SITE PLAN FOR THE HURRICANE ISLAND REACH

DREDGED MATERIAL MANAGEMENT PLAN WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

POOL 11
DUBUQUE COUNTY, IA AND GRANT COUNTY, WI
UPPER MISSISSIPPI RIVER, RIVER MILES 591-608

FINAL

APPENDIX A

SAMPLE ANALYSES

SITE PLAN FOR THE
HURRICANE ISLAND REACH

DREDGED MATERIAL MANAGEMENT PLAN
WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

POOL 11
DUBUQUE COUNTY, IA AND GRANT COUNTY, WI
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FINAL

APPENDIX A-1

ANALYTICAL DATA PACKAGE

ANALYTICAL DATA PACKAGE

Corps of Engineers – Rock Island District

Report Date: 08/20/15

Lab Name: ARDL, Inc.
Samples Received at ARDL: 24-Jul-15
Project Name: Rosebrook Island

ARDL Report No.: 1058

CASE NARRATIVE

Sample ID No.	Date Collected	Lab ID No.	Analysis Requested
MS-595.1L	07/23/2015	1058-1	Metals (1), Other Inorganics (2), PNA-SIM, PCBs
MS-595.2L	07/23/2015	1058-2	Metals (1), Other Inorganics (2), PNA-SIM, PCBs
MS-595.3L	07/23/2015	1058-3	Metals (1), Other Inorganics (2), PNA-SIM, PCBs

(1) Including arsenic, cadmium, chromium, lead, mercury and zinc.
(2) Including ammonia, TOC and total solids.

Sample Receiving Notation:
Four samples were submitted for analysis, the three listed above and a sample labeled 'DUP'. the 16 oz jar containing the bulk of this sample was broken in shipment and the resulting glass slivers perforated the plastic bag containing the sample container, allowing ice water to mix with the sediment sample. At the direction of Dave Bierl, this sample was excluded from testing. See the 'Sample Receipt Information' section for additional details.

INORGANIC FRACTION

NOTE: TOC were analyzed by an accredited outside laboratory due to instrument status.

The quality control data are summarized as follows:

Laboratory Control Samples
Percent recoveries of all LCS analyses were within control limits.

Preparation Blanks
Results of all preparation blanks were within acceptable limits.

Matrix Spikes
Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits. No matrix spike duplicate was performed for the TOC analysis.

Duplicates
All duplicate analyses are reported as MS/MSD except TOC and total solids, which are reported as sample/duplicate. RPD on all duplicate analyses were within control limits, except for TOC. As the TOC results are less than five times the reporting limit (100 mg/kg) and results are ± the reporting limit of each other, % RPD was not considered.

PNA-SIM – METHOD 8270/SIM

Soil samples were received by ARDL, Inc. on July 24, 2015, for PNA analysis. All samples were extracted and analyzed within specified holding time.

All calibrations and QC passed method criteria.

The matrix spike/matrix spike duplicate was performed on sample MS-595.1L and passed criteria.

ANALYTICAL DATA PACKAGE

Corps of Engineers – Rock Island District

Report Date: 08/20/15

Lab Name: ARDL, Inc.
Samples Received at ARDL: 24-Jul-15
Project Name: Rosebrook Island

ARDL Report No.: 1058

CASE NARRATIVE

PCB – METHOD 8082

All sample analyses were performed within the method specified holding time.

All calibrations and QC passed method criteria.

The MS/MSD analyses performed on sample MS-595.1L passed criteria.

DATA REPORTING QUALIFIERS

The following organic data reporting qualifiers are used as required.

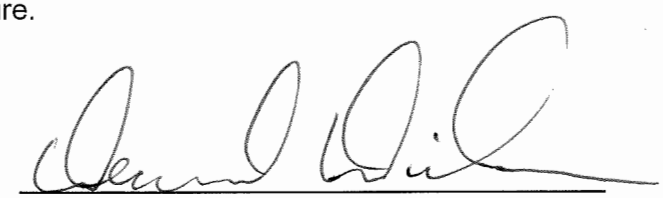
ND- Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

P - This flag is used for any two column confirmation methodology when there is greater than 40% difference for detected concentrations between the two columns. The primary column value is reported on the Form 1 and flagged with a "P".

B - This flag is used when the analyte is found in the blank as well as the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.



