



07/02/13

Technical Report for

Marathon Oil

MOC Fresh Water Pond Samples

Accutest Job Number: D47717

Sampling Date: 06/28/13

Report to:

Marathon Oil Company
743 Horizon Court Suite 220
Grand Junction, CO 81056
zjtoellner@marathonoil.com; bmtalancon@marathonoil.com
ATTN: Ben Talancon

Total number of pages in report: 43



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Scott Heideman'.

Scott Heideman
Laboratory Director

Client Service contact: Ann Doerr 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

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Test results relate only to samples analyzed.

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Sample Summary

Marathon Oil

Job No: D47717

MOC Fresh Water Pond Samples

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D47717-1	06/28/13	14:00 BT	06/29/13	AQ	Surface Water	MOC_POND_C_SURFACE
D47717-2	06/28/13	14:15 BT	06/29/13	AQ	Surface Water	MOC_POND_C_BOTTOM

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Marathon Oil

Job No D47717

Site: MOC Fresh Water Pond Samples

Report Date 7/2/2013 5:10:36 PM

On 06/29/2013, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D47717 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: V6V1088
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D47660-23MS, D47660-23MSD were used as the QC samples indicated.
- D47660-23MS: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.
- D47660-23MSD: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.

Volatiles by GC By Method SW846 8015B

Matrix AQ	Batch ID: GFA734
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D47717-1MS, D47717-1MSD were used as the QC samples indicated.

Matrix AQ	Batch ID: GGA1080
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D47509-24MS, D47509-24MSD were used as the QC samples indicated.
- D47509-24MS: The pH of the sample was >2 at time of analysis.
- D47509-24MSD: The pH of the sample was >2 at time of analysis.

Extractables by GC By Method SW846-8015B

Matrix AQ	Batch ID: OP8120
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D47509-25MS, D47509-25MSD were used as the QC samples indicated.

Wet Chemistry By Method EPA 300.0/SW846 9056

Matrix AQ	Batch ID: GP10327
------------------	--------------------------

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D47717-2MS, D47717-2MSD were used as the QC samples for the Chloride, Sulfate, Chloride analysis.

Wet Chemistry By Method SM 2540C-2011

Matrix AQ

Batch ID: GN20844

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D47589-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

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Job Number: D47717
Account: Marathon Oil
Project: MOC Fresh Water Pond Samples
Collected: 06/28/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

D47717-1 MOC_POND_C_SURFACE

Benzene	0.0242	0.0010	0.00027	mg/l	SW846 8260B
Toluene	0.0425	0.0020	0.0010	mg/l	SW846 8260B
Ethylbenzene	0.00085 J	0.0020	0.00033	mg/l	SW846 8260B
Xylene (total)	0.0133	0.0030	0.0020	mg/l	SW846 8260B
TPH-GRO (C6-C10)	0.397	0.20	0.10	mg/l	SW846 8015B
Chloride	230	5.0		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved	900	10		mg/l	SM 2540C-2011
Sulfate	103	2.5		mg/l	EPA 300.0/SW846 9056

D47717-2 MOC_POND_C_BOTTOM

Benzene	0.205	0.0050	0.0014	mg/l	SW846 8260B
Toluene	0.405	0.010	0.0050	mg/l	SW846 8260B
Ethylbenzene	0.0092 J	0.010	0.0017	mg/l	SW846 8260B
Xylene (total)	0.160	0.015	0.010	mg/l	SW846 8260B
TPH-GRO (C6-C10)	2.14	0.20	0.10	mg/l	SW846 8015B
Methanol	3.26	0.50	0.40	mg/l	SW846 8015B
Chloride	309	13		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved	988	10		mg/l	SM 2540C-2011
Sulfate	99.4	2.5		mg/l	EPA 300.0/SW846 9056

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	MOC_POND_C_SURFACE	Date Sampled:	06/28/13
Lab Sample ID:	D47717-1	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V19668.D	1	06/29/13	BR	n/a	n/a	V6V1088
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0242	0.0010	0.00027	mg/l	
108-88-3	Toluene	0.0425	0.0020	0.0010	mg/l	
100-41-4	Ethylbenzene	0.00085	0.0020	0.00033	mg/l	J
1330-20-7	Xylene (total)	0.0133	0.0030	0.0020	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	114%		62-130%
2037-26-5	Toluene-D8	89%		70-130%
460-00-4	4-Bromofluorobenzene	89%		69-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MOC_POND_C_SURFACE	Date Sampled:	06/28/13
Lab Sample ID:	D47717-1	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8015B		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FA12037.D	1	07/01/13	AV	n/a	n/a	GFA734
Run #2							

