APPENDIX D

Microcosm Study Results

APPENDIX D – MICROCOSM STUDY RESULTS

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Attachment A – BCI Final Report Honeywell Wastebeds 1-8 Microcosm Study

List of Acronyms

NYSDEC – New York State Department of Environmental Conservation
BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes
GCMS - Gas Chromatography with Mass Spectrometry

1. Introduction

A microcosm study was conducted by Bioremediation Consulting, Inc. (BCI), between November 2008 and September 2009. The study was conducted in accordance with the October 2008 *Wastebeds 1-8 Site, Microcosm Study Work Plan* (Honeywell 2008), which was approved by the New York State Department of Environmental Conservation (NYSDEC) on October 14, 2008. The study was conducted on groundwater and solids samples obtained in November 2008 from four areas in the Wastebeds 1-8 Site located in Geddes, NY, to examine the biodegradability of benzene, toluene, ethylbenzene and xylene (BTEX), phenol, and naphthalene under varying redox and pH conditions by both aerobic and anaerobic microbiological processes. The evaluation of microbial degradation processes included in this study was considered during the evaluation of remedial technology evaluations and the assembly of remedial alternatives as part of the FFS.

2. Summary of Approach

The BCI *Final Report – Honeywell Wastebeds 1-8 Microcosm Study* is included as **Attachment A**, and summarizes the work performed by BCI in completion of this study.

For the microcosm study, each treatment condition was evaluated in separate microcosm bottles containing groundwater and Site fill/soils. The groundwater used in the microcosms was collected from four monitoring wells (WB18-MW-01S, WB18-MW-02S, WB18-MW-03S, and WB18-MW-16S) that were anticipated to represent different groundwater conditions. These monitoring wells are presented on **Figure 1**. Soils used to construct the microcosms were collected from locations within the immediate vicinity of the monitoring well locations.

Five microbial processes were tested on soil and groundwater from each of the wells. Additional microcosm bottles were constructed to assess the steps necessary to optimize pH, salinity, mineral nutrients and ORP for native and bioaugmented bacteria. Microcosms were constructed to assess the following microbial processes:

1. Anaerobic
2. Nitrate-reducing
3. Ferric-reducing
4. Methanotrophic
5. Direct aerobic

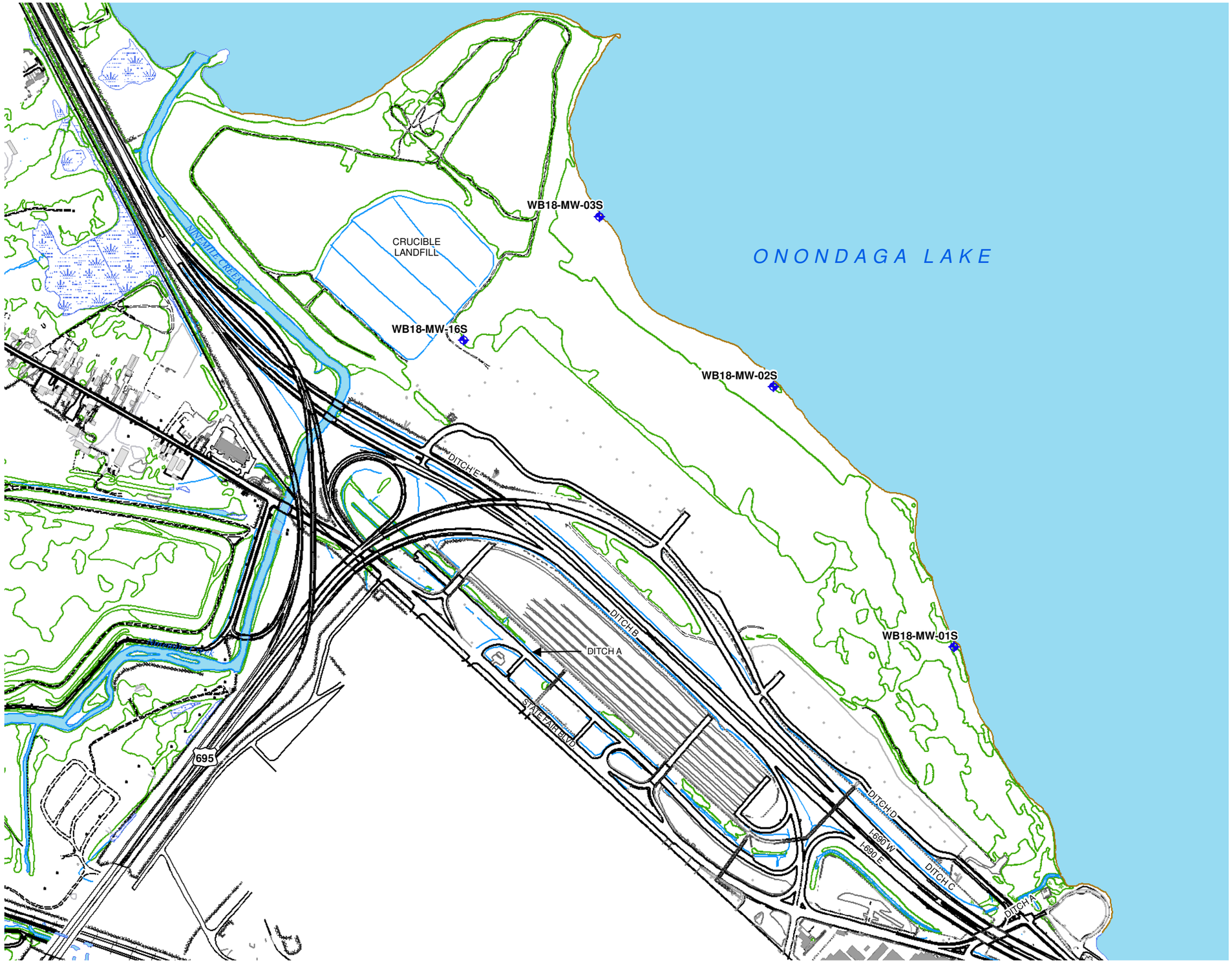
3. Findings and Conclusions

At approximately weeks 6, 10, 15, and 20 during the study, microcosm bottles were destructively sampled by extracting with dichloromethane, and the solvent extract was analyzed by gas chromatography with mass spectrometry (GCMS). For each of the compounds and tested conditions, the results indicated no evidence of biodegradation.

References

Honeywell. 2008. *Microcosm Study Work Plan for Wastebeds 1 through 8 Site. Geddes, New York.* October 3, 2008.

FIGURE 1



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LEGEND

MONITORING WELL

HONEYWELL
WASTEBEDS 1 - 8
GEDDES, NEW YORK

SITE PLAN

0 350 700 1,400
Feet

JUNE 2010

O'BRIEN & GERE

PATH: I:\Honeywell.1163\TDS\GIS\Wb18\MXD\Site Plan.mxd

NAME: NewtonJM

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Attachment A

BCI Final Report Honeywell Wastebeds 1-8 Microcosm Study

Final Report

Honeywell Wastebeds 1-8 Microcosm Study

Project Number 41861.001.104

September 14, 2009

Prepared for

Robert J. Trent, Project Scientist
315-437-6100
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, New York 13221

Prepared by

Margaret Findlay, Ph.D.
Bioremediation Consulting, Inc.
39 Clarendon St., Watertown MA 02472
617-923-0976 bioremediation@bciLabs.com

Honeywell Wastebeds 1-8 Microcosm Study

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Honeywell Wastebeds 1-8 Microcosm Study

Summary

Introduction and Conclusions

Bioremediation Consulting, Inc. (BCI) was contracted by O'Brien and Gere on behalf of Honeywell, Inc. to conduct microcosm tests on ground water and solids samples obtained in November 2008 from four areas in the Wastebeds 1-8 Site in Geddes, NY, to examine the biodegradability of BTEX (benzene, toluene, ethylbenzene and xylene), phenol and naphthalene under varying redox and pH conditions by both aerobic and anaerobic microbiological processes. The microcosm tests were conducted in accordance with the October 2008 *Wastebeds 1-8 Site, Microcosm Study Work Plan* (Honeywell 2008) which was approved by the New York State Department of Conservation (NYSDEC) in its October 14, 2008 letter (NYSDEC 2008).

The evaluation of microbiological degradation processes included in this study was conducted to support remedial technology evaluations as part of the Focused Feasibility Study (FFS). Each treatment condition was evaluated in separate microcosms containing Site ground water and Solvay Waste/soils (solids). The tested ground water was collected from four monitoring wells (WB18-MW-01S, WB18-MW-02S, WB18-MW-03S, and WB18-MW-16S) that represented different ground water conditions. Details related to the microcosm test procedures and findings are provided following this summary section.

Anaerobic microcosm tests were conducted with ground water and solids from MW-01S and MW-03S to examine biodegradation of these compounds at the native ground water pH, (approximately 8.5 for these two wells) under nitrate-reducing, iron-reducing, sulfate-reducing and methanogenic conditions. For MW-02S, anaerobic microcosm tests were conducted at nitrate-reducing and at iron-reducing conditions at pH 7, 9, and 11. Aerobic tests were conducted with solids and ground water from MW-16S, for direct oxidation at pH 7, 9, and 11, and for co-metabolic oxidation by methane-utilizing bacteria at pH 7 and 9. All tests included killed control microcosms. The test period was approximately 20 weeks.

At approximately weeks 6, 10, 15, and 20, microcosm bottles were destructively sampled by extracting with dichloromethane, and the solvent extract was analyzed by gas chromatography with mass spectrometry (GCMS). The results were tabulated and represented by graphs comparing the results for each compound in the live and corresponding killed control microcosm. Evaluation of the graphed data was conducted by examining the trend lines produced by Excel software. As shown in Figures 1 through 28, these trend lines show that there was no evidence for biodegradation of any of the compounds under any of the tested conditions.

The nature of the solids may be useful in understanding the potential for biological activity in situ. The solids tested had extremely high salinity. For example, sodium, calcium and chloride in MW-01S ground water represent 5.4%, and calcium, magnesium, sodium and iron make up 39% of the solids. The microcosm environment represented a process in which the ground water is thoroughly mixed with the associated solids. Although ground water from two of the locations had pH 8.5, mixing with solids gave pH 11. Lowering the pH from 11 to 8 required a large amount of HCl, for example, the equivalent of 180 Liters of 6 N HCl per cubic meter of solids. Phosphate, a compound required by bacteria for growth, was added to the microcosms but became bound to the solids and was not available in the aqueous portion of the microcosms.

Similarly, soluble Fe^{+++}, needed by the iron-reducing bacteria, was added but became bound by the solids, where it may not be available to bacteria. At neutral pH, sulfate leached out of the solids into the aqueous portion of the microcosms.

Sample Collection and Chemical Characterization

Ground water was collected using anaerobic techniques from MW-01S, MW-02S and MW-03S, and using aerobic techniques from MW-16S. Core samples were obtained from a depth of 6 to 10 feet, within six feet of their respective wells. Split samples of ground water and solids were characterized by Lancaster Laboratories for pH, NH_4, PO_4, Organic Acids, Cl, SO_4, NO_3, conductivity, methane, VOCs/SVOCs and TPH, metals, and trace elements. The analytical results are summarized in Table 3. Both the solids and the ground water samples were high in a variety of inorganic salts, with the major constituent of the solids being calcium, at about 330,000 mg/kg. Of the ground water samples, MW-01S and MS-03S were relatively high in sodium, at 10,000 mg/L and 6,000 mg/L, respectively, while MW-02S and MW-16S had approximately 200 mg/L sodium. The Oxidation Reduction Potential (ORP) of MW-16S was –140 mv, while that of the other three wells was about –450 mv. Ground water pH was 11.5 in MW-02S and MW-16S, but about 8.5 in MW-01S and MW-03S.

Test Design

- MW-01S and MW-03S microcosms were conducted at pH 8.3, and were designed to represent four anaerobic conditions: nitrate-reducing, iron-reducing, sulfate-reducing, and methanogenic, plus one duplicate, as well as a killed and an unamended control.
- MW-02S microcosms represent nitrate-reducing and iron-reducing anaerobic conditions, each at pH 7, 9, and 11, plus one duplicate and a killed control.
- MW-16S microcosms represent aerobic conditions at pH 7, 9, and 11, and methanotrophic aerobic with added methane at pH 7 and 9, plus one killed control.
- For each condition, four microcosms were constructed, one for each of four time points. Entire microcosms were extracted with solvent, and the extract analyzed by GCMS.

Microcosm Construction and Maintenance

- Microcosms were constructed by adding 10 to 18 grams of wet solids and approximately 90 ml of ground water to 160 ml serum bottles sealed with septa through which small samples could be transferred by syringe.
- Microcosms for MW-16S were constructed using aerobic techniques. For the other three samples, microcosms were constructed using anaerobic techniques, including use of an anaerobic glove box. Controls were killed by autoclaving.
- For MW-01S and MS-03S, which had a native ground water pH of 8.5, the pH changed to 11 when the ground water was mixed with the solids.
- To achieve the designated test pH, small amounts of HCl were added by syringe.
- For bacterial growth, microcosms were amended with nitrogen, phosphate and trace elements.
- Microcosms designed to study nitrate-reducing bacteria received KNO_3, those for iron-reducing bacteria received Fe^{+++} as $FeCl_3$, and those for sulfate-reducing bacteria contained native sulfate. For methanogenic bacteria, microcosms were planned to completely utilize sulfate and then develop methanogenic conditions.
- Bottles were incubated at 21°C in darkness with intermittent shaking.

Monitoring

pH

- pH was monitored by sampling the aqueous portion of microcosms (after allowing solids to settle) then removing 150 µL for analysis by pH meter.
- Results are given in Table 4 and Table 7.
- For a MW-01S microcosm containing 18 grams of wet solids (15 cc), to change from pH 11 to pH 8, the amount of HCl required was 2.7 ml of 6 N HCl (Table 4), equivalent to 180 Liters of 6 N HCl per cubic meter of solids. Results were similar for other well locations.

Nitrate

- Nitrate was monitored by analyzing the aqueous portion of microcosms.
- Added nitrate could be initially accounted for in microcosms for MW-01S, MW-02S and MW-03S. Control bottles were shown not to contain nitrate.
- For MW-01S, added nitrate disappeared during the first 69 days of the test, but did not decrease during the subsequent 69 days. Thus it is possible that nitrate-reducing bacteria were active initially.
- For MW-02S and MW-03S, nitrate did not decrease significantly, showing no evidence for activity of nitrate-reducing bacteria.

Sulfate

- Sulfate was monitored by analyzing the aqueous portion of microcosms.
- For MW-01S, the ground water sulfate was 520 mg/L.
    - In the pH 8 microcosm, in 55 days, soluble SO_4 increased to 690 mg/L.
    - In the pH 11 microcosm, soluble SO_4 decreased to 425 mg/L.
    - At pH 11, it is possible that biological sulfate reduction occurred.
- For MW-02S, the ground water sulfate was 40 mg/L.
    - In the pH 7 microcosm, in 108 days, the soluble SO_4 increased to 160 mg/L.
    - In the pH 11 microcosm, the soluble SO_4 remained at 40 mg/L.
- For MW-03S, the ground water sulfate was 15 mg/L.
    - In the pH 8 microcosm, the soluble sulfate increased to 250 mg/L.
    - In the pH 11 microcosm, the soluble sulfate increased only to 40 mg/L.
- The data are consistent with the dissolution of sulfate from the solids into the aqueous portion of microcosms at pH 7 and pH 8, but not at pH 11.

Iron

- Iron Distribution between aqueous and solids. Ground water contained < 0.2 mg/L iron, while solid material contained > 3,000 mg/kg. Similarly, the aqueous portion of the microcosms had non-detectable iron, and added soluble iron was all associated with the solid particles.

- Test for Fe^{++} and Fe^{+++} in microcosms. An anaerobic iron test procedure was developed in which the microcosm bottles were shaken, a 100 µL sample containing a representative mixture of aqueous and solid particles was removed for analysis, and the solid particles completely dissolved at pH 3.2. This material was tested anaerobically for reduced iron (Fe^{++})

and aerobically for total iron, allowing calculation of the concentration of oxidized iron (Fe^{+++}).

Fate of added Fe^{+++} in iron-reducing microcosms; MW-01S, MW-02S, MW-03S

- Native solid material in unamended microcosms contained both Fe^{++} and Fe^{+++}.
- For MW-01S and MW-03S, Fe^{+++} was added on two occasions to both duplicate microcosms at pH 8, and each was analyzed in duplicate at least twice.
    - For MW-01S no significant reduction of added Fe^{+++} occurred in 92 days.
    - For MW-03S, about 45% of the added Fe^{+++} was reduced in 94 days
- For MW-02S, Fe^{+++} was added once to three microcosms at pH 7, 9, and 11. Reduction of the added Fe^{+++} was observed at pH 9 and 11.
- It is not known whether the reduction process was abiotic or biological.
- It is not known whether native or added Fe^{+++} was available to bacteria.

Phosphate

- Phosphate (PO_4) was analyzed on the aqueous portion of the microcosms.
- Initially, phosphate was not detected, even when analysis was conducted after the addition of 120 mg/L PO_4.
- The phosphate test was subsequently conducted by shaking the microcosm to suspend the particulates before removing the sample, and the results showed that phosphate was associated only with the solids.
- Analysis of samples containing suspended particulates showed that MW-01S unamended microcosm contained 24 mg/L PO_4, and after adding 120 mg/L PO_4, the test accounted for 140 mg/L.

O_2, CO_2, and Methane

- Methane, O_2 and CO_2 were monitored by removing 100 µL samples of microcosm headspace and injecting it into a HP 5890 gas chromatograph in accordance with EPA Method 5021A.
- For methanogenic tests, there was no generation of methane.
- For the methanotrophic tests, there was no change in methane or oxygen concentrations, and no generation of CO_2.
- For the direct oxidizer tests, the data show no use of oxygen and no generation of CO_2.

GCMS Analysis for Compounds of Concern

For analysis of BTEX, phenol, and naphthalene, one microcosm from each set of four replicates was extracted at each time point with 20 or 30 ml of dichloromethane solvent. The procedure for extracting analytes from a *sealed* microcosm was developed and validated at BCI, and involved injecting solvent into the sealed bottle, shaking to extract the compounds of concern into the solvent, and centrifuging to separate the solvent from solids and water. The extract was submitted to Meta Environmental, Inc., for analysis by GCMS in accordance with EPA Method 8270, modified. The data was reported as µg/ml of extract, and converted at BCI to µg/bottle. The analytical results are summarized in Tables 14 through 17.

Evaluation of the Data

Figures 1 through 28 present graphs that were prepared with the data for each compound, in each experiment, for the live microcosm and for the corresponding killed control microcosm, and the data was evaluated by comparing the trend lines generated by Excel software. In no case was the slope of the trend line significantly different for the live and killed control microcosm.

1. Sample Receipt and Sample Characteristics

This section provides a description of ground water and solid samples that were collected by O'Brien & Gere and provided to BCI for microcosm construction. In addition, sample handling procedures and initial characteristics are described.

Ground Water Samples in 1 L Serum Bottles

At BCI, bottles for ground water for anaerobic tests were filled with Argon to exclude air, and received one of the two concentrations of reducing agent listed in Table 1A. The purpose of the reducing agent was to help maintain anaerobic conditions in case of brief exposure to air during sampling. Ground water samples with only Argon were intended for nitrate-reducing and killed microcosms. Those with the lower amount of reducing agent were intended for unamended and iron-reducing microcosms, and those with the higher amount of reducing agent were for sulfate-reducing and methanogenic microcosms. Bottles for the aerobic test were air-filled. Ground water was collected by O'Brien and Gere following low flow purging and sampling protocols into 1-Liter serum bottles, sealed with Teflon-lined septa affixed by crimped caps, and shipped in coolers on ice to BCI. Samples were refrigerated on arrival. Tables 1A and 1B provide a summary of the initial sample handling and appearance.

Table 1A.
Ground Water Samples for Anaerobic Microcosms, Collected 11/11/08
1-Liter bottle preparation and sample appearance

	Argon filled		Argon filled + Na_2S to give 0.13 mM $FeCl_2$ to give 0.04 mM		Argon filled + Na_2S to give 0.25 mM $FeCl_2$ to give 0.25 mM	
	# of samples	appearance	# of samples	appearance	# of samples	appearance
MW-01S	2	clear	2	clear w black ppt[(1)]	2	clear w black ppt
MW-02S	4	clear	3	clear w black ppt	none	
MW-03S	2	pale yellow	2	yellow w black ppt	2	black w black ppt

[(1)] ppt = precipitate

Table 1B.
Ground Water Samples for Aerobic Microcosms, Collected 11/12/08
1-Liter bottle preparation and sample appearance

	# of samples	bottle preparation	appearance
MW-16S	4	air filled, no reducing agent	clear, no ppt

Solid Samples

Core sections in 1.75" plastic liners, collected from locations near MW-01S, MW-02S and MW-03S, were received on 11/11/08, and those from MW-16S on 11/12/08. Visual characteristics of the cores are given in Table 2. Soil cores were refrigerated.

Table 2
Visible characteristics of soil core sections, from 6 to 10 feet depth

well area	core #	color	free water	air bubbles	apparent texture
MW-01S	# 1, top	med gray	much	large	fine to gravel
	# 1, bottom	light gray	none	none	fine
	# 2	light gray	none	none	fine
	# 3	light gray	none	none	fine
MW-02S	# 1	v. light gray	none	v. small	fine
	# 2	light to dark gray	none	none	fine
	# 3	med gray	none	none	fine
MW-03S	# 1	v. light gray	some	bubble	fine
	# 2	v. light gray	some	bubble	fine to gravel
	# 3	v.v. light gray	none	bubbles	fine
	# 4	v. light gray	~ none	small	fine
	# 5	not noted	v. little	bubbles	fine
MW-16S	# 1	mottled light tan	none	v. small	fine
	# 2	light tan / gray	none	none	fine
	# 3	light gray	none	none	fine

Sample Characteristics

Ground water and core samples were analyzed at Lancaster Labs. For core samples, Lancaster conducted analyses for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and total petroleum hydrocarbons (TPH) on grab samples, and used a homogenized sample for the remaining analyses (per the request of Mr. Robert Trent at O'Brien and Gere).

Selected Lancaster data for water and solids is presented in Table 3. ORP and pH were obtained from field sampling logs, and H_2S was noted based on odor (at BCI). The field sampling logs are included in Attachment 1. Ground water contaminant concentrations were similar to those reported for 2006 and 2007. However, the pH of MW-01S and MW-16S were higher than previously measured values, and the ORP of MW-16S was much lower (-140 mv) than previously reported (+3 mv).

The two samples with a moderate pH of approximately 8.5 (MW-01S and MW-03S) contain methane, indicating that methanogenic bacteria might be present in the vicinity of the well, or in an upgradient area. The sample from MW-03S, contained 200 mg/L of the organic acid acetate, as well as lower concentrations of propionate and tartrate, as shown in Table 3.

Of the mineral nutrients needed in relatively high concentration by bacteria for growth, three of the wells had sufficient ammonia-N but appeared to lack soluble phosphate. MW-16S appeared to lack both nitrogen and phosphate. Some of the samples lacked selected soluble trace elements.

Table 3A Selected Lancaster Data for MW-01S

		Cl	Ca	Mg	Na	SO_4	H_2S	Mn	Fe	K	pH	ORP
Water	mg/L	36,700	7,160	52	10,500	550	+++	0.2	0.1	380	8.4	-417
Solids	mg/Kg	--	350,000	24,000	7,040	--		240	6,150	1,630		

		Cu	Ni	Se	Co	Mo	Zn	B	NH_4-N	NO_3-N	PO_4
Water	mg/L	< .002	0.003	0.001	< .002	< .005	< .008	0.7	57	< 0.3	< 2.5
Solids	mg/Kg	15.0	18.0	< 2.0	4.2	1.7	31.0	26.0			n.a.

		GRO	DRO	CH_4	phenol	methyl phenols	ben-zene	tol-uene	EB	total Xyl	naphth-alenes	ace-tate
Water	mg/L	20	2	1.8	0.01	0.05	10.0	0.02	0.04	0.5	0.24	< 2
Solids	mg/Kg	3	14		6.6	0.16	1.4	0.26	0.005	0.1	0.35	

Table 3B Selected Lancaster Data for MW-02S

		Cl	Ca	Mg	Na	SO_4	H_2S	Mn	Fe	K	pH	ORP
Water	mg/L	1920	1,120	.02	250	42	no	< .001	< .05	26	11.6	-450
Solids	mg/Kg	--	340,000	7,500	2,000			205	3020	1,370		

		Cu	Ni	Se	Co	Mo	Zn	B	NH_4-N	NO_3-N	PO_4
Water	mg/L	.004	.016	.001	< .002	.007	< .008	< .009	6	< .25	< .25
Solids	mg/Kg	4	5	< 2	0.9	< 1	15	10			n.a.

		GRO	DRO	CH_4	phenol	methyl phenols	ben-zene	tol-uene	EB	total Xyl	naphth-alenes	acetate
Water	mg/L	5.2	3.9	0.02	0.02	0.02	0.08	0.6	0.07	1.7	2.3	7.4
Solids	mg/Kg	27	23	--	8.7	<	0.23	1.3	0.27	7.9	14.0	

Table 3C Selected Lancaster Data for MW-03S

		Cl	Ca	Mg	Na	SO_4	H_2S	Mn	Fe	K	pH	ORP
Water	mg/L	27,000	10,300	9	5,870	17	+++	0.05	0.2	197	8.7	-460
Solids	mg/Kg	--	325,000	17,800	6,710			231	5,390	2,690	-	

		Cu	Ni	Se	Co	Mo	Zn	B	NH_4-N	NO_3-N	PO_4
Water	mg/L	< .002	0.008	0.001	< .002	< .005	< .008	0.05	29	< .3	< 2.5
Solids	mg/Kg	11	9	< 2	1.6	< 1	23	20			n.a.

		GRO	DRO	CH_4	phenol	methyl phenols	ben-zene	tol-uene	EB	total xyl	naphth-alenes	ace-tate
Water	mg/L	28	10	11	0.66	2.2	8.0	7.7	0.09	1.5	< .02	290
Solids	mg/Kg	34	21	--	10.0	2.0	4.6	8.6	0.17	2.7	0.04	--

Table 3D Selected Lancaster Data for MW-16S

		Cl	Ca	Mg	Na	SO_4	H_2S	Mn	Fe	K	pH	ORP
Water	mg/L	790	1,150	0.06	154	31	no	.002	< .05	19	11.8	-140
Solids	mg/Kg	--	315,000	50,000	2,470	-		679	8,190	100	-	--

		Cu	Ni	Se	Co	Mo	Zn	B	NH_4-N	NO_3-N	PO_4
Water	mg/L	.005	0.01	.0006	< .002	.005	< .008	< .009	1	< 0.3	< 0.3
Solids	mg/Kg	14	12	< 2	3.9	<	35	64			n.a.

		GRO	DRO	CH_4	phenol	methyl phenols	ben-zene	tol-uene	EB	total xyl	naphth-alenes	ace-tate
Water	mg/L	0.07	0.24	<	0.005	<	< .001	< .001	< .001	< .001	.001	4.4
Solids	mg/Kg	7	210		7.40	<	<	0.004	<	<	.013	

n.a., not analyzed. ORP and pH from sampling logs, and H_2S by odor.

2. Microcosm Plan and Construction

This section describes the methods used for the construction of the microcosms. The initial pH adjustment for the microcosms is also described.

Test Plan with Replicates for Destructive Sampling

Microcosm Conditions.

- MW-01S and MW-03S Microcosms represented six anaerobic conditions plus one duplicate, as follows: (1) Killed, (2) Unamended, (3) Nitrate-reducing, (4) Iron-reducing and (5) Duplicate Iron-reducing, (6) Sulfate-reducing, and (7) Methanogenic.
- MW-02S microcosms represented seven anaerobic conditions plus a duplicate, as follows: (1) Killed, (2) Nitrate-reducing at pH 7, (3) Nitrate-reducing at pH 9, (4) Nitrate-reducing at pH 11, & (5) Duplicate Nitrate-reducing at pH 11, (6) Iron-reducing at pH 7, (7) Iron-reducing at pH 9, and (8) Iron-reducing at pH 11.
- MW-16S microcosms represented seven aerobic conditions: (1) Killed, (2) Aerobic at pH 7, (3) Aerobic at pH 9, (4) Duplicate Aerobic at pH 9, and (5) Aerobic at pH 11, (6) Methanotrophic aerobic with methane at pH 7, and (7) Methanotrophic aerobic with methane at pH 9.

Microcosms for destructive sampling. For each condition, four microcosms were constructed. At monthly intervals, one microcosm for each condition was destructively sampled by extracting the entire microcosm with the solvent dichloromethane.

Microcosm names. The microcosm names represented the well, condition, and time point. For example "1S -K1-1" means MW-01S, Killed, time point #1. D indicates duplicates, different for each test, as defined below.

Construction of Anaerobic Microcosms

Preparation of serum bottles. To initiate the construction of anaerobic microcosms, the 160 ml serum bottles for the microcosms were filled with Argon (to remove air), stoppered, and labeled. Extra serum bottles were prepared for preliminary tests and for validating analytical procedures.

Preparation and Operation of Anaerobic Glove Box.

