

April 12, 2017

Marine One LTD  
49090 Jefferson  
Chesterfield, MI 48047

Subject: Lottivue Dredge  
2017 Maintenance Dredge

Dear Ms. Cannon :

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Attached are the results for the samples submitted on 04/04/2017 for the above mentioned project. NELAP/TNI Accredited Analysis and MDEQ Drinking Water Certified Analysis will be identified in their respective reporting formats. Hard copies can be supplied at your request for a fee of \$20.00 per copy.

The invoice for this project will be emailed separately. If you have any questions concerning the data or invoice, please don't hesitate to contact our office. We welcome your comments and suggestions to improve our quality systems. Please reference Brighton Analytical, L.L.C. Project ID 44704 when calling or emailing. We thank you for this opportunity to partner with you on this project and hope to work with you again in the future.

Sincerely,  
Brighton Analytical, L.L.C.







**Brighton Analytical, L.L.C.**  
**2105 Pless Drive**  
**Brighton, Michigan 48116**  
**Phone: (810) 229-7575 FAX: (810) 229-8650**  
 e-mail: bai-brighton@sbcglobal.net

To: Marine One LTD  
 49090 Jefferson  
 Chesterfield, MI 48047

Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03779**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **South Entrance S-1**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
<b>Total Metal Analysis</b>						
Total Arsenic	2200	ug/Kg	100	SW846 6020A	LT	4/7/2017
Total Cadmium	95	ug/Kg	50	SW846 6020A	LT	4/7/2017
Total Copper	3800	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Lead	3900	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Mercury	Not detected	ug/Kg	50	SW846 7471A	LS	4/5/2017
Total Selenium	Not detected	ug/Kg	200	SW846 6020A	LT	4/7/2017
Total Zinc	12000	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Metal Soil (digestion)	Digested			3050	EB	4/5/2017
Mercury (digestion)	Digested			7470/7471	LS	4/5/2017
<b>PCB Analysis</b>						
ARO 1016	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1221	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1232	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1242	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1248	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1254	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1260	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1262	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1268	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
Total PCB	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
PCB soil extraction	Extracted			3510C/3545	MB	4/6/2017
<b>PNA Analysis</b>						
Acenaphthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Acenaphthylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(b)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017



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To: Marine One LTD  
 49090 Jefferson  
 Chesterfield, MI 48047

Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03779**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **South Entrance S-1**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
Benzo(g,h,i)perylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(k)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Chrysene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Dibenzo(a,h)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluorene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Indeno(1,2,3-cd)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
2-Methylnaphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Naphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Phenanthrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
PNA solid GC/MS (extraction)	Extracted			3510C/3545	MB	4/6/2017
%Solid	72	%		ASTM D2216	TR	4/6/2017

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

Released by: \_\_\_\_\_

Date: \_\_\_\_\_

*[Signature]*  
 4/12/17



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Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03780**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **South Entrance S-2**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
<b>Total Metal Analysis</b>						
Total Arsenic	<b>3000</b>	ug/Kg	100	SW846 6020A	LT	4/7/2017
Total Cadmium	<b>120</b>	ug/Kg	50	SW846 6020A	LT	4/7/2017
Total Copper	<b>4900</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Lead	<b>7000</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Mercury	<b>Not detected</b>	ug/Kg	50	SW846 7471A	LS	4/5/2017
Total Selenium	<b>Not detected</b>	ug/Kg	200	SW846 6020A	LT	4/7/2017
Total Zinc	<b>20000</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Metal Soil (digestion)	<b>Digested</b>			3050	EB	4/5/2017
Mercury (digestion)	<b>Digested</b>			7470/7471	LS	4/5/2017
<b>PCB Analysis</b>						
ARO 1016	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1221	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1232	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1242	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1248	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1254	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1260	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1262	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1268	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
Total PCB	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
PCB soil extraction	<b>Extracted</b>			3510C/3545	MB	4/6/2017
<b>PNA Analysis</b>						
Acenaphthene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Acenaphthylene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Anthracene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)anthracene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)pyrene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(b)fluoranthene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017



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BA Report Number: **44704**  
 BA Sample ID: **CF03780**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **South Entrance S-2**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
Benzo(g,h,i)perylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(k)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Chrysene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Dibenzo(a,h)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluorene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Indeno(1,2,3-cd)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
2-Methylnaphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Naphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Phenanthrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
PNA solid GC/MS (extraction)	Extracted			3510C/3545	MB	4/6/2017
%Solid	74	%		ASTM D2216	TR	4/6/2017