	Initial Volume	Final Volume
Run #1	1.0 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
67-56-1	Methanol	ND	0.50	0.40	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
71-36-3	n-Butyl Alcohol	68%		25-169%		

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 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MOC_POND_C_SURFACE	Date Sampled:	06/28/13
Lab Sample ID:	D47717-1	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8015B		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA19099.D	1	06/29/13	BR	n/a	n/a	GGA1080
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	0.397	0.20	0.10	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	92%		60-140%		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MOC_POND_C_SURFACE	Date Sampled:	06/28/13
Lab Sample ID:	D47717-1	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD25998.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	40%		20-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MOC_POND_C_SURFACE	Date Sampled:	06/28/13
Lab Sample ID:	D47717-1	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Project:	MOC Fresh Water Pond Samples		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	230	5.0	mg/l	10	06/29/13 18:00	SK	EPA 300.0/SW846 9056
Solids, Total Dissolved	900	10	mg/l	1	07/01/13	BF	SM 2540C-2011
Sulfate	103	2.5	mg/l	5	06/29/13 15:58	SK	EPA 300.0/SW846 9056

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MOC_POND_C_BOTTOM	Date Sampled:	06/28/13
Lab Sample ID:	D47717-2	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6V19669.D	5	06/29/13	BR	n/a	n/a	V6V1088
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.205	0.0050	0.0014	mg/l	
108-88-3	Toluene	0.405	0.010	0.0050	mg/l	
100-41-4	Ethylbenzene	0.0092	0.010	0.0017	mg/l	J
1330-20-7	Xylene (total)	0.160	0.015	0.010	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	111%		62-130%
2037-26-5	Toluene-D8	90%		70-130%
460-00-4	4-Bromofluorobenzene	89%		69-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MOC_POND_C_BOTTOM	Date Sampled:	06/28/13
Lab Sample ID:	D47717-2	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8015B		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FA12038.D	1	07/01/13	AV	n/a	n/a	GFA734
Run #2							

	Initial Volume	Final Volume
Run #1	1.0 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
67-56-1	Methanol	3.26	0.50	0.40	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
71-36-3	n-Butyl Alcohol	100%		25-169%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MOC_POND_C_BOTTOM	Date Sampled:	06/28/13
Lab Sample ID:	D47717-2	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8015B		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA19100.D	1	06/29/13	BR	n/a	n/a	GGA1080
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	2.14	0.20	0.10	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	94%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID:	MOC_POND_C_BOTTOM	Date Sampled:	06/28/13
Lab Sample ID:	D47717-2	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	MOC Fresh Water Pond Samples		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD26000.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	53%		20-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MOC_POND_C_BOTTOM	Date Sampled:	06/28/13
Lab Sample ID:	D47717-2	Date Received:	06/29/13
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Project:	MOC Fresh Water Pond Samples		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	309	13	mg/l	25	06/29/13 18:12	SK	EPA 300.0/SW846 9056
Solids, Total Dissolved	988	10	mg/l	1	07/01/13	BF	SM 2540C-2011
Sulfate	99.4	2.5	mg/l	5	06/29/13 16:09	SK	EPA 300.0/SW846 9056

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Form 4, within thirty (30) days of December 30, 1997. The Sundry Notice, Form 4 shall include a copy of the existing pit permit, if a permit was obtained, and a description of the closure process.

(2) Pits closed prior to December 30, 1997 were required to be reclaimed in accordance with the 1000 Series rules. Pits closed after December 30, 1997 shall be closed in accordance with the 900 Series rules and reclaimed in accordance with the 1000 Series rules.

(3) Operators of steel, fiberglass, concrete or other similar produced water vessels buried or partially buried and located in sensitive areas were required to repair or replace vessels and tanks found to be leaking. Operators shall repair or replace vessels and tanks found to be leaking. Operators shall submit to the Director a Sundry Notice, Form 4, describing the integrity testing results and action taken within thirty (30) days of December 30, 1997.

(4) Closure of pits and steel, fiberglass, concrete or other similar produced water vessels, and associated remediation operations conducted prior to December 30, 1997 are not subject to Rules 905, 906, 907, 909, and 910.