The anaerobic glove box was loaded with the flushed serum bottles, matrix cores for one well location, supplies for compositing and distributing matrix samples to serum bottles, and two freshly regenerated Palladium catalyst plates with a small fan for circulating the glove box atmosphere.

The glove box was then sealed, flushed with Argon to remove air, then continuously flushed with 4% H_2 in Argon to react (on the catalyst) with traces of O_2 that might diffuse into the chamber. The glove box exit gas was monitored continuously by an O_2 meter. In addition an O_2 indicator patch inside the glove box was observed.

Anaerobic Preparation of Core Composites.

Cores were opened in the glove box and approximately ¾" of solid material was removed from each end and discarded. The remaining core material was placed in a stainless steel bowl for compositing.

- For MW-01S, Cores #2, #3, and the bottom half of core #1 were used.
- For MW-02S, 6" from one end of each of three cores was used.
- For MW-03S, portions of cores # 3, #4, and #5 were used.

Distribution of Core Material to Anaerobic Microcosms.

To distribute core material to serum bottles, each bottle was placed on a scale in the glove box, and the composite was added by spatula through the 1 cm opening. The following amounts were added to each bottle.

- For MW-01S, 18 ± 0.1 grams. Dens 1.2 52% dry
- For MW-02S, 10 ± 0.1 grams 44% dry
- For MW-03S, 10 ± 0.1 grams 46% dry

Bottle rims were cleaned, then Teflon-lined butyl rubber septa were affixed by crimping with aluminum caps. Samples of the composite were taken for density and percent dry solids determination. Microcosm bottles were then removed from the glove box.

Anaerobic Addition of Ground Water to Anaerobic Microcosms.

Anaerobic transfer of ground water to each microcosm was accomplished using pressure transfer through Viton tubing connected by needles through the septa of the 1-Liter ground water sample and a microcosm bottle on a scale. The following amounts of ground water were added.

- For MW-01S, 87 ± 0.6 ml
- For MW-02S, 80 ± 1 ml
- For MW-03S, 81 ± 1.5 ml

Ground water without reducing agent was used for the killed control and nitrate-reducing microcosms. Ground water containing 0.04 mM FeS reducing agent was used for unamended and iron-reducing microcosms, and 0.27 mM FeS for sulfate-reducing and methanogenic microcosms. Bottles were pressurized with 3 cc Argon.

Killed Control. Control microcosms were killed by autoclaving

(For MW-01S, an attempt was made to produce a killed control by acidification to pH 2. However, 2 ml of 6.25N HCl was able to reduce the initial pH of 11 to only pH 8.0.)

Microcosm Incubation. Microcosms were incubated at 22°C, in darkness, with the septum in contact with the aqueous material. Bottles were shaken briefly three times per week.

Construction of Aerobic Microcosms

The construction of the aerobic microcosms was intended to use ground water collected from MW-16S because historically this well exhibited higher ORP values than other wells. Specifically, MW-16S had been previously reported to be +3 mv. However, field measurements resulted in the much lower ORP in MW-16S of -140 mv. Despite the lower ORP, the aerobic microcosms were constructed to be consistent with the work plan.

Ground water from MW-16S was also anticipated to exhibit a pH of approximately 9.2, based on historical measurements. Field measurements showed a pH of 11.8. Given this elevated pH, one additional set of microcosms was constructed and maintained at the higher pH.

- For MW-16S, compositing and distribution of core material was done aerobically.
- Portions of cores #1, #2, and #3 were composited
- 17 grams were distributed to each serum bottle by weighing. ~ 30% dry solids.
- 80 ml ground water was transferred aerobically to each microcosm bottle.
- The aerobic bottles were sealed with crimped septa as for the anaerobic microcosms.
- Killed control microcosms were autoclaved.
- One ml of a mixture of benzene, toluene, ethylbenzene and p-xylene was added by syringe to each microcosm to provide 1 mg/L of each compound.

pH Adjustment During Microcosm Construction

For MW-01S and MW-03S, the native ground water had a pH of about 8.5. On addition of the core solids, the pH increased to 11. Adjustment of microcosm pH to 8 required 0.7 to 2.8 ml of 6N HCl, as given in Table 4. For MW-01S, due to concerns about the affect of sudden pH changes on the microbes, 2 ml of the ground water were added after the pH had been adjusted to 8.

Table 4. Initial ground water pH, effect of adding core solids, pH adjustment

Well Name	ground water pH	ground water in microcosm(2)	wet core solids in microcosm	dry core solids in microcosm	initial microcosm pH	6N HCl to lower pH to 8

MW-01S	8.5	96 ml	18 g	9.3 g	11.0	2.7 ml
MW-02S	11.7	86 ml	10 g	4.8 g	11.2	0.7 ml
MW-03S	8.7[(1)]	86 ml	10 g	4.5 g	11.1	1.3 ml
MW-16S	11.8	92 ml	17 g	5.1 g	12.2	2.8 ml

[(1)]Reported by Lancaster [(2)]Includes water contained in the core solids

3. Amendment of Microcosms (Anaerobic and Aerobic)

Stock Solutions. All amendments were added by injecting small amounts of stock solutions by syringe through the septa. For anaerobic microcosms, the amendment stock solutions were prepared using anaerobic techniques.

Minerals Needed for Bacterial Growth

Minerals needed by bacteria for growth, ammonia- or nitrate- nitrogen, phosphate, and iron and trace elements, were added to all microcosms (except Killed and Unamended) if not present in the native ground water or core material (Table 5).

Phosphate Amendment. The *initial* phosphate amendment for all four well samples, all amended microcosms (i.e. not Killed and Unamended) was 6 mg PO_4/bottle. After analysis of the *aqueous* portion showed no detectable phosphate, an additional 6 mg/bottle was added to MW-01S (week 5), MW-03S (week 3), MW-02S (week 2), and MW-16S (week 2). Subsequently, all phosphate was shown to be associated with the core solids.

Trace Element and Trace Iron Amendment. Some trace elements needed by bacteria were lacking in ground water samples. Therefore, a standard trace element mixture was added to all amended microcosms.

- For *anaerobic* microcosms the mix provided the following in µg/bottle: 28 Manganese, 42 Cobalt, 48 Zinc, 3 Boron, 12 Nickel, 8 Molybdenum, 10 Copper, 10 Tungsten and 6 Selenium.
- The nitrate-reducing bottles received 1.4 mg iron (as $FeCl_2$) /bottle. The other anaerobic microcosms had 0.2 to 1.2 mg Fe/bottle as FeS reducing agent added during sampling.
- For the *aerobic* test the trace element mix provided, in µg/bottle: 1.6 Zinc, 0.6 Manganese, 0.4 Boron, 2.5 Cobalt, 0.4 Copper, 0.5 Nickel, 1.2 Molybdenum. 1.4 mg Fe/bottle was also added.

Nitrogen Amendment. MW-01S and MW-03S contained > 20 mg/L ammonia-nitrogen, so no NH_4-N was added. MW-02S and MW-16S were amended as shown in Table 5.

Table 5. Minerals Needed for Bacterial Growth mg / bottle
See text for trace element amounts. All PO_4 is associated with core solids.
Amendments added to all microcosms except Killed and Unamended bottles

Well name	**native** NH_4-N	**Added** N	**Native** PO_4	**added** PO_4	add trace elements
MW-01S	5.5	no	3.1	12	yes
MW-02S	0.5	2 (NH_4)	n.a.	12	yes
MW-03S	2.5	no	3.3	12	yes
MW-16S	0.09	3.5 (NO_3)	n.a.	12	yes

n.a.= not analyzed

Amendment of Anaerobic Microcosms with Electron Acceptors

Anaerobic microcosms designated nitrate-reducing and iron-reducing were given nitrate or iron as terminal electron acceptors to support these biodegradation processes (Table 6).

Amendment of nitrate-reducing microcosms with KNO_3.

For nitrate-reducing microcosms, the µmols of nitrate needed to degrade the contaminants was calculated based on equations for bacterial use of NO_3 as electron acceptor to biodegrade

toluene, ethylbenzene, m/p xylenes, and phenol, as well as on the amounts of these compounds in the microcosm. The calculated amounts needed and the actual amounts added are in Table 6.

Amendment of Iron-reducing microcosms with Fe^{+++} as $FeCl_3$.

The solids are known to contain iron. However, assuming that this iron would be unavailable, soluble Fe^{+++} was added. The amount of soluble Fe^{+++} to be added to the iron-reducing microcosms was calculated based on equations for bacterial use of Fe^{+++} as a terminal electron acceptor for degradation of BTEX and phenol, and on the amounts of those contaminants in the microcosms. pH was re-adjusted after adding $FeCl_3$. The calculated requirement for Fe^{+++}, and the amounts added, are provided in Table 6.

Sulfate-reducing microcosms.

The MW-01S microcosms were not amended with sulfate because the ground water already contained 550 mg/L sulfate. The *ground water* used in the MW-03S microcosms contributed only 16 µmol SO_4 /bottle. However, when analyzed for soluble sulfate, the *microcosms* which had approximately pH 8 showed 170 umols/bottle, indicating that sulfate had been released by the solids in the microcosm. Therefore, soluble sulfate was not added. The unamended microcosm, pH 11, did not show as much SO_4 release. It was planned to add additional sulfate if microcosms reduced all available sulfate.

Methanogenic microcosms.

For the methanogenic microcosms, the plan was to allow sulfate to be reduced, then *not* add additional sulfate, but allow methanogenic conditions to develop. Toluene and benzene degradation have been reported to occur under methanogenic conditions, although typically methanogens produce methane by the reduction of CO_2 with H_2, or by fermenting acetate. MW-03S contained 200 µmols/bottle of acetate which would be expected to support methanogenic activity, even if no contaminants were degraded.

Amendment of Anaerobic Microcosms, Addition of Electron Acceptors

Table 6A. MW-01S Electron Acceptors. µmols/bottle

bottle names	conditions	electron acceptor	native	needed	each addition	week	total added
1S-U 1→ 4	Unamended, pH 11	SO_4	480	52	(native)		none
1S-N 1→ 4	NO_3-reducing, pH 8	NO_3^-	none	15	40	0, 6, 10	120
1S-F 1→ 4	Iron-reducing, pH 8	Fe^{+++}	insoluble	420	160	0, 7	320
1S-D 1→ 4	Dup Iron-reduc, pH 8	Fe^{+++}	insoluble	420	160	0, 7	320
1S-S 1→ 4	SO_4-reducing, pH 8	SO_4	480	52	(native)		none
1S-M 1→ 4	Methanogenic, pH 8						

Table 6B. MW-02S Electron Acceptors. µmols/bottle							
bottle names	conditions	electron acceptor	native	needed	initial addition	week 6	total added
2S-N7 1→ 4	NO_3-reducing, pH 7	NO_3^-	none	11	25	30	55
2S-N9 1→ 4	NO_3-reducing, pH 9	NO_3^-	none	11	25	30	55
2S-N11 1→4	NO_3-reducing, pH 11	NO_3^-	none	11	25	30	55
2S-D11 1→4	NO_3-reducing, pH 11	NO_3^-	none	11	25	30	55
2S-F7 1→ 4	Iron-reducing, pH 7	Fe^{+++}	insoluble	150	80	0	80
2S-F9 1→ 4	Iron-reducing, pH 9	Fe^{+++}	insoluble	150	80	0	80
2S-F11 1→ 4	Iron-reducing, pH 11	Fe^{+++}	insoluble	150	80	0	80

Table 6C. MW-03S Electron Acceptors. µmols/bottle							
bottle names	conditions	electron acceptor	native	needed	each addition	week	total added
3S-U 1→ 4	Unamended, pH 11	SO_4	29				no
3S-N 1→ 4	NO_3-reducing, pH 8	NO_3^-	none	40	100	0, 6, 10	300
3S-F 1→ 4	Iron-reducing, pH 8	Fe^{+++}	insoluble	670	240	0, 7	480
3S-D 1→ 4	Dup Iron-reduc, pH 8	Fe^{+++}	insoluble	670	240	0, 7	480
3S-S 1→ 4	SO_4-reducing, pH 8	SO_4	170	87			none
3S-M 1→4	Methanogenic, pH 8		200 acetate				

Amendment of Aerobic Microcosms (MW-16S) with Oxygen and Methane

This task was designed to test for two types of aerobic organisms, (1) typical aerobes which obtain energy by oxidizing contaminants to CO_2 and use the carbon from the contaminants to build their biomass, and (2) methane-using aerobes (methanotrophs) which obtain their energy and biomass only from methane, and fortuitously add an oxygen atom to selected contaminant molecules, initiating their breakdown by other microbes. The 59 cc air headspace provided 12.3 cc O_2. Then each microcosm received either 8cc additional air (1.7 cc O_2) or 8 cc methane (Table 6D).

Table 6D. MW-16S Aerobic Microcosms, Amendment with O_2 and Methane			
bottle names	conditions	add cc O_2	add cc methane
16S-K 1→ 4	Killed (autoclaved)	14.0	
16S-7 1→ 4	Aerobic, pH 7	14.0	
16S-7M 1→ 4	Methanotrophic, pH 7	12.3	8
16S-9 1→ 4	Aerobic, pH 9	14.0	
16S-9D 1→ 4	Dup Aerobic, pH 9	14.0	
16S-9M 1→ 4	Methanotrophic, pH 9	12.3	8
16S-11 1→ 4	Aerobic pH 11	14.0	

4. Microcosm Monitoring, Methods and Results

Analysis of pH

Solids were allowed to settle, then 150 µL aqueous sample was removed by syringe through the septum and measured with a ThermoOrion model 290A pH meter and Ross semi-micro electrode. pH was adjusted by injecting HCl. Values for average pH and the total amount of HCl needed to lower the pH of ground water and maintain the desired pH for four months are provided in Table 7.

Table 7A. MW-01S pH during test and HCl used per bottle

Bottle names	Conditions	Actual pH	ml 6N HCl/bottle
1S-U 1→ 4	Unamended pH 11	11 ± .2	none
1S-N 1→ 4	NO_3-reducing, pH 8	8.4 ± .4	2.7
1S-F 1→ 4	Iron-reducing, pH 8	7.9 ± .5	2.6
1S-D 1→ 4	Dup Iron-reduc, pH 8	8.1 ± .4	2.6
1S-S 1→ 4	SO_4-reducing, pH 8	8.3 ± .4	2.7
1S-M 1→ 4	Methanogenic, pH 8	8.2 ± .4	2.7

Table 7B. MW-02S pH during test and HCl used per bottle

Bottle names	Conditions	Actual pH	ml 6N HCl/bottle
2S-N7 1→ 4	NO_3-reducing, pH 7	7.9 ± .8	0.9
2S-N9 1→ 4	NO_3-reducing, pH 9	9.5 ± .5	0.6
2S-N11 1→4	NO_3-reducing, pH 11	11 ± .2	0.2
2S-D11 1→4	NO_3-reducing, pH 11	11 ± .2	0.2
2S-F7 1→ 4	Iron-reducing, pH 7	7.8 ± .8	0.9
2S-F9 1→ 4	Iron-reducing, pH 9	9.3 ± .5	0.7
2S-F11 1→ 4	Iron-reducing, pH 11	11.2 ± .3	0.2

Table 7C. MW-03S pH during test and HCl used per bottle

Bottle names	Conditions	Actual pH	ml 6 N HCl/bottle
3S-U 1→ 4	Unamended, pH 11	11 ± .2	none
3S-N 1→ 4	NO_3-reducing, pH 8	8.2 ± .3	1.5
3S-F 1→ 4	Iron-reducing, pH 8	8.1 ± .2	1.5
3S-D 1→ 4	Dup Iron-reduc, pH 8	8.1 ± .2	1.5
3S-S 1→ 4	SO_4-reducing, pH 8	8.0 ± .5	1.5
3S-M 1→4	Methanogenic, pH 8	8.2 ± .3	1.5

Table 7D. MW-16S Aerobic microcosms, pH and HCl used per bottle

Bottle names	Conditions	Actual pH	ml 6 N HCl/bottle
16S-K 1→ 4	Killed (autoclaved)	-	
16S-7 1→ 4	Aerobic, pH 7	7.8 ± .4	3.6
16S-7M 1→ 4	Methanotrophic, pH 7	7.8 ± .4	3.9
16S-9 1→ 4	Aerobic, pH 9	9.8 ± .7	2.7
16S-9D 1→ 4	Dup Aerobic, pH 9	9.8 ± .7	2.7
16S-9M 1→ 4	Methanotrophic, pH 9	9.8 ± .7	2.7
16S-11 1→ 4	Aerobic pH 11	11.4 ±.2	1.4

Discussion of pH results.

For MW-02S and MW-16S microcosms that were designated to be maintained at pH 7, it was difficult to achieve and maintain that pH, and the actual pH during the test was closer to 8. For MW-16S, bottles designated as pH 9 were actually closer to 10.

The amount of HCl needed to change the pH in situ can be estimated from microcosm results. For MW-01S, to achieve and maintain pH 8 required 2.7 ml of 6 N HCl for 18 grams wet solids (15 cc) is 180 Liters of 6 N HCl per cubic meter of solids.

Analysis of Nitrate for Anaerobic Tests

Analytical Method. Nitrate and sulfate were analyzed by removing 150 µL of the aqueous portion of the microcosm by syringe through the septum, and analyzing by Waters capillary ion electrophoresis instrument according to EPA Method 6500. Standards were analyzed with each batch of samples. Compounds were identified by retention time ratio in comparison with standards analyzed with each batch of samples. Response factors were calculated and results were quantified using Waters Empower software.

Amendment with Nitrate. Nitrate-reducing microcosms were analyzed for nitrate at intervals in order to determine whether nitrate was being utilized. If nitrate was utilized, additional nitrate was added. The results for nitrate utilization are presented in Tables 8A, 8B, and 8C.

The MW-01S data in Table 8A show that after two additions of 25 mg/L soluble nitrate on days 0 and 61, the detectable nitrate in the nitrate-amended microcosms decreased to < 12 mg/L. [The MW-01S samples had a detection limit of 12 mg/L because the samples required 100-fold dilution prior to analysis due to the high concentration of chloride, approximately 38,000 mg/L.] The nitrate decreases are consistent with the utilization of nitrate by bacteria. However, after a third nitrate addition on day 83, the nitrate did not decrease.

Table 8A. MW-01S *Soluble* NO_3 in Nitrate-amended bottles compared to controls (non-NO_3-amended bottles)

date	day	NO_3 in N bottle		"NO_3" in control bottles	
		# of analyses	mg/L	# of analyses	mg/L
1/28	0		**add 26**		**add 0**
1/29	1	(2)	25 ± 1		
2/18	28	(2)	< 12		
3/3	41	(2)	< 12	(6)	< 12
3/4	42		**add 25**		**add 0**
3/23	61	(1)	31	(5)	< 12
3/31	69	(2)	< 12	(2)	< 12
4/1	70		**add 25**		**add 0**
4/14	83	(2)	23 ± 2	(2)	< 12
6/1	138	(2)	30 ± 1		

For MW-02S, 16 mg/L NO_3 were initially added to the N bottles. Analysis of the control bottles (which did not receive added nitrate) did not show significant nitrate. Analysis of N bottles for nitrate on day 37 showed a 38% decrease in nitrate at all three pH values, indicating that nitrate-reducing bacteria might have been active. However, a second addition of 19 mg/L NO_3 on day 46 did not show nitrate utilization.

Table 8B. MW-02S *Soluble* NO_3 in Nitrate-amended bottles
Compared to controls (iron-amended bottles)

date	day	pH 7 bottle		pH 9 bottle		pH 11 bottle & dup		control bottles	
		# of analyses	mg/L $NO_2 + NO_3$	# of analyses	mg/L	# of analyses	mg/L	# of analyses	mg/L
2/23	0		**add 16**		**add 16**		**add 16**		**add 0**
3/3-5	8-10	(2)	16	(2)	16 ± 0	(1)	15	(3)	< 6
3/24	29	(1)	22[(1)]	(1)	12	(2)	13 ± 1	(3)	< 6
4/1	37	(2)	11[(1)]	(2)	10 ±1	(3)	9 ± 1	(3)	< 6
4/10	46		**add 19**		**add 19**		**add 19**		**add 0**
4/14	50	(1)	26	1	29	(1)	26	(1)	6
6/11	108	(1)	37	1	34	(2)	29	(1)	< 6

[(1)] includes nitrite

For MW-03S, 73 mg/L soluble NO_3 were added to the N bottles. Analyses of the N bottles through day 111 detected 50 to 70 mg/L nitrate, indicating that nitrate has not been used by bacteria. Data for bottles that did not receive added nitrate indicates that native soluble NO_3 concentration is < 12 mg/L. (The detection limit for NO_3 in MW-03S was 12 mg/L due to high chloride.)

Table 8C. MW-03S *Soluble* NO_3 in Nitrate-amended bottles
compared to controls (non-NO_3 -amended bottles)

date	Day	NO_3 in N bottle		"NO_3" in control bottles	
		# of analyses	mg/L	# of analyses	mg/L
2/17	1		**add 73**		**add 0**
2/18	2	(2)	54 ± 3		
3/3-5	15	(2)	60 ± 0	(6)	< 12
3/23	35	(1)	73	(5)	< 12
3/31-4/1	42	(2)	50 ±1	(5)	< 12
4/29	78	(2)	58 ± 4		
6/1	111	(2)	57 ± 2		

Analysis of Sulfate, and Data on Sulfate-reduction and Sulfate Solubility

Method. Sulfate analysis was performed for the aqueous portion of microcosms by the same method used for nitrate (above). Sulfate reduction and sulfate solubility. MW-01S and MW-03S data is presented in Tables 9A and 9C for sulfate-reducing microcosms at pH 8, and unamended microcosms at pH 11. For MW-02S, data from nitrate-reducing microcosms is presented.

MW-01S ground water at pH 8.5 (without core solids) contained sulfate at 520 mg/L. In the pH 11 microcosms, the SO_4 in the aqueous portion was measured to be 340 to 425 mg/L, less than that in the original ground water. In the pH 8 microcosms, the sulfate gradually increased from 570 to 690 mg/L (Table 9A). These data are consistent with the dissolution of SO_4 from the solids into the water at pH 8, and the adsorption of SO_4 onto the solids at pH 11. Alternatively, sulfate reduction may have occurred briefly at pH 11.

Table 9A. MW-01S *Soluble* SO_4 in Sulfate-reducing bottles					
date	day	SO_4 in S bottle, pH 8		SO_4 in U bottles, pH 11	
		# of analyses	mg/L	# of analyses	mg/L
1/28	1	2	570 ± 10		
3/3-5	35	2	630 ± 20	2	340 ± 20
3/23	55	2	690 ± 10	1	425

The original MW-02S ground water contained only 43 mg/L SO_4. The SO_4 (in the nitrate-amended bottles) increased at pH 7, over 3 months, from 80 mg/L to 160 mg/L. At pH 9, SO_4 was maintained at approximately 65 mg/L. At pH 11, sulfate remained at 40 mg/L, the same as native ground water. The data indicates that sulfate was released from the solids at pH 7 and not at pH 11.

Table 9B. MW-02S *Soluble* SO_4 in *Nitrate-amended* bottles							
date	day	pH 7 bottle		pH 9 bottle		pH 11 bottle & dup	
		# of analyses	mg/L	# of analyses	mg/L	# of analyses	mg/L
3/3-5	8	2	82 ± 1	3	62 ± 3	1	41
3/24	29	1	110	1	63	2	39 ±1
4/1	37	2	104 ± 5	2	64 ± 2	3	37 ± 3
4/14	50	1	114	1	62	1	40
6/11	108	2	160 ± 1	1	71	2	39 ± 2

The original MW-03S ground water contained 15 mg/L SO_4. By day 1, in the pH 8 microcosms, the concentration of sulfate had already increased by 175 mg/L, showing that SO_4 had already been released into the ground water. By day 42 an additional increase of 60 mg/L was observed. At pH 11, the concentration of sulfate in the aqueous portion increased by only 25 mg/L SO_4.

Table 9C. MW-03S *Soluble* SO_4 in Sulfate-reducing bottles					
date	day	SO4 in S bottle, pH 8		SO_4 in U bottles, pH 11	
		# of analyses	mg/L	# of analyses	mg/L
2/18	1	2	190 ± 10		
3/3-5	14	2	250 ± 40	2	38 ± 4
3/23	34	1	265	1	39
3/31	42	3	250 ± 10	2	43

Analysis of Fe^{+++}

Fe^{+++} was measured as the difference between Total Iron and Reduced Iron.
Total Iron was analyzed according to Hach Method (FerroVer) #8008 using the Hach spectrophotometer. Analysis for total iron required that the sample be adjusted to pH between 3 and 9, and be diluted to have a total iron concentration below 2 mg/L. The test required 10 ml of prepared sample.

Reduced iron was analyzed according to Hach Method #8146 using the Hach spectrophotometer. Analysis of reduced ion required that the sample must be adjusted to pH between 3 and 9, and be diluted to have a total iron concentration below 1.5 mg/L. For this test, *the sample and the diluted sample were required to be maintained in anaerobic condition*. The time limit for this analysis was 3 minutes, due to slow competing reactions. The test required 25 ml of prepared sample.

Iron Standards were analyzed with every batch of samples.
The standard for Fe^{++} was 50 mg/L Fe^{++}, 35 mg $Fe(NH_4)_2(O_4)_2*6H_2O$ in 100 ml DI water.
The standard for Fe^{+++} purchased from Hach, was 25 mg/L Fe as $FeCl_3$.

Analysis of Ground Water and Soil Cores. The concentration of iron in the ground water was reported by Lancaster Lab (Table 3) to be very low, <0.05 mg/L for MW-02S and MW-16S, and 0.1 mg/L and 0.2 mg/L for MW-01S and MW-03S. In contrast, the concentration of iron in the core material ranges from 3,000 mg/Kg to 8,000 mg/Kg.

Analysis of the Aqueous Portion of Microcosms. Preliminary tests for iron in microcosms, in which the solids were allowed to settle prior to removing a sample, showed that *neither form of iron was present in the aqueous portion of the microcosms*. This result is consistent with the data for ground water and core material discussed above. Even after adding soluble iron to the microcosms, no iron was detected in the aqueous portion of the microcosm. It was shown that iron in the microcosms was associated only with the solids, and that the particles completely dissolve at pH between 3 and 4. Therefore the following procedure was developed to evaluate a sample containing solids and ground water.

Iron Test Procedure for Microcosms Containing Solids. The microcosm was shaken to suspend particulates, and a sample was withdrawn and diluted with anaerobic deionized (DI) water in a sealed serum bottle. HCl was added to lower the pH to about 3.2 and shaken to dissolve the particulates. Then additional anaerobic DI water was added to obtain the desired dilution, and the Fe^{++} test was conducted using anaerobic procedures. Subsequently, the Total iron test was conducted on the same dilution using aerobic procedures.

Iron Test Results

MW-01S Iron Results

The data for the unamended microcosm show that both Fe^{++} and Fe^{+++} were present in the native core material. Since it was not known whether the Fe^{+++} in the solids was available to bacteria, soluble Fe^{+++} was added to the iron-reducing microcosms.

On day 23, F and D bottles received another 90 ppm Fe^{+++}, and were immediately tested for iron. The total and oxidized iron values increased consistent with the addition of Fe^{+++}.

On day 92, the average value for the reduced iron in the amended bottles was 200 mg/L greater than that in the control bottles, indicating that iron reduction may have occurred.

Table 10A. MW-**0**1S Iron Data. mg/L. aqueous & solids. Fe^{+++} calculated
F and D are iron-reducing microcosm and duplicates (pH 8). U is unamended (pH 11)

date	day	average F & D Tot Fe	average F & D Fe^{++}	average F & D Fe^{+++}	U Tot Fe	U Fe^{++}	U Fe^{+++}
1/29	0			**add 90**			**add 0**
3/17	20	452±12	293±15	159±27	245	143	102
3/20	23			**add 90**			**add 0**
3/20+	23	580	310	270			
5/1	92	595±45	322±3	273±40	320	100	220

MW-02S Iron Results

The data for microcosms that did not receive iron amendment (nitrate amended) indicate that core solids contribute about 120 mg/L total iron to the microcosm, with approximately equal amounts of Fe^{++} and Fe^{+++}.

The F bottles, which received 56 ppm Fe^{+++} on day 1, should have contained 120 + 56 = 176 total iron, which is in agreement with the result obtained for total iron in the bottles at all three pH levels.

By day 81 (5/15), in the pH 11 amended microcosms, the amount of Fe^{+++} decreased by 50 mg/L and the amount of Fe^{++} increased by 60 mg/L, indicating reduction of Fe^{+++}. The apparent reduction of Fe^{++} was about 40 mg/L in the pH 9 microcosms. Fe^{+++} reduction appeared to occur at pH 7, but not enough to be significant.

Table 10B. MW-02S Iron Data (aqueous & solids) mg/L Fe^{+++} = Total Iron minus Fe^{++}
N bottles used as control

date	F pH 7 Tot Fe	F pH 7 Fe^{++}	F pH 7 Fe^{+++}	F pH 9 Tot Fe	F pH 9 Fe^{++}	F pH9 Fe^{+++}	F pH 11 Tot Fe	F pH 11 Fe^{++}	F pH 11 Fe^{+++}	N pH9 Tot Fe	N pH 9 Fe^{++}	N pH 9 Fe^{+++}
2/23			**add 56**			**add 56**			**add 56**			**add 0**
3/26	190 ± 2	56	136	169	26	143	175	17	158	120 ±20	55 ± 20	65 ± 5
5/15	211 ± 3	85	125	173±0	71	102	187±7	78	109			

MW-03S Iron Results

Table 10C contains separate data for the iron-reducing microcosm and the duplicate, as well as for the unamended control bottle. Table 10D presents the averaged data for the duplicate iron-amended bottles.