Dean S. Dickerson
Technical Services Manager

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

Field ID: MS-595.1L
Sampling Loc'n: ROSEBROOK ISLAND
Sampling Date: 07/23/2015
Sampling Time: ----

ARDL No: 001058-01
Received: 07/24/2015
Matrix: SEDIMENT
Moisture: 25.8

Analyte	Detection Limit	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Arsenic	0.38	1.4	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Cadmium	0.25	0.25	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Chromium	0.63	4.3	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Lead	0.38	1.2	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Mercury	0.26	ND	MG/KG	7471A	7471A	07/31/15	07/31/15	C2003
Zinc	0.63	11.2	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Ammonia Nitrogen	0.039	10.1	MG/KG	350.1	350.1	07/30/15	07/31/15	08200417
Solids, Percent	1.0	74.2	%	NONE	160.3	NA	07/28/15	08200416
Total Organic Carbon	100	240	MG/KG	NONE	9060	NA	08/05/15	TA03998R

Sample 001058-01, Inorganic Analyses

Page 1 of 1

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MS-595.1L	ARDL Lab No.:	001058-01
Desc/Location:	ROSEBROOK ISLAND	Lab Filename:	E0805505
Sample Date:	07/23/2015	Received Date:	07/24/2015
Sample Time:	----	Prep. Date:	07/28/2015
Matrix:	SEDIMENT	Analysis Date:	08/05/2015
Amount Used:	30 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B10425
% Moisture:	25.8	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Naphthalene	0.822	4.49	ND		UG/KG	1
Acenaphthylene	0.795	4.49	ND		UG/KG	1
Acenaphthene	0.660	4.49	ND		UG/KG	1
Fluorene	0.755	4.49	ND		UG/KG	1
Phenanthrene	0.970	4.49	ND		UG/KG	1
Anthracene	0.809	4.49	ND		UG/KG	1
Fluoranthene	1.08	4.49	ND		UG/KG	1
Pyrene	0.916	4.49	ND		UG/KG	1
Benzo(a)anthracene	0.701	4.49	ND		UG/KG	1
Chrysene	1.16	4.49	ND		UG/KG	1
Benzo(b)fluoranthene	1.25	4.49	ND		UG/KG	1
Benzo(k)fluoranthene	1.48	4.49	ND		UG/KG	1
Benzo(a)pyrene	0.984	4.49	ND		UG/KG	1
Indeno(1,2,3-cd)pyrene	0.849	4.49	ND		UG/KG	1
Dibenzo(a,h)anthracene	1.12	4.49	ND		UG/KG	1
Benzo(g,h,i)perylene	1.25	4.49	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
2-Fluorobiphenyl	30-115	47%
Terphenyl-d14	18-137	74%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
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Lab Report No: 001058 Report Date: 08/11/2015

Project Name:	ROSEBROOK ISLAND	Analysis:	PCBs (8082)
Project No.:		Analytical Method:	8082
NELAC Certified - IL100308		Prep Method:	3550A

Field ID:	MS-595.1L	ARDL Lab No.:	001058-01
Desc/Location:	ROSEBROOK ISLAND	Lab Filename:	
Sample Date:	07/23/2015	Received Date:	07/24/2015
Sample Time:	----	Prep. Date:	07/29/2015
Matrix:	SEDIMENT	Analysis Date:	08/10/2015
Amount Used:	30 g	Instrument ID:	
Final Volume:	1 mL	QC Batch:	B10426
% Moisture:	25.8	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Aroclor 1016	4.14	44.5	ND		UG/KG	1
Aroclor 1221	15.6	44.5	ND		UG/KG	1
Aroclor 1232	6.66	44.5	ND		UG/KG	1
Aroclor 1242	6.66	44.5	ND		UG/KG	1
Aroclor 1248	6.51	44.5	ND		UG/KG	1
Aroclor 1254	6.64	44.5	ND		UG/KG	1
Aroclor 1260	5.28	44.5	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Tetrachloro-m-xylene	29-128	87%
Decachlorobiphenyl	31-128	105%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

Field ID: MS-595.2L
Sampling Loc'n: ROSEBROOK ISLAND
Sampling Date: 07/23/2015
Sampling Time: ----

ARDL No: 001058-02
Received: 07/24/2015
Matrix: SEDIMENT
Moisture: 20.4

Analyte	Detection Limit	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Arsenic	0.36	0.77	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Cadmium	0.24	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Chromium	0.60	3.8	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Lead	0.36	1.0	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Mercury	0.23	ND	MG/KG	7471A	7471A	07/31/15	07/31/15	C2003
Zinc	0.60	7.9	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Ammonia Nitrogen	0.033	5.1	MG/KG	350.1	350.1	07/30/15	07/31/15	08200417
Solids, Percent	1.0	79.6	%	NONE	160.3	NA	07/28/15	08200416
Total Organic Carbon	100	240	MG/KG	NONE	9060	NA	08/05/15	TA03998R