912. VENTING OR FLARING NATURAL GAS

a. The unnecessary or excessive venting or flaring of natural gas produced from a well is prohibited.

b. Except for gas flared or vented during an upset condition, well maintenance, well stimulation flowback, purging operations, or a productivity test, gas from a well shall be flared or vented only after notice has been given and approval obtained from the Director on a Sundry Notice, Form 4, stating the estimated volume and content of the gas. The notice shall indicate whether the gas contains more than one (1) ppm of hydrogen sulfide. If necessary to protect the public health, safety or welfare, the Director may require the flaring of gas.

c. Gas flared, vented or used on the lease shall be estimated based on a gas-oil ratio test or other equivalent test approved by the Director, and reported on Operator's Monthly Production Report, Form 7.

d. Flared gas that is subject to Sundry Notice, Form 4, shall be directed to a controlled flare in accordance with Rule 903.b.(2) or other combustion device operated as efficiently as possible to provide maximum reduction of air contaminants where practicable and without endangering the safety of the well site personnel and the public.

e. Operators shall notify the local emergency dispatch or the local governmental designee of any natural gas flaring. Notice shall be given prior to flaring when flaring can be reasonably anticipated, or as soon as possible, but in no event more than two (2) hours after the flaring occurs.

Table 910-1
CONCENTRATION LEVELS¹

Contaminant of Concern	Concentrations
Organic Compounds in Soil	
TPH (total volatile and extractable hydrocarbons)	500 mg/kg
Benzene	0.17 ng/kg ²

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As of May 30, 2011

Toluene	85 mg/kg ²
Ethylbenzene	100 mg/kg ²
Xylenes (total)	175 mg/kg ²
Acenaphthene	1,000 mg/kg ²
Anthracene	1,000 mg/kg ²
Benzo(A)anthracene	0.22 mg/kg ²
Benzo(B)fluoranthene	0.22 mg/kg ²
Benzo(K)fluoranthene	2.2 mg/kg ²
Benzo(A)pyrene	0.022 mg/kg ²
Chrysene	22 mg/kg ²
Dibenzo(A,H)anthracene	0.022 mg/kg ²
Fluoranthene	1,000 mg/kg ²
Fluorene	1,000 mg/kg ²
Indeno(1,2,3-C,D)pyrene	0.22 mg/kg ²
Naphthalene	23 mg/kg ²
Pyrene	1,000 mg/kg ²
Organic Compounds in Ground Water	
Benzene	5 µg/l ³
Toluene	560 to 1,000 µg/l ³
Ethylbenzene	700 µg/l ³
Xylenes (Total)	1,400 to 10,000 µg/l ^{3,4}
Inorganics in Soils	
Electrical Conductivity (EC)	<4 mmhos/cm or 2x background
Sodium Adsorption Ratio (SAR)	<12 ⁵
pH	6-9
Inorganics in Ground Water	
Total Dissolved Solids (TDS)	<1.25 x background ³
Chlorides	<1.25 x background ³
Sulfates	<1.25 x background ³
Metals in Soils	
Arsenic	0.39 mg/kg ²
Barium (LDNR True Total Barium)	15,000 mg/kg ²
Boron (Hot Water Soluble)	2 mg/l ²
Cadmium	70 mg/kg ^{3,5}
Chromium (III)	120,000 mg/kg ²
Chromium (VI)	23 mg/kg ^{2,6}
Copper	3,100 mg/kg ²
Lead (Inorganic)	400 mg/kg ²
Mercury	23 mg/kg ²
Nickel (soluble salts)	1,600 mg/kg ^{2,6}
Selenium	390 mg/kg ^{2,6}
Silver	390 mg/kg ²
Zinc	23,000 mg/kg ^{2,6}
Liquid Hydrocarbons in Soils and Ground Water	
Liquid hydrocarbons including condensate and oil	Below detection level

COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

- 1 Consideration shall be given to background levels in native soils and ground water.
- 2 Concentrations taken from CDPHE-HMMMD Table 1 Colorado Soil Evaluation Values (December 2007).
- 3 Concentrations taken from CDPHE-WQCC Regulation 4.1 - The Basic Standards for Ground Water.
- 4 For this range of standards, the first number in the range is a strictly health-based value, based on the WQCC's established methodology for human health-based standards. The second number in the range is a maximum contaminant level (MCL), established under the Federal Safe Drinking Water Act which has been

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As of May 30, 2011

D47717: Chain of Custody

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the self-certification process to demonstrate compliance with emission limits.
(Reference: Regulation No. 3, Part B, Section III.E.)