The average data (3/24 and 5/15) for the *control bottle* (unamended) indicate that the core solids iron contains both the oxidized and reduced forms. These data are used in Table 10D as starting values for the amended microcosms, which were not analyzed prior to addition of Fe^{+++}.

mg/L: Total iron = 250 ± 20 Fe^{++} = 96 ± 7 Fe^{+++} = 156 ± 12

Table 10D shows the average actual values for total iron. The expected values for total iron were calculated from the day 0 amount plus the additions. According to this table, the actual measured total iron on day 94 agrees with the calculated amount of total iron, providing some validation of the analytical procedure. Also according to Table 10D, the measured reduced iron increased from 96 mg/L to 235 mg/L, indicating that *139 mg/L Fe^{+++} were reduced to Fe^{++} during the test.*

It should be stressed that it is not known whether the core solids iron or the added Fe^{+++} was available to bacteria, nor whether the reduction process was abiotic or biological.

Table 10C. MW-03S Iron Data. (aqueous & solids) mg/L
Fe^{+++} = Total Iron minus Fe^{++} F and D are Iron-amended and Dup

date	day	F Total Fe	F Fe^{++}	F Fe^{+++}	D Tot Fe	D Fe^{++}	D Fe^{+++}	U Tot Fe	U Fe^{++}	U Fe^{+++}
2/17	0			**add 155**			**add 155**			**add 0**
3/24-4/1	35	340 ± 10	167	173	370 ± 3	200	170	272 ±5	103	169
4/2	51			**add 155**			**add 155**			**add 0**
4/2+	51	566 ± 1	201	367						
5/15	94	586 ± 1	229	357	590 ± 10	240	350	233	89	144

Table 10D. MW-03S Iron Data. Results for D and F bottles Averaged
Data for Unamended Control (average 3/4 & 5/15) used as a Day 0 for F & D bottles.

date	day		# of analyses	Total Fe actual	Total Fe expect	# of analyses	Fe^{++} measured	Fe^{+++} calculated
2/17	0			250 ± 20	250 ± 20	2	**96 ± 7**	156 ± 12
2/17	0	add		**155**	**155**			
3/24	35	analyze	4	355 ± 15	405	2	186 ± 14	
4/2	51	add		**155**	**155**			
4/2	51	analyze	2	566	560	1	201	
5/15	94	analyze	4	588 ± 12	560	2	**235 ± 6**	

Analysis of Phosphate

Method. Phosphate was analyzed according to Hach Method 8048 using the Hach spectrophotometer. Preliminary PO_4 tests showed that phosphate was not present in the aqueous portion of the microcosm, but was associated only with the solids. The phosphate test was subsequently conducted by shaking the microcosm to suspend the particulates before removing the sample. The Hach phosphate test color reagents are acidic and dissolve the particulates, however, the *blank* required acidification (Hach 'pretreatment reagent') to dissolve particulates.

Typical Data for Phosphate Amendment. Analysis of the aqueous portion of a microcosm before, and immediately after amending with phosphate, showed no detectable phosphate. When the analytical method was changed to include core solids by shaking the bottle prior to removing the sample, the unamended microcosm was shown to contain 32 mg/L PO_4 and the amended had 140 ppm, showing that the added 120 mg/L PO_4 had adsorbed to the particulates. Similar data were obtained for MW-02S, MW-03S & MW-16S. The MW-01S phosphate data is summarized in Table 11.

Table 11. MW-01S Phosphate Data

date	analysis type	microcosm	mg/L
1/29			**add 60**
3/5	water only	amended	< 0.02
3/5	water only	unamended	< 0.02
3/6			**add 60**
4/14	water & solids	amended	140
4/14	water & solids	unamended	32

Analysis of O_2, CO_2, and Methane.

Method. Methane, O_2 and CO_2 were monitored by removing 100 μL samples of microcosm headspace and injecting into a HP 5890 gas chromatograph according to EPA Method 5021A. Standards were prepared similarly, and analyzed in the same manner as samples. Methane was detected by FID and O_2 and CO_2 were detected by TCD. ChemStation software was used to calculate response factors and quantitate results.

Result.

- For methanogenic tests, there was no generation of methane.
- For the methanotrophic tests, there was no change in methane or oxygen concentrations, and no generation of CO_2.
- For the direct oxidizer tests, the data showed no use of oxygen and no generation of CO_2.

Methane Data for Anaerobic Microcosm Tests

Table 12A . MW-01S Methane Analysis µM				
	Methanogenic microcosms		Unamended or Killed Control	
date	# analyses	µM	# analyses	µM
3/3	2	89 ± 5	1	103
3/26	1	87	1	104
5/14	2	77 ±4	1	88
6/24	1	82		

Table 12B. MW-03S Methane Analysis µM				
	Methanogenic microcosms		Unamended or Killed Control	
date	# analyses	µM	# analyses	µM
3/4			1	543
3/26	2	502 ± 15	2	506 ± 8
5/14	2	438 ± 3	1	469
6/24	1	486		

O_2, CO_2, and Methane Data Aerobic Microcosm Tests (methanotrophs and direct oxidizers)

Table 13A. Methanotroph Microcosms Gases as Volume % of Headspace						
	pH 7			pH 9		
date	Methane	O_2	CO_2	Methane	O_2	CO_2
3/13	11.8	16.9	0	11.8	16.7	0
3/24	10.7	16.5	0	10.7	16.6	0
4/10	11.2	16.4	0	10.7	16.2	0
5/4	11.9	15.8	0	12.0	16.0	0
6/11	10.6	16.7	0	11.0	16.5	0

Table 13B. Direct Aerobic Microcosms Gases as Volume % of Headspace						
	pH 7		pH 9		pH 11	
date	O_2	CO_2	O_2	CO_2	O_2	CO_2
3/13	19.0	0	18.9	0	19.0	0
3/24	18.4	0	18.5	0	18.5	0
4/10	18.3	0	18.1±.2	0	18.1	0
5/4		0	17.6	0		0

5. GCMS Analysis for Compounds of Concern

Method. For analysis of BTEX, phenol, methyl phenols and naphthalene, one microcosm from each set of four replicates was extracted at each time point with dichloromethane (DCM). MW-01S, MW-02S and MW-16S were extracted with 20 ml of DCM and MW-03S was extracted with 30 ml (due to its higher concentration of analytes). Subsequently, the extract was submitted with COC to Meta Environmental Inc for analysis by GCMS in accordance with EPA Method 8270, modified. The data was reported as µg/ml of extract, and converted at BCI to µg/bottle.

Extraction Procedure. The procedure for extracting analytes from a *sealed* microcosm was developed and validated at BCI, as follows:

- The pH of the microcosm was adjusted to < 8 using 6 N HCl to assure that phenol would not be in its ionized form.
- Ananalytical surrogate toluene-D8 was injected.
- The first 10 ml of DCM was injected through the septa, swirling to extract most of the analytes into the DCM.
- The second 10 ml of DCM was injected, while venting excess headspace gas through the DCM in the syringe.
- For MW-03S, a third aliquot of DCM was injected and swirled.
- The serum bottle septum was quickly changed for a new septum.
- The serum bottle containing 20 ml DCM was placed in horizontal position and shaken for 15 minutes on a reciprocal shaker.
- The entire serum bottle was then centrifuged in a swinging-bucket centrifuge for 30 min. This resulted in three layers in the serum bottle: bottom solids, middle DCM, top aqueous.
- 6 ml of DCM were carefully removed by Pasteur pipette and transferred to a 7-ml screw-cap vial having rinsed Teflon liners, and submitted to Meta.

Validation of Extraction Procedure. For MW-01S, the extraction procedure was validated by re-extracting a bottle that had been extracted according to the procedure above, and submitting this second extract to Meta for analysis. The data showed that the entire amount of each analyte, ± ~ 5% had been extracted during the first extract.

Results of GCMS analysis for Compounds of Concern.

A graph was prepared of the data for each compound, in each experiment, for the live microcosm and for the corresponding killed control microcosm, and the data was evaluated by comparing the trend lines generated by Excel software. In no case was the slope of the trend line significantly different for the live and killed control microcosm. The data and resulting graphs are provided as follows:

MW-01S	Table14 and Figures 1-7
MW-02S	Table15 and Figures 8-14
MW-03S	Table16 and Figures 15-21
MW-16S	Table17 and Figures 22-28

References

Honeywell, Inc. 2008. *Wastebeds 1-8 Site, Microcosm Study Work Plan.* October 3, 2008.

NYSDEC. 2008. Letter approving the October 3, 2008 WB 1-8 Site Microcosm Study Work Plant. October 14, 2008

Table 14 MW-01S
Anaerobic Microcosm GCMS Data

wk	µg/bottle benzene	µg/bottle toluene	µg/bottle ethylbenzene	µg/bottle mp xylene	µg/bottle o xylene	µg/bottle phenol	µg/bottle m phenols	µg/bottle naphthalene
killed								
8	1020	7	6	32	17	212	7	58
12	800	6	5	28	15	162	6	52
18	700	6	5	24	13	158	8	42
22	720	5	4	20	10	170	6	54
Unamended								
8	860	7	6	28	16	166	7	60
12	780	6	5	26	14	176	6	54
18	540	5	4	20	11	142	6	40
22	880	5	4	22	11	150	6	46
nitrate amended								
8	740	5	5	24	13	182	6	54
12	780	6	5	26	14	182	7	60
18	600	5	4	22	12	190	7	40
22	660	5	3	16	10	184	5	44
iron amended								
8	780	6	5	26	14	192	6	54
12	760	6	5	24	13	202	7	50
18	760	7	5	28	15	216	8	56
22	900	6	4	22	11	206	6	50
iron dup								
8	740	6	5	24	13	190	6	52
12	760	6	5	38	13	180	6	46
18	700	7	5	24	13	194	8	56
22	700	5	3	18	9	198	7	40
sulfate reducing								
8	920	8	7	34	18	248	8	76
12	800	6	5	26	14	198	7	52
18	660	5	4	22	12	182	6	42
22	860	5	4	20	11	212	6	44
Methanogenic								
8	780	6	5	26	14	196	7	60
12	760	6	5	24	13	192	6	58
18	640	6	4	22	12	180	7	48
22	760	5	3	18	10	188	6	44