Sample 001058-02, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MS-595.2L	ARDL Lab No.:	001058-02
Desc/Location:	ROSEBROOK ISLAND	Lab Filename:	E0805508
Sample Date:	07/23/2015	Received Date:	07/24/2015
Sample Time:	----	Prep. Date:	07/28/2015
Matrix:	SEDIMENT	Analysis Date:	08/05/2015
Amount Used:	30 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B10425
% Moisture:	20.4	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Naphthalene	0.766	4.18	ND		UG/KG	1
Acenaphthylene	0.741	4.18	ND		UG/KG	1
Acenaphthene	0.616	4.18	ND		UG/KG	1
Fluorene	0.704	4.18	ND		UG/KG	1
Phenanthrene	0.905	4.18	ND		UG/KG	1
Anthracene	0.754	4.18	ND		UG/KG	1
Fluoranthene	1.01	4.18	ND		UG/KG	1
Pyrene	0.854	4.18	ND		UG/KG	1
Benzo(a)anthracene	0.653	4.18	ND		UG/KG	1
Chrysene	1.08	4.18	ND		UG/KG	1
Benzo(b)fluoranthene	1.17	4.18	ND		UG/KG	1
Benzo(k)fluoranthene	1.38	4.18	ND		UG/KG	1
Benzo(a)pyrene	0.917	4.18	ND		UG/KG	1
Indeno(1,2,3-cd)pyrene	0.791	4.18	ND		UG/KG	1
Dibenzo(a,h)anthracene	1.04	4.18	ND		UG/KG	1
Benzo(g,h,i)perylene	1.17	4.18	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
2-Fluorobiphenyl	30-115	43%
Terphenyl-d14	18-137	73%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PCBs (8082)
Project No.: Analytical Method: 8082
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MS-595.2L	ARDL Lab No.:	001058-02
Desc/Location:	ROSEBROOK ISLAND	Lab Filename:	
Sample Date:	07/23/2015	Received Date:	07/24/2015
Sample Time:	----	Prep. Date:	07/29/2015
Matrix:	SEDIMENT	Analysis Date:	08/10/2015
Amount Used:	30 g	Instrument ID:	
Final Volume:	1 mL	QC Batch:	B10426
% Moisture:	20.4	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Aroclor 1016	3.86	41.5	ND		UG/KG	1
Aroclor 1221	14.6	41.5	ND		UG/KG	1
Aroclor 1232	6.21	41.5	ND		UG/KG	1
Aroclor 1242	6.21	41.5	ND		UG/KG	1
Aroclor 1248	6.07	41.5	ND		UG/KG	1
Aroclor 1254	6.19	41.5	ND		UG/KG	1
Aroclor 1260	4.92	41.5	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Tetrachloro-m-xylene	29-128	83%
Decachlorobiphenyl	31-128	102%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

ARDL, INC.
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Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

Field ID: MS-595.3L
Sampling Loc'n: ROSEBROOK ISLAND
Sampling Date: 07/23/2015
Sampling Time: ----

ARDL No: 001058-03
Received: 07/24/2015
Matrix: SEDIMENT
Moisture: 11.6

Analyte	Detection Limit	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Arsenic	0.32	1.0	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Cadmium	0.22	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Chromium	0.54	2.3	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Lead	0.32	0.90	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Mercury	0.21	ND	MG/KG	7471A	7471A	07/31/15	07/31/15	C2003
Zinc	0.54	8.1	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995
Ammonia Nitrogen	0.030	11.3	MG/KG	350.1	350.1	07/30/15	07/31/15	08200417
Solids, Percent	1.0	88.4	%	NONE	160.3	NA	07/28/15	08200416
Total Organic Carbon	100	180	MG/KG	NONE	9060	NA	08/05/15	TA03998R

