RTI LABORATORIES</b>  <b>Livonia, Michigan</b>	

Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-21  
 Sample Number: 1410A92-014A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
54.90	0.00	.375	542.00	542.00	100.0
		#4	499.30	498.20	98.0
		#10	467.60	455.30	75.6
		#20	486.60	474.50	53.6
		#40	485.90	476.30	36.1
		#100	371.30	357.40	10.7
		#200	318.30	314.80	4.4
		#270	392.20	390.90	2.0

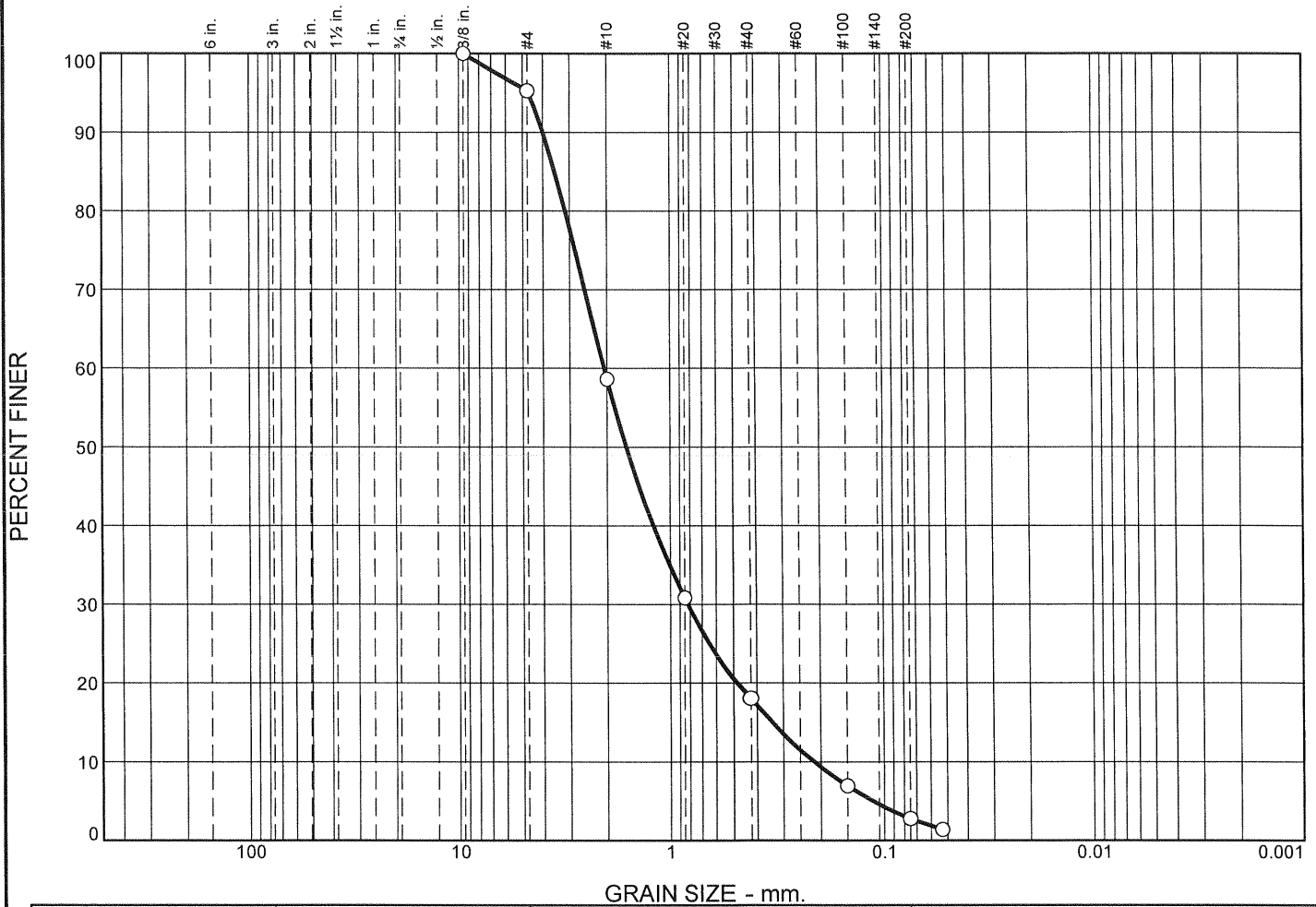
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	2.0	2.0	22.4	39.5	31.7	93.6			4.4