Figure 1 MW-01S Benzene

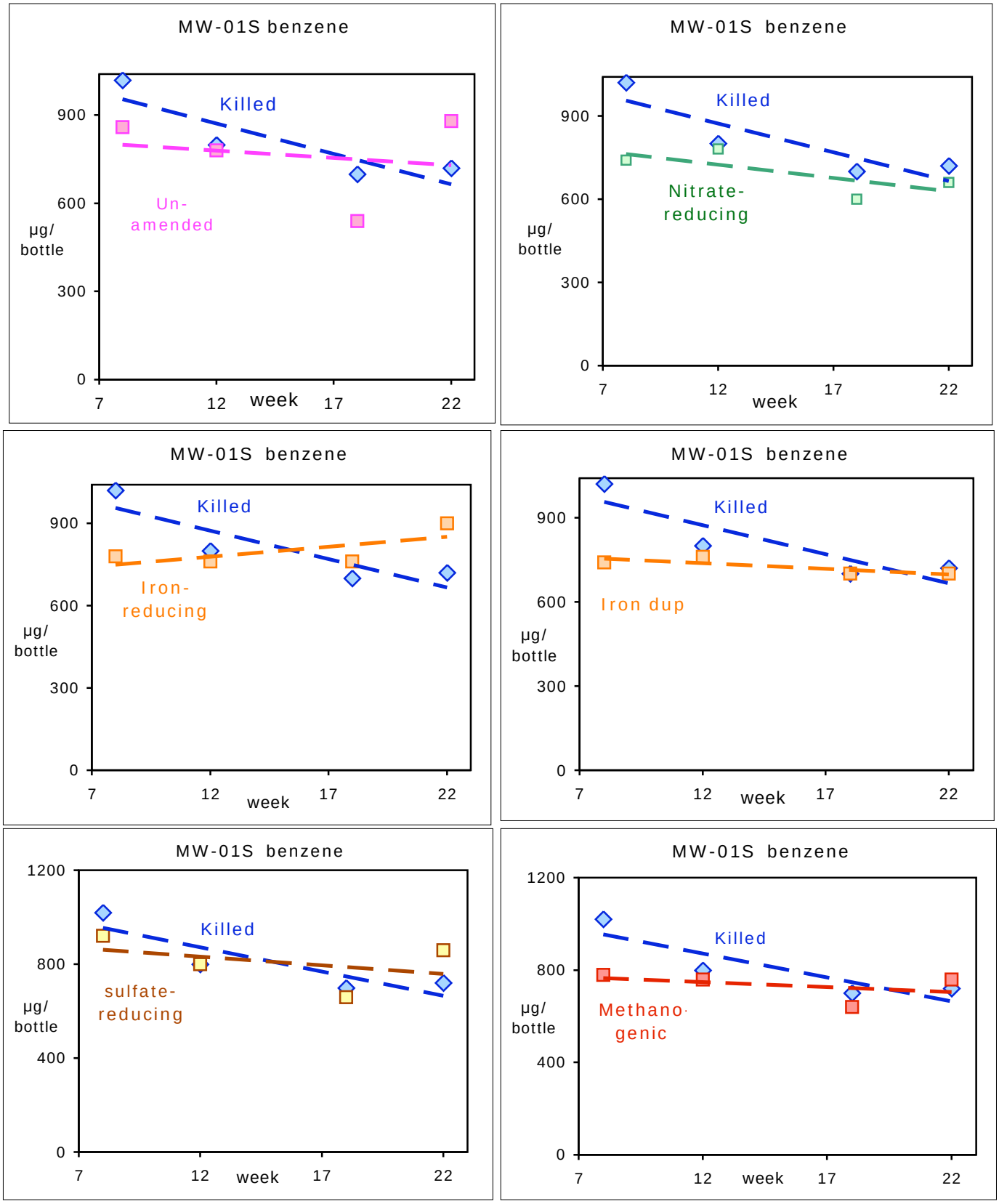


Figure 2 MW-01S Toluene

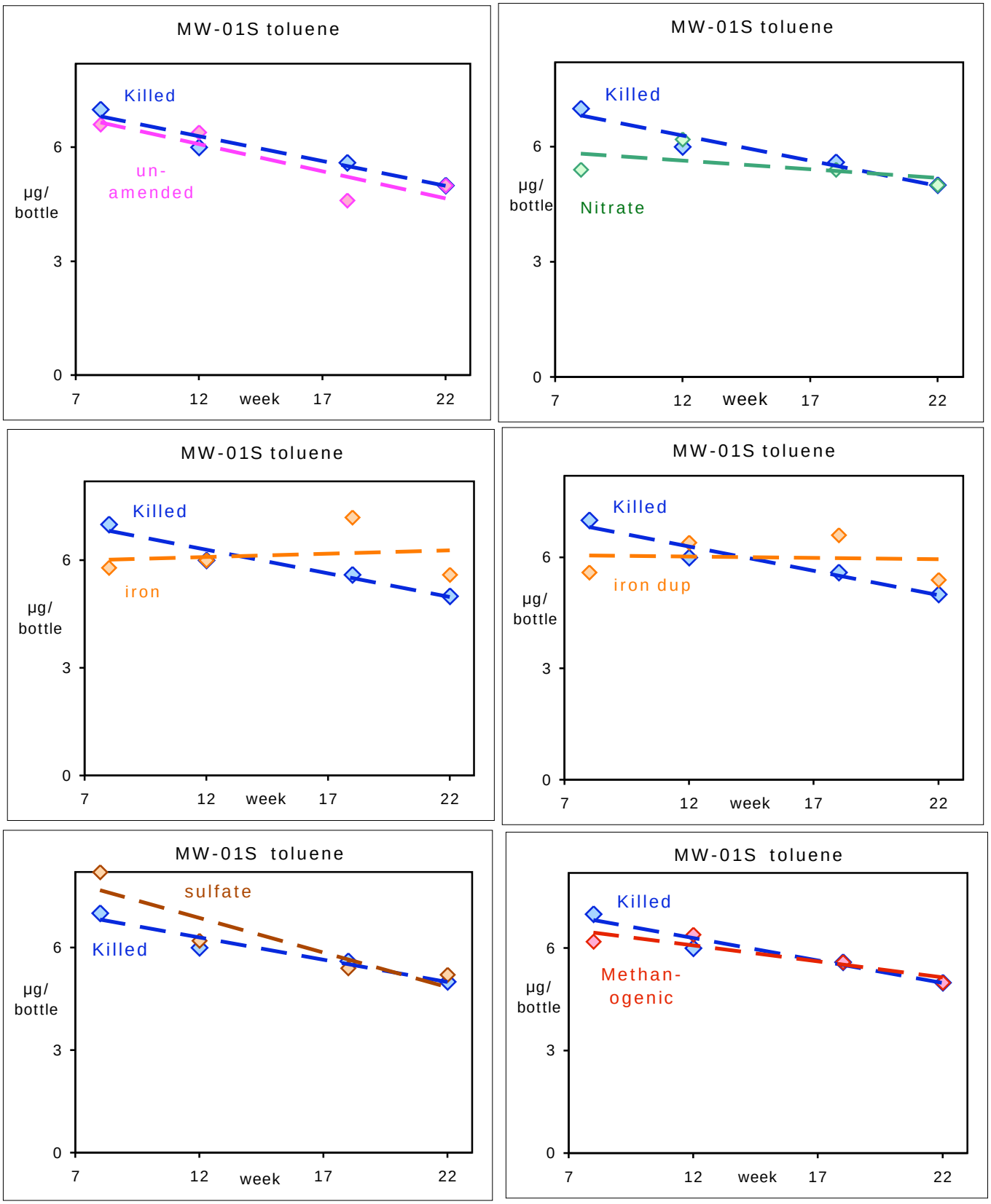


Figure 3 MW-01S Ethylbenzene

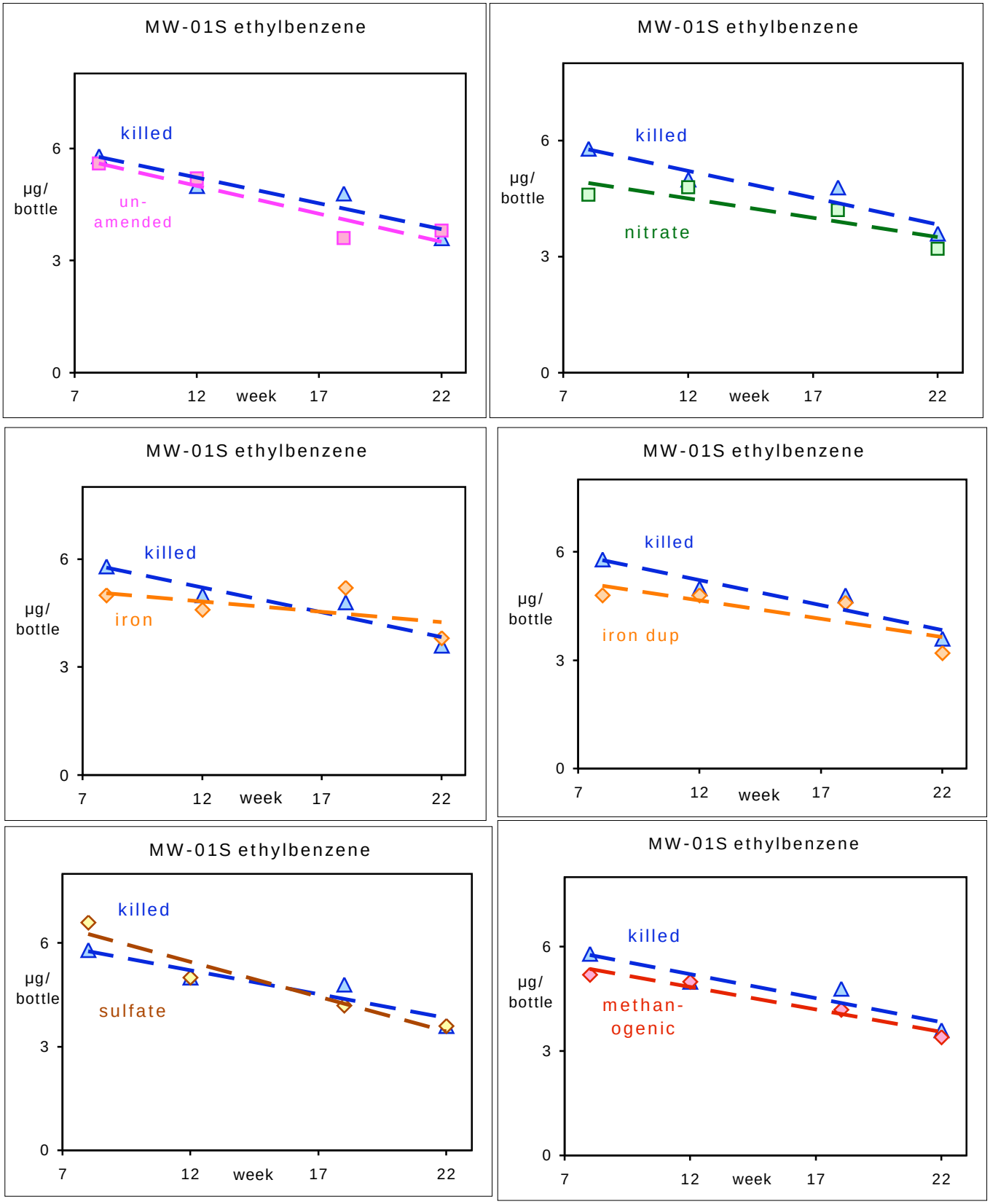


Figure 4 MW-01S m/p Xylene

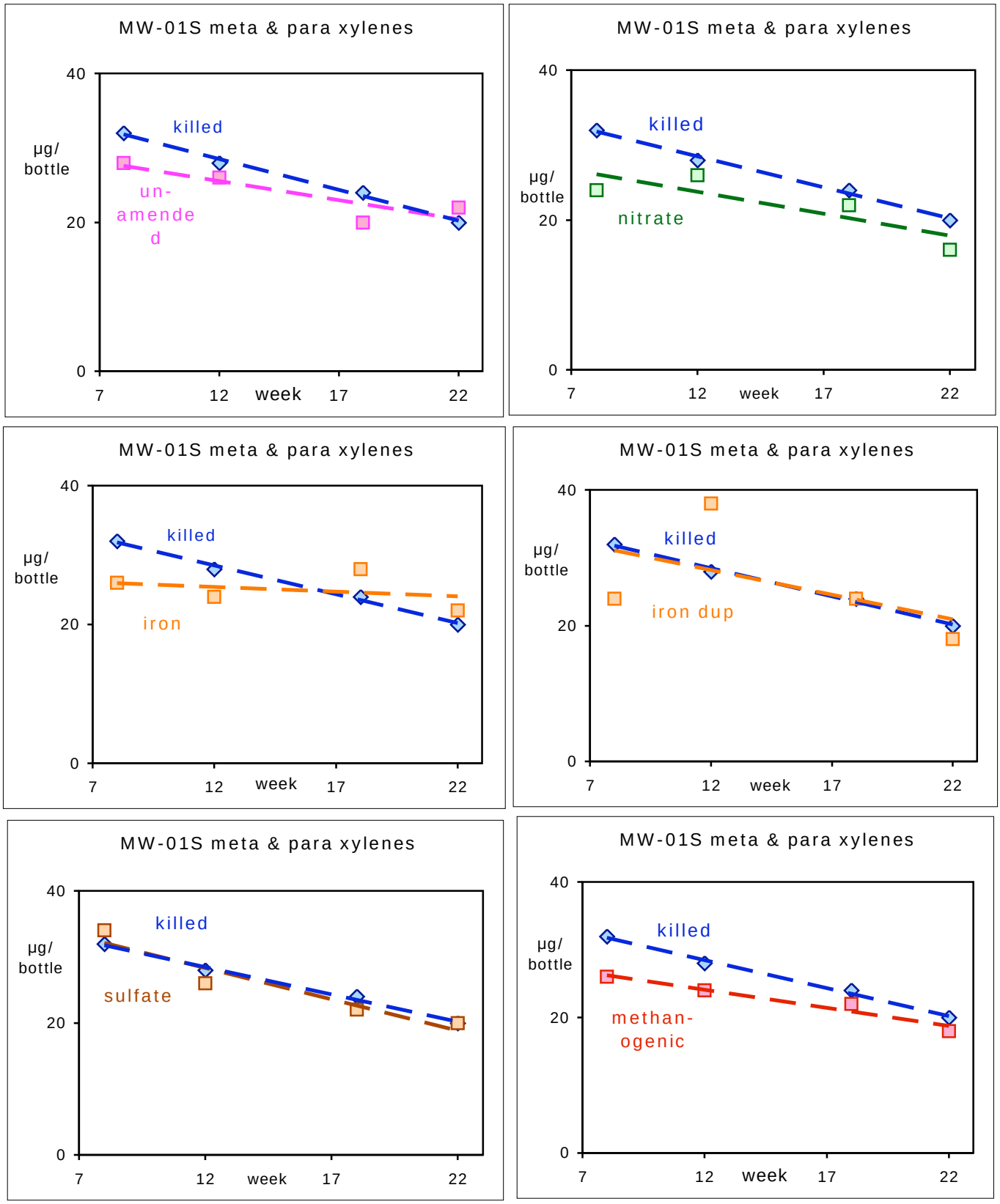


Figure 5 MW-01S ortho Xylene

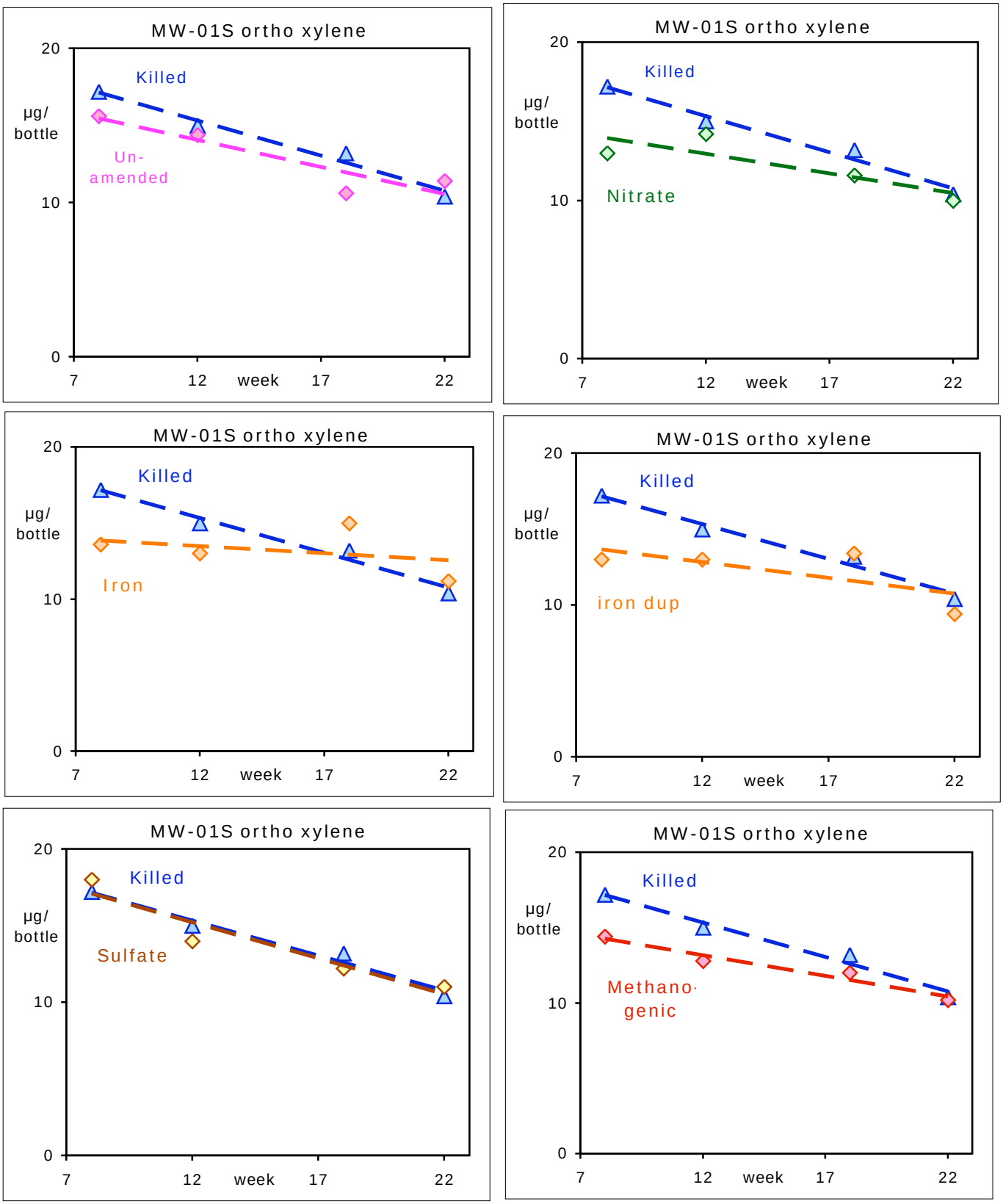


Figure 6 MW-01S Phenol

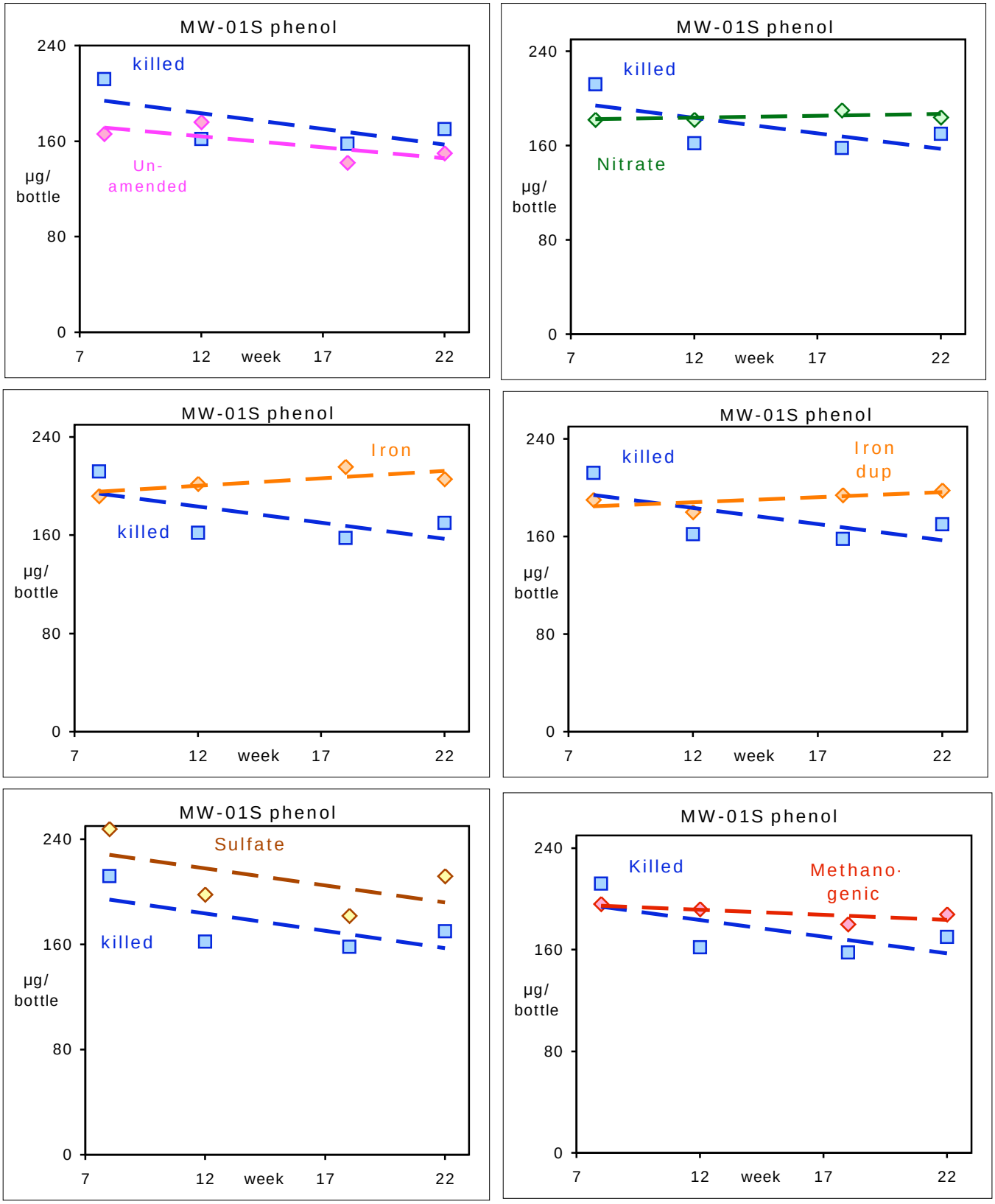


Figure 7 MW-01S Naphthalene

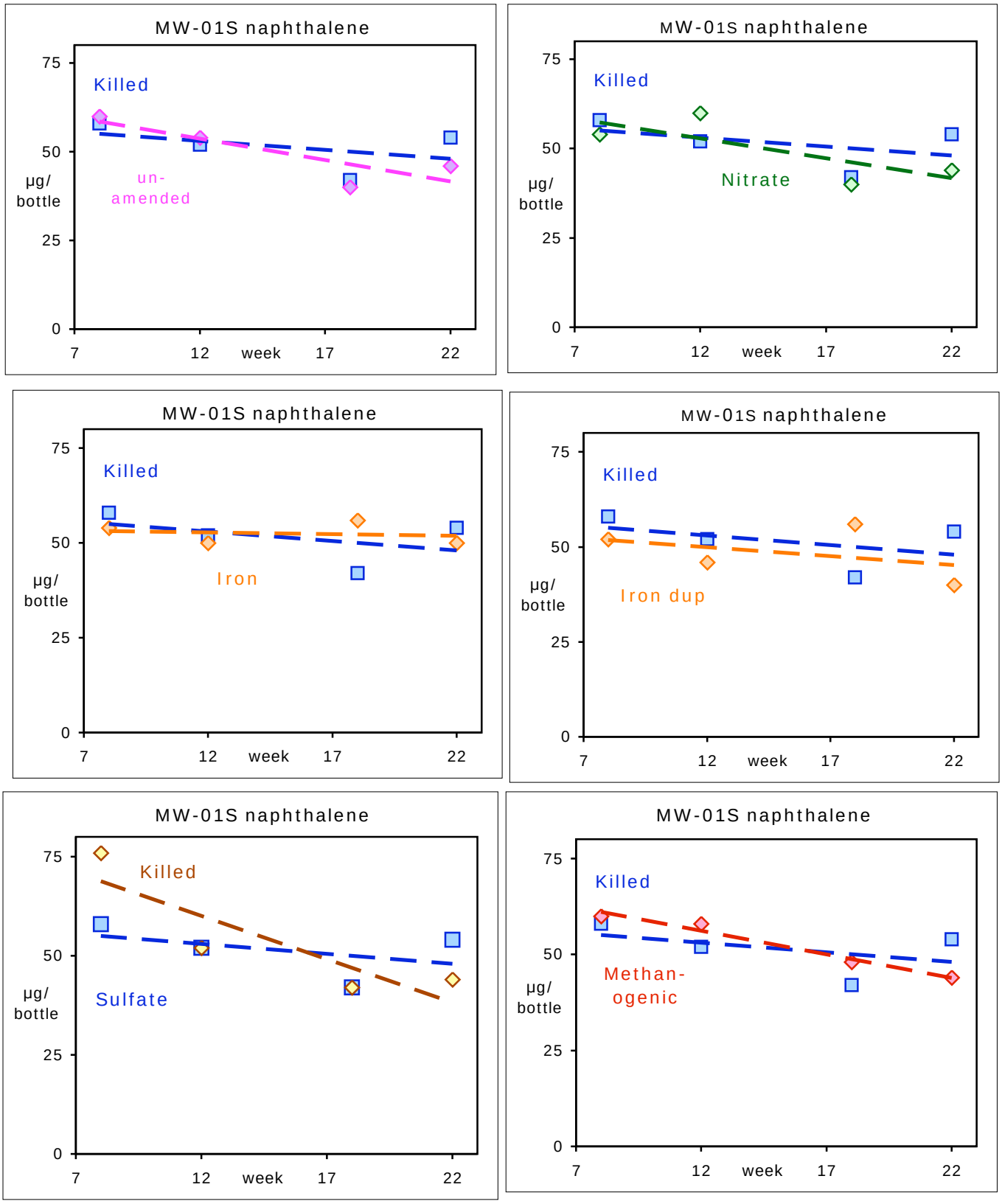


Table 15 MW-02S Anaerobic Microcosms GCMS Data

week	µg/bottle benzene	µg/bottle toluene	µg/bottle ethylbenzene	µg/bottle mp xylene	µg/bottle o xylene	µg/bottle phenol	µg/bottle m phenols	µg/bottle naphthalene
Killed								
6	15.2	82	10.0	176	56	118	3.2	348
10	13.8	74	8.8	166	54	126	3.0	344
15	18.4	76	9.8	190	58	152	3.4	456
19	8.0	52	6.4	122	36	94	2.0	284
NO3 reducing , pH 7								
6	13.6	76	9.2	162	52	154	3.4	330
10	13.8	64	7.4	132	44	128	2.6	286
15	10.0	62	7.4	138	44	174	3.4	314
19	8.0	50	6.0	114	34	108	2.2	274
NO3 reducing , pH 9								
6	15.4	86	11.2	194	64	170	3.8	382
10	12.0	62	7.0	132	42	132	2.8	276
15	9.6	62	7.4	140	44	150	3.2	300
19	8.6	52	6.2	116	36	102	2.2	266
NO3 reducing , pH 11								
6	14.4	80	10.4	180	58	156	3.4	358
10	13.8	60	7.2	132	42	132	2.6	276
15	10.0	66	8.0	154	48	180	3.6	316
19	8.6	48	6.2	116	36	106	1.8	268
NO3 reducing , pH 11, duplicate								
6	14.2	76	9.6	170	54	154	3.2	342
10	12.0	60	7.0	132	42	134	2.6	276
15	9.2	60	7.6	146	46	148	3.4	320
19	8.0	54	7.0	128	38	110	2.0	284
Fe reducing , pH 7								
6	18.6	72	8.4	148	48	130	3.2	314
10	11.2	56	6.6	120	40	132	2.6	264
15	9.8	60	7.4	138	44	168	3.8	318
19	8.0	50	6.4	116	36	98	2.2	278
Fe reducing , pH 9								
6	15.2	78	9.2	162	52	150	3.4	326
10	12.6	62	7.0	130	42	132	2.6	280
15	11.0	60	7.4	138	44	152	3.6	300
19	7.6	50	6.2	118	36	104	2.0	270
Fe reducing , pH 11								
6	14.8	78	9.6	170	56	166	3.6	338
10	12.0	64	7.6	140	46	134	2.8	292
15	9.4	60	7.6	144	44	158	3.4	310
19	8.6	54	6.8	126	38	104	2.0	284