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

Released by: \_\_\_\_\_

Date: \_\_\_\_\_

*W. J. Wood*  
 4/12/17



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Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03781**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **South Canal S-3**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
<b>Total Metal Analysis</b>						
Total Arsenic	<b>1600</b>	ug/Kg	100	SW846 6020A	LT	4/7/2017
Total Cadmium	<b>88</b>	ug/Kg	50	SW846 6020A	LT	4/7/2017
Total Copper	<b>7000</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Lead	<b>2400</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Mercury	<b>Not detected</b>	ug/Kg	50	SW846 7471A	LS	4/5/2017
Total Selenium	<b>Not detected</b>	ug/Kg	200	SW846 6020A	LT	4/7/2017
Total Zinc	<b>21000</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Metal Soil (digestion)	<b>Digested</b>			3050	EB	4/5/2017
Mercury (digestion)	<b>Digested</b>			7470/7471	LS	4/5/2017
<b>PCB Analysis</b>						
ARO 1016	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1221	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1232	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1242	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1248	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1254	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1260	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1262	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1268	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
Total PCB	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
PCB soil extraction	<b>Extracted</b>			3510C/3545	MB	4/6/2017
<b>PNA Analysis</b>						
Acenaphthene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Acenaphthylene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Anthracene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)anthracene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)pyrene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(b)fluoranthene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017



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To: Marine One LTD  
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 Chesterfield, MI 48047

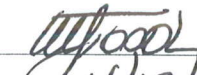
Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03781**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **South Canal S-3**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
Benzo(g,h,i)perylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(k)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Chrysene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Dibenzo(a,h)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluorene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Indeno(1,2,3-cd)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
2-Methylnaphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Naphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Phenanthrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
PNA solid GC/MS (extraction)	Extracted			3510C/3545	MB	4/6/2017
%Solid	68	%		ASTM D2216	TR	4/6/2017

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

Released by:   
 Date: 4/12/17



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 49090 Jefferson  
 Chesterfield, MI 48047

Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: 44704  
 BA Sample ID: CF03782

Project Name: Lottivue Dredge  
 Project Number: 2017 Maintenance Dredge  
 Sample ID: North Entrance S-4

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
<b>Total Metal Analysis</b>						
Total Arsenic	940	ug/Kg	100	SW846 6020A	LT	4/7/2017
Total Cadmium	62	ug/Kg	50	SW846 6020A	LT	4/7/2017
Total Copper	2700	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Lead	7700	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Mercury	Not detected	ug/Kg	50	SW846 7471A	LS	4/5/2017
Total Selenium	Not detected	ug/Kg	200	SW846 6020A	LT	4/7/2017
Total Zinc	20000	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Metal Soil (digestion)	Digested			3050	EB	4/5/2017
Mercury (digestion)	Digested			7470/7471	LS	4/5/2017
<b>PCB Analysis</b>						
ARO 1016	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1221	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1232	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1242	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1248	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1254	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1260	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1262	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1268	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
Total PCB	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
PCB soil extraction	Extracted			3510C/3545	MB	4/6/2017
<b>PNA Analysis</b>						
Acenaphthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Acenaphthylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(b)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017





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Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03783**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **North Entrance S-5**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
<b>Total Metal Analysis</b>						
Total Arsenic	720	ug/Kg	100	SW846 6020A	LT	4/7/2017
Total Cadmium	Not detected	ug/Kg	50	SW846 6020A	LT	4/7/2017
Total Copper	2000	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Lead	1100	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Mercury	Not detected	ug/Kg	50	SW846 7471A	LS	4/5/2017
Total Selenium	Not detected	ug/Kg	200	SW846 6020A	LT	4/7/2017
Total Zinc	9400	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Metal Soil (digestion)	Digested			3050	EB	4/5/2017
Mercury (digestion)	Digested			7470/7471	LS	4/5/2017
<b>PCB Analysis</b>						
ARO 1016	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1221	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1232	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1242	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1248	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1254	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1260	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1262	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1268	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
Total PCB	Not detected	ug/Kg	330	SW846 8082A	BY	4/11/2017
PCB soil extraction	Extracted			3510C/3545	MB	4/6/2017
<b>PNA Analysis</b>						
Acenaphthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Acenaphthylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(b)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017



