

US EPA ARCHIVE DOCUMENT

MICHIGAN DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT  
ENVIRONMENTAL LABORATORY



P.O. Box 30270  
Lansing, MI 48909  
TEL: (517) 335-9800  
FAX: (517) 335-9600

**Division:** RRD  
**Report to:** MARK DUCHARME  
MDNRE-RRD-KALAMAZOO  
7953 ADOBE ROAD  
KALAMAZOO, MI 49009-5025,

**Total:** \$1,510.50

**Lab Work Order # :** 00900300  
**Work Site ID :** 13000397  
**Site Name :** EOS SITE-MARSHALL MI  
**Received:** 09/29/2010  
**Reported:** 10/07/2010  
**Collected By:** JAMES SWEENEY

**Samples Received :**

No:	Sample ID	Sample Description	Matrix:	Collection Date
01	AB63754	LL-072223-092710-JS-KA-001-15	ORGANIC/OIL	09/27/2010
02	AB63755	WCS-6B-072223-092910-JPS-KA-002-44	ORGANIC/OIL	09/29/2010

I certify that the analysis performed by the MDEQ Environmental Laboratory are accurate and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency and other appropriate regulatory agencies.

Bob Avery, Laboratory Director

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**Sample Number: AB63754 LL-072223-092710-JS-KA-001-15**

**Volatile Compounds**

**Analytical Method:** 8260  
**Extraction Method:** 3585

**Date Tested:** 10/04/2010  
**Extraction Date:** 10/01/2010

**Analyst:** SJR  
**Qualifier:**

CAS #	Compound	Result mg/Kg	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	Not Applicable		V	
SURROGATE	#Dibromofluoromethane#	Not Applicable		V	
SURROGATE	#Toluene-d8#	Not Applicable		V	
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	40		40
71-55-6	1,1,1-Trichloroethane	Not Detected	40		40
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	40		40
79-00-5	1,1,2-Trichloroethane	Not Detected	40		40
75-34-3	1,1-Dichloroethane	Not Detected	40		40
75-35-4	1,1-Dichloroethylene	Not Detected	40		40
87-61-6	1,2,3-Trichlorobenzene	Not Detected	200		40
96-18-4	1,2,3-Trichloropropane	Not Detected	40		40
526-73-8	1,2,3-Trimethylbenzene	130	40		40
120-82-1	1,2,4-Trichlorobenzene	Not Detected	200		40
95-63-6	1,2,4-Trimethylbenzene	340	40		40
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	200		40
106-93-4	1,2-Dibromoethane	Not Detected	40		40
95-50-1	1,2-Dichlorobenzene	Not Detected	40		40
107-06-2	1,2-Dichloroethane	Not Detected	40		40
78-87-5	1,2-Dichloropropane	Not Detected	40		40
108-67-8	1,3,5-Trimethylbenzene	150	40		40
541-73-1	1,3-Dichlorobenzene	Not Detected	40		40
106-46-7	1,4-Dichlorobenzene	Not Detected	40		40
78-93-3	2-Butanone (MEK)	Not Detected	200		40
591-78-6	2-Hexanone	Not Detected	200		40
91-57-6	2-Methylnaphthalene	Not Detected	200	X	40
67-64-1	2-Propanone (acetone)	Not Detected	800		40
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	200		40
107-13-1	Acrylonitrile	Not Detected	200		40
71-43-2	Benzene	1100	40		40
108-86-1	Bromobenzene	Not Detected	40		40
74-97-5	Bromochloromethane	Not Detected	40		40
75-27-4	Bromodichloromethane	Not Detected	40		40
75-25-2	Bromoform	Not Detected	40		40
74-83-9	Bromomethane	Not Detected	200		40
75-15-0	Carbon disulfide	Not Detected	40		40
56-23-5	Carbon tetrachloride	Not Detected	40		40
108-90-7	Chlorobenzene	Not Detected	40		40
75-00-3	Chloroethane	Not Detected	200		40
67-66-3	Chloroform	Not Detected	40		40
74-87-3	Chloromethane	Not Detected	200		40

CAS# : Chemical Abstract Service Registry Number  
RL : Reporting Limit  
ND : Not Detected

ug / L : microgram / liter (ppb)  
mg / L : milligram / liter (ppm)  
ug / Kg : microgram / kilogram (ppb)  
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Laboratory Contacts  
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Organic Unit Mgr: Carol Smith  
Systems Mgmt Unit: George Krisztian