Periodic Testing Requirements

18. **AIRS Point 001:** The operator shall sample the wastewater inlet to the pond system (or the gun barrel separator tank wastewater outlet) to determine volatile organic compounds (VOC) and hazardous air pollutant (HAP) concentrations, including total hydrocarbons (including gasoline range and diesel range), benzene, toluene, ethylbenzene, xylene, and methanol. These samples shall be analyzed using EPA Method 8260 for benzene, toluene, ethylbenzene, and xylene, and EPA Method 8015 for methanol, gasoline range organics (total volatile hydrocarbons), and diesel range organics (total extractable hydrocarbons).
- A sample of the wastewater inlet to the pond system (or the gun barrel separator tank wastewater outlet) shall be collected and analyzed at a minimum frequency of once per calendar month. Sample results shall be used to calculate emissions as required by Condition 12. If more frequent sampling is conducted, then all samples of the wastewater inlet to the pond collected during the calendar month will be averaged and then used to calculate emissions as specified in Condition 12. Samples shall be collected no less than at least seven (7) days apart. The operator shall maintain records of all sampling events and the records shall be made available to the Division for inspection upon request. The operator shall flag monthly records if any sampling results are noted by the laboratory as beyond QA/QC criteria limits.

ADDITIONAL REQUIREMENTS

19. A revised Air Pollutant Emission Notice (APEN) shall be filed: (Reference: Regulation No. 3, Part A, II.C)
- a. Annually whenever a significant increase in emissions occurs as follows:
For any criteria pollutant:
For sources emitting less than 100 tons per year, a change in actual emissions of five (5) tons per year or more, above the level reported on the last APEN; or
For any non-criteria reportable pollutant:
If the emissions increase by 50% or five (5) tons per year, whichever is less, above the level reported on the last APEN submitted to the Division.
 - b. Whenever there is a change in the owner or operator of any facility, process, or activity; or
 - c. Whenever new control equipment is installed, or whenever a different type of control equipment replaces an existing type of control equipment; or
 - d. Whenever a permit limitation must be modified; or
 - e. No later than 30 days before the existing APEN expires.
20. Federal regulatory program requirements (i.e. PSD, NANSR or Title V Operating Permit) shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable Federal program threshold will require a full review of the

AIRS ID: 045/1741/001

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D47717

Client: MARATHON OIL

Immediate Client Services Action Required: No

Date / Time Received: 6/29/2013 9:00:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: MOC FRESH WATER POND SAMPLES

Airbill #'s: Fedex

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

 Accutest Laboratories
 V: (303) 425-6021

 4036 Youngfield Street
 F: (303) 425-6854

 Wheat Ridge, CO
 www.accutest.com

D47717: Chain of Custody

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GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D47717

Account: MOILCOGJ Marathon Oil

Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1088-MB	6V19653.D	1	06/29/13	BR	n/a	n/a	V6V1088

The QC reported here applies to the following samples:

Method: SW846 8260B

D47717-1, D47717-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.27	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.33	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	2.0	ug/l	

CAS No.	Surrogate Recoveries	Limits
17060-07-0	1,2-Dichloroethane-D4	101% 62-130%
2037-26-5	Toluene-D8	87% 70-130%
460-00-4	4-Bromofluorobenzene	95% 69-130%

Blank Spike Summary

Page 1 of 1

Job Number: D47717

Account: MOILCOGJ Marathon Oil

Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1088-BS	6V19654.D	1	06/29/13	BR	n/a	n/a	V6V1088

The QC reported here applies to the following samples:

Method: SW846 8260B

D47717-1, D47717-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	43.9	88	70-130
100-41-4	Ethylbenzene	50	46.7	93	70-130
108-88-3	Toluene	50	41.8	84	70-130
1330-20-7	Xylene (total)	150	142	95	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	62-130%
2037-26-5	Toluene-D8	86%	70-130%
460-00-4	4-Bromofluorobenzene	98%	69-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D47660-23MS ^a	6V19665.D	5	06/29/13	BR	n/a	n/a	V6V1088
D47660-23MSD ^a	6V19666.D	5	06/29/13	BR	n/a	n/a	V6V1088
D47660-23 ^b	6V19664.D	5	06/29/13	BR	n/a	n/a	V6V1088