Sample 001058-03, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3550A

Field ID:	MS-595.3L	ARDL Lab No.:	001058-03
Desc/Location:	ROSEBROOK ISLAND	Lab Filename:	E0805509
Sample Date:	07/23/2015	Received Date:	07/24/2015
Sample Time:	----	Prep. Date:	07/28/2015
Matrix:	SEDIMENT	Analysis Date:	08/05/2015
Amount Used:	30 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B10425
% Moisture:	11.6	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Naphthalene	0.690	3.77	ND		UG/KG	1
Acenaphthylene	0.667	3.77	ND		UG/KG	1
Acenaphthene	0.554	3.77	ND		UG/KG	1
Fluorene	0.633	3.77	ND		UG/KG	1
Phenanthrene	0.814	3.77	ND		UG/KG	1
Anthracene	0.679	3.77	ND		UG/KG	1
Fluoranthene	0.905	3.77	ND		UG/KG	1
Pyrene	0.769	3.77	ND		UG/KG	1
Benzo(a)anthracene	0.588	3.77	ND		UG/KG	1
Chrysene	0.973	3.77	ND		UG/KG	1
Benzo(b)fluoranthene	1.05	3.77	ND		UG/KG	1
Benzo(k)fluoranthene	1.24	3.77	ND		UG/KG	1
Benzo(a)pyrene	0.826	3.77	ND		UG/KG	1
Indeno(1,2,3-cd)pyrene	0.713	3.77	ND		UG/KG	1
Dibenzo(a,h)anthracene	0.939	3.77	ND		UG/KG	1
Benzo(g,h,i)perylene	1.05	3.77	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
2-Fluorobiphenyl	30-115	46%
Terphenyl-d14	18-137	77%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name:	ROSEBROOK ISLAND	Analysis:	PCBs (8082)
Project No.:		Analytical Method:	8082
NELAC Certified - IL100308		Prep Method:	3550A

Field ID:	MS-595.3L	ARDL Lab No.:	001058-03
Desc/Location:	ROSEBROOK ISLAND	Lab Filename:	
Sample Date:	07/23/2015	Received Date:	07/24/2015
Sample Time:	----	Prep. Date:	07/29/2015
Matrix:	SEDIMENT	Analysis Date:	08/10/2015
Amount Used:	30 g	Instrument ID:	
Final Volume:	1 mL	QC Batch:	B10426
% Moisture:	11.6	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units	Dilution Factor
Aroclor 1016	3.47	37.3	ND		UG/KG	1
Aroclor 1221	13.1	37.3	ND		UG/KG	1
Aroclor 1232	5.59	37.3	ND		UG/KG	1
Aroclor 1242	5.59	37.3	ND		UG/KG	1
Aroclor 1248	5.46	37.3	ND		UG/KG	1
Aroclor 1254	5.58	37.3	ND		UG/KG	1
Aroclor 1260	4.43	37.3	ND		UG/KG	1

SURROGATE RECOVERIES:	Limits	Results
Tetrachloro-m-xylene	29-128	78%
Decachlorobiphenyl	31-128	107%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

BLANK SUMMARY REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND NELAC Certified - IL100308

Analyte	Detect Limit	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
Arsenic	0.30	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995	001058-01B1
Cadmium	0.20	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995	001058-01B1
Chromium	0.50	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995	001058-01B1
Lead	0.30	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995	001058-01B1
Mercury	0.080	ND	MG/KG	7471A	7471A	07/31/15	07/31/15	C2003	001058-01B1
Zinc	0.50	ND	MG/KG	3050B	6010B	07/30/15	07/30/15	P4995	001058-01B1
Ammonia Nitrogen	0.030	ND	MG/KG	350.1	350.1	07/30/15	07/31/15	08200417	001058-01B1
Solids, Percent	1.0	ND	%	NONE	160.3	NA	07/28/15	08200416	001058-01B1
Total Organic Carbon	100	ND	MG/KG	NONE	9060	NA	08/05/15	TA03998R	001058-01B1

Inorganic Method Blanks for 001058

METHOD BLANK REPORT

ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/13/2015

Project Name:	ROSEBROOK ISLAND	Analysis:	PNA'S (METHOD 8270, SIM)
Project No.:		Analytical Method:	8270C
NELAC Certified - IL100308		Prep Method:	3550A