Figure 8 MW-02S Benzene

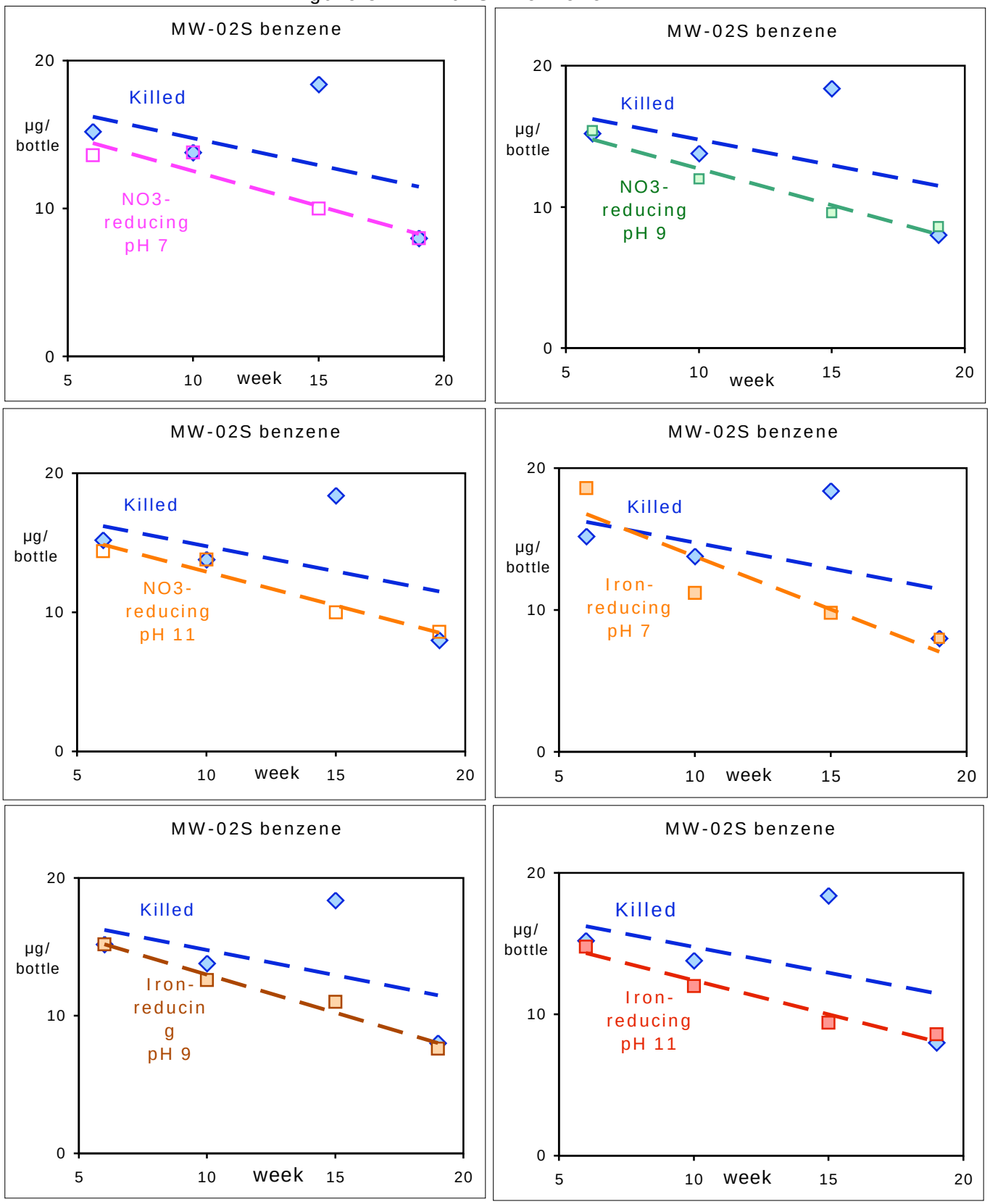


Figure 9 MW-02S Toluene

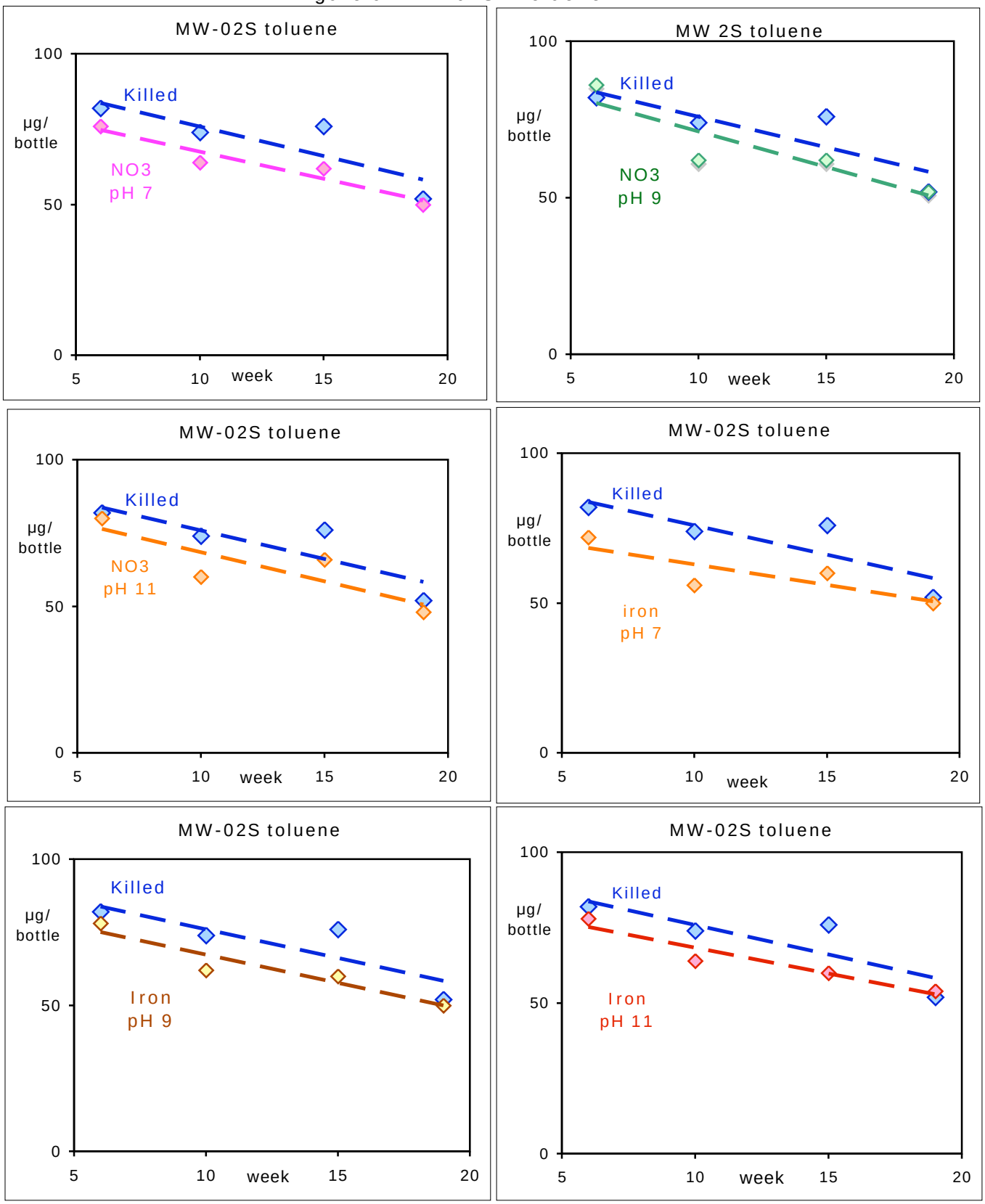


Figure 10 MW-02S Ethylbenzene

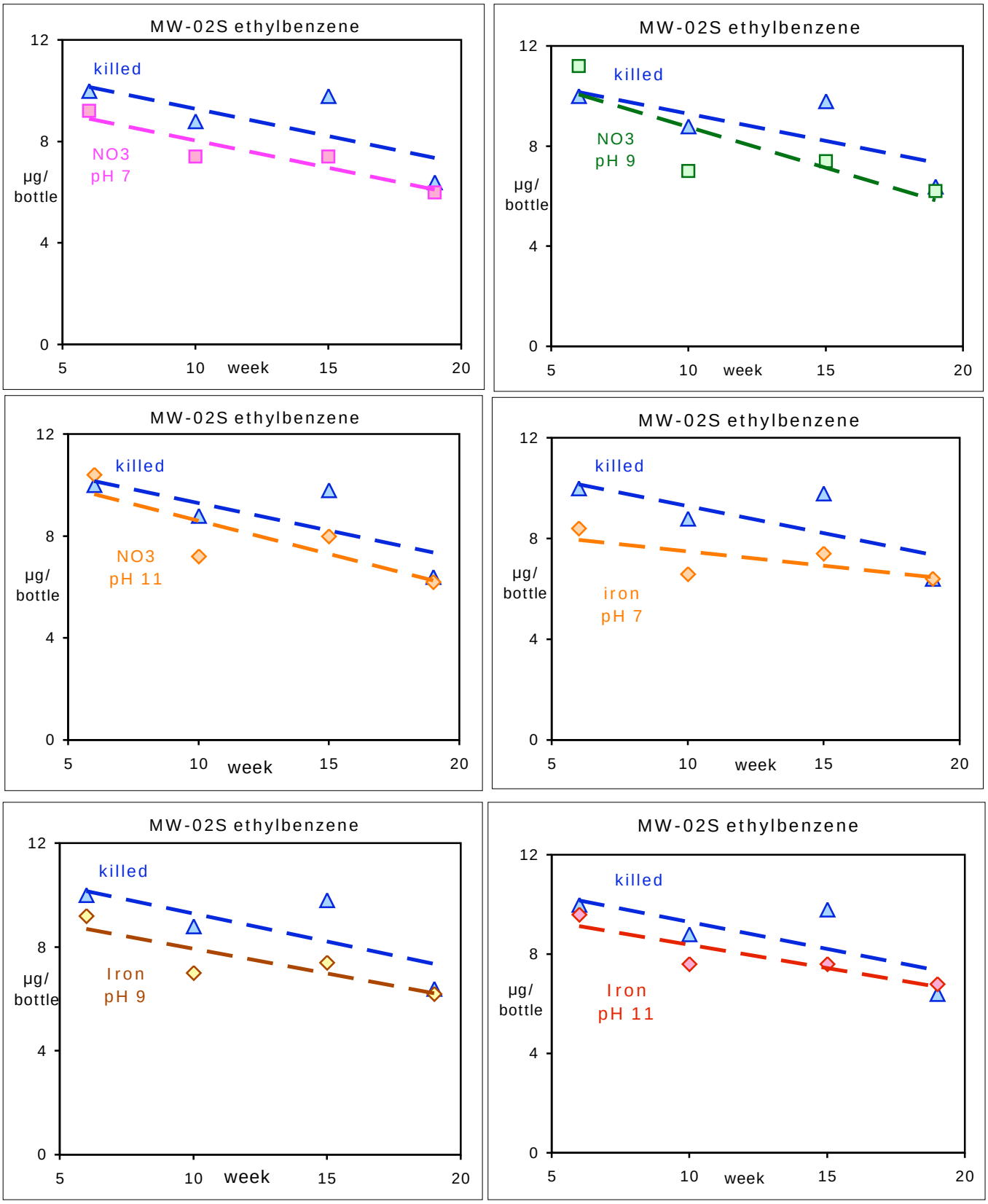


Figure 11 MW-02S meta & para Xylene

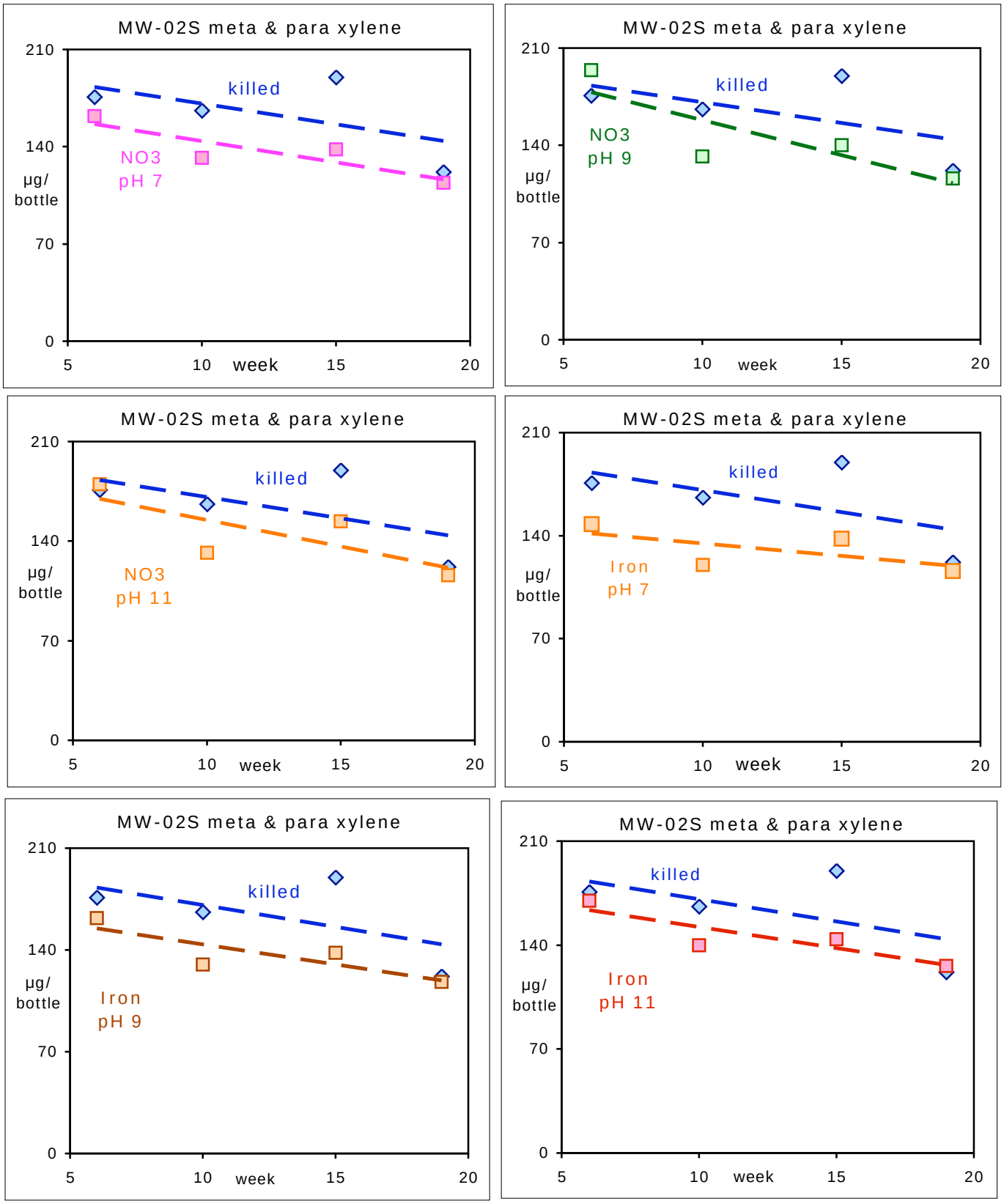


Figure 12 MW-02S ortho-Xylene

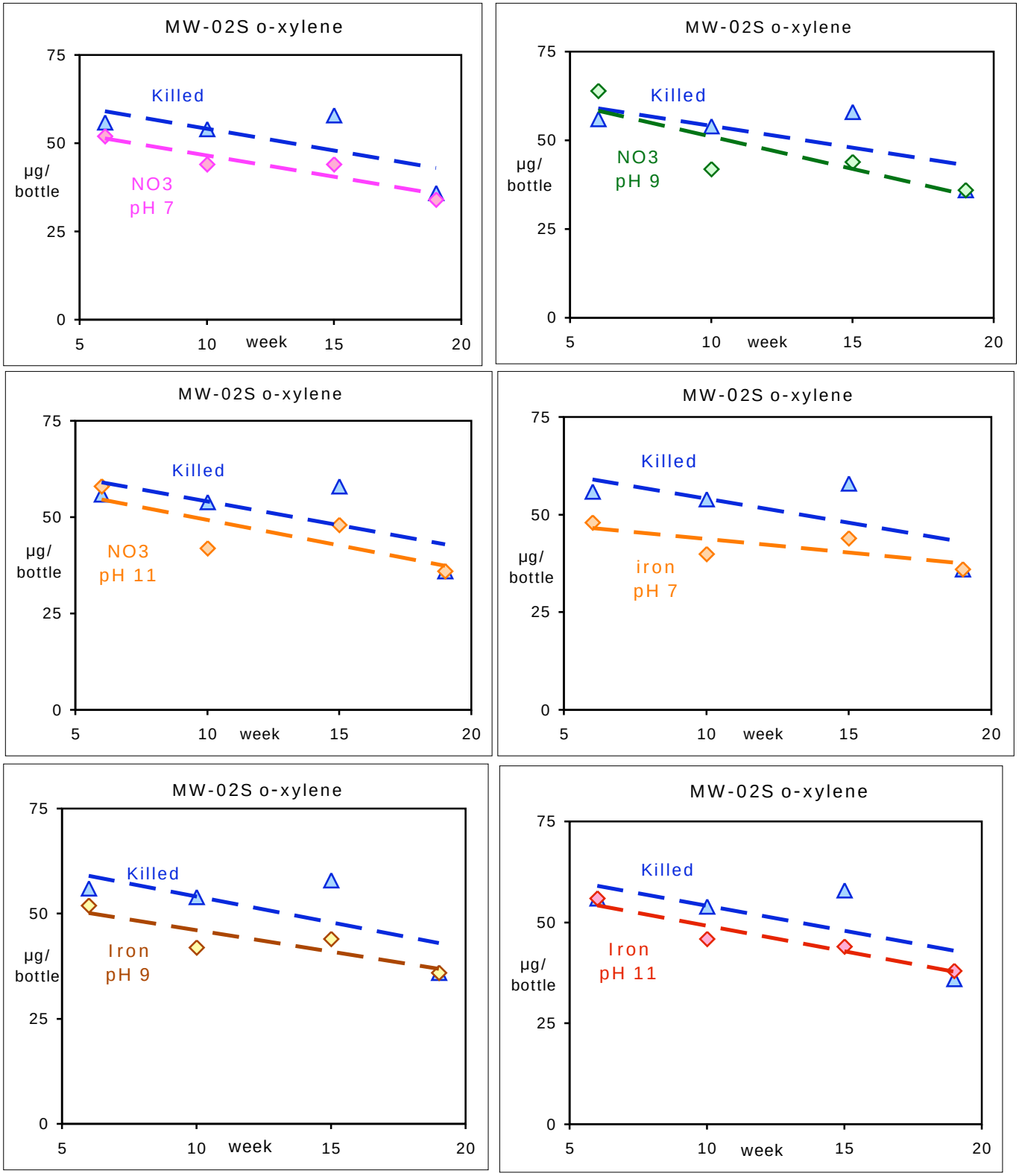


Figure 13 MW-02S Phenol

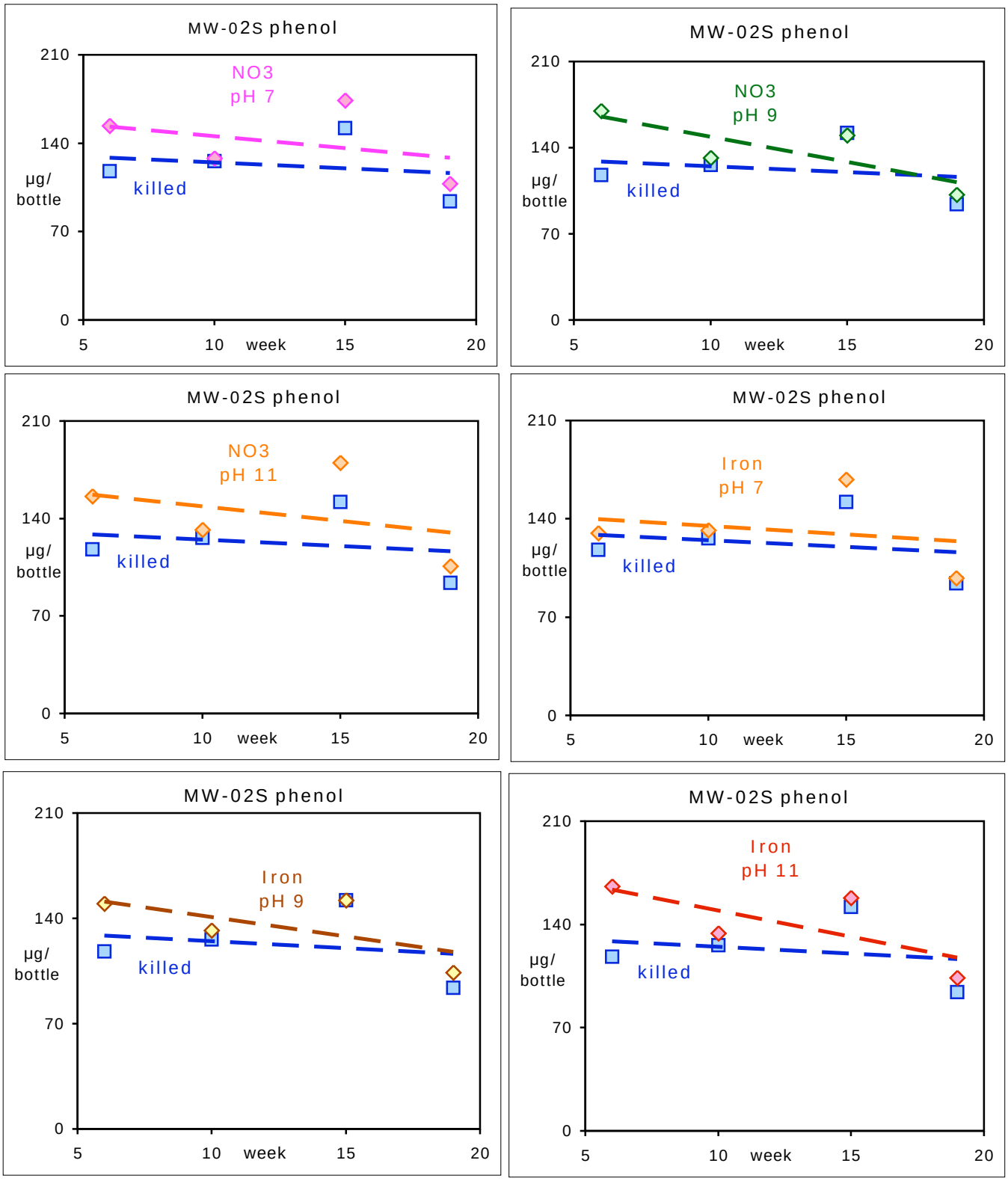


Figure 14 MW-2S Naphthalene

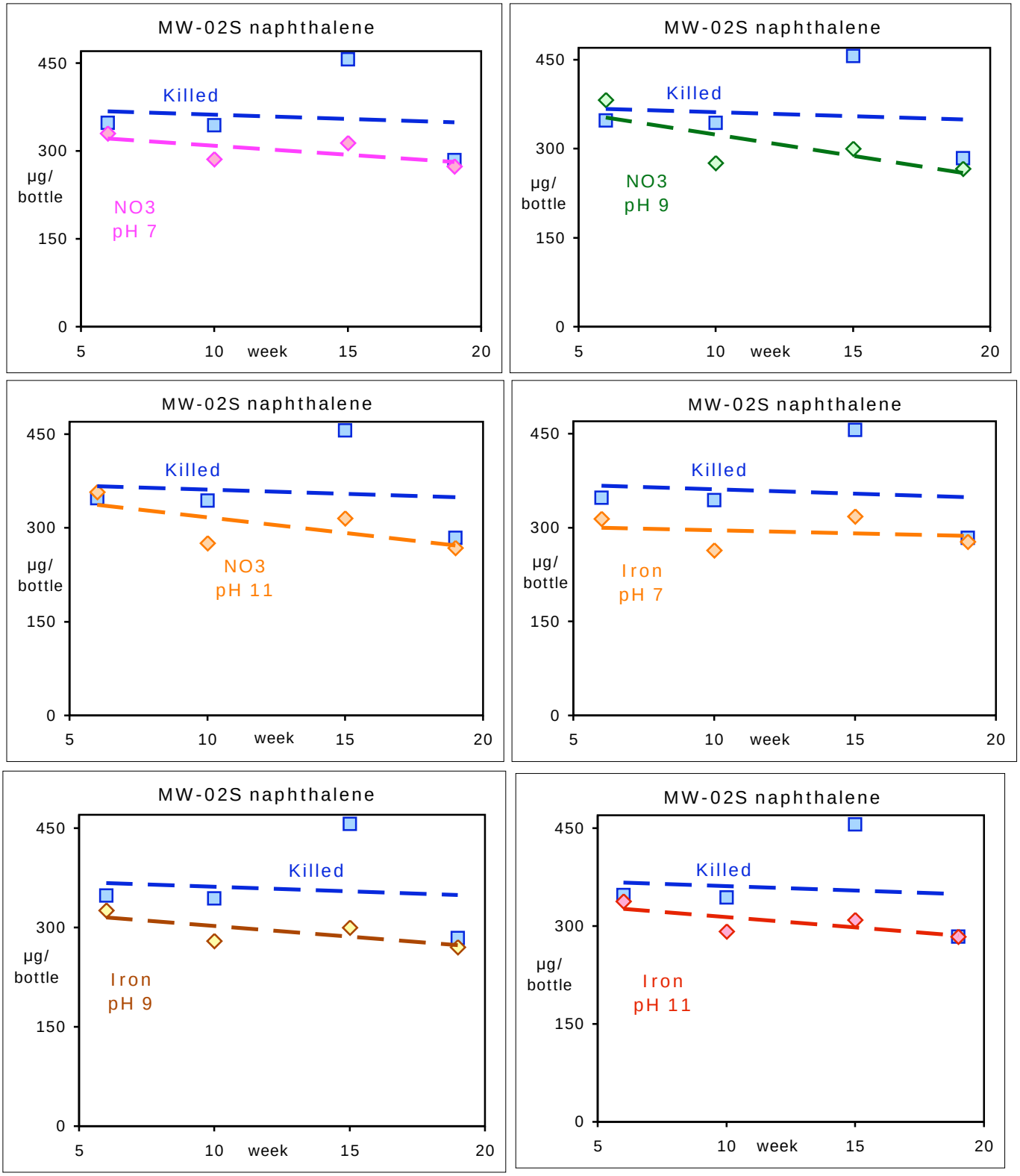


Table 16 MW-03S
Anaerobic microcosms, GCMS data

week	µg/bottle benzene	µg/bottle toluene	µg/bottle ethylbenze	µg/bottle mp xylene	µg/bottle o xylene	µg/bottle phenol	µg/bottle m phenols	µg/bottle naphth
killed								
6	615	612	5.7	66	27	414	306	2.7
11	774	858	7.8	87	36	546	420	3.6
16	771	723	8.1	93	39	486	351	3.6
21	525	474	4.8	54	21	459	318	2.4
unamended								
6	618	621	5.7	66	27	429	315	2.7
11	699	699	6.6	78	33	492	375	3.6
16	861	801	8.7	99	39	492	378	3.3
21	549	492	5.1	54	21	357	294	2.4
nitrate amended								
6	618	609	5.4	63	26	417	306	2.7
11	666	630	6.0	69	29	486	348	2.7
16	909	828	9.0	102	42	534	414	3.9
21	582	510	4.8	54	22	483	330	2.1
iron amended								
6	636	621	5.4	63	26	429	309	3.3
11	666	615	5.7	66	27	468	330	2.7
16	711	639	7.2	81	32	456	333	3.6
21	504	432	4.2	48	19	405	294	2.1
iron dup								
6	600	570	5.1	60	25	417	303	2.7
11	588	510	5.1	57	24	438	303	2.7
16	768	717	7.5	84	35	504	369	3.3
21	486	423	4.2	48	19	417	288	2.4
sulfate reducing								
6	639	645	5.7	66	27	444	321	2.7
11	570	480	4.8	57	23	414	300	2.7
16	825	744	8.1	93	38	501	387	3.9
21	507	438	4.2	48	19	459	309	2.1
methanogenic								
6	633	624	5.7	66	26	378	297	2.7
11	594	513	5.1	60	25	417	303	2.7
16	828	759	8.4	93	39	492	369	3.6
21	582	513	5.1	57	23	456	324	2.4