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**Volatile Compounds**

**Analytical Method:** 8260  
**Extraction Method:** 3585

**Date Tested:** 10/04/2010  
**Extraction Date:** 10/01/2010

**Analyst:** SJR  
**Qualifier:**

CAS #	Compound	Result mg/Kg	RL	Qualifier	Dilution Factor
156-59-2	cis-1,2-Dichloroethylene	Not Detected	40		40
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	40		40
110-82-7	Cyclohexane	2500	200		40
124-48-1	Dibromochloromethane	Not Detected	40		40
74-95-3	Dibromomethane	Not Detected	40		40
75-71-8	Dichlorodifluoromethane	Not Detected	200	5	40
60-29-7	Diethyl ether	Not Detected	200		40
108-20-3	Diisopropyl Ether	Not Detected	200		40
100-41-4	Ethylbenzene	250	40		40
637-92-3	Ethyltertiarybutylether	Not Detected	200		40
67-72-1	Hexachloroethane	Not Detected	200		40
98-82-8	Isopropylbenzene	49	40		40
108383,106423	m & p - Xylene	1200	80		40
74-88-4	Methyl iodide	Not Detected	40		40
75-09-2	Methylene chloride	Not Detected	200		40
1634-04-4	Methyltertiarybutylether	Not Detected	40		40
91-20-3	Naphthalene	Not Detected	200	X	40
104-51-8	n-Butylbenzene	Not Detected	40		40
103-65-1	n-Propylbenzene	91	40		40
95-47-6	o-Xylene	330	40		40
99-87-6	p-Isopropyl toluene	Not Detected	40		40
135-98-8	sec-Butylbenzene	Not Detected	40		40
100-42-5	Styrene	Not Detected	40		40
98-06-6	tert-Butylbenzene	Not Detected	40		40
75-65-0	tertiary Butyl Alcohol	Not Detected	2000		40
994-05-8	tertiaryAmylmethylether	Not Detected	200		40
127-18-4	Tetrachloroethylene	Not Detected	40		40
109-99-9	Tetrahydrofuran	Not Detected	200		40
108-88-3	Toluene	1900	40		40
156-60-5	trans-1,2-Dichloroethylene	Not Detected	40		40
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	40		40
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	200		40
79-01-6	Trichloroethylene	Not Detected	40		40
75-69-4	Trichlorofluoromethane	Not Detected	40		40
75-01-4	Vinyl chloride	Not Detected	40		40

Unidentified peaks present in sample.

CAS# : Chemical Abstract Service Registry Number  
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**Sample Number: AB63754 LL-072223-092710-JS-KA-001-15**

CAS#	Analyte Name	Result	Unit	RL	Qualifier	Date Tested	Method	Analyst
7439-97-6	Mercury - Organic	ND	mg/Kg wet	0.05	3	10/05/2010	7471	TS
	Mercury Digestion - Organic	Completed				10/04/2010		TS
7429-90-5	Aluminium - Organic	ND	mg/Kg wet	5		10/05/2010	6010	WN
7440-38-2	Arsenic - Organic	ND	mg/Kg wet	0.5		10/05/2010	7061	LAV
7440-39-3	Barium - Organic	ND	mg/Kg wet	1		10/05/2010	6010	WN
7440-41-7	Beryllium - Organic	0.3	mg/Kg wet	0.2		10/05/2010	6010	WN
7440-43-9	Cadmium - Organic	ND	mg/Kg wet	2		10/05/2010	6010	WN
7440-47-3	Chromium - Organic	ND	mg/Kg wet	2		10/05/2010	6010	WN
7440-48-4	Cobalt - Organic	ND	mg/Kg wet	4		10/05/2010	6010	WN
7440-50-8	Copper - Organic	ND	mg/Kg wet	2		10/05/2010	6010	WN
7439-89-6	Iron - Organic	5.1	mg/Kg wet	5		10/05/2010	6010	WN
7439-92-1	Lead - Organic	ND	mg/Kg wet	10		10/05/2010	6010	WN
7439-93-2	Lithium - Organic	ND	mg/Kg wet	2.0		10/05/2010	6010	WN
7439-96-5	Manganese - Organic	ND	mg/Kg wet	1		10/05/2010	6010	WN
	Metal Digestion - Organic	Completed				10/01/2010		RG
7439-98-7	Molybdenum - Organic	6.4	mg/Kg wet	5		10/05/2010	6010	WN
7440-02-0	Nickel - Organic	55	mg/Kg wet	5		10/05/2010	6010	WN
7440-32-6	Titanium - Organic	2.1	mg/Kg wet	1		10/05/2010	6010	WN
7440-62-2	Vanadium - Organic	140	mg/Kg wet	1		10/05/2010	6010	WN
7440-66-6	Zinc - Organic	ND	mg/Kg wet	5		10/05/2010	6010	WN
	Priority 1 Costs	Completed				10/05/2010		CS1
	Gel Permeation Cleanup-SVOC Analy	Completed				10/01/2010	3640	SC