Field ID:	NA	ARDL Lab No.:	001058-01B1
Desc/Location:	NA	Lab Filename:	E0805503
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	07/28/2015
Matrix:	QC Material	Analysis Date:	08/05/2015
Amount Used:	30 g	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B10425
% Moisture:	NA	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units
Naphthalene	0.610	3.33	ND		UG/KG
Acenaphthylene	0.590	3.33	ND		UG/KG
Acenaphthene	0.490	3.33	ND		UG/KG
Fluorene	0.560	3.33	ND		UG/KG
Phenanthrene	0.720	3.33	ND		UG/KG
Anthracene	0.600	3.33	ND		UG/KG
Fluoranthene	0.800	3.33	ND		UG/KG
Pyrene	0.680	3.33	ND		UG/KG
Benzo(a)anthracene	0.520	3.33	ND		UG/KG
Chrysene	0.860	3.33	ND		UG/KG
Benzo(b)fluoranthene	0.930	3.33	ND		UG/KG
Benzo(k)fluoranthene	1.10	3.33	ND		UG/KG
Benzo(a)pyrene	0.730	3.33	ND		UG/KG
Indeno(1,2,3-cd)pyrene	0.630	3.33	ND		UG/KG
Dibenzo(a,h)anthracene	0.830	3.33	ND		UG/KG
Benzo(g,h,i)perylene	0.930	3.33	ND		UG/KG

SURROGATE RECOVERIES:	Limits	Results
2-Fluorobiphenyl	30-115	74%
Terphenyl-d14	18-137	82%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

METHOD BLANK REPORT

ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name:	ROSEBROOK ISLAND	Analysis:	PCBs (8082)
Project No.:		Analytical Method:	8082
NELAC Certified - IL100308		Prep Method:	3550A

Field ID:	NA	ARDL Lab No.:	001058-01B1
Desc/Location:	NA	Lab Filename:	
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	07/29/2015
Matrix:	QC Material	Analysis Date:	08/10/2015
Amount Used:	30 g	Instrument ID:	
Final Volume:	1 mL	QC Batch:	B10426
% Moisture:	NA	Level:	LOW

Parameter	Method Limit	Reporting Limit	Result	Data Flag	Units
Aroclor 1016	3.07	33.0	ND		UG/KG
Aroclor 1221	11.6	33.0	ND		UG/KG
Aroclor 1232	4.94	33.0	ND		UG/KG
Aroclor 1242	4.94	33.0	ND		UG/KG
Aroclor 1248	4.83	33.0	ND		UG/KG
Aroclor 1254	4.93	33.0	ND		UG/KG
Aroclor 1260	3.92	33.0	ND		UG/KG

SURROGATE RECOVERIES:	Limits	Results
Tetrachloro-m-xylene	29-128	91%
Decachlorobiphenyl	31-128	104%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

LABORATORY CONTROL SAMPLE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND NELAC Certified - IL100308

Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
Arsenic	0.95	1.0	95	--	--	--	80-120	--	P4995	001058-01C1
Cadmium	0.46	0.50	93	--	--	--	80-120	--	P4995	001058-01C1
Chromium	0.46	0.50	92	--	--	--	80-120	--	P4995	001058-01C1
Lead	0.44	0.50	88	--	--	--	80-120	--	P4995	001058-01C1
Mercury	0.0049	0.005	98	--	--	--	80-120	--	C2003	001058-01C1
Zinc	1	1.0	100	--	--	--	80-120	--	P4995	001058-01C1
Ammonia Nitrogen	1.1	1.0	105	--	--	--	80-120	--	08200417	001058-01C1
Total Organic Carbon	4290	5790	74	--	--	--	49-117	--	TA03998R	001058-01C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

Inorganic LCS Results for 001058

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM) Analytical Method: 8270C
Project No.: Prep Method: 3550A

Matrix: QC Material QC Batch: B10425 Prep. Date: 07/28/2015
Amount Used: 30 g Level: LOW Analysis Date: 08/05/2015

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Naphthalene	63.7	83.3	76	--	--	--	21-133	--	--
Acenaphthylene	71.6	83.3	86	--	--	--	33-145	--	--
Acenaphthene	68.2	83.3	82	--	--	--	47-145	--	--
Fluorene	74.2	83.3	89	--	--	--	59-121	--	--
Phenanthrene	70.2	83.3	84	--	--	--	54-120	--	--
Anthracene	69.7	83.3	84	--	--	--	27-133	--	--
Fluoranthene	80.1	83.3	96	--	--	--	26-137	--	--
Pyrene	78.8	83.3	95	--	--	--	52-115	--	--
Benzo(a)anthracene	81.9	83.3	98	--	--	--	33-143	--	--
Chrysene	71.7	83.3	86	--	--	--	17-168	--	--
Benzo(b)fluoranthene	95.6	83.3	115	--	--	--	24-159	--	--
Benzo(k)fluoranthene	79.4	83.3	95	--	--	--	11-162	--	--
Benzo(a)pyrene	80.2	83.3	96	--	--	--	17-163	--	--
Indeno(1,2,3-cd)pyrene	97.5	83.3	117	--	--	--	1-171	--	--
Dibenzo(a,h)anthracene	88.6	83.3	106	--	--	--	1-227	--	--
Benzo(g,h,i)perylene	81.4	83.3	98	--	--	--	1-219	--	--