Figure 15 MW-03S Benzene

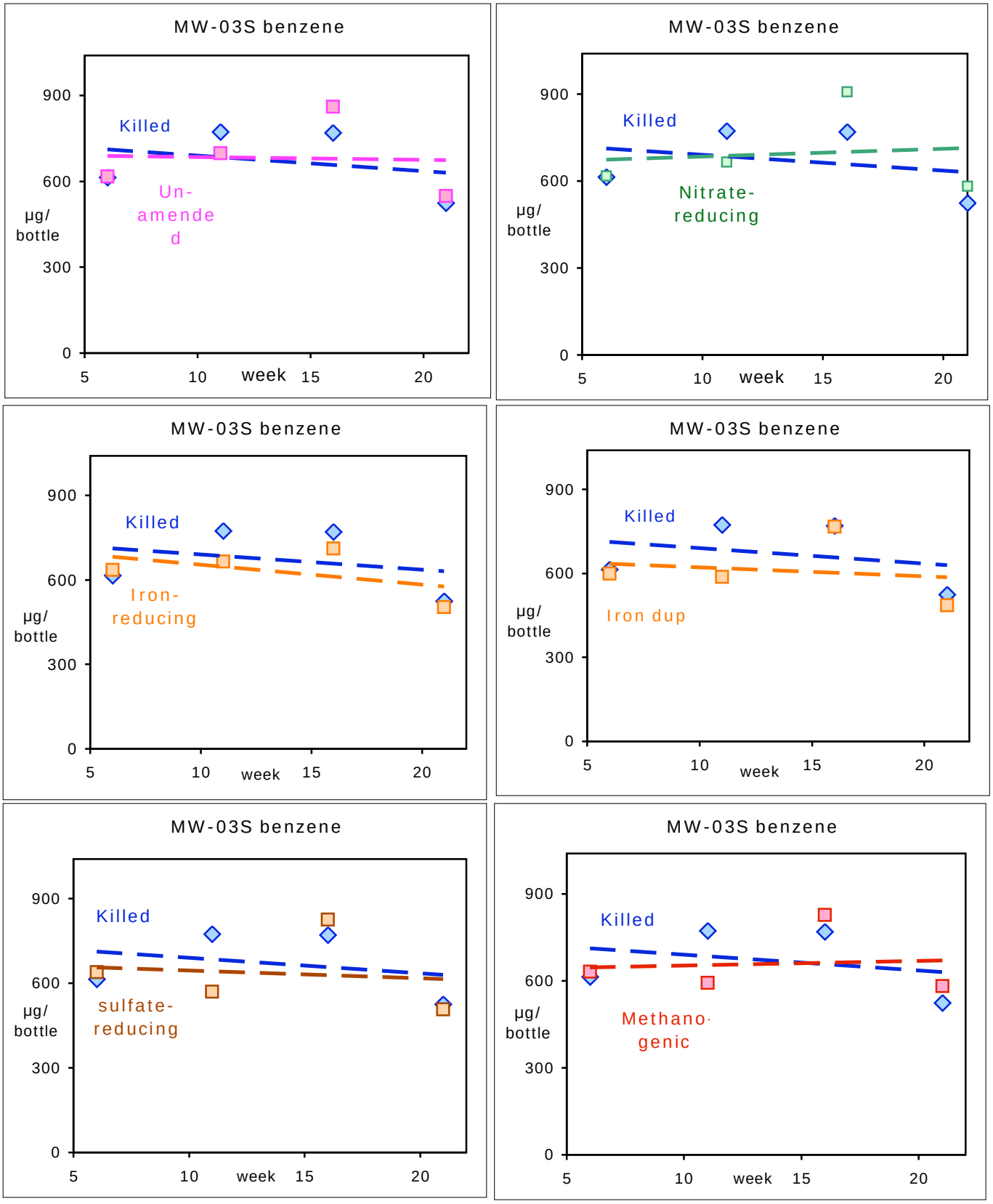


Figure 16 MW-3S Toluene

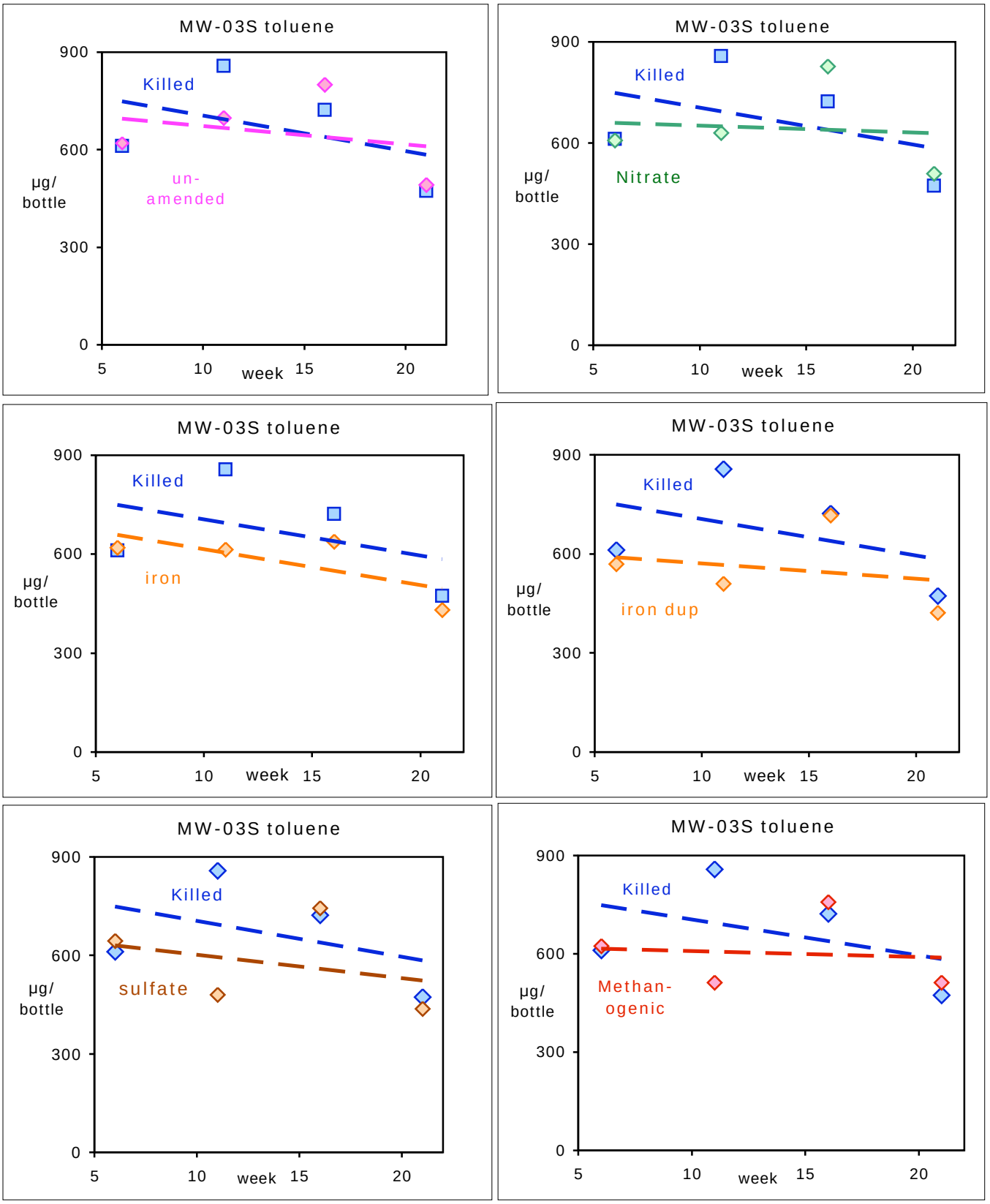


Figure 17 MW-03S Ethylbenzene

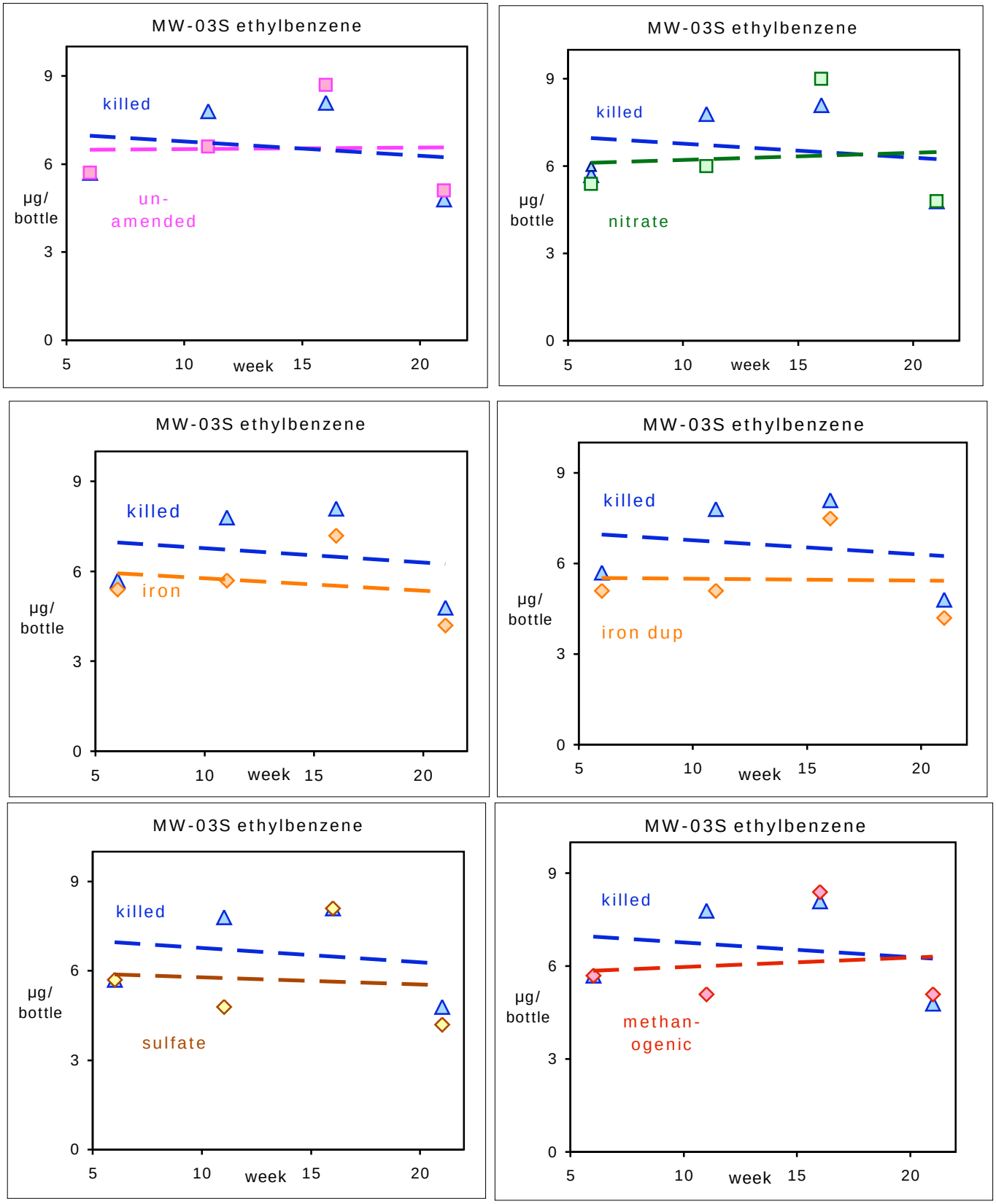


Figure 18 MW-3S meta & para Xylene

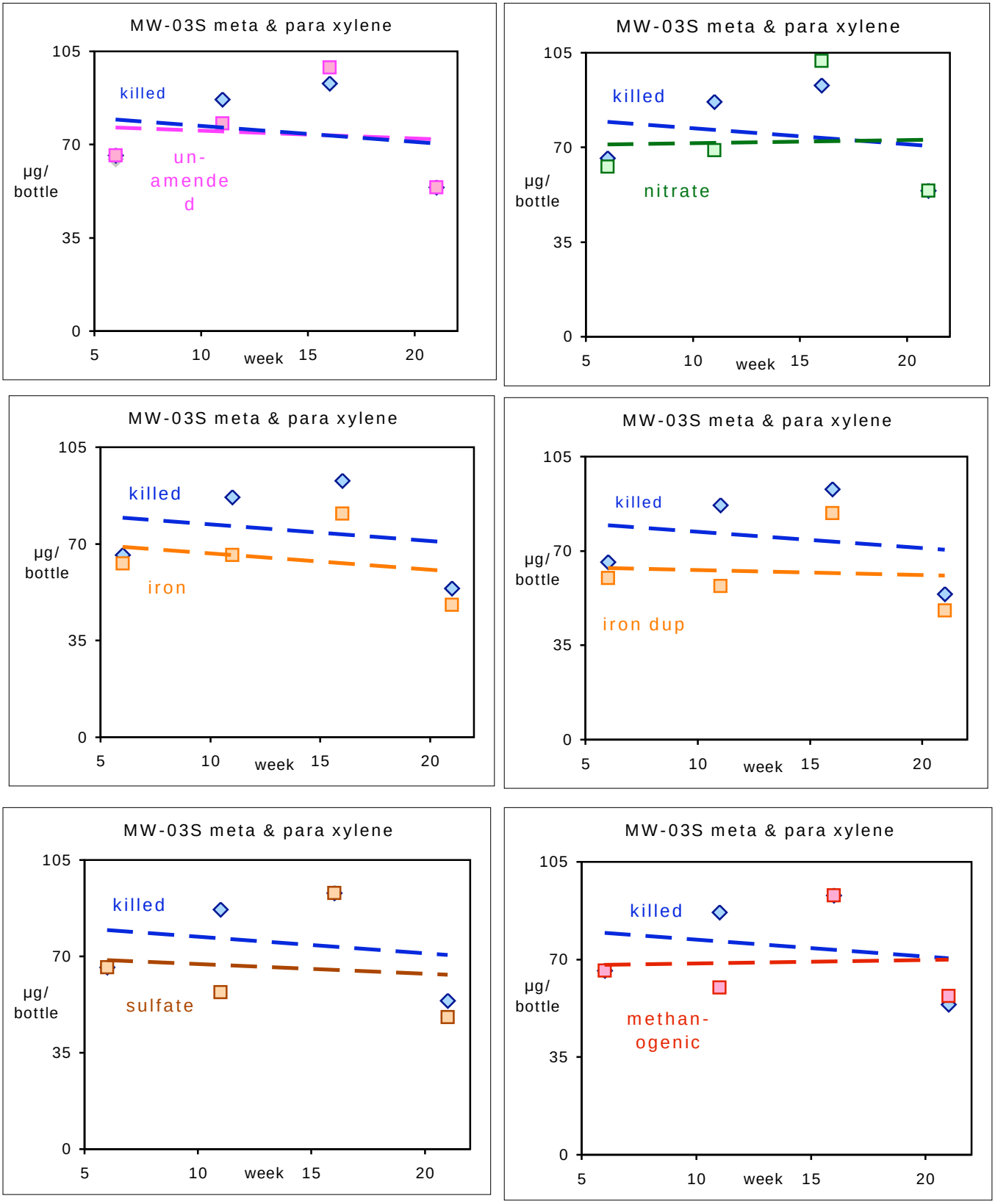


Figure 19 MW-03S o-Xylene

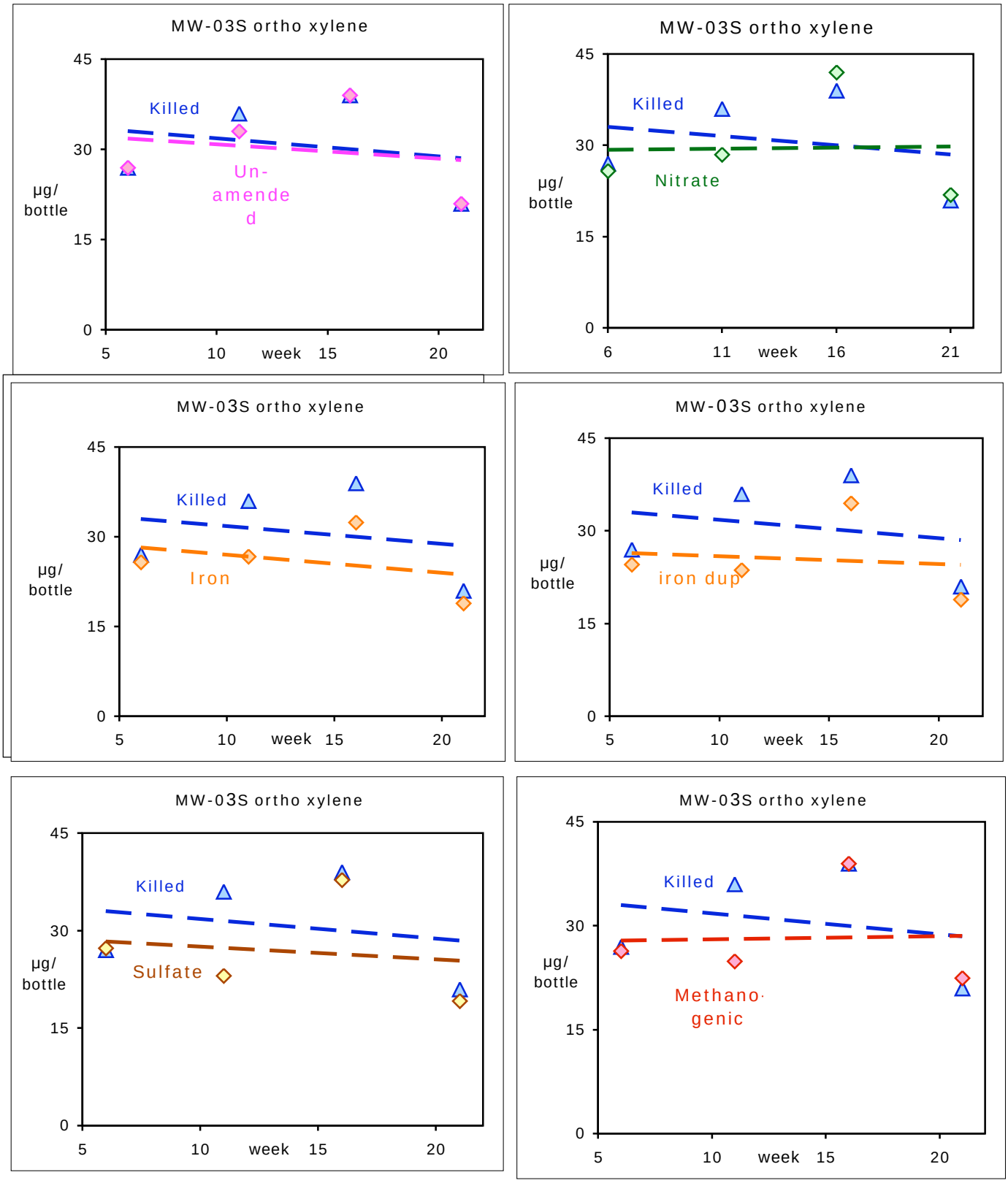


Figure 20 MW-3S Phenol

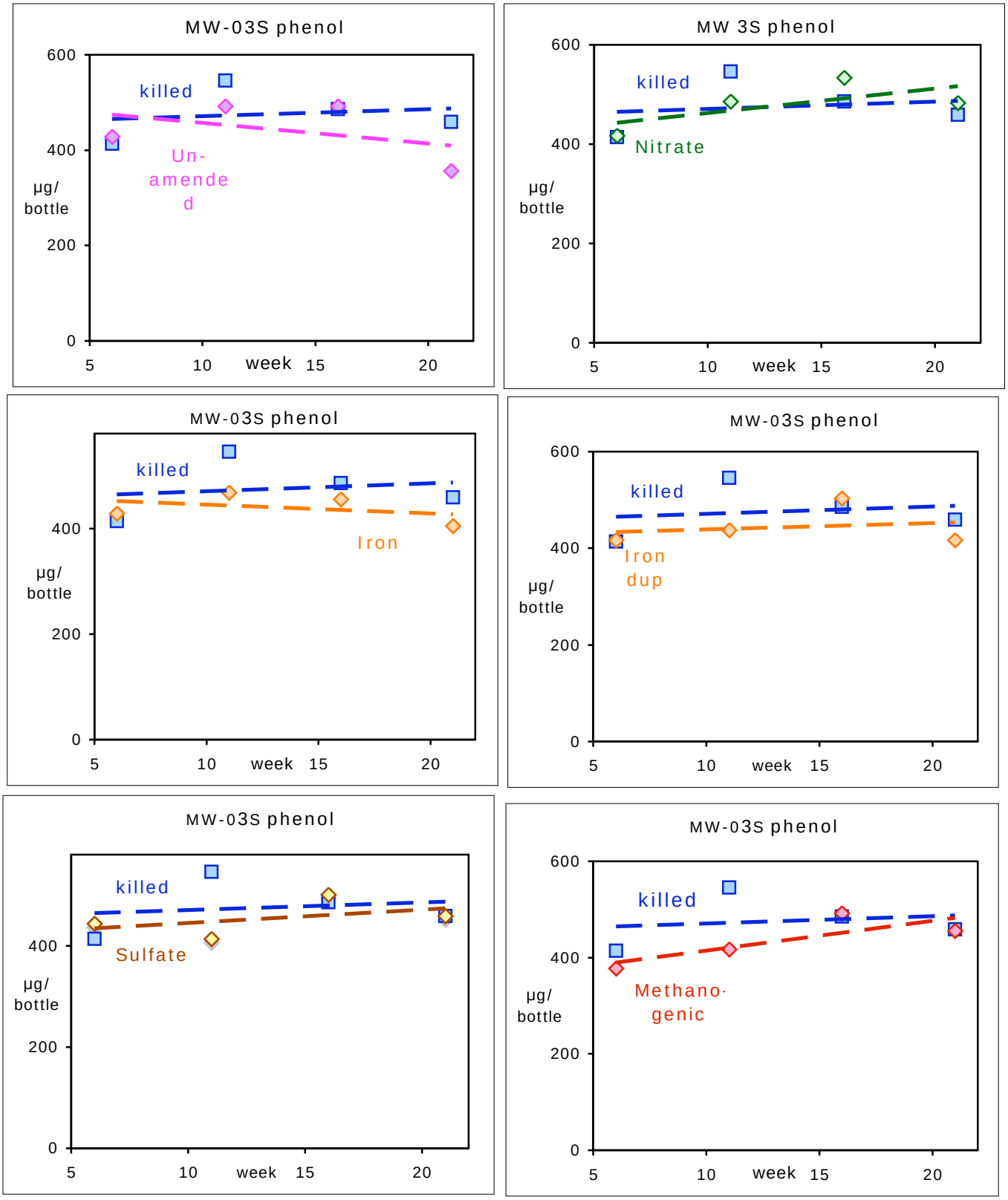


Figure 21 MW-03S Naphthalene

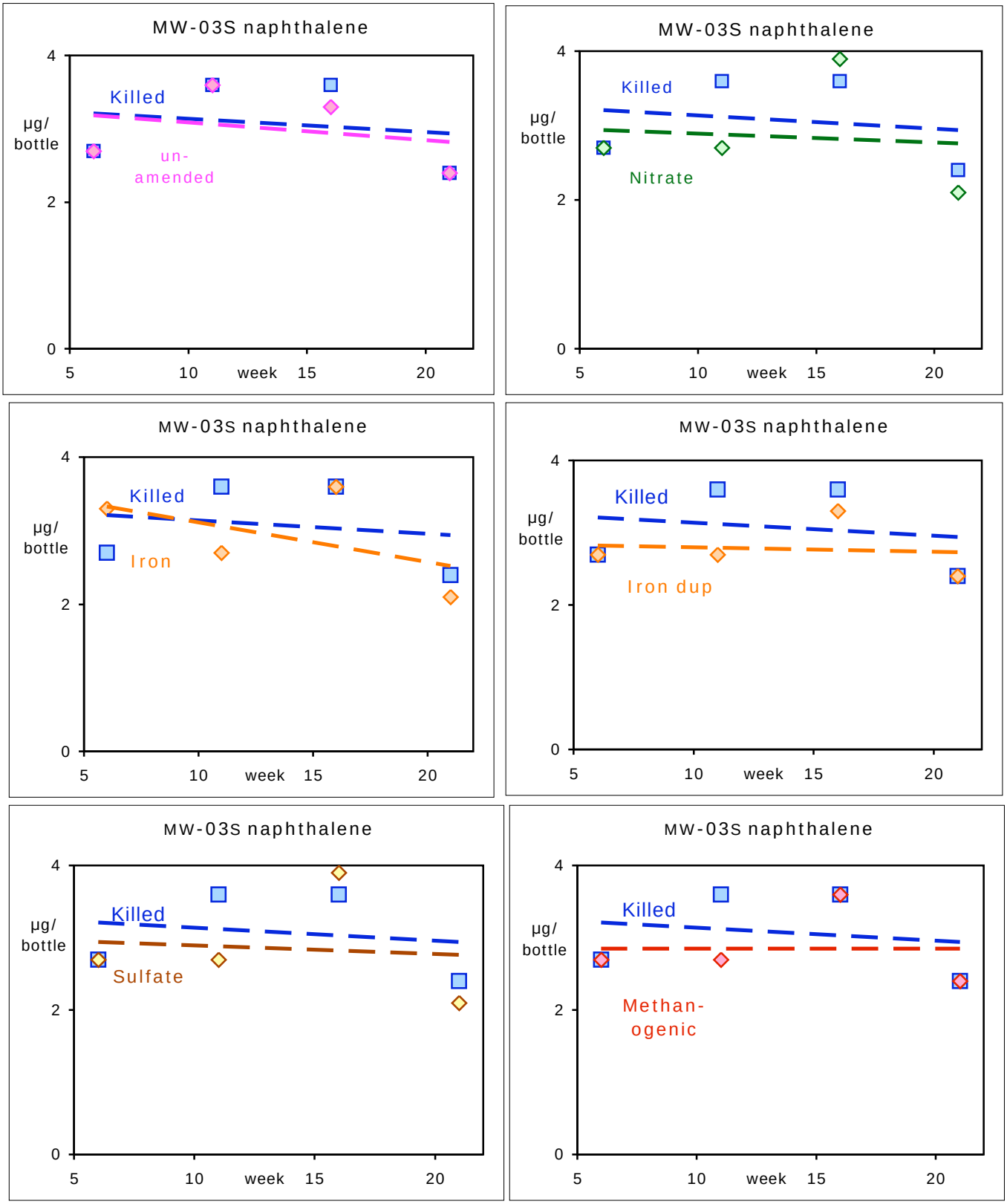


Table 17 MW-016S
Aerobic Microcosms, GCMS data

wk	µg/bottle benzene	µg/bottle toluene	µg/bottle ethylbenzene	µg/bottle mp xylene	µg/bottle o xylene	µg/bottle phenol	µg/bottle m phenols	µg/bottle naphthalene
killed								
5	148	98	84	84	0.48	276	0.52	2.0
9	132	90	76	74	0.30	312	0.48	1.2
15	96	88	82	78	0.44	354	0.80	1.4
19	106	88	82	76	0.58	374	*0.01*	1.2
pH 7								
5	144	92	82	80	0.24	208	0.44	2.4
9	122	82	70	70	0.22	240	0.01	1.0
15	92	84	76	72	0.46	370	0.56	1.0
19	114	96	90	84	0.30	396	*0.01*	1.2
pH 7, add methane (CH4)								
5	128	86	76	76	0.22	220	0.32	1.6
9	120	82	70	70	0.20	242	0.10	0.8
15	92	82	74	70	0.48	332	0.44	1.2
19	104	84	76	70	0.42	366	*0.01*	1.4
pH 9								
5.1	118	90	82	80	0.46	186	0.32	1.6
9	114	78	68	66	0.28	262	0.01	0.6
15	92	82	76	72	0.36	362	0.42	1.6
19	120	102	92	86	0.62	412	*0.01*	1.6
pH 9, add methane (CH4)								
5.1	110	84	76	76	0.34	174	0.34	1.4
9	114	80	68	68	0.34	276	*0.01*	0.6
15	96	88	80	76	0.52	374	0.38	1.4
19	122	92	84	80	0.50	394	*0.01*	1.6
pH 9 dup								
5.1	112	86	80	78	0.44	184	0.42	1.2
9	122	82	70	68	0.22	254	*0.01*	1.0
15	96	86	80	76	0.36	344	0.40	1.4
19	110	88	80	74	0.42	378	*0.01*	1.4
pH 11								
5.1	106	88	78	76	0.40	130	0.26	0.8
9	112	80	68	66	0.22	258	*0.01*	0.6
15	94	84	78	72	0.32	306	0.32	1.4
19	112	94	86	80	0.34	342	*0.01*	1.4

For Week 5, #4-#7, the pH during *extraction* was not low enough to properly extract phenols. Therefore, the microcosms were re-extracted and the new data substituted as "week 5.1" See text.