The QC reported here applies to the following samples:

Method: SW846 8260B

D47717-1, D47717-2

CAS No.	Compound	D47660-23 ug/l	Spike Q	ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		250	225	90	231	92	3	62-130/30
100-41-4	Ethylbenzene	3.4	J	250	225	89	229	90	2	63-130/30
108-88-3	Toluene	9.0	J	250	220	84	225	86	2	60-130/30
1330-20-7	Xylene (total)	28.1		750	702	90	727	93	3	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D47660-23	Limits
17060-07-0	1,2-Dichloroethane-D4	110%	114%	118%	62-130%
2037-26-5	Toluene-D8	85%	90%	88%	70-130%
460-00-4	4-Bromofluorobenzene	95%	97%	86%	69-130%

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.

(b) Dilution due to matrix interference (ISTD failure at 1x). The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC3699-MB	FA12026.D	1	07/01/13	AV	n/a	n/a	GFA734

The QC reported here applies to the following samples: Method: SW846 8015B

D47717-1, D47717-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-56-1	Methanol	ND	0.50	0.40	mg/l	

CAS No.	Surrogate Recoveries	Limits
71-36-3	n-Butyl Alcohol	109% 25-169%

7.1.1
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Method Blank Summary

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA1080-MB	GA19082.D	1	06/29/13	BR	n/a	n/a	GGA1080

The QC reported here applies to the following samples: Method: SW846 8015B

D47717-1, D47717-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.20	0.10	mg/l	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	92% 60-140%

Blank Spike Summary

Page 1 of 1

Job Number: D47717

Account: MOILCOGJ Marathon Oil

Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC3699-BS	FA12027.D	1	07/01/13	AV	n/a	n/a	GFA734

The QC reported here applies to the following samples:

Method: SW846 8015B

D47717-1, D47717-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
67-56-1	Methanol	25	23.1	92	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
71-36-3	n-Butyl Alcohol	90%	25-169%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA1080-BS	GA19083.D	1	06/29/13	BR	n/a	n/a	GGA1080

The QC reported here applies to the following samples: Method: SW846 8015B

D47717-1, D47717-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	2.19	100	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	95%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC3699-MS	FA12035.D	1	07/01/13	AV	n/a	n/a	GFA734
GC3699-MSD	FA12036.D	1	07/01/13	AV	n/a	n/a	GFA734
D47717-1	FA12037.D	1	07/01/13	AV	n/a	n/a	GFA734

The QC reported here applies to the following samples:

Method: SW846 8015B

D47717-1, D47717-2

CAS No.	Compound	D47717-1 mg/l	Spike Q	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
67-56-1	Methanol	ND	25	15.4	62	15.6	62	1	25-176/30

CAS No.	Surrogate Recoveries	MS	MSD	D47717-1	Limits
71-36-3	n-Butyl Alcohol	56%	56%	68%	25-169%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D47509-24MS ^a	GA19087.D	1	06/29/13	BR	n/a	n/a	GGA1080
D47509-24MSD ^a	GA19088.D	1	06/29/13	BR	n/a	n/a	GGA1080
D47509-24 ^a	GA19086.D	1	06/29/13	BR	n/a	n/a	GGA1080

The QC reported here applies to the following samples:

Method: SW846 8015B

D47717-1, D47717-2

CAS No.	Compound	D47509-24 mg/l	Spike Q	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	2.2	2.23	101	2.20	100	1	60-145/30

CAS No.	Surrogate Recoveries	MS	MSD	D47509-24	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	98%	94%	60-140%

(a) The pH of the sample was > 2 at time of analysis.

* = Outside of Control Limits.

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D47717

Account: MOILCOGJ Marathon Oil

Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8120-MB	FD25988.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281

The QC reported here applies to the following samples:

Method: SW846-8015B

D47717-1, D47717-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	35% 20-140%

8.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: D47717

Account: MOILCOGJ Marathon Oil

Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8120-BS	FD25990.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281

The QC reported here applies to the following samples:

Method: SW846-8015B

D47717-1, D47717-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	20	8.66	43	36-140

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	38%	20-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D47717
Account: MOILCOGJ Marathon Oil
Project: MOC Fresh Water Pond Samples

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8120-MS	FD25992.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281
OP8120-MSD	FD25994.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281
D47509-25	FD25996.D	1	07/02/13	TU	06/29/13	OP8120	GFD1281