'*' indicates a recovery outside of standard limits.
Spike Blanks for 001058-01, PNA'S (METHOD 8270, SIM)

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM) Analytical Method: 8270C
Project No.: Prep Method: 3550A

Matrix: QC Material QC Batch: B10425 Prep. Date: 07/28/2015
Amount Used: 30 g Level: LOW Analysis Date: 08/05/2015

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
2-Fluorobiphenyl	68.5	--	30-115
Terphenyl-d14	75.1	--	18-137

'*' indicates a recovery outside of standard limits.
Spike Blanks for 001058-01, PNA'S (METHOD 8270, SIM)

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PCBs (8082) Analytical Method: 8082
Project No.: Prep Method: 3550A

Matrix: QC Material QC Batch: B10426 Prep. Date: 07/29/2015
Amount Used: 30 g Level: LOW Analysis Date: 08/10/2015

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Aroclor 1016	150	167	90	--	--	--	0-189	--	--
Aroclor 1260	159	167	95	--	--	--	0-177	--	--

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Tetrachloro-m-xylene	96	--	29-128
Decachlorobiphenyl	107.1	--	31-128

'*' indicates a recovery outside of standard limits.

Spike Blanks for 001058-01, PCBs (8082)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND NELAC Certified - IL100308

Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit	Run	QC Lab Number
Arsenic	SEDIMENT	1.4	249	259	96	228	262	87	75-125	9	20	P4995	001058-01MS
Cadmium	SEDIMENT	0.25	8.4	6.5	125	7.7	6.5	114	75-125	8	20	P4995	001058-01MS
Chromium	SEDIMENT	4.3	27.5	25.9	90	25.7	26.2	82	75-125	7	20	P4995	001058-01MS
Lead	SEDIMENT	1.2	61.1	64.7	93	56.2	65.4	84	75-125	8	20	P4995	001058-01MS
Mercury	SEDIMENT	ND	0.50	0.52	96	0.52	0.53	98	75-125	5	20	C2003	001058-01MS
Zinc	SEDIMENT	11.2	75.1	64.7	99	68.6	65.4	88	75-125	9	20	P4995	001058-01MS
Ammonia Nitrogen	SEDIMENT	10.1	133	133	92	126	123	95	75-125	5	20	08200417	001058-01MS
Total Organic Carbon	SEDIMENT	240	1310	1000	107	0	0	--	50-150	--	--	TA03998R	001058-01MS

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

Inorganic Matrix Spikes for 001058

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM) Analytical Method: 8270C
Project No.: Prep Method: 3550A

Field ID:	MS-595.1L	Prep. Date:	07/28/2015	ARDL Lab No.:	001058-01
Desc/Location:	ROSEBROOK ISLAND	Amount Used:	30 g	Lab Filename:	
Sample Date:	07/23/2015	% Moisture:	25.8	Received Date:	07/24/2015
Sample Time:	----	QC Batch:	B10425	Analysis Date:	08/05/2015
Matrix:	SEDIMENT	Level:	LOW		

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Naphthalene	ND	78.2	112	69.6	69.3	112	61.7	21-133	12	25
Acenaphthylene	ND	98.5	112	87.7	99.3	112	88.5	33-145	0.8	25
Acenaphthene	ND	95.3	112	84.9	92.7	112	82.6	47-145	2.7	25
Fluorene	ND	105	112	93.9	104	112	92.5	59-121	1.5	25
Phenanthrene	ND	99.1	112	88.2	97.1	112	86.5	54-120	2	25
Anthracene	ND	99	112	88.2	99.4	112	88.5	27-133	0.4	25
Fluoranthene	ND	113	112	100.6	110	112	98.3	26-137	2.4	25
Pyrene	ND	117	112	103.9	113	112	100.9	52-115	3	25
Benzo(a)anthracene	ND	120	112	106.7	118	112	105.2	33-143	1.4	25
Chrysene	ND	104	112	93.1	101	112	89.8	17-168	3.6	25
Benzo(b)fluoranthene	ND	138	112	122.6	136	112	120.9	24-159	1.4	25
Benzo(k)fluoranthene	ND	113	112	100.9	109	112	96.7	11-162	4.2	25
Benzo(a)pyrene	ND	114	112	101.6	111	112	99.1	17-163	2.5	25
Indeno(1,2,3-cd)pyrene	ND	136	112	121	138	112	123.3	1-171	1.9	25
Dibenzo(a,h)anthracene	ND	126	112	112.6	123	112	109.7	1-227	2.6	25
Benzo(g,h,i)perylene	ND	116	112	103.5	113	112	100.9	1-219	2.6	25