Figure 22 MW-16S Benzene

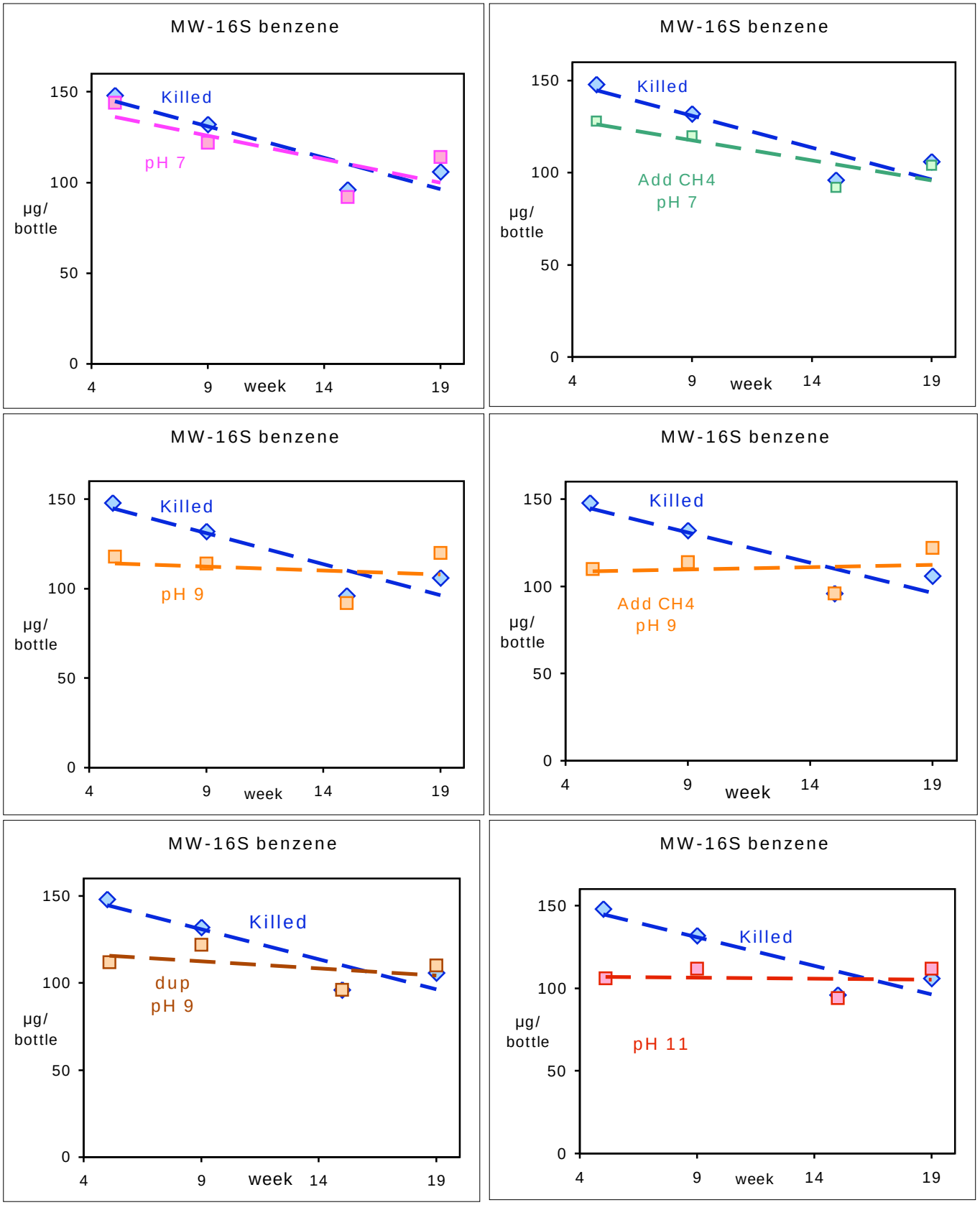


Figure 23 MW-16S Toluene

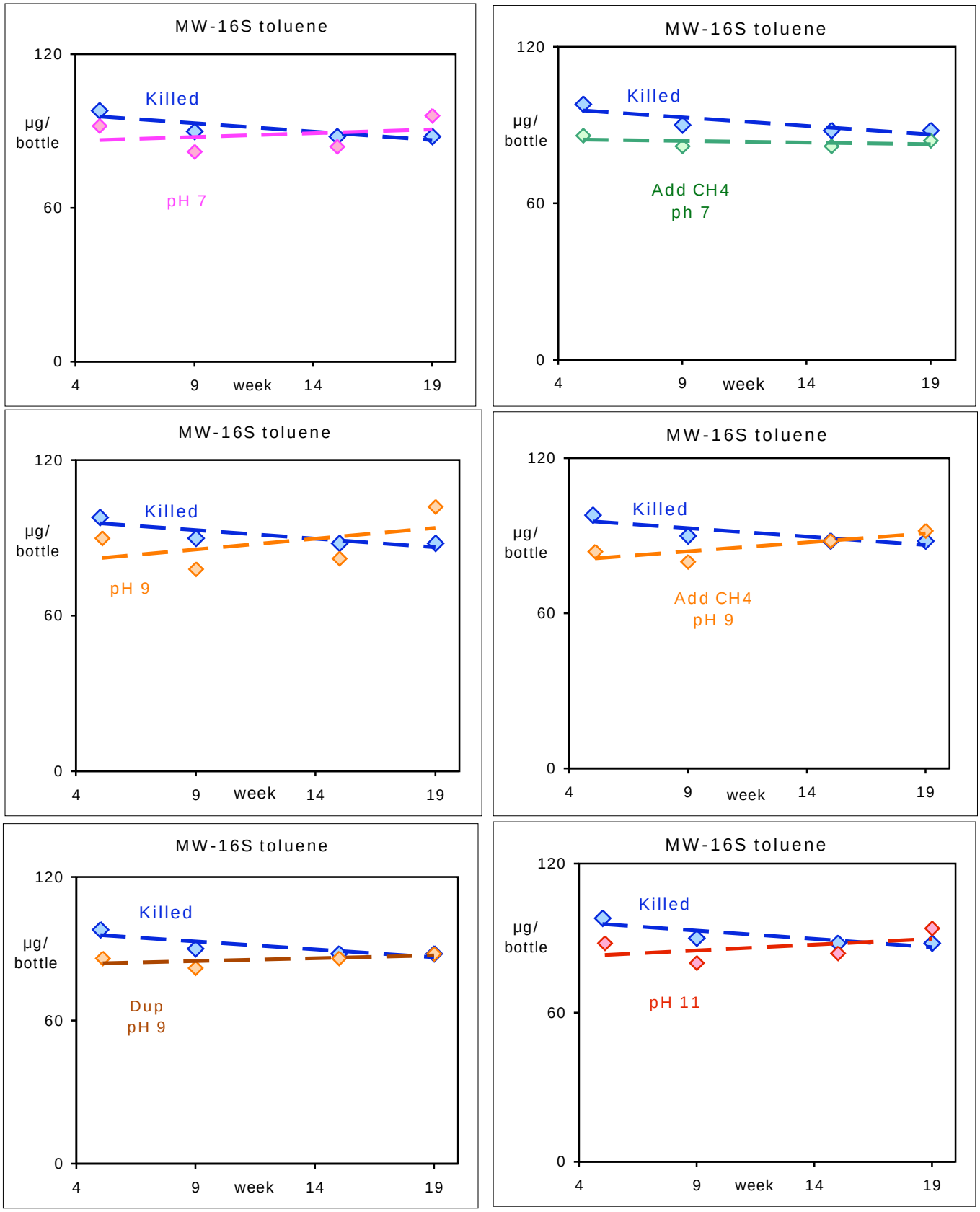


Figure 24 MW-16S Ethylbenzene

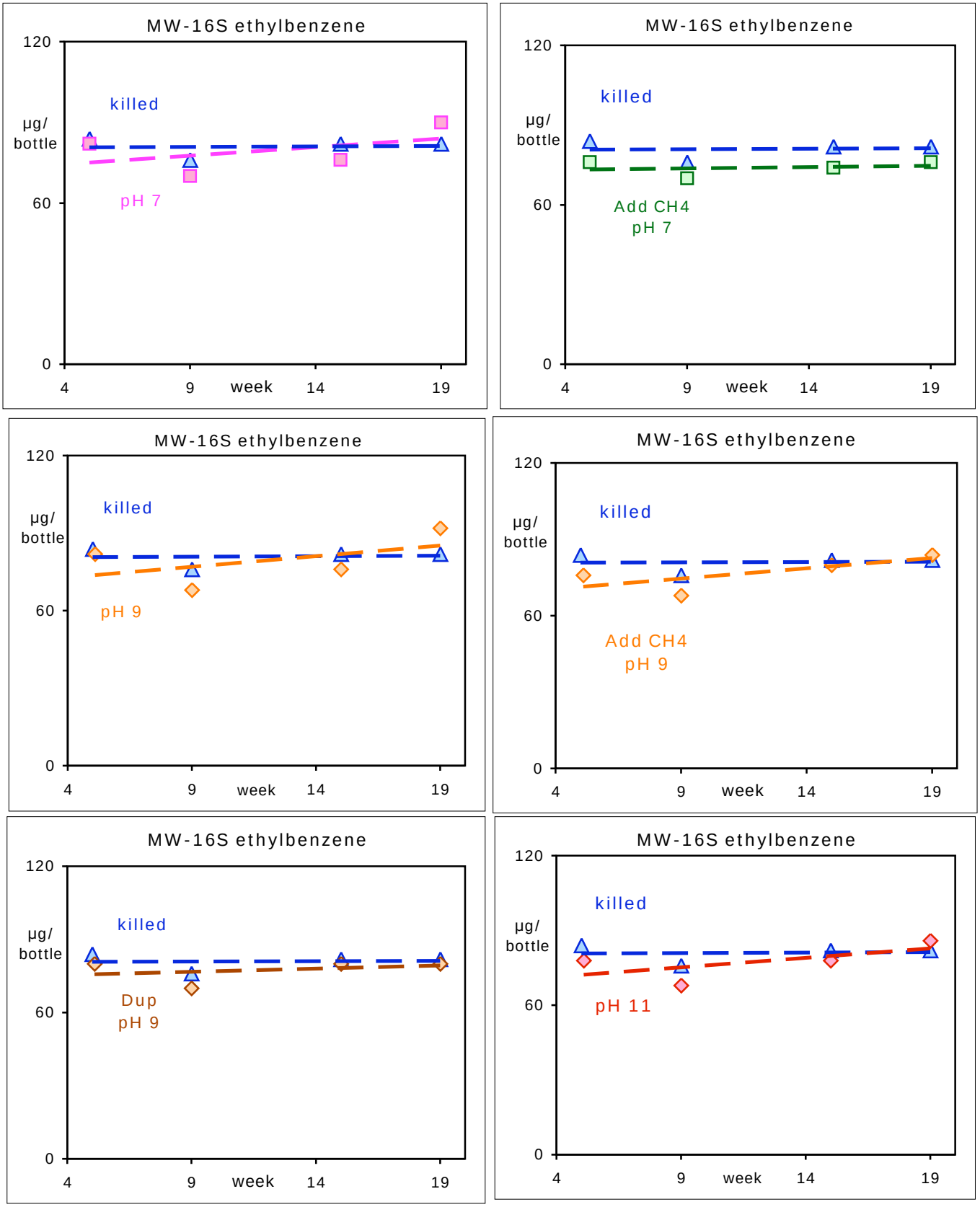


Figure 25 MW-16S meta & para Xylene

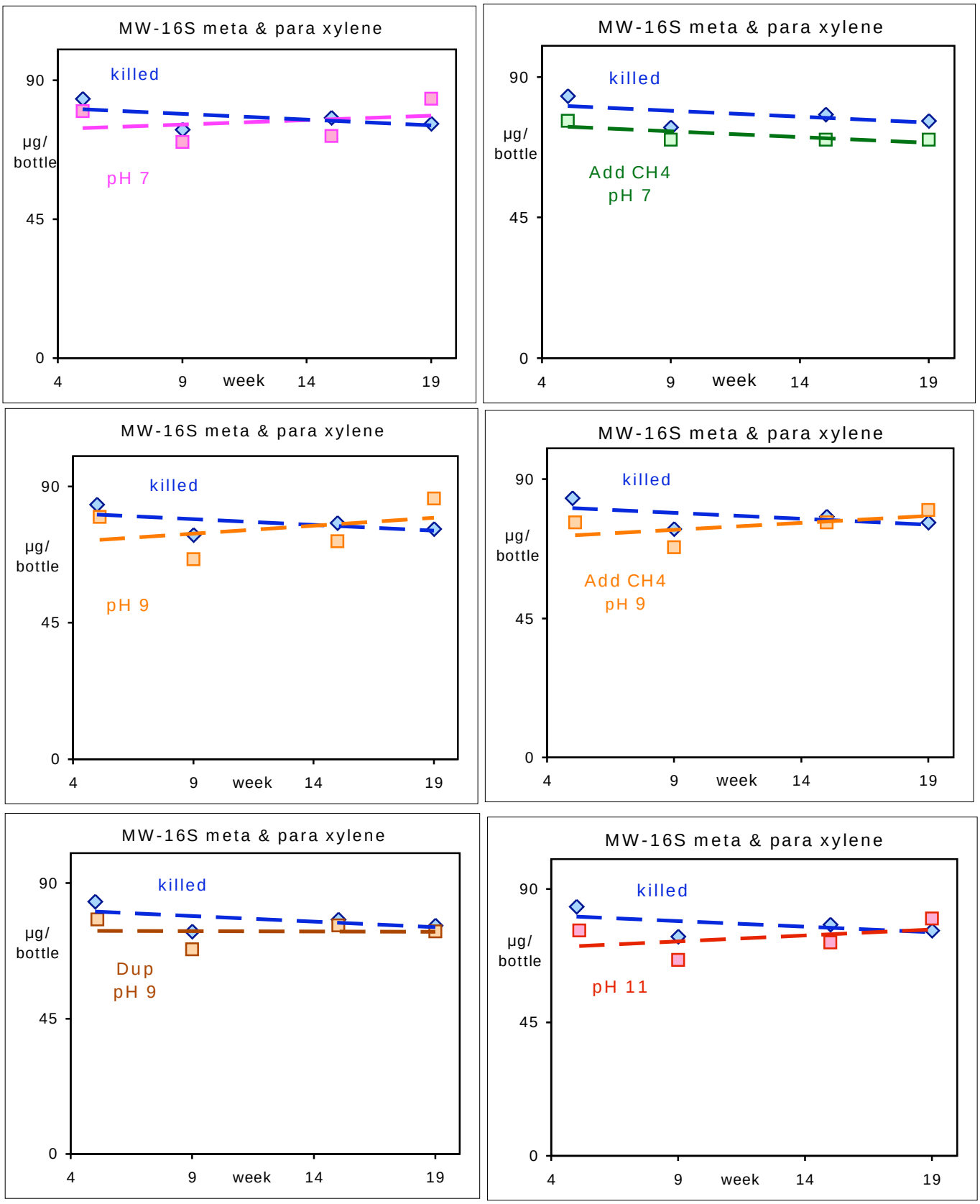


Figure 26 MW-16S ortho Xylene

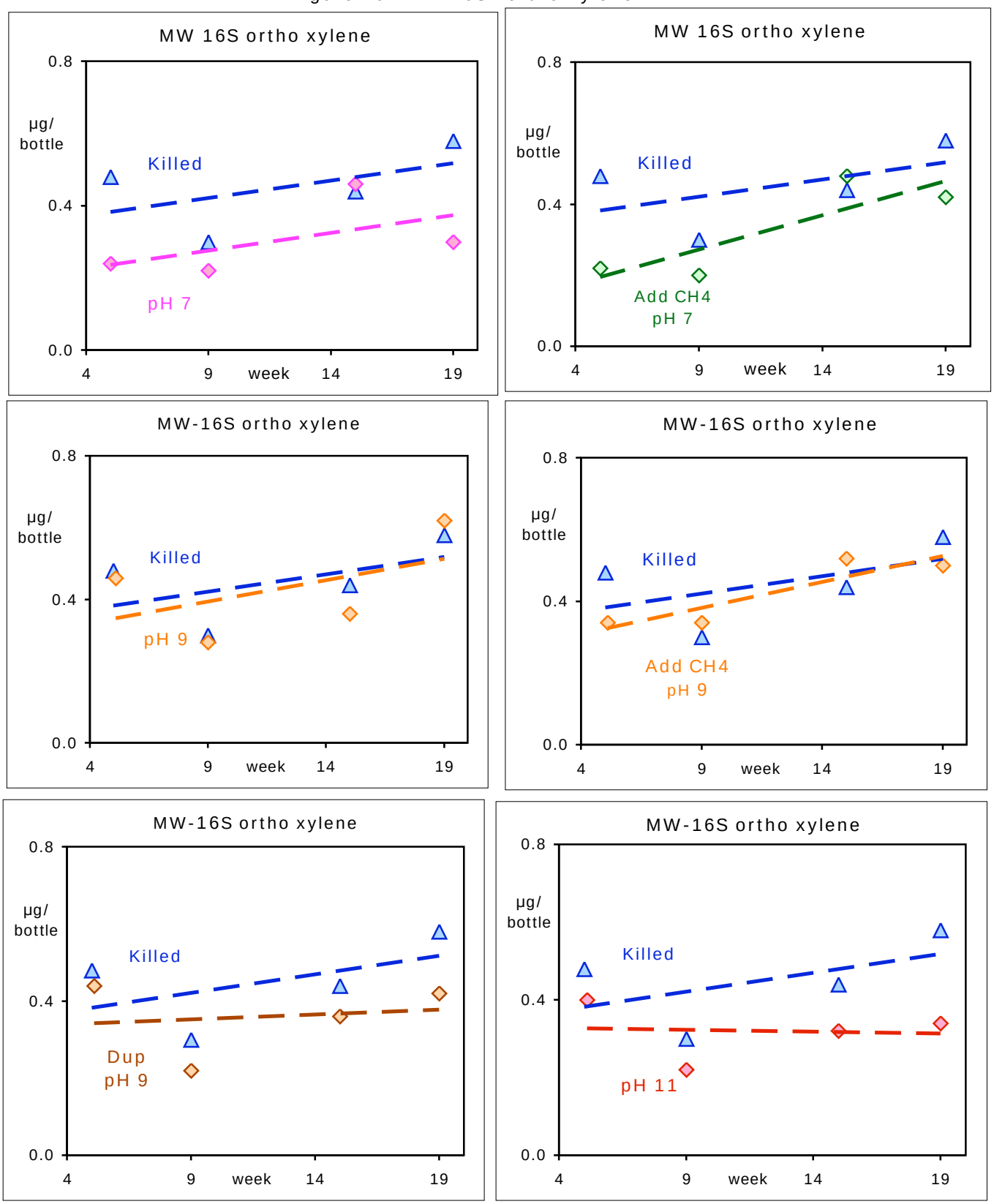


Figure 27 MW-16S Phenol

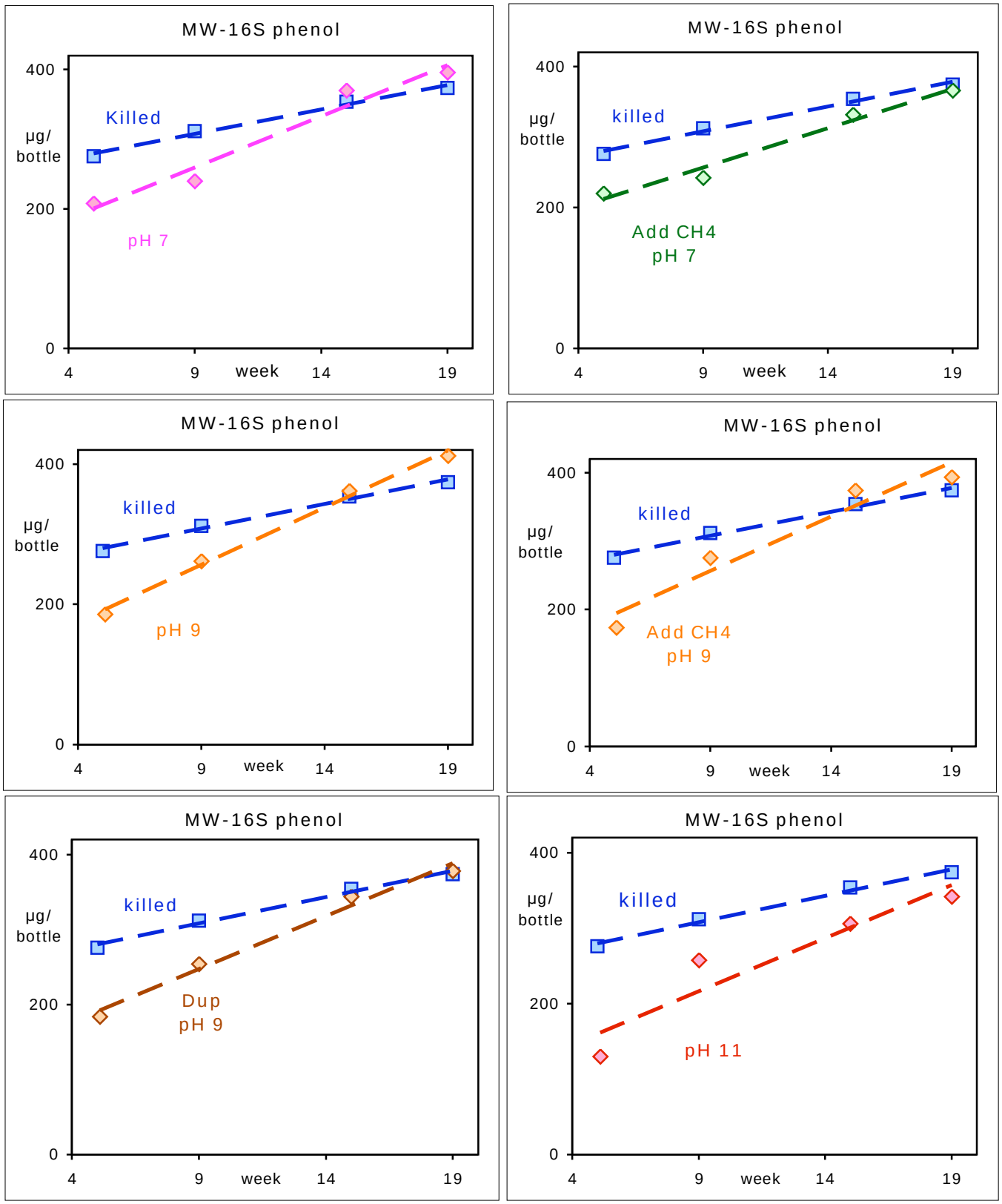
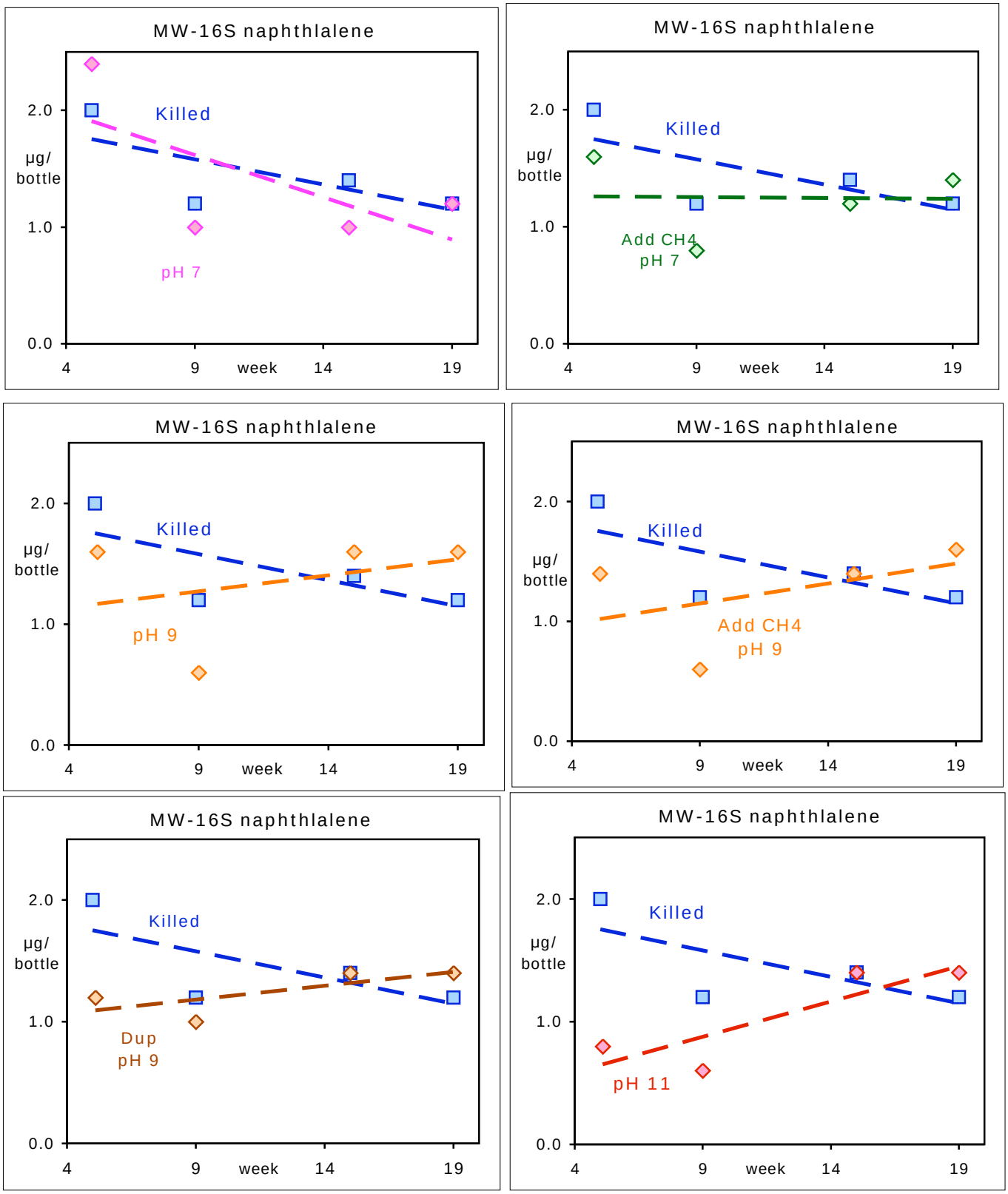


Figure 28 MW-16S Naphthalene



O'Brien & Gere Engineers, Inc. — **Low Flow Ground Water Sampling Log**

Date	11/10/08	Personnel	NWV (OBG) + JWB	Weather	235°F
Site Name	~~Former Kennedy Sq.~~ WB18	Evacuation Method	~~Bailing~~ Peristaltic Pump	Well #	WB18-MW-01S
Site Location	~~Syracuse, NY~~	Sampling Method	~~Bailing~~	Project #	~~8754~~ ~~12667~~ 1163 / 41861

COC # / Field Sample ID :

Well Information:

Depth of Well * 15.02 ft.
Depth to Water * 3.89 ft.
Length of Water Column ft.

Well Dia (in)	Gallons per Ft	Linear Ft per gallon
1	0.0408	24.5
2	0.1632	6.1
4	0.6528	1.5

* Measurements taken from
- [X] Top of Well Casing
- [ ] Top of Protective Casing
- [ ] (Other, Specify)

Water parameters:

Elapsed Time	Depth To Water	Temperature ✓ (10%)	pH (0.1)	Conductivity ✓ (3%)	Oxidation Reduction Potential ✓ (10mV)	Dissolved Oxygen (mg/l) ✓ (10%)	Turbidity (NTU) ✓ (10%)	Flow Rate (ml/min).
1140	4.15	8.91	7.85	0.008	-276.9	8.71	17	—
1143	4.45	10.66	10.22	71.51	-375.8	1.89	13	250
1146	4.67	10.89	10.38	72.05	-396.6	0.89	16	(NW) ~~200~~ 250
1149	4.83	10.97	10.35	72.76	-405.3	0.56	14	250
1152	4.95	11.02	10.07	73.84	-411.2	0.43	12	250
1155	5.05	10.92	9.61	76.00	-391.2	0.37	11	250
1158	5.14	10.94	9.00	77.33	-390.1	0.33	8.4	250
1201	5.20	10.97	8.73	77.30	-392.1	0.30	7.7	250
1204	5.22	10.93	8.63	76.68	-394.6	0.28	8.1	250
1207	5.26	10.92	8.57	75.90	-398.9	0.26	4.2	250
1210	5.30	10.90	8.54	75.14	-405.8	0.25	4.4	250
1213	5.20	10.85	8.46	74.53	-393.4	0.24	4.3	220
1216	5.16	10.79	8.33	74.08	-391.0	0.24	3.14	220
1219	5.11	10.77	8.25	73.48	-404.5	0.23	4.2	220
1222	5.09	10.75	8.26	72.93	-411.7	0.23	4.0	220
1225	5.10	10.71	8.35	72.50	-413.6	0.22	3.5	220
1228	5.10	10.77	8.37	72.27	-412.2	0.22	2.8	220
1231	5.10	10.70	8.41	72.12	-412.4	0.21	3.0	220
1234	5.10	10.78	8.37	71.84	-416.7	0.21	2.9	220
1237	5.16	10.80	8.43	71.65	~~-417.0~~ -417.0 (NW)	0.21	3.2	220

Water sample:

Density Measurement _____

Time collected: 1300

Total volume of purged water removed: _____

Physical appearance at start
- Color: clear
- Odor: strong sulfur
- Sheen/Free Product: none

Physical appearance at sampling
- Color: clear
- Odor: strong sulfur
- Sheen/Free Product: none

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
VOC	40 mL TCL VOA		N	HCl	
SVOC	1 L Amber		N	None	
RCRA Metals	500 mL Plastic		N	HNO3	
PCB			N		

Notes: Microcosm Laboratory / VCI

O'Brien & Gere Engineers, Inc. — **Low Flow Ground Water Sampling Log**

Date	11/11/08	Personnel	~~NWV~~ (OBG) JWB	Weather	~40°F Rain
Site Name	~~Former Kennedy Sq.~~ WB8	Evacuation Method	~~Bailing~~ Peri	Well #	WB18-MW-02S
Site Location	Syracuse, NY	Sampling Method	~~Bailing~~ Peri	Project #	8754 42667 1163 / 41861

COC # / Field Sample ID :

Well Information:

Depth of Well * _____ ft.
Depth to Water * 4.05 ft.
Length of Water Column _____ ft.

Well Dia (in)	Gallons per Ft	Linear Ft per gallon
1	0.0408	24.5
2	0.1632	6.1
4	0.6528	1.5

* Measurements taken from
- [X] Top of Well Casing
- [ ] Top of Protective Casing
- [ ] (Other, Specify)

Water parameters:

Elapsed Time	Depth To Water	Temperature (10%)	pH (0.1)	Conductivity (3%)	Oxidation Reduction Potential (10mV)	Dissolved Oxygen (mg/l) (10%)	Turbidity (NTU) (10%)	Flow Rate (ml/min).
1240	4.05	—	—	—	—	—	—	—
1243	4.46	10.84	10.61	21.37	-454.0	1.32	0.0	275
1246	4.94	12.04	11.45	8.58	-469.0	1.13	0.0	275
1249	4.90	12.12	11.52	7.22	-465.9	1.01	0.0	225
1253	5.01	12.21	11.53	6.75	-471.5	0.82	0.0	225
1256	5.14	12.17	11.52	6.77	-455.3	0.67	0.0	225
1259	5.06	12.08	11.52	6.74	-464.4	0.61	0.0	225
1302	5.10	11.92	11.53	6.82	-455.4	0.57	0.0	225
1305	5.10	11.92	11.54	6.89	-447.4	0.54	0.0	225
1308	5.11	11.90	11.54	6.98	-450.0	0.51	0.0	225
1311	5.10	11.89	11.55	7.10	-452.0	0.48	0.0	225
1316	5.10	11.92	11.55	7.20	-451.0	0.45	0.0	225
1320	5.12	12.00	11.55	7.40	-449.0	0.44	0.0	225
1326	5.12	12.00	11.56	7.54	-453	0.43	0.0	225
1339	5.12	12.10	11.56	7.6	-450	0.44	0.0	225

Water sample:

Density Measurement _____

Time collected: 1350

Total volume of purged water removed: 4 gals

Physical appearance at start
- Color: clear
- Odor: slight sulfur
- Sheen/Free Product: none

Physical appearance at sampling
- Color: clear
- Odor: slight sulfur
- Sheen/Free Product: none

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
VOC	40 mL TCL VOA		N	HCl	
SVOC	1 L Amber		N	None	
RCRA Metals	500 mL Plastic		N	HNO3	
PCB			N		

Notes: Microcosm Lancaster/RCI

O'Brien & Gere Engineers, Inc. — **Low Flow Ground Water Sampling Log**

Date	11/11/08	Personnel	~~NWV (OBG)~~ JWB	Weather	~38°F Rain
Site Name	~~Former Kennedy Sq.~~ WB18	Evacuation Method	~~Bailing~~ Perry Pump	Well #	WB18-MW-03S
Site Location	Syracuse, NY	Sampling Method	~~Bailing~~ Perry Pump	Project #	~~8754 42667~~ 1163/41861

COC # / Field Sample ID :

Well Information:

Depth of Well * _____ ft.

Depth to Water * 4.50 ft.

Length of Water Column _____ ft.

Well Dia (in)	Gallons per Ft	Linear Ft per gallon
1	0.0408	24.5
2	0.1632	6.1
4	0.6528	1.5

* Measurements taken from
- [X] Top of Well Casing
- [ ] Top of Protective Casing
- [ ] (Other, Specify)

Water parameters:

Elapsed Time	Depth To Water	Temperature (10%)	pH (0.1)	Conductivity (3%)	Oxidation Reduction Potential (10mV)	Dissolved Oxygen (mg/l) (10%)	Turbidity (NTU) (10%)	Flow Rate (ml/min).
0935	4.50	~~5.10~~	—	—	—	—	—	—
0938	4.86	11.25	8.09	61.84	-359.0	1.76	17	250
0941	4.91	11.64	7.84	61.98	-391.0	0.82	15	250
0944	4.99	11.92	8.60	61.45	-450.9	0.48	16	250
0947	5.01	12.00	8.42	60.98	-472.8	0.37	15	250
0950	5.01	12.00	8.68	60.71	-477.2	0.33	12.3	250
0953	5.03	11.99	8.77	60.66	-474.0	0.31	12.5	250
0956	5.05	11.96	8.80	60.70	-468.4	0.27	12.0	250
0959	5.00	11.85	8.79	60.77	-467.6	0.24	12.0	250
1002	5.00	11.84	8.78	60.72	-467.2	0.22	10	250
1005	5.00	11.86	8.77	60.76	-463.6	0.22	8	250
1010	5.00	11.89	8.71	60.79	-462.4	0.21	8	250
1015	5.00	11.98	8.68	60.74	-460.5	0.20	7	250

Water sample:

Density Measurement _____

Time collected: 1030

Total volume of purged water removed: 4 gals

Physical appearance at start
- Color: Clear
- Odor: Sulfur
- Sheen/Free Product: None

Physical appearance at sampling
- Color: ~~clear~~ pale yellow
- Odor: Sulfur
- Sheen/Free Product: None

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
VOC	40 mL TCL VOA		N	HCl	
SVOC	1 L Amber		N	None	
RCRA Metals	500 mL Plastic		N	HNO3	
PCB			N		

Notes: Microlism Lancaster / BCI

O'Brien & Gere Engineers, Inc. — **Low Flow Ground Water Sampling Log**

Date	11/12/08	Personnel	NWV (OBG), JWB	Weather	~40F Cloudy
Site Name	~~Former Kennedy Sq.~~ WBR	Evacuation Method	~~Bailing~~ Peristaltic Pump	Well #	WBR-MW-16S
Site Location	Syracuse, NY	Sampling Method	~~Bailing~~ Bladder	Project #	~~8754 — 42007~~ 1163 / 41861

COC # / Field Sample ID : page 1 of 2

Well Information:

			Well Dia (in)	Gallons per Ft	Linear Ft per gallon
Depth of Well *	46.34	ft.	1	0.0408	24.5
Depth to Water *	35.97	ft.	2	0.1632	6.1
Length of Water Column		ft.	4	0.6528	1.5

* Measurements taken from
- [X] Top of Well Casing
- [ ] Top of Protective Casing
- [ ] (Other, Specify)

Water parameters:

Elapsed Time	Depth To Water	Temperature (10%)	pH (0.1)	Conductivity (3%)	Oxidation Reduction Potential (10mV)	Dissolved Oxygen (mg/l) (10%)	Turbidity (NTU) (10%)	Flow Rate (ml/min).
0940	35.97	—	—	—	—	—	—	—
0943	36.75	9.78	11.62	10.31	-243.4	5.74	0	100
0947	36.96	9.82	11.76	10.34	-245.9	4.41	0	100
0950	37.04	9.88	11.81	10.35	-243.6	3.88	0	100
0953	37.25	9.94	11.85	10.36	-239.5	3.88	0	100
0956	37.20	9.96	11.87	10.36	-235.4	5.90	0	100
0959	37.25	9.98	11.88	10.36	-230.7	6.85	0	100
1002	37.35	10.02	11.89	10.34	-225.7	7.40	0	100
1005	37.40	10.04	11.89	10.33	-219.7	7.11	0	100
1008	37.50	10.07	11.90	10.32	-214.8	8.46	0	100
1011	37.55	10.07	11.90	10.30	-210.7	8.05	0	100
1014	37.70	10.02	11.90	10.29	-208.3	8.13	0	100
1017	37.55	10.06	11.90	10.29	-207.2	7.97	0	~75
1020	37.60	10.20	11.90	10.27	-205.4	7.95	0	75
1023	37.53	10.29	11.90	10.27	-203.5	7.91	0	75
1026	37.60	10.36	11.90	10.28	-202.0	7.73	0	75
1029	37.65	10.41	11.89	10.29	-200.6	7.54	0	75
1032	37.62	10.50	11.89	10.29	-198.1	7.27	0	75
1035	37.70	10.57	11.88	10.28	-195.1	7.08	0	75
1038	37.70	10.63	11.87	10.28	-191.0	6.89	0	75
1041	38.00	10.55	11.87	10.28	-188.4	6.78	0	75
1044	37.80	10.55	11.87	10.28	-186.3	6.63	0	75
1048	37.83	10.60	11.86	10.28	-184.1	6.46	0	75
1051	37.85	10.51	11.86	10.30	-180.4	6.28	0	75
1056	37.85	10.44	11.87	10.31	-178.8	6.11	0	75
1101	37.85	10.57	11.86	10.32	-176.5	5.87	0	75
1106	37.94	10.70	11.84	10.31	-170.9	5.65	0	75

Water sample:

Density Measurement _____

Time collected: 12

Total volume of purged water removed: 2.5

Physical appearance at start
- Color: Clear
- Odor: none
- Sheen/Free Product: none

Physical appearance at sampling
- Color: Clear
- Odor: none
- Sheen/Free Product: none

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
VOC	40 mL TCL VOA		N	HCl	
SVOC	1 L Amber		N	None	
RCRA Metals	500 mL Plastic		N	HNO3	
PCB			N		

Notes: Microcosm Lancaster / BCI

O'Brien & Gere Engineers, Inc. — Low Flow Ground Water Sampling Log

Date	11/13/08	Personnel	NW, OSG / JB (OBG)	Weather	~40°F PC
Site Name	~~Former Kennedy Sq~~ WB18	Evacuation Method	~~Bailing~~ Bladder	Well #	WB18-MW-16S
Site Location	Syracuse NY	Sampling Method	~~Bailing~~ Bladder	Project #	~~8754 42867~~ 1163/41861

COC # / Field Sample ID : page 2 of 2

Well information:

Depth of Well * 46.34 ft.
Depth to Water * 35.97 ft.
Length of Water Column ____ ft.

Well Dia (in)	Gallons per Ft	Linear Ft per gallon
1	0.0408	24.5
2	0.1632	6.1
4	0.6528	1.5

* Measurements taken from
- [x] Top of Well Casing
- [ ] Top of Protective Casing
- [ ] (Other, Specify)

Water parameters:

Elapsed Time	Depth To Water	Temperature (10%)	pH (0.1)	Conductivity (3%)	Oxidation Reduction Potential (10mV)	Dissolved Oxygen (mg/l) (10%)	Turbidity (NTU) (10%)	Flow Rate (ml/min).
1111	37.85	10.99	11.81	10.32	-159.1	5.37	0	75
1116	37.90	11.04	11.79	10.32	-152.6	5.26	0	75
1120	37.95	11.04	11.77	10.32	-146.2	5.12	0	75
1125	38.00	11.03	11.76	10.33	-139.8	4.90	0	75
1130	37.98	10.91	11.77	10.35	-138.9	4.85	0	75
1135	38.00	10.89	11.78	10.34	-140.4	4.69	0	75
1140	38.00	10.88	11.78	10.36	-139.3	4.58	0	75

Water sample:

Density Measurement ____

Time collected: 1200

Total volume of purged water removed: 2.5 gals

Physical appearance at start
- Color: clear
- Odor: none
- Sheen/Free Product: none

Physical appearance at sampling
- Color: clear
- Odor: none
- Sheen/Free Product: none

Samples collected:

Container Size	Container Type	# Collected	Field Filtered	Preservative	Container pH
VOC	40 mL TCL VOA		N	HCl	
SVOC	1 L Amber		N	None	
RCRA Metals	500 mL Plastic		N	HNO3	
PCB			N		

Notes: Microcosm Lancaster / BCI

Bioremediation Consulting Inc
39 Clarendon Street Watertown MA 02472
phone 617-923-0976 fax 617-923-0959
e-mail: MFindlay@bciLabs.com

CHAIN OF CUSTODY RECORD

Project Name: OBG-Honeywell

Sampling Location: UB18-MW-01S
Feild Sample ID: UB18-0239-01

Sampled by: Nate Vegas / Son Bone

Contact: trent rj ~~Robert Trent~~ @obg.com
315-437-6100 ext. 2732

VociCJ@obg.com
215-628-9100

MW-1S

6 1-L serum bottles for microcosm test – fill completely
2 160-ml serum bottles, HCl preserved – fill ***to line***
2 voas, HCl-preserved: fill completely

See enclosed CAPPING INSTRUCTIONS for serum bottles
RETURN CRIMPER & pliers **TO BCI**

Well Number	Date	VOA Vials HCl-preserved	rcv	160 ml SB HCl-preserved	rcv	1-Liter serum bottles Filled with Argon	rcv	1-Liter serum bottles Filled with Argon. Sulfide, 0.13 mM Fe^{++}, 0.04 mM	rcv	1-Liter serum bottles Filled with Argon. Sulfide and Fe^{++} to give 0.25 mM FeS	rcv
MW-1S		2	2	2	2	2	2	2	2	2	2
Return crimper to BCI											no

SHIP TO: Bioremediation Consulting Inc (phone 617-923-0976)
39 Clarendon St Watertown MA 02472

Shipping Conditions:
ICE NECESSARY; **however,**
No Loose Ice – bag ice in leak-proof bags
Do not allow ice to contact groundwater samples

Fed Ex Priority Overnite. **NO** Saturday Delivery

Call or fax BCI at time of shipping and report the tracking number

Relinquished by [signature] date 11/10/08

Received by L. MacDonnell date 11/11/08

Bioremediation Consulting Inc.
39 Clarenden Street
Watertown, MA 02472

Chain Of Custody / Analysis Request

AESI Ref: 38609.59845
COC # : WB18- 0239
Lab Use Only
Lab Proj #
Lab ID

Privileged & Confidential

Site Name: Wastebeds 1-8 Microcosm Study
Location of Site: Geddes, New York

EDD To: Brad Kubiak, Chuck Sharpe

Client Contact: (name, co., address)
John.McAuliffe@Honeywell.com
Honeywell International
101 Columbia Road
Morristown, NJ 07962

Sampler: Jen Bowe / Nate Vugan
P O #
Analysis Turnaround Time:
Standard - Y
Rush Charges Authorized for - N
2 weeks -
1 week -
Next Day -

Hardcopy Report To: Robert Trent
Invoice To: John McAuliffe

Job No.

Preservative: BCI Microcosm

	Sample Identification: Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID	Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample ?	Units	Lab Sample Numbers
1	WB18-MW-01S	–	–	WB18- 0239 -01	11/10/08	1300	MW	water	Reg	10	G	N	X	
2				WB18- -02										
3				WB18- -03										
4				WB18- -04										
5				WB18- -05										
6				WB18- -06										
7				WB18- -07										
8				WB18- -08										
9				WB18- -09										
10				WB18- -10										
11				WB18- -11										
12				WB18- -12										

Special Instructions: Grab samples for TCL analyses (VOCs and SVOCs) will be sent to Life Sciences Laboratories, Inc., 5000 Brittonfield Parkway, East Syracuse, NY 13057.

Relinquished by	Company	O'Brien & Gere	Received by	Company		Condition	Custody Seals Intact
	Date/Time	11/10/08 1300		Date/Time		Cooler Temp.	
Relinquished by	Company	BCI	Received by	Company		Condition	Custody Seals Intact
	Date/Time	11/11/08		Date/Time		Cooler Temp.	

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

Bioremediation Consulting Inc.
39 Clarenden Street
Watertown, MA 02472

Chain Of Custody / Analysis Request

AESI Ref: 38609.59845
COC #: WB18-0241
Lab Use Only
Lab Proj #
Lab ID

Privileged & Confidential

Site Name: Wastebeds 1-8 Microcosm Study
Location of Site: Geddes, New York

EDD To: Brad Kubiak, Chuck Sharpe

Client Contact: (name, co., address)
John.McAuliffe@Honeywell.com
Honeywell International
101 Columbia Road
Morristown, NJ 07962

Hardcopy Report To: Robert Trent
Invoice To: John McAuliffe

Sampler: Jon Bone
P O #
Analysis Turnaround Time:
Standard - Y
Rush Charges Authorized for - N
2 weeks -
1 week -
Next Day -

Job No.

	Sample Identification: Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID	Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample ?	Preservative: NO3 Methanol													Lab Sample Numbers
											Units															
1	WB18-MW-03S	—	—	WB18- 0241 -01	11/11/08	1030	MW	water	REG	10	G	N	X	W W	W W	V V										
2	WB18-MW-02S	—	—	WB18- 0241 -02	11/11/08	1330	MW	water	REG	11	G	N	X	W W	W W	V V										
3				WB18- -03																						
4				WB18- -04																						
5				WB18- -05																						
6				WB18- -06																						
7				WB18- -07																						
8				WB18- -08																						
9				WB18- -09																						
10				WB18- -10																						
11				WB18- -11																						
12				WB18- -12																						

Special Instructions: Grab samples for TCL analyses (VOCs and SVOCs) will be sent to Life Sciences Laboratories, Inc., 5000 Brittonfield Parkway, East Syracuse, NY 13057.

Relinquished by: Jon Bone	Company: O'Brien & Gere	Received by: W. Smolle	Company: BCI		Condition		Custody Seals Intact	
	Date/Time: 11/11/08 1700		Date/Time: 11/12/08		Cooler Temp.			
Relinquished by	Company	Received by	Company		Condition		Custody Seals Intact	
	Date/Time		Date/Time		Cooler Temp.			