The QC reported here applies to the following samples:

Method: SW846-8015B

D47717-1, D47717-2

CAS No.	Compound	D47509-25 mg/l	Spike Q mg/l	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	20	9.21	46	11.1	56	19	28-140/30

CAS No.	Surrogate Recoveries	MS	MSD	D47509-25	Limits
84-15-1	o-Terphenyl	41%	44%	39%	20-140%

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D47717
Account: MOILCOGJ - Marathon Oil
Project: MOC Fresh Water Pond Samples

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Bromide	GP10327/GN20842	0.050	0.0	mg/l	20	20.3	101.5	90-110%
Chloride	GP10327/GN20842	0.50	0.0	mg/l	20	19.2	96.0	90-110%
Nitrogen, Nitrate	GP10327/GN20842	0.010	0.0	mg/l	4.52	4.34	96.1	90-110%
Nitrogen, Nitrite	GP10327/GN20842	0.0040	0.0	mg/l	6.09	5.88	96.6	90-110%
Solids, Total Dissolved	GN20844	10	0.0	mg/l	400	394	98.5	90-110%
Sulfate	GP10327/GN20842	0.50	0.0	mg/l	30	29.1	97.0	90-110%

Associated Samples:

Batch GN20844: D47717-1, D47717-2

Batch GP10327: D47717-1, D47717-2

(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D47717
Account: MOILCOGJ - Marathon Oil
Project: MOC Fresh Water Pond Samples

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Total Dissolved	GN20844	D47589-1	mg/l	3230	3240	0.3	0-20%

Associated Samples:

Batch GN20844: D47717-1, D47717-2

(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D47717
Account: MOILCOGJ - Marathon Oil
Project: MOC Fresh Water Pond Samples

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP10327/GN20842	D47717-2	mg/l	2.6	62.5	69.1	106.7	80-120%
Bromide	GP10327/GN20842	D47717-2	mg/l	2.4	62.5	69.1	106.7	80-120%
Chloride	GP10327/GN20842	D47717-2	mg/l	235	250	568	103.6	80-120%
Chloride	GP10327/GN20842	D47717-2	mg/l	309	250	568	103.6	80-120%
Nitrogen, Nitrate	GP10327/GN20842	D47717-2	mg/l	0.15	14.1	14.5	101.6	80-120%
Nitrogen, Nitrate	GP10327/GN20842	D47717-2	mg/l	0.0	14.1	14.5	101.6	80-120%
Nitrogen, Nitrite	GP10327/GN20842	D47717-2	mg/l	0.0	7.61	8.2	107.7	80-120%
Nitrogen, Nitrite	GP10327/GN20842	D47717-2	mg/l	0.0	7.61	8.2	107.7	80-120%
Sulfate	GP10327/GN20842	D47717-2	mg/l	99.4	250	356	102.6	80-120%
Sulfate	GP10327/GN20842	D47717-2	mg/l	99.4	250	356	102.6	80-120%

Associated Samples:

Batch GP10327: D47717-1, D47717-2

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

9.3

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MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D47717
Account: MOILCOGJ - Marathon Oil
Project: MOC Fresh Water Pond Samples

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Bromide	GP10327/GN20842	D47717-2	mg/l	2.6	62.5	69.3	0.3	20%
Bromide	GP10327/GN20842	D47717-2	mg/l	2.4	62.5	69.3	0.3	20%
Chloride	GP10327/GN20842	D47717-2	mg/l	235	250	566	0.4	20%
Chloride	GP10327/GN20842	D47717-2	mg/l	309	250	566	0.4	20%
Nitrogen, Nitrate	GP10327/GN20842	D47717-2	mg/l	0.15	14.1	14.6	0.7	20%
Nitrogen, Nitrate	GP10327/GN20842	D47717-2	mg/l	0.0	14.1	14.6	0.7	20%
Nitrogen, Nitrite	GP10327/GN20842	D47717-2	mg/l	0.0	7.61	8.2	0.0	20%
Nitrogen, Nitrite	GP10327/GN20842	D47717-2	mg/l	0.0	7.61	8.2	0.0	20%
Sulfate	GP10327/GN20842	D47717-2	mg/l	99.4	250	356	0.0	20%
Sulfate	GP10327/GN20842	D47717-2	mg/l	99.4	250	356	0.0	20%

Associated Samples:

Batch GP10327: D47717-1, D47717-2

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

9.4

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