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.1426	0.1887	0.2341	0.3406	0.7345	1.1083	2.3182	2.7367	3.2616	4.0086

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
2.78	7.77	0.73

# Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	4.7	36.7	40.5	15.3	2.8	

☒	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○			3.5244	2.0633	1.6195	0.8196	0.3393	0.2152	1.51	9.59

Material Description	USCS	AASHTO
○		

<p><b>Project No.</b> DC04      <b>Client:</b> USACE-Detroit District</p> <p><b>Project:</b> St. Marys Sampling</p> <p>○ <b>Source of Sample:</b> SM-14-22      <b>Sample Number:</b> 1410A92-015A</p>	<p><b>Remarks:</b> ○ 11/05/2014</p>
<p><b>RTI LABORATORIES</b></p> <p><b>Livonia, Michigan</b></p>	

Figure

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-22  
 Sample Number: 1410A92-015A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
36.00	0.00	.375	542.00	542.00	100.0
		#4	499.90	498.20	95.3
		#10	468.50	455.30	58.6
		#20	484.50	474.50	30.8
		#40	480.90	476.30	18.1
		#100	361.40	357.40	6.9
		#200	316.30	314.80	2.8
		#270	391.40	390.90	1.4

**Fractional Components**

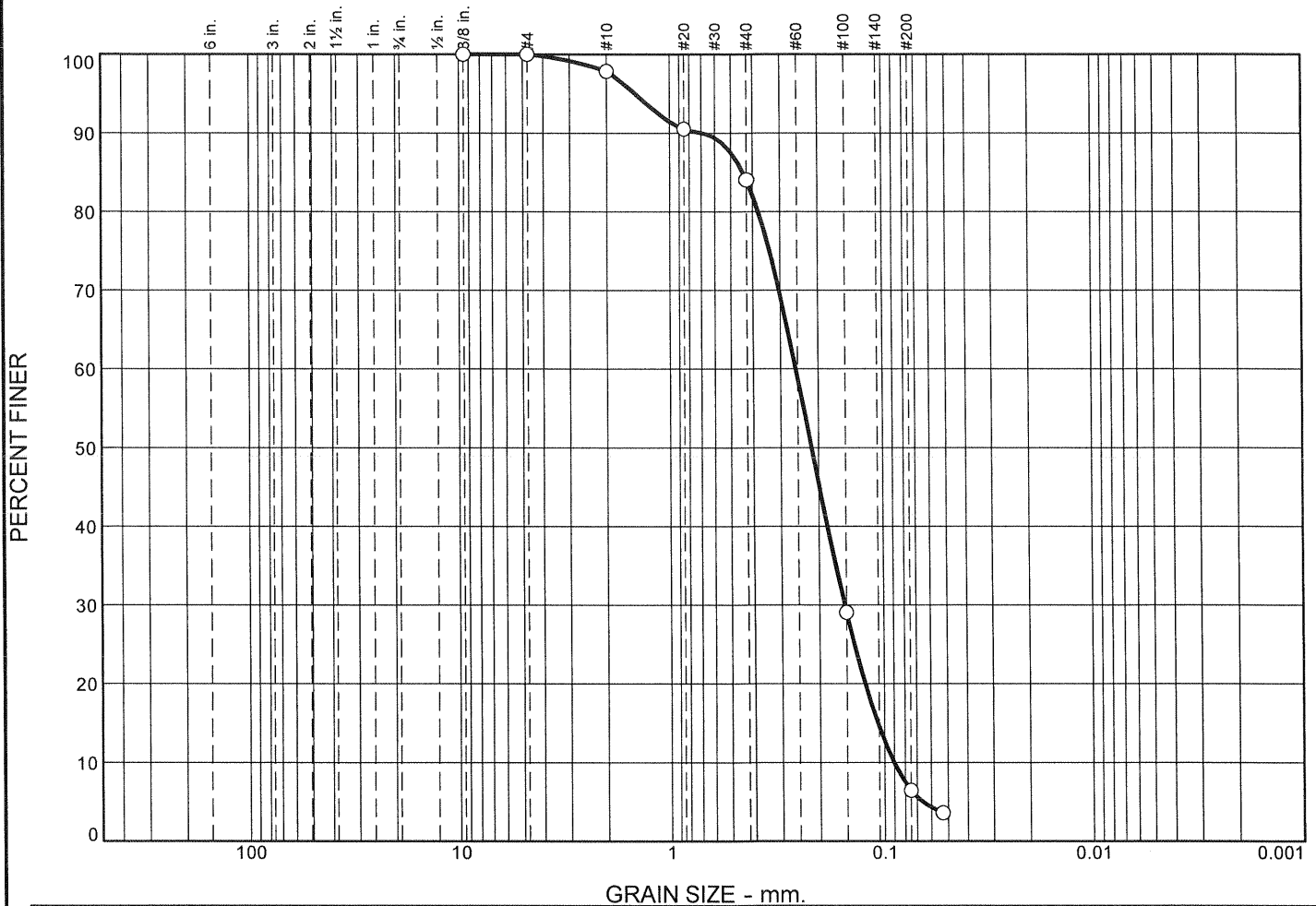
Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	4.7	4.7	36.7	40.5	15.3	92.5			2.8