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**Sample Number: AB63755 WCS-6B-072223-092910-JPS-KA-002-44**

**Volatile Compounds**

**Analytical Method:** 8260  
**Extraction Method:** 3585

**Date Tested:** 10/04/2010  
**Extraction Date:** 10/01/2010

**Analyst:** SJR  
**Qualifier:**

CAS #	Compound	Result mg/Kg	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	Not Applicable		V	
SURROGATE	#Dibromofluoromethane#	Not Applicable		V	
SURROGATE	#Toluene-d8#	Not Applicable		V	
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	40		40
71-55-6	1,1,1-Trichloroethane	Not Detected	40		40
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	40		40
79-00-5	1,1,2-Trichloroethane	Not Detected	40		40
75-34-3	1,1-Dichloroethane	Not Detected	40		40
75-35-4	1,1-Dichloroethylene	Not Detected	40		40
87-61-6	1,2,3-Trichlorobenzene	Not Detected	200		40
96-18-4	1,2,3-Trichloropropane	Not Detected	40		40
526-73-8	1,2,3-Trimethylbenzene	380	40		40
120-82-1	1,2,4-Trichlorobenzene	Not Detected	200		40
95-63-6	1,2,4-Trimethylbenzene	370	40		40
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	200		40
106-93-4	1,2-Dibromoethane	Not Detected	40		40
95-50-1	1,2-Dichlorobenzene	Not Detected	40		40
107-06-2	1,2-Dichloroethane	Not Detected	40		40
78-87-5	1,2-Dichloropropane	Not Detected	40		40
108-67-8	1,3,5-Trimethylbenzene	170	40		40
541-73-1	1,3-Dichlorobenzene	Not Detected	40		40
106-46-7	1,4-Dichlorobenzene	Not Detected	40		40
78-93-3	2-Butanone (MEK)	Not Detected	200		40
591-78-6	2-Hexanone	Not Detected	200		40
91-57-6	2-Methylnaphthalene	Not Detected	200	X	40
67-64-1	2-Propanone (acetone)	Not Detected	800		40
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	200		40
107-13-1	Acrylonitrile	Not Detected	200		40
71-43-2	Benzene	880	40		40
108-86-1	Bromobenzene	Not Detected	40		40
74-97-5	Bromochloromethane	Not Detected	40		40
75-27-4	Bromodichloromethane	Not Detected	40		40
75-25-2	Bromoform	Not Detected	40		40
74-83-9	Bromomethane	Not Detected	200		40
75-15-0	Carbon disulfide	Not Detected	40		40
56-23-5	Carbon tetrachloride	Not Detected	40		40
108-90-7	Chlorobenzene	Not Detected	40		40
75-00-3	Chloroethane	Not Detected	200		40
67-66-3	Chloroform	Not Detected	40		40
74-87-3	Chloromethane	Not Detected	200		40

CAS# : Chemical Abstract Service Registry Number  
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**Sample Number: AB63755 WCS-6B-072223-092910-JPS-KA-002-44**