'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 001058-01, PNA'S (METHOD 8270, SIM)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PNA'S (METHOD 8270, SIM) Analytical Method: 8270C
Project No.: Prep Method: 3550A

Field ID:	MS-595.1L	Prep. Date:	07/28/2015	ARDL Lab No.:	001058-01 (cont'd)
Desc/Location:	ROSEBROOK ISLAND	Amount Used:	30 g	Lab Filename:	
Sample Date:	07/23/2015	% Moisture:	25.8	Received Date:	07/24/2015
Sample Time:	----	QC Batch:	B10425	Analysis Date:	08/05/2015
Matrix:	SEDIMENT	Level:	LOW		

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
2-Fluorobiphenyl	61	50	30-115
Terphenyl-d14	77	76	18-137

'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 001058-01, PNA'S (METHOD 8270, SIM)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/11/2015

Project Name: ROSEBROOK ISLAND Analysis: PCBs (8082) Analytical Method: 8082
Project No.: Prep Method: 3550A

Field ID:	MS-595.1L	Prep. Date:	07/29/2015	ARDL Lab No.:	001058-01
Desc/Location:	ROSEBROOK ISLAND	Amount Used:	30.1 g	Lab Filename:	
Sample Date:	07/23/2015	% Moisture:	25.8	Received Date:	07/24/2015
Sample Time:	----	QC Batch:	B10426	Analysis Date:	08/10/2015
Matrix:	SEDIMENT	Level:	LOW		

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Aroclor 1016	ND	201	224	89.8	200	224	89.2	0-189	0.7	25
Aroclor 1260	ND	207	224	92.2	193	224	86.2	0-177	6.7	25

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
Tetrachloro-m-xylene	89	81	29-128
Decachlorobiphenyl	103	95	31-128

'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 001058-01, PCBs (8082)

SAMPLE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 001058 Report Date: 08/20/2015

Project Name: ROSEBROOK ISLAND NELAC Certified - IL100308

Analyte	Sample Conc'n	First Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Solids, Percent	74.2	80.8	--	%	9	--	08200416	001058-01D1
Total Organic Carbon	240	172	--	MG/KG	33*	--	TA03998R	001058-01D1

* indicates that agreement between duplicates is greater than 20%. See Case Narrative for exceptions.

Sample Duplicates for 001058

This is the first page of the

Sample Receipt Information:

(May contain any or all of the following)

Chain-of-Custody
Cooler receipt forms
Courier Documentation
Additional instructions/email

ARDL, Inc.

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864
(618) 244-3235 Phone (618) 244-1149 Fax

CHAIN OF CUSTODY RECORD

PROJECT: Rosebrook Island

SAMPLERS: (Signature) Keller, Bierl, [redacted], Afflerbach

SAMPLE NUMBER	DATE	TIME	COMP	GRAB	NO. OF CONTAINERS	ICP metals, Hg, PCBs, PAHs, Ammonia	TOC	REMARKS OR SAMPLE LOCATION	PRESERVATION ICED	PRESERVATION SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN
MS-595.1L	7/23/15			X	1	1			X	
MS-595.2L	↓			↓	1	1			↓	
MS-595.3L					1	1				
Dup.				↓	1	1		discard per Dave B dlc 7-27-15		

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
David P. Bierl	7/23/15		
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Received for Laboratory by: (Signature)	Date	Time	Shipping Ticket No.
L Lachrum	7/24/15	0940	

REMARKS/SPECIAL INSTRUCTIONS:

U.S. Army Corps of Engrs.
Attn: David Bierl (EC-HQ)
P.O. Box 2004
Rock Island, IL 61204-2004

PURCHASE ORDER NO: _____

COPIES: White & Yellow copies accompany sample shipment to laboratory.
Pink copy retained by sampler.