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.2152	0.3393	0.4833	0.8196	1.6195	2.0633	3.1473	3.5244	4.0016	4.6979

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
3.55	9.59	1.51



# Particle Size Distribution Report



% +3"		% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>	0.0	0.0	0.0	2.1	13.9	77.5	6.5			
<input checked="" type="checkbox"/>	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
<input type="radio"/>			0.4404	0.2548	0.2159	0.1527	0.1074	0.0902	1.02	2.83

Material Description	USCS	AASHTO
<input type="radio"/>		

<b>Project No.</b> DC04 <b>Project:</b> St. Marys Sampling <input type="radio"/> <b>Source of Sample:</b> SM-14-23	<b>Client:</b> USACE-Detroit District <b>Sample Number:</b> 1410A92-016A	<b>Remarks:</b> <input type="radio"/> 11/05/2014
<b>RTI LABORATORIES</b> <b>Livonia, Michigan</b>		<b>Figure</b>

Tested By: EL

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-23  
 Sample Number: 1410A92-016A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
66.40	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	456.70	455.30	97.9
		#20	479.40	474.50	90.5
		#40	480.60	476.30	84.0
		#100	393.90	357.40	29.1
		#200	329.80	314.80	6.5
		#270	392.80	390.90	3.6

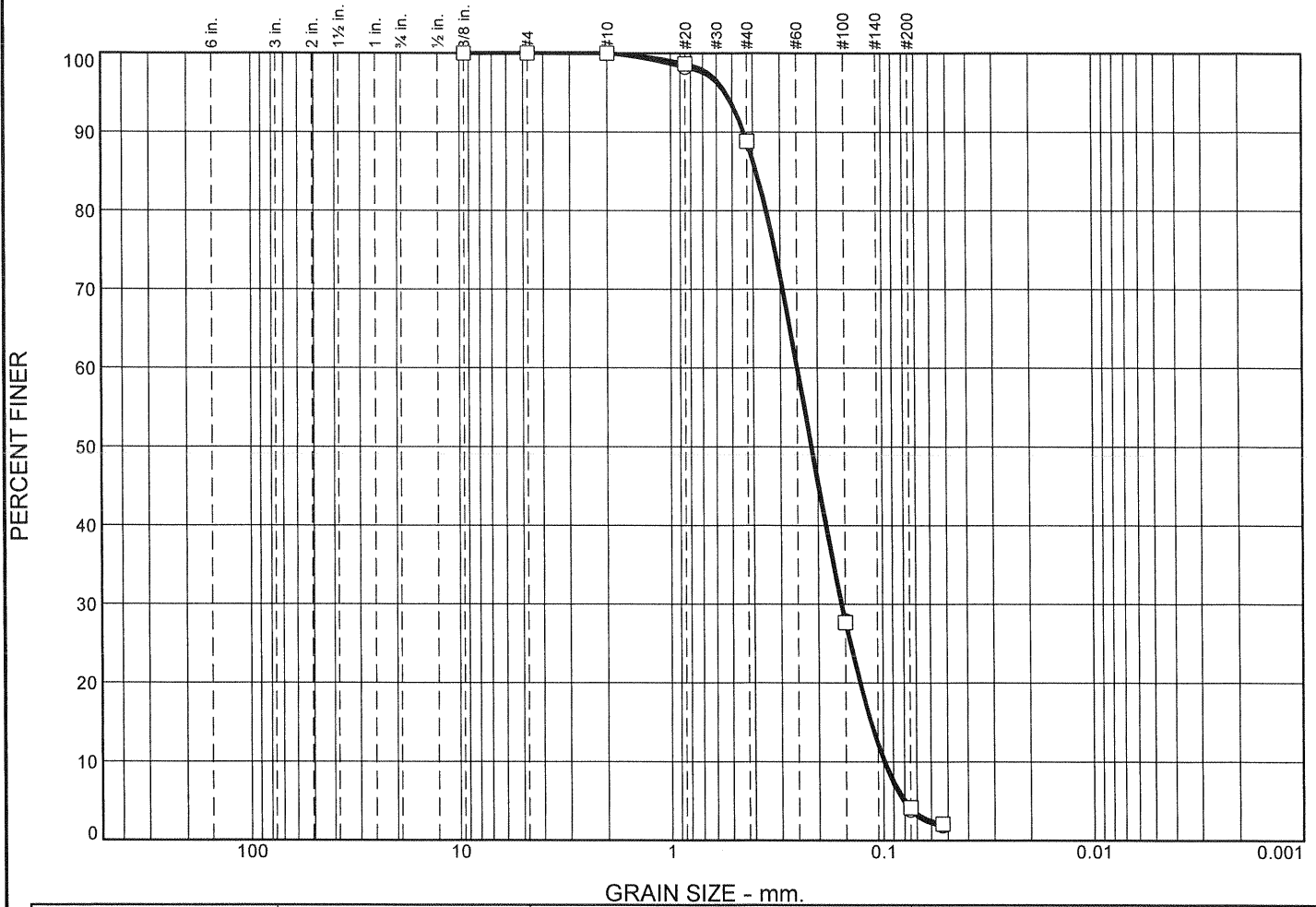
**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	2.1	13.9	77.5	93.5			6.5

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0902	0.1074	0.1230	0.1527	0.2159	0.2548	0.3775	0.4404	0.7013	1.4599

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.21	2.83	1.02

# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	0.0	0.0	0.0	11.2	84.9	3.9			
□	0.0	0.0	0.0	0.0	11.2	84.6	4.2			
⊗	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○			0.3864	0.2490	0.2140	0.1557	0.1143	0.0991	0.98	2.51
□			0.3868	0.2501	0.2150	0.1564	0.1142	0.0985	0.99	2.54

Material Description							USCS	AASHTO	
○									
□									

<b>Project No.</b> DC04 <b>Project:</b> St. Marys Sampling	<b>Client:</b> USACE-Detroit District	<b>Remarks:</b> ○ 11/05/2014 □ 11/05/2014
○ <b>Source of Sample:</b> SM-14-24	<b>Sample Number:</b> 1410A92-017A	
□ <b>Source of Sample:</b> SM-14-24	<b>Sample Number:</b> 1410A92-017A dup	
<b>RTI LABORATORIES</b>		
<b>Livonia, Michigan</b>		
		<b>Figure</b>