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Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03783**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **North Entrance S-5**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
Benzo(g,h,i)perylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(k)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Chrysene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Dibenzo(a,h)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluorene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Indeno(1,2,3-cd)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
2-Methylnaphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Naphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Phenanthrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
PNA solid GC/MS (extraction)	Extracted			3510C/3545	MB	4/6/2017
%Solid	71	%		ASTM D2216	TR	4/6/2017

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

Released by:   
 Date: 4/12/17



**Brighton Analytical, L.L.C.**  
**2105 Pless Drive**  
**Brighton, Michigan 48116**  
**Phone: (810) 229-7575 FAX: (810) 229-8650**  
 e-mail: bai-brighton@sbcglobal.net

To: Marine One LTD  
 49090 Jefferson  
 Chesterfield, MI 48047

Sample Date: 4/1/2017  
 Submit Date: 4/4/2017  
 Report Date: 4/12/2017

BA Report Number: **44704**  
 BA Sample ID: **CF03784**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **North Canal S-6**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
<b>Total Metal Analysis</b>						
Total Arsenic	<b>1200</b>	ug/Kg	100	SW846 6020A	LT	4/7/2017
Total Cadmium	<b>74</b>	ug/Kg	50	SW846 6020A	LT	4/7/2017
Total Copper	<b>4900</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Lead	<b>3200</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Total Mercury	<b>Not detected</b>	ug/Kg	50	SW846 7471A	LS	4/5/2017
Total Selenium	<b>Not detected</b>	ug/Kg	200	SW846 6020A	LT	4/7/2017
Total Zinc	<b>18000</b>	ug/Kg	1000	SW846 6020A	LT	4/7/2017
Metal Soil (digestion)	<b>Digested</b>			3050	EB	4/5/2017
Mercury (digestion)	<b>Digested</b>			7470/7471	LS	4/5/2017
<b>PCB Analysis</b>						
ARO 1016	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1221	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1232	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1242	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1248	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1254	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1260	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1262	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
ARO 1268	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
Total PCB	<b>Not detected</b>	ug/Kg	330	SW846 8082A	BY	4/11/2017
PCB soil extraction	<b>Extracted</b>			3510C/3545	MB	4/6/2017
<b>PNA Analysis</b>						
Acenaphthene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Acenaphthylene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Anthracene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)anthracene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(a)pyrene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(b)fluoranthene	<b>Not detected</b>	ug/Kg	330	SW846 8270D	RG	4/7/2017



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BA Report Number: **44704**  
 BA Sample ID: **CF03784**

Project Name: **Lottivue Dredge**  
 Project Number: **2017 Maintenance Dredge**  
 Sample ID: **North Canal S-6**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
Benzo(g,h,i)perylene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Benzo(k)fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Chrysene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Dibenzo(a,h)anthracene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluoranthene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Fluorene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Indeno(1,2,3-cd)pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
2-Methylnaphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Naphthalene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Phenanthrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
Pyrene	Not detected	ug/Kg	330	SW846 8270D	RG	4/7/2017
PNA solid GC/MS (extraction)	Extracted			3510C/3545	MB	4/6/2017
%Solid	76	%		ASTM D2216	TR	4/6/2017

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

Released by: \_\_\_\_\_

Date: \_\_\_\_\_

*Handwritten signature and date: [Signature] 4/12/17*



BRIGHTON ANALYTICAL, LLC

QUALITY ASSURANCE/QUALITY  
CONTROL

# GC/MS

## SEMI-VOLATILE METHOD (PNA) 8270

### REPRESENTATIVE BATCH PRECISION AND ACCURACY QUALITY CONTROL SUMMARY

Analysis Date: 4/7/2017      Std ID: #2775/#2776      Inst./Detec: HP5973/GC-MS  
 Laboratory ID#: CF03807      Matrix: SOIL      Ext. Date: 4/06/17 MB      Analyst: RG