**Volatile Compounds**

**Analytical Method:** 8260  
**Extraction Method:** 3585

**Date Tested:** 10/04/2010  
**Extraction Date:** 10/01/2010

**Analyst:** SJR  
**Qualifier:**

CAS #	Compound	Result mg/Kg	RL	Qualifier	Dilution Factor
156-59-2	cis-1,2-Dichloroethylene	Not Detected	40		40
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	40		40
110-82-7	Cyclohexane	2100	200		40
124-48-1	Dibromochloromethane	Not Detected	40		40
74-95-3	Dibromomethane	Not Detected	40		40
75-71-8	Dichlorodifluoromethane	Not Detected	200	5	40
60-29-7	Diethyl ether	Not Detected	200		40
108-20-3	Diisopropyl Ether	Not Detected	200		40
100-41-4	Ethylbenzene	230	40		40
637-92-3	Ethyltertiarybutylether	Not Detected	200		40
67-72-1	Hexachloroethane	Not Detected	200		40
98-82-8	Isopropylbenzene	54	40		40
108383,106423	m & p - Xylene	1100	80		40
74-88-4	Methyl iodide	Not Detected	40		40
75-09-2	Methylene chloride	Not Detected	200		40
1634-04-4	Methyltertiarybutylether	Not Detected	40		40
91-20-3	Naphthalene	Not Detected	200	X	40
104-51-8	n-Butylbenzene	Not Detected	40		40
103-65-1	n-Propylbenzene	88	40		40
95-47-6	o-Xylene	320	40		40
99-87-6	p-Isopropyl toluene	41	40		40
135-98-8	sec-Butylbenzene	Not Detected	40		40
100-42-5	Styrene	Not Detected	40		40
98-06-6	tert-Butylbenzene	Not Detected	40		40
75-65-0	tertiary Butyl Alcohol	Not Detected	2000		40
994-05-8	tertiaryAmylmethylether	Not Detected	200		40
127-18-4	Tetrachloroethylene	Not Detected	40		40
109-99-9	Tetrahydrofuran	Not Detected	200		40
108-88-3	Toluene	1600	40		40
156-60-5	trans-1,2-Dichloroethylene	Not Detected	40		40
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	40		40
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	200		40
79-01-6	Trichloroethylene	Not Detected	40		40
75-69-4	Trichlorofluoromethane	Not Detected	40		40
75-01-4	Vinyl chloride	Not Detected	40		40

Unidentified peaks present in sample.

CAS# : Chemical Abstract Service Registry Number  
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**Sample Number: AB63755 WCS-6B-072223-092910-JPS-KA-002-44**

**Polynuclear Aromatic Hydrocarbons**

**Analytical Method:** 8270                      **Date Tested:** 10/04/2010                      **Analyst:** SMH  
**Extraction Method:** 3580                      **Extraction Date:** 09/30/2010                      **Qualifier:**

CAS #	Compound	Result mg/Kg	RL	Qualifier	Dilution Factor
SURROGATE	#2 - Fluorobiphenyl#	74.0			
SURROGATE	#Nitrobenzene - D5#	72.0			
SURROGATE	#p-Terphenyl-d14#	113			
91-57-6	2-Methylnaphthalene	150	500	T	1.0
83-32-9	Acenaphthene	Not Detected	100		1.0
208-96-8	Acenaphthylene	Not Detected	100		1.0
120-12-7	Anthracene	Not Detected	100		1.0
56-55-3	Benzo[a]anthracene	Not Detected	100		1.0
50-32-8	Benzo[a]pyrene	Not Detected	2000		10
205-99-2	Benzo[b]fluoranthene	Not Detected	2000		10
191-24-2	Benzo[g,h,i]perylene	Not Detected	2000		10
207-08-9	Benzo[k]fluoranthene	Not Detected	2000		10
218-01-9	Chrysene	Not Detected	100		1.0
53-70-3	Dibenz[a,h]anthracene	Not Detected	2000		10
206-44-0	Fluoranthene	Not Detected	100		1.0
86-73-7	Fluorene	Not Detected	100		1.0
193-39-5	Indeno(1,2,3-c,d)pyrene	Not Detected	2000		10
91-20-3	Naphthalene	Not Detected	100		1.0
85-01-8	Phenanthrene	70	100	T	1.0
129-00-0	Pyrene	Not Detected	100		1.0

RLs raised due to matrix interference.  
Probable petroleum product(s) present.