Tested By: EL



**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-24  
 Sample Number: 1410A92-017A  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
80.30	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	455.30	455.30	100.0
		#20	475.90	474.50	98.3
		#40	483.90	476.30	88.8
		#100	406.30	357.40	27.9
		#200	334.10	314.80	3.9
		#270	392.50	390.90	1.9

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	11.2	84.9	96.1			3.9

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0991	0.1143	0.1284	0.1557	0.2140	0.2490	0.3480	0.3864	0.4404	0.5433

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.05	2.51	0.98

**GRAIN SIZE DISTRIBUTION TEST DATA**

11/6/2014

Client: USACE-Detroit District  
 Project: St. Marys Sampling  
 Project Number: DC04  
 Location: SM-14-24  
 Sample Number: 1410A92-017A dup  
 Testing Remarks: 11/05/2014  
 Tested by: EL

**Sieve Test Data**

Dry Sample and Tare (grams)	Tare (grams)	Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Finer
81.30	0.00	.375	542.00	542.00	100.0
		#4	498.20	498.20	100.0
		#10	455.30	455.30	100.0
		#20	475.60	474.50	98.6
		#40	484.30	476.30	88.8
		#100	407.10	357.40	27.7
		#200	333.90	314.80	4.2
		#270	392.60	390.90	2.1

**Fractional Components**

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	0.0	0.0	0.0	11.2	84.6	95.8			4.2

D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
0.0985	0.1142	0.1287	0.1564	0.2150	0.2501	0.3488	0.3868	0.4399	0.5371

Fineness Modulus	C <sub>u</sub>	C <sub>c</sub>
1.05	2.54	0.99

---

## DEFINITIONS:

DF: Dilution factor; the dilution factor applied to the prepared sample.

DL: Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known amount of target analytes to a specified amount of clean matrix and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: A duplicate LCS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

LOD: Limit of Detection; a laboratory verified concentration that can be detected at three times greater than the noise level. This concentration is equal to or greater than the DL.

LOQ: Limit of Quantitation; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below the LOQ are reported with a "J" qualifier.

MBLK: Method Blank; a sample of similar matrix that does not contain target analytes or interference that may impact the analytical results and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, used to assess and verify that the analytical process is free of contamination.

Mg/Kg or mg/L: Units of part per million (PPM) – milligram per Kilogram (W/W) or milligram per Liter (W/V).

MS: Matrix Spike; prepared by adding a known amount of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: A duplicate MS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

% REC: Percent Recovery of a known spike (SPK); a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration (SPK) added to the sample. This is compared to the Low Limit and High Limit.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration. This is compared to the RPD Limit.

Qual: Qualifier that applies to the analyte reported

SPK: Spike; used in the QC section for both SPK Value and SPK Ref Val

Ug/Kg or ug/L: Units of part per billion (PPB) – microgram per Kilogram (W/W) or microgram per Liter (W/V).

## QUALIFIERS:

\*: Reported value exceeds the maximum allowed concentration by regulation or permit.

B: Analyte detected in the associated Method Blank at a concentration greater than 1/2 the LOQ

G: ICB/CCB result is greater than the MDL

H: Holding time for preparation or analysis has been exceeded

J: Estimated result. Greater uncertainty is associated with this result and data reported is estimated.

M: Manual Integration used to determine area response

P: Second column RPD exceeds 40%

Q: % REC exceeded control limits. When applied to sample analytes - denotes an associated LCS recovery that exceeded control limits.

R: % RPD exceeds control limits

T: MBLK result is greater than 1/2 of the LOQ

U: The analyte concentration is less than the DL. The result is reported as less than the LOD

X: Matrix spike recovery for the noted analyte exceeded control limits. Applied to the MS/MSD parent sample.

Y: Percent Difference/Drift in the associated CCV exceeded acceptance criteria.