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 1058 — Cooler # None

Number of Coolers in Shipment: 1

Project: ~~Rock Island~~ Raselrock Island dlc 7/24/15 — Date Received: 7-24-15

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 7-24-15 (Signature) DSCackrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES NO

   If YES, enter carrier name and airbill number here: _____ 1Z 411 R51 22 1000 3802

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where? _____, Seal Date: _____, Seal Name: _____

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag? ..... (YES) NO
6. Were custody papers filled out properly (ink, signed, etc.)? no relinquished time ..... YES (NO) N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES ____ NO ✓ Cooler Temp. 3.4 C

B. **LOG-IN PHASE:** Date samples were logged-in: 7-24-15 (Signature) DSCackrum

10. Describe type of packing in cooler: loose ice / bubble pack
11. Were all samples sealed in separate plastic bags? ..... (YES) NO N/A
12. Did all containers arrive unbroken and were labels in good condition? MS-595-2L/1qt broken ..... YES (NO)
13. Were sample labels complete? ..... (YES) NO
14. Did all sample labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... YES NO (N/A)
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... (YES) NO N/A

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walden	Area #:
By: dlc	By:
On: 7-24-15	On:

Chain-of-Custody # _____

Dean Dickerson

From: "Bierl, David P MVR" <David.P.Bierl@usace.army.mil>
To: "Dean Dickerson" <ddickerson@ardlinc.com>
Cc: "Keller, Thomas L MVR" <Thomas.L.Keller@usace.army.mil>
Sent: Monday, July 27, 2015 6:42 AM
Subject: RE: [EXTERNAL] Sediment Sample Shipment (UNCLASSIFIED)
Classification: UNCLASSIFIED
Caveats: NONE

Dean,

Please discard the broken "Dup" sample.

Thanks,
Dave

-----Original Message-----
From: Dean Dickerson [mailto:ddickerson@ardlinc.com]
Sent: Friday, July 24, 2015 10:35 AM
To: Bierl, David P MVR
Cc: Bruns, Elizabeth A MVR
Subject: [EXTERNAL] Sediment Sample Shipment

Dave - the 16 oz container for the 'Dup" sample broke in shipment and the glass perforated the plastic sack - allowing melted ice to mix with the sample. I think we can decant and recover enough material to test if you want us to, but it may not match the original sample.

Please advise.

Regards,

Dean Dickerson
Vice President of Technical Services
ARDL, Inc.
(618) 244-3235 x227
www.ardlinc.com

Classification: UNCLASSIFIED
Caveats: NONE

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2015.0.6081 / Virus Database: 4401/10314 - Release Date: 07/26/15

SITE PLAN FOR THE HURRICANE ISLAND REACH

DREDGED MATERIAL MANAGEMENT PLAN WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

POOL 11
DUBUQUE COUNTY, IA AND GRANT COUNTY, WI
UPPER MISSISSIPPI RIVER, RIVER MILES 591-608

FINAL

APPENDIX A-2

ROSEBROOK CUT
GRAIN SIZE ANALYSIS

MISSISSIPPI RIVER DREDGING

ROSEBROOK CUT

GRAIN SIZE ANALYSIS OF SEDIMENT SAMPLE

SAMPLES COLLECTED: 23-JUL-15

Percent Finer by Weight

	SAMPLE NUMBERS	594.9L	595.1L	595.2L	595.2L (DUP)	595.3L
	1 1/2"					
S	**3/4"**					
I	**3/8"**		100.0%	100.0%	100.0%	
E	**#4**	100.0%	99.7%	99.9%	99.9%	100.0%
V	**#10**	99.9%	99.2%	99.7%	99.7%	99.2%
E	**#16**	99.6%	98.4%	99.2%	99.1%	96.9%
	#30	96.2%	93.4%	94.4%	94.9%	87.5%
S	**#40**	85.5%	80.4%	78.7%	79.9%	68.9%
I	**#50**	42.5%	32.7%	23.8%	26.4%	22.6%
Z	**#70**	5.3%	2.8%	1.4%	1.6%	1.7%
E	**#100**	0.6%	0.3%	0.1%	0.4%	0.2%
S	**#200**	0.1%	0.0%	0.0%	0.2%	0.0%
	CLASSIFICATION:	SP, Medium to Fine Sand	SP, Medium to Fine Sand	SP, Medium to Fine Sand	SP, Medium to Fine Sand	SP, Medium to Fine Sand

Notes:

1. Visual classification of soil is in accordance with "Unified Soils Classification System (USCS)"

2. Laboratory testing was performed in accordance with EM 1110-2-1906, dated 30 Nov 70, revised 1 May 80 and 20 Aug 86. All samples were oven dried at 110 degrees centigrade. Sample designated (dup) is a duplicate sample.