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CAS#	Analyte Name	Result	Unit	RL	Qualifier	Date Tested	Method	Analyst
7439-97-6	Mercury - Organic	ND	mg/Kg wet	0.05	3	10/05/2010	7471	TS
	Mercury Digestion - Organic	Completed				10/04/2010		TS
7429-90-5	Aluminium - Organic	ND	mg/Kg wet	5		10/05/2010	6010	WN
7440-38-2	Arsenic - Organic	ND	mg/Kg wet	0.5		10/05/2010	7061	LAV
7440-39-3	Barium - Organic	ND	mg/Kg wet	1		10/05/2010	6010	WN
7440-41-7	Beryllium - Organic	0.3	mg/Kg wet	0.2		10/05/2010	6010	WN
7440-43-9	Cadmium - Organic	ND	mg/Kg wet	2		10/05/2010	6010	WN
7440-47-3	Chromium - Organic	ND	mg/Kg wet	2		10/05/2010	6010	WN
7440-48-4	Cobalt - Organic	ND	mg/Kg wet	4		10/05/2010	6010	WN
7440-50-8	Copper - Organic	ND	mg/Kg wet	2		10/05/2010	6010	WN
7439-89-6	Iron - Organic	11	mg/Kg wet	5		10/05/2010	6010	WN
7439-92-1	Lead - Organic	ND	mg/Kg wet	10		10/05/2010	6010	WN
7439-93-2	Lithium - Organic	ND	mg/Kg wet	2.0		10/05/2010	6010	WN
7439-96-5	Manganese - Organic	ND	mg/Kg wet	1		10/05/2010	6010	WN
	Metal Digestion - Organic	Completed				10/01/2010		RG
7439-98-7	Molybdenum - Organic	ND	mg/Kg wet	5		10/05/2010	6010	WN
7440-02-0	Nickel - Organic	54	mg/Kg wet	5		10/05/2010	6010	WN
7440-32-6	Titanium - Organic	2.9	mg/Kg wet	1		10/05/2010	6010	WN
7440-62-2	Vanadium - Organic	130	mg/Kg wet	1		10/05/2010	6010	WN
7440-66-6	Zinc - Organic	ND	mg/Kg wet	5		10/05/2010	6010	WN
	Gel Permeation Cleanup-SVOC Analy	Completed				10/01/2010	3640	SC

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<b>Qualifier Code</b>	<b>Qualifier Description</b>
1	Result(s) and RL(s) are estimated due to low surrogate recovery.
2	Result is estimated due to high surrogate recovery.
3	Result(s) and RL(s) are estimated due to low matrix spike recovery.
4	Result is estimated due to high matrix spike recovery.
5	Result and RL are estimated due to low continuing calibration standard criteria failure.
6	Result is estimated due to high continuing calibration standard criteria failure.
7	Result(s) and RL(s) are estimated due to poor precision.
8	Result(s) and RL(s) are estimated due to low recovery of batch QC.
9	Result outside QC acceptance criteria.
A	Value reported is the mean of two or more determinations.
C	Value calculated from other independent parameters.
D	Analyte value quantified from a dilution(s); reporting limit (RL) raised.
E	Result is estimated due to high recovery of batch QC.
F	Amenable cyanide was not analyzed due to low level of total cyanide.
G	Result and RL are estimated due to initial calibration standard criteria failure.
H	Recommended laboratory holding time was exceeded.
I	Dilution required due to matrix interference; reporting limit (RL) raised.
J	Analyte was positively identified. Value is an estimate.
JA	Result is estimated due to multiple Aroclors present.
JC	Result is estimated since confirmation analysis did not meet acceptance criteria
JD	Due to severe degradation, specific Aroclor identification is difficult and quantitation is estimated.
K	RL(s) raised due to matrix interferences.
KR	RL(s) raised due to low sample volume submitted.
KS	RL(s) raised due to low total solids.
KW	RL(s) raised due to light sample weight.
LB	Reported library search compounds are tentative identifications with estimated concentrations.
M	The level of the method preparation blank (MPB) is reported in the qualifier column.
N	Non-homogeneous sample made analysis of sample questionable.
O	Result and RL estimated due to analysis from an open vial.
P	Recommended sample collection/preservation technique not used; reported result(s) is an estimate.
Q	Quantity of sample insufficient to perform analyses requested.
R	Result confirmed by re-extraction and analysis.
S	Supernatant analyzed.
T	Reported value is less than the reporting limit (RL). Result is estimated.
V	Value not available due to dilution.
W	Reported value is less than the method detection limit (MDL).
X	Methods 8260 & 624 are used to analyze volatile organics that have boiling points below 200°C. 2-Methylnaphthalene & naphthalene have boiling points above 200°C and are better suited to analysis by methods 8270 or 625 as semivolatile organics.
PI	Possible interference may have affected the accuracy of the laboratory result
Z	Result reported below the RL to meet the TDL in RRD Op Memo 2 (10/22/04) multiplied by applicable dilution factor.

CAS# : Chemical Abstract Service Registry Number  
RL : Reporting Limit  
ND : Not Detected

ug / L : microgram / liter (ppb)  
mg / L : milligram / liter (ppm)  
ug / Kg : microgram / kilogram (ppb)  
mg / Kg : milligram / kilogram (ppm)

Laboratory Contacts  
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