Z: Percent Difference/Drift in the associated ICV exceeded acceptance criteria.









RTI LABORATORIES, INC.

1410 A9Z

# CHAIN OF CUSTODY RECORD



NECAC Cert #000873



MDE Cert #R-8150-2-424



Reg / SCL

ENVIRONMENTAL SCIENCES LAB

RTI LABORATORIES, INC.

31626 Glendale Street  
Livonia, MI 48150-1827

Phone (734) 422-8000

Fax (734) 422-5342

www.rtilab.com

PAGE 2 OF 2

Please include Email Address of Report Recipient !!!

SUBMITTING COMPANY RTI			REPORT TO: Ms. Pam Horner		BILL TO:
PROJECT NAME St Mary's River	PROJECT # DC04	QUOTE # 13453	COMPANY: USACE - Detroit		COMPANY:
SAMPLING LOCATION (STATE or COUNTRY) St Clair MI			ADDRESS: 477 Michigan Ave.		ADDRESS:
SPECIAL INSTRUCTIONS / COMMENTS			CITY, STATE, ZIP Detroit, MI		CITY, STATE, ZIP:
			PHONE: 313-226-6748	EMAIL (OR FAX IF NO EMAIL AVAILABLE):	

SAMPLER'S PRINTED NAME Fred Holtash, Gerard Lalonde, Andrew Mrazik			SAMPLER'S SIGNATURE										ANALYTICAL PARAMETERS						Comments
ITEM NUMBER	SAMPLE ID	DATE SAMPLED	TIME SAMPLED (24-hour format)	MATRIX CODE (see notes below)	NBR OF BOTTLES	NBR OF CONTAINERS AND PRESERVATIVES						PEETE PCBs PAHs	TOC, COC, OIL & GREASE	V VOLATILE RESIDUES SW-284002, C-141008	GRAIN SIZE (NET SEIVE)	METALS: AMMONIUM/ NITS	RESIDUES IN PLACE DENSITY	SPECIFIC GRAVITY	
						NONE	HCL	HNO3	H2O2	NaOH	OTHER								
15	SM-14-20	10/21/14	1227	s	3	3						X	X	X	X	X	X	X	
14	SM-14-21	10/21/14	1158	s	3	3						X	X	X	X	X	X	X	
15	SM-14-22	10/21/14	1112	s	3	3						X	X	X	X	X	X	X	
16	SM-14-23	10/21/14	1040	s	3	3						X	X	X	X	X	X	X	
17	SM-14-24	10/21/14	1013	s	3	3						X	X	X	X	X	X	X	
6																			
7																			
8																			
9																			
10																			
11																			
12																			

Relinquished By <i>Fred Holtash</i>	Date 10/23/14	Time 11:00	Received By <i>STORAGE</i>	Date 10/23/14	Time 11:00
Relinquished By <i>RTI cooler</i>	Date 10/24/14	Time 10:00	Received By <i>Chad Jones</i>	Date 10-24-14	Time 10:00

REPORT TRANSMITTAL DESIRED:

HARDCOPY (extra cost)
  FAX
  EMAIL
  ONLINE

ALL REPORTING IS VIA THE RTI "FLASHPOINT" ONLINE SYSTEM UNLESS OTHERWISE SPECIFIED

FOR LAB USE ONLY

Temp of samples: 4.8 °C On Wet Ice? YES

Comments: \_\_\_\_\_

TURNAROUND DESIRED: Standard  RUSH: Next BO  2nd BO  3rd BO

Note: RUSH requests will incur surcharges!

Distribution: White and Yellow - Lab; Pink - Field

See reverse side for Laboratory Terms and Conditions of Service

MATRIX CODES: A = AIR, BW = BULK, DW = DRINKING WATER, BL = BULKW, OW = ORIGIN WATER, BV = SOLVENT WASTE, L = LIQUID, W = WASTE, M = MISCELLANEOUS, WP = WIFE, O = OIL, WW = WASTE WATER, S = SOLID