SURROGATES	Matrix Spike-Precision*			Matrix Spike - Accuracy				LCS-%recovery	
	Spike 1	Spike 2	RPD	Spk Conc ug/L	% Recovery	Range (%)	Sample surr. recov.	LCS-MStd	Method Blank
Nitrobenzene-d5	73	72	1.4	100	73	51-103	71	89	88
2-Fluorobiphenyl	89	89	0.0	100	89	54-109	80	98	93
Terphenyl-d14	105	94	11.1	100	100	49-118	101	109	118
<b>COMPOUNDS</b>							Background		
Naphthalene	42.8	42.5	0.7	50	85	32-124	ND	96	<330
Acenaphthylene	53.0	52.9	0.2	50	106	65-136	ND	102	<330
Acenaphthene	50.0	50.7	1.4	50	101	65-129	ND	98	<330
Fluorene	55.2	54.9	0.5	50	110	70-128	ND	103	<330
Phenanthrene	52.9	53.0	0.2	50	106	71-123	ND	99	<330
Anthracene	53.3	54.2	1.7	50	108	65-116	ND	100	<330
Fluoranthene	54.4	58.6	7.4	50	113	53-144	ND	98	<330
Pyrene	57.5	51.5	11.0	50	109	64-134	ND	112	<330
Benzo[a]anthracene	53.0	51.8	2.3	50	105	63-117	ND	96	<330
Chrysene	38.8	38.7	0.3	50	78	43-119	ND	70	<330
Benzo[b]fluoranthene	56.8	55.9	1.6	50	113	70-117	ND	105	<330
Benzo[k]fluorathene	53.0	52.2	1.5	50	105	72-125	ND	97	<330
Benzo[a]pyrene	55.1	55.2	0.2	50	110	66-126	ND	100	<330
Indeno[1,2,3-cd]pyrene	42.9	42.8	0.2	50	86	32-138	ND	79	<330
Dibenzo (a,h) anthracene	47.6	48.5	1.9	50	96	40-132	ND	86	<330
Benzo[g,h,i]perylene	52.7	53.7	1.9	50	106	35-152	ND	96	<330

\* Matrix Spike Precision +/-20 Relative Percent Difference.

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



## REPRESENTATIVE BATCH QUALITY CONTROL

### Accuracy & Precision

Analyst: BY

Parameter: PCB

Analysis Date: 4/11/2017

Method Reference: EPA 8082A

Matrix: Soil

Batch: 04/06/17MB

SPIKE - ACCURACY					
Laboratory ID	Spike Conc. (µg/mL)	Background (µg/mL)	% Recovery	Acceptable Range (%)	Method Blank Concentration
CF03782					
DCB (Surrogate)	0.50	ND	107 / 90	60 - 130	116%
Aroclor 1260	1.0	ND	86 / 80	60 - 130	<330 µg/Kg
SPIKE - PRECISION					
Laboratory ID	Observed A (µg/mL)	Observed B (µg/mL)	RPD	Acceptable Range	LCS % Recovery
CF03782					
DCB (Surrogate)	0.54	0.45	17.5	≤ 20%	118%
Aroclor 1260	0.86	0.80	7.0	≤ 20%	111%
MISCELLANEOUS					
	Standard ID #				
DCB (Surrogate)	#2462.4				
Aroclor 1260	#2779				

COMMENTS: \_\_\_\_\_

# ICP-MS METHOD 6020

## REPRESENTATIVE BATCH PRECISION AND ACCURACY QUALITY CONTROL SUMMARY

Analysis Date: 4/7/2017                      Standard ID: 030217 S                      Batch: 4/5/2017 S1  
 Matrix Spike Lab ID: M. STD 1&2                      Matrix: Soil                      Analyst: LT

Metals	Matrix Spike - Precision *			Matrix Spike - Accuracy**				Miscellaneous***		
	Matrix Spike (ug/Kg)	Matrix Spike Dup (ug/Kg)	RPD (%)	Spk Conc (ug/Kg)	MS Recovery (%)	MSD Recovery (%)	Blank Conc (ug/Kg)	Method Blk (ug/Kg)	LCS-Method STD (%)	Ind. Std. SPEX 1&3 (%)
Copper	1056	1065	0.8	1000	105.6	106.5	0	<1000	105.6	103.6
Zinc	1019	1037	1.8	1000	100.9	102.7	10	<1000	100.9	96.7
Arsenic	978	995	1.7	1000	97.8	99.5	0	<100	97.8	102.5
Selenium	909	920	1.2	1000	90.9	92.0	0	<200	90.9	93.3
Silver	9.77	9.61	1.7	10	97.7	96.1	0	<100	97.7	98.8
Cadmium	1020	1024	0.4	1000	102.0	102.4	0	<50	102.0	96.5
Lead	1034	1010	2.3	1000	103.4	101.0	0	<1000	103.4	94.4

\* Matrix spike precision range +/- 20% RPD  
 \*\* Matrix spike accuracy range +/- 30% recovery  
 \*\*\* LCS accuracy range +/- 15% recovery / Ind std accuracy range +/- 10% recovery

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