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

Bioremediation Consulting Inc
39 Clarendon Street Watertown MA 02472
phone 617-923-0976 fax 617-923-0959
e-mail: MFindlay@bciLabs.com

CHAIN OF CUSTODY RECORD

Project Name: OBG-Honeywell

Sampling Location: WB18-MW-02S
Field Sample ID WB18-0241-02

Sampled by: Jon Bove

Contact: trentrj ~~Robert Trent~~ @obg.com
315-437-6100 ext. 2732

VociCJ@obg.com
215-628-9100

MW-2S

7 1-L serum bottles for microcosm test – fill completely
2 160-ml serum bottles, HCl preserved – fill ***to line***
2 voas, HCl-preserved: fill completely

See enclosed CAPPING INSTRUCTIONS for serum bottles
RETURN CRIMPER & pliers **TO BCI**

Well Number	Date	VOA Vials HCl-preserved	rcv	160 ml SB HCl-preserved	rcv	1-Liter serum bottles Filled with Argon	rcv	1-Liter serum bottles Filled with Argon. Sulfide, 0.13 mM Fe^{++}, 0.04 mM	rcv
MW-2S		2	2	2	2	4	4	3	3
Return crimper to BCI									no

SHIP TO: Bioremediation Consulting Inc (phone 617-923-0976)
39 Clarendon St Watertown MA 02472

Shipping Conditions:
ICE NECESSARY; **however,**
No Loose Ice – bag ice in leak-proof bags
Do not allow ice to contact groundwater samples

Fed Ex Priority Overnite. **NO** Saturday Delivery

Call or fax BCI at time of shipping and report the tracking number

Relinquished by [signature] date 11/11/08

Received by [signature] date 11/12/08

Bioremediation Consulting Inc
39 Clarendon Street Watertown MA 02472
phone 617-923-0976 fax 617-923-0959
e-mail: MFindlay@bciLabs.com

CHAIN OF CUSTODY RECORD

Project Name: OBG-Honeywell

Sampling Location: WB18-MW-03S
Full Sample ID: WB18-0241-01

Sampled by: _____

Contact: trentrj ~~Robert Trent~~ @obg.com
315-437-6100 ext. 2732

VociCJ@obg.com
215-628-9100

MW-3S

6 1-L serum bottles for microcosm test – fill completely
2 160-ml serum bottles, HCl preserved – fill ***to line***
2 voas, HCl-preserved: fill completely

See enclosed CAPPING INSTRUCTIONS for serum bottles
RETURN CRIMPER & pliers **TO BCI**

Well Number	Date	VOA Vials HCl-preserved	rcv	160 ml SB HCl-preserved	rcv	1-Liter serum bottles Filled with Argon	rcv	1-Liter serum bottles Filled with Argon. Sulfide, 0.13 mM Fe^{++}, 0.04 mM	rcv	1-Liter serum bottles Filled with Argon. Sulfide and Fe^{++} to give 0.25 mM FeS	rcv
MW-3S		2	2	2	2	2	2	2	2	2	2
Return crimper to BCI											no

SHIP TO: Bioremediation Consulting Inc (phone 617-923-0976)
39 Clarendon St Watertown MA 02472

Shipping Conditions:
ICE NECESSARY; **however,**
No Loose Ice – bag ice in leak-proof bags
Do not allow ice to contact groundwater samples

Fed Ex Priority Overnite. **NO** Saturday Delivery

Call or fax BCI at time of shipping and report the tracking number

Relinquished by Robert Trent date 11/11/08

Received by N Smola date 11/12/08

Bioremediation Consulting Inc.
39 Clarendon Street
Watertown, MA 02472

Chain Of Custody / Analysis Request

AESI Ref: 38609.59845
COC #: WB18-0243
Lab Use Only
Lab Proj #
Lab ID

Privileged & Confidential
EDD To: Robert Trent/Chuck Sharpe
Site Name: Wastebeds 1-8: Microcosm Study
Location of Site: Geddes, New York

Client Contact: (name, co., address)
John.McAuliffe@Honeywell.com
Honeywell International
101 Columbia Road
Morristown, NJ 07962

Hardcopy Report To: Robert Trent
Invoice To: John McAuliffe

Sampler: Jonathan Bone / Nate Hagan
PO #
Analysis Turnaround Time:
Standard - Y
Rush Charges Authorized for - N
2 weeks -
1 week -
Next Day -

Job No.

Preservative: BCI MICROCOSM

	Sample Identification: Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID	Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample?	BCI MICROCOSM												Lab Sample Numbers
											Units														
1	WB18-MW 16S	—	—	WB18-0243 -01	11/12/08	1200	MW	water	REG	8	G	N	X	VVVV	VVVV										
2				WB18- -02																					
3				WB18- -03																					
4				WB18- -04																					
5				WB18- -05																					
6				WB18- -06																					
7				WB18- -07																					
8				WB18- -08																					
9				WB18- -09																					
10				WB18- -10																					
11				WB18- -11																					
12				WB18- -12																					

Special Instructions: * Metals and trace elements = boron, calcium, cobalt, copper, iron, maganesium, manganese, molybdeunum, nickel, potassium, selenium, sodium, and zinc

Relinquished by	Company	O'Brien & Gere	Received by	BCI Company		Condition		Custody Seals Intact
	Date/Time	11/12/08 1600		Date/Time 11/13/08		Cooler Temp		
Relinquished by	Company		Received by	Company		Condition		Custody Seals Intact
	Date/Time			Date/Time		Cooler Temp		

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

Bioremediation Consulting Inc
39 Clarendon Street Watertown MA 02472
phone 617-923-0976 fax 617-923-0959
e-mail: MFindlay@bciLabs.com

CHAIN OF CUSTODY RECORD

Project Name: OBG-Honeywell

Sampling Location: WB18-MW-16S
Field Sample ID: WB18-0243-01

Sampled by: Jonathan Bone / Nate Vogan

Contact: Trent CJ ~~Robert Trent~~ @obg.com
315-437-6100 ext. 2732

VociCJ@obg.com
215-628-9100

MW-16S

4 1-L serum bottles for microcosm test – fill completely
2 160-ml serum bottles, HCl preserved – fill ***to line***
2 voas, HCl-preserved: fill completely

See enclosed CAPPING INSTRUCTIONS for serum bottles
RETURN CRIMPER & pliers **TO BCI**

Well Number	Date	VOA Vials HCl-preserved	rcv	160 ml SB HCl-preserved	rcv	1-Liter serum bottles **no flush**	rcv
MW-16S		2	✓✓	2	✓✓	**4**	✓✓✓✓
Return crimper to BCI							yes

SHIP TO: Bioremediation Consulting Inc (phone 617-923-0976)
39 Clarendon St Watertown MA 02472

Shipping Conditions:
ICE NECESSARY; **however,**
No Loose Ice – bag ice in leak-proof bags
Do not allow ice to contact groundwater samples

Fed Ex Priority Overnite. **NO** Saturday Delivery

Call or fax BCI at time of shipping and report the tracking number

Relinquished by _____ date 11/12/08

Received by _____ date 11/13/08

Bioremediation Consulting Inc.

39 Clarenden Street
Watertown, MA 02472

Chain Of Custody / Analysis Request

AESI Ref: 38609.59845
COC #: WB18- 0352
Lab Use Only
Lab Proj #
Lab ID

Privileged & Confidential

Site Name: Wastebeds 1-8 Microcosm Study
Location of Site: Geddes, New York

BDD To: Brad Kubiak, Chuck Sharpe

Client Contact: (name, co., address)
John.McAuliffe@Honeywell.com
Honeywell International
101 Columbia Road
Morristown, NJ 07962

Hardcopy Report To: Robert Trent
Invoice To: John McAuliffe

Sampler: Nate Vogan
P O #
Job No.

Analysis Turnaround Time:
Standard - Y
Rush Charges Authorized for - N
2 weeks -
1 week -
Next Day -

Preservative: Microcosm study

	Sample Identification: Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID	Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample ?	Microcosm study												Lab Sample Numbers
											Units														
1	WB18-MW-035	6	10	WB18- 0352 -01	11/11/08	0980	SB	Soil	Reg	5	G	N	X		✓✓ ✓	✓ ✓									
2	WB18-MW-035	6	10	WB18- 0352 -02	11/11/08	1315	SB	Soil	Reg	3	G	N	X		✓✓	✓									
3	WB18-MW-035	6	10	WB18- 0352 -03	11/11/08	1415	SB	Soil	Reg	3	G	N	X		✓✓	✓									
4				WB18- -04																					
5				WB18- -05																					
6				WB18- -06																					
7				WB18- -07																					
8				WB18- -08																					
9				WB18- -09																					
10				WB18- -10																					
11				WB18- -11																					
12				WB18- -12																					

Special Instructions: Grab samples for TCL analyses (VOCs and SVOCs) will be sent to Life Sciences Laboratories, Inc., 5000 Brittonfield Parkway, East Syracuse, NY 13057.

Relinquished by: MAm	Company: O'Brien & Gere	Received by: [signature]	Company: BCI		Condition		Custody Seals Intact	
	Date/Time: 11/11/08 1700		Date/Time: 11/12/08		Cooler Temp.			
Relinquished by	Company	Received by	Company		Condition		Custody Seals Intact	
	Date/Time		Date/Time		Cooler Temp.			

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

Bioremediation Consulting Inc.
39 Clarenden Street
Watertown, MA 02472

Chain Of Custody / Analysis Request

AESI Ref: 38609.59845
COC # : WB18- 0354
Lab Use Only
Lab Proj #
Lab ID

Privileged & Confidential
Site Name: Wastebeds 1-8 Microcosm Study
EDD To: Brad Kubiak, Chuck Sharpe
Location of Site: Geddes, New York

Client Contact: (name, co., address)
John.McAuliffe@Honeywell.com
Honeywell International
101 Columbia Road
Morristown, NJ 07962

Hardcopy Report To: Robert Trent
Invoice To: John McAuliffe

Sampler: Noe Vogan
P O #
Analysis Turnaround Time:
Standard - Y
Rush Charges Authorized for - N
2 weeks -
1 week -
Next Day -

Job No.

	Sample Identification				Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample ?	Preservative: Microcosm study													Lab Sample Numbers
	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID							Units															
1	WB18 - MW-16S	38	42	WB18- 0354 -01	11/12/08	0900	SB	Soil	Reg	3	G	N	X													
2				WB18- -02																						
3				WB18- -03																						
4				WB18- -04																						
5				WB18- -05																						
6				WB18- -06																						
7				WB18- -07																						
8				WB18- -08																						
9				WB18- -09																						
10				WB18- -10																						
11				WB18- -11																						
12				WB18- -12																						

Special Instructions: Grab samples for TCL analyses (VOCs and SVOCs) will be sent to Life Sciences Laboratories, Inc., 5000 Brittonfield Parkway, East Syracuse, NY 13057.

Relinquished by: Mt M Y	Company: O'Brien & Gere	Received by: Donna Franklin	Company: BCI		Condition		Custody Seals Intact	
	Date/Time: 1600 11/12/08		Date/Time: 11/13/08		Cooler Temp			
Relinquished by	Company	Received by	Company		Condition		Custody Seals Intact	
	Date/Time		Date/Time		Cooler Temp			

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

Quantitation Report (QT Reviewed)

MW-01S-K1
mg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040324.D
Acq On : 4 Apr 2009 5:02 pm
Operator : JAR
Sample : BC090325-01
Misc : 0325 Hon 1S - K1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 06 13:10:04 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:00:44 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	93070	1.000 µg/mL extract	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	191764	1.500 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 150.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	5925703	51.687 µg/mL	100
4) Toluene	9.08	91	56723	0.348 µg/mL#	95
5) Ethylbenzene	11.12	91	54951	0.290 µg/mL	98
6) m/p-Xylenes	11.29	91	236757	1.578 µg/mL	97
7) o-Xylene	11.83	91	128781	0.856 µg/mL	97
8) Phenol	13.56	94	993529	10.594 ug/mL	96
9) 2-Methylphenol	15.24	108	17114	0.247 ug/mL	93
10) 3/4-Methylphenol	15.71	108	8796m	0.119 ug/mL	
11) Naphthalene	18.07	128	613841	2.909 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0325

Quantitation Report (QT Reviewed)

MW-01S-U1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040325.D
Acq On : 4 Apr 2009 6:18 pm
Operator : JAR
Sample : BC090325-02
isc : 0325 Hon 1S - U1
LS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 06 13:10:25 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	112438	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	197294	1.277 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 128.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	5936215	42.860 µg/mL	99
4) Toluene	9.07	91	65017	0.330 µg/mL#	95
5) Ethylbenzene	11.12	91	63572	0.278 µg/mL	98
6) m/p-Xylenes	11.29	91	259922	1.434 µg/mL	97
7) o-Xylene	11.83	91	141096	0.777 µg/mL	97
8) Phenol	13.57	94	942869	8.322 ug/mL	96
9) 2-Methylphenol	15.24	108	18290	0.218 ug/mL	93
10) 3/4-Methylphenol	15.72	108	10047m	0.112 ug/mL	
11) Naphthalene	18.07	128	770276	3.021 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-01S-N1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040326.D
Acq On : 4 Apr 2009 7:33 pm
Operator : JAR
Sample : BC090325-03
isc : 0325 Hon 1S - N1
LS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 06 13:10:41 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	119446	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	191517	1.167 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 117.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	5506368	37.424 µg/mL	100
4) Toluene	9.08	91	56902	0.272 µg/mL#	94
5) Ethylbenzene	11.12	91	55842	0.230 µg/mL	98
6) m/p-Xylenes	11.29	91	231648	1.203 µg/mL	97
7) o-Xylene	11.83	91	125909	0.652 µg/mL	98
8) Phenol	13.56	94	1099608	9.136 ug/mL	96
9) 2-Methylphenol	15.24	108	18145	0.204 ug/mL	83
10) 3/4-Methylphenol	15.71	108	9694m	0.102 ug/mL	
11) Naphthalene	18.07	128	723321	2.671 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0505

Quantitation Report (QT Reviewed)

MU-01S-F1

µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040327.D
Acq On : 4 Apr 2009 8:48 pm
Operator : JAR
Sample : BC090325-04
isc : 0325 Hon 1S - F1
LS Vial : 27 Sample Multiplier: 1

Quant Time: Apr 06 13:10:57 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	117242	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	194022	1.204 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 120.00%	
Target Compounds					Qvalue
3) Benzene	7.13	78	5689081	39.392 µg/mL	100
4) Toluene	9.07	91	60033	0.292 µg/mL#	94
5) Ethylbenzene	11.12	91	58489	0.245 µg/mL	98
6) m/p-Xylenes	11.29	91	239437	1.267 µg/mL	97
7) o-Xylene	11.83	91	129277	0.682 µg/mL	97
8) Phenol	13.56	94	1134312	9.601 ug/mL	96
9) 2-Methylphenol	15.24	108	18351	0.210 ug/mL	90
10) 3/4-Methylphenol	15.72	108	9954m	0.107 ug/mL	
11) Naphthalene	18.07	128	704731	2.651 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

IS 0325

Quantitation Report (QT Reviewed)

MW-01S-D1
ug/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040328.D
Acq On : 4 Apr 2009 10:03 pm
Operator : JAR
Sample : BC090325-05
isc : 0325 Hon 1S - D1
LS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 06 13:11:12 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	120836	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.00	98	190419	1.147	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	115.00%	
Target Compounds						Qvalue
3) Benzene	7.15	78	5541865	37.232	µg/mL	100
4) Toluene	9.08	91	58946	0.279	µg/mL#	95
5) Ethylbenzene	11.12	91	58519	0.238	µg/mL	99
6) m/p-Xylenes	11.29	91	234635	1.205	µg/mL	97
7) o-Xylene	11.83	91	126504	0.648	µg/mL	97
8) Phenol	13.56	94	1153698	9.475	ug/mL	96
9) 2-Methylphenol	15.25	108	18451	0.205	ug/mL	90
10) 3/4-Methylphenol	15.72	108	9352m	0.097	ug/mL	
11) Naphthalene	18.07	128	720189	2.628	µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0325

Quantitation Report (QT Reviewed)

MW-01S-S1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040329.D
Acq On : 4 Apr 2009 11:19 pm
Operator : JAR
Sample : BC090325-06
isc : 0325 Hon 1S - S1
LS Vial : 29 Sample Multiplier: 1

Quant Time: Apr 06 13:11:28 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	114339	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	242586	1.544 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 154.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	6528354	46.351 µg/mL	97
4) Toluene	9.07	91	82209	0.411 µg/mL#	95
5) Ethylbenzene	11.12	91	75547	0.325 µg/mL	98
6) m/p-Xylenes	11.28	91	306965	1.666 µg/mL	97
7) o-Xylene	11.83	91	167062	0.904 µg/mL	98
8) Phenol	13.56	94	1425977	12.377 ug/mL	96
9) 2-Methylphenol	15.23	108	23738	0.279 ug/mL	92
10) 3/4-Methylphenol	15.71	108	12490m	0.137 ug/mL	
11) Naphthalene	18.07	128	982182	3.788 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0325

Quantitation Report (QT Reviewed)

MW-01S-M1
ug/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040330.D
Acq On : 5 Apr 2009 12:34 am
Operator : JAR
Sample : BC090325-07
isc : 0325 Hon 1S - M1
LS Vial : 30 Sample Multiplier: 1

Quant Time: Apr 06 13:11:42 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	121825	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	211458	1.263 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 126.00%	
Target Compounds					Qvalue
3) Benzene	7.15	78	5858100	39.037 µg/mL	99
4) Toluene	9.08	91	65713	0.308 µg/mL#	95
5) Ethylbenzene	11.12	91	64906	0.262 µg/mL	98
6) m/p-Xylenes	11.29	91	259357	1.321 µg/mL	97
7) o-Xylene	11.83	91	140788	0.715 µg/mL	98
8) Phenol	13.56	94	1198711	9.765 ug/mL	96
9) 2-Methylphenol	15.25	108	20223	0.223 ug/mL	83
10) 3/4-Methylphenol	15.73	108	11191m	0.115 ug/mL	
11) Naphthalene	18.07	128	819101	2.965 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0325

Quantitation Report (QT Reviewed)

MW-01S-K2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042414.D
Acq On : 25 Apr 2009 7:09 am
Operator : JAR
Sample : BC090424-01
Misc : 0423 Hon 1S - K2
ALS Vial : 14 Sample Multiplier: 0.05

Quant Time: Apr 28 11:28:06 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	125822	1.000 µg/mL	-0.10
System Monitoring Compounds					
2) Toluene-d8	8.93	98	436710	2.526 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 253.00%	
Target Compounds					Qvalue
3) Benzene	7.09	78	6229652	40.194 µg/mL	99
4) Toluene	9.01	91	66690	0.303 µg/mL#	95
5) Ethylbenzene	11.05	91	63481	0.248 µg/mL	99
6) m/p-Xylenes	11.22	91	280142	1.381 µg/mL	97
7) o-Xylene	11.76	91	153176	0.753 µg/mL	98
8) Phenol	13.49	94	1026798	8.099 ug/mL	96
9) 2-Methylphenol	15.14	108	19793	0.211 ug/mL	87
10) 3/4-Methylphenol	15.59	108	10083	0.101 ug/mL	88
11) Naphthalene	17.99	128	734527	2.575 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

MW-01S-U2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042415.D
Acq On : 25 Apr 2009 8:27 am
Operator : JAR
Sample : BC090424-02
isc : 0423 Hon 1S - U2
LS Vial : 15 Sample Multiplier: 0.05

Quant Time: Apr 28 11:35:47 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	130289	1.000	µg/mL	-0.10
System Monitoring Compounds						
2) Toluene-d8	8.93	98	434131	2.425	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	243.00%	
Target Compounds						Qvalue
3) Benzene	7.08	78	6257336	38.988	µg/mL	99
4) Toluene	9.01	91	72586	0.318	µg/mL#	95
5) Ethylbenzene	11.05	91	67478	0.255	µg/mL	98
6) m/p-Xylenes	11.22	91	275097	1.310	µg/mL	98
7) o-Xylene	11.76	91	151352	0.719	µg/mL	97
8) Phenol	13.49	94	1154005	8.790	ug/mL	96
9) 2-Methylphenol	15.14	108	21333	0.220	ug/mL	83
10) 3/4-Methylphenol	15.61	108	10687	0.103	ug/mL	83
11) Naphthalene	17.99	128	796980	2.698	µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

MW-01S-N2
mg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042416.D
Acq On : 25 Apr 2009 9:45 am
Operator : JAR
Sample : BC090424-03
isc : 0423 Hon 1S - N2
LS Vial : 16 Sample Multiplier: 0.05

Quant Time: Apr 28 11:37:04 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	128117	1.000 µg/mL	-0.10
System Monitoring Compounds					
2) Toluene-d8	8.93	98	447676	2.543 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 254.00%	
Target Compounds					Qvalue
3) Benzene	7.09	78	6211611	39.360 µg/mL	99
4) Toluene	9.01	91	70460	0.314 µg/mL	96
5) Ethylbenzene	11.05	91	61765	0.237 µg/mL	99
6) m/p-Xylenes	11.22	91	268209	1.299 µg/mL	97
7) o-Xylene	11.76	91	147017	0.710 µg/mL	98
8) Phenol	13.49	94	1170822	9.069 ug/mL	96
9) 2-Methylphenol	15.14	108	21507	0.225 ug/mL	89
10) 3/4-Methylphenol	15.60	108	11345	0.111 ug/mL	94
11) Naphthalene	17.99	128	880364	3.030 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

MW-01S-F2
mg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042417.D
Acq On : 25 Apr 2009 11:03 am
Operator : JAR
Sample : BC090424-04
isc : 0423 Hon 1S - F2
LS Vial : 17 Sample Multiplier: 0.05

Quant Time: Apr 28 11:38:21 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	131271	1.000	µg/mL	-0.10
System Monitoring Compounds						
2) Toluene-d8	8.92	98	428825	2.378	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	238.00%	
Target Compounds						Qvalue
3) Benzene	7.08	78	6088025	37.650	µg/mL	99
4) Toluene	9.01	91	69084	0.301	µg/mL#	95
5) Ethylbenzene	11.05	91	61958	0.232	µg/mL	98
6) m/p-Xylenes	11.22	91	252651	1.194	µg/mL	97
7) o-Xylene	11.76	91	137540	0.648	µg/mL	98
8) Phenol	13.49	94	1340675	10.135	ug/mL	96
9) 2-Methylphenol	15.14	108	21084	0.216	ug/mL	88
10) 3/4-Methylphenol	15.59	108	11436	0.109	ug/mL	93
11) Naphthalene	17.99	128	755524	2.538	µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

MW-01S-D2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042418.D
Acq On : 25 Apr 2009 12:22 pm
Operator : JAR
Sample : BC090424-05
Misc : 0423 Hon 1S - D2
ALS Vial : 18 Sample Multiplier: 0.05

Quant Time: Apr 28 11:39:13 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	129882	1.000 µg/mL	-0.10
System Monitoring Compounds					
2) Toluene-d8	8.92	98	422795	2.369 µg/mL	-0.07
Spiked Amount 1.000			Recovery	= 237.00%	
Target Compounds					Qvalue
3) Benzene	7.08	78	6034569	37.718 µg/mL	99
4) Toluene	9.00	91	71890	0.316 µg/mL#	94
5) Ethylbenzene	11.05	91	62717	0.238 µg/mL	98
6) m/p-Xylenes	11.22	91	248476	1.187 µg/mL	97
7) o-Xylene	11.76	91	136122	0.649 µg/mL	98
8) Phenol	13.49	94	1183471	9.043 ug/mL	96
9) 2-Methylphenol	15.14	108	20299	0.210 ug/mL	86
10) 3/4-Methylphenol	15.61	108	11248	0.109 ug/mL	99
11) Naphthalene	17.99	128	684296	2.324 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042419.D
Acq On : 25 Apr 2009 1:42 pm
Operator : JAR
Sample : BC090424-06
Misc : 0423 Hon 1S - S2
ALS Vial : 19 Sample Multiplier: 0.05

MW-01S-S2
ug/ml of extract

Quant Time: Apr 28 11:40:20 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	127389	1.000	µg/mL	-0.10
System Monitoring Compounds						
2) Toluene-d8	8.92	98	436090	2.492	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	249.00%	
Target Compounds						Qvalue
3) Benzene	7.07	78	6203061	39.530	µg/mL	99
4) Toluene	9.00	91	68192	0.306	µg/mL#	95
5) Ethylbenzene	11.05	91	63811	0.246	µg/mL	99
6) m/p-Xylenes	11.22	91	263407	1.283	µg/mL	97
7) o-Xylene	11.76	91	143491	0.697	µg/mL	97
8) Phenol	13.49	94	1273541	9.921	ug/mL	97
9) 2-Methylphenol	15.15	108	20819	0.219	ug/mL	86
10) 3/4-Methylphenol	15.61	108	11085	0.109	ug/mL	95
11) Naphthalene	17.99	128	761138	2.635	µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

MW-01S - M2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090424\
Data File : E042420.D
Acq On : 25 Apr 2009 3:03 pm
Operator : JAR
Sample : BC090424-07
Misc : 0423 Hon 1S - M2
LS Vial : 20 Sample Multiplier: 0.05

Quant Time: Apr 28 11:41:19 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Apr 28 09:02:15 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.28	164	128928	1.000	µg/mL	-0.10
System Monitoring Compounds						
2) Toluene-d8	8.91	98	433188	2.445	µg/mL	-0.08
Spiked Amount 1.000			Recovery	=	245.00%	
Target Compounds						Qvalue
3) Benzene	7.06	78	6007770	37.829	µg/mL	99
4) Toluene	9.00	91	72712	0.322	µg/mL#	95
5) Ethylbenzene	11.05	91	64391	0.246	µg/mL	98
6) m/p-Xylenes	11.22	91	256301	1.233	µg/mL	97
7) o-Xylene	11.76	91	140442	0.674	µg/mL	98
8) Phenol	13.49	94	1253529	9.649	ug/mL	97
9) 2-Methylphenol	15.15	108	21127	0.220	ug/mL	84
10) 3/4-Methylphenol	15.61	108	10408	0.101	ug/mL#	76
11) Naphthalene	17.99	128	855443	2.926	µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0423

Quantitation Report (QT Reviewed)

MW-01S-K3
µg/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062504.D
Acq On : 25 Jun 2009 8:15 pm
Operator : ERL
Sample : BC090603-01
isc : 0602 Hon 1S - K3
LS Vial : 4 Sample Multiplier: 1

Quant Time: Jul 06 11:51:06 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	80156m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	96270	0.720	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	72.00%	
Target Compounds						Qvalue
3) Benzene	7.27	78	4589362m	34.678	µg/mL	
4) Toluene	9.23	91	47539m	0.275	µg/mL	
5) Ethylbenzene	11.30	91	46498m	0.238	µg/mL	
6) m/p-Xylenes	11.47	91	191070m	1.221	µg/mL	
7) o-Xylene	12.02	91	104027m	0.662	µg/mL	
8) Phenol	13.74	94	711429m	7.903	ug/mL	
9) 2-Methylphenol	15.38	108	14815m	0.243	ug/mL	
10) 3/4-Methylphenol	15.82	108	8806m	0.136	ug/mL	
11) Naphthalene	18.28	128	486987m	2.099	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0602

Quantitation Report (QT Reviewed)

MW-01S-U3
ug/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062505.D
Acq On : 25 Jun 2009 9:32 pm
Operator : ERL
Sample : BC090603-02
Misc : 0602 Hon 1S - U3
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jul 06 11:53:08 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	109286m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	104911	0.575	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	58.00%	
Target Compounds						Qvalue
3) Benzene	7.28	78	4951582	27.442	µg/mL	98
4) Toluene	9.23	91	54874m	0.233	µg/mL	
5) Ethylbenzene	11.30	91	48071m	0.181	µg/mL	
6) m/p-Xylenes	11.47	91	209717	0.981	µg/mL	95
7) o-Xylene	12.02	91	113668	0.530	µg/mL	92
8) Phenol	13.74	94	867903m	7.072	ug/mL	
9) 2-Methylphenol	15.40	108	15680	0.189	ug/mL	100
10) 3/4-Methylphenol	15.85	108	7848m	0.089	ug/mL	
11) Naphthalene	18.29	128	646773m	2.044	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0602

Quantitation Report (QT Reviewed)

MW-01S-N3
ug/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062506.D
Acq On : 25 Jun 2009 10:49 pm
Operator : ERL
Sample : BC090603-03
Misc : 0602 Hon 1S - N3
LS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 06 11:54:40 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	90599m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	103399	0.684	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	68.00%	
Target Compounds						Qvalue
3) Benzene	7.28	78	4548232	30.406	µg/mL	99
4) Toluene	9.23	91	52416	0.268	µg/mL#	95
5) Ethylbenzene	11.30	91	46586	0.211	µg/mL	91
6) m/p-Xylenes	11.47	91	186479	1.053	µg/mL	94
7) o-Xylene	12.02	91	102461	0.576	µg/mL	92
8) Phenol	13.74	94	963090m	9.466	ug/mL	
9) 2-Methylphenol	15.39	108	15763m	0.229	ug/mL	
10) 3/4-Methylphenol	15.82	108	8253m	0.112	ug/mL	
11) Naphthalene	18.28	128	528123m	2.012	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0602

Quantitation Report (QT Reviewed)

MW-01S-F3
mg/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062507.D
Acq On : 26 Jun 2009 12:06 am
Operator : ERL
Sample : BC090603-04
Misc : 0602 Hon 1S - F3
LS Vial : 7 Sample Multiplier: 1

Quant Time: Jul 06 11:56:30 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	86575m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	102838	0.712	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	71.00%	
Target Compounds						Qvalue
3) Benzene	7.28	78	5379268	37.633	µg/mL	97
4) Toluene	9.23	91	67879m	0.364	µg/mL	
5) Ethylbenzene	11.30	91	55851	0.265	µg/mL	91
6) m/p-Xylenes	11.47	91	234529m	1.389	µg/mL	
7) o-Xylene	12.02	91	127353m	0.751	µg/mL	
8) Phenol	13.73	94	1045368m	10.752	ug/mL	
9) 2-Methylphenol	15.37	108	17336m	0.263	ug/mL	
10) 3/4-Methylphenol	15.81	108	9792m	0.140	ug/mL	
11) Naphthalene	18.28	128	708738m	2.848	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0602

Quantitation Report (QT Reviewed)

MW-01S-D3
µg/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062508.D
Acq On : 26 Jun 2009 1:24 am
Operator : ERL
Sample : BC090603-05
Misc : 0602 Hon 1S - D3
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 06 12:00:30 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	85881m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	109192	0.763	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	76.00%	
Target Compounds						Qvalue
3) Benzene	7.27	78	4941044m	34.846	µg/mL	
4) Toluene	9.23	91	60548m	0.327	µg/mL	
5) Ethylbenzene	11.30	91	48708	0.233	µg/mL	92
6) m/p-Xylenes	11.47	91	203890	1.216	µg/mL	95
7) o-Xylene	12.02	91	112026	0.665	µg/mL	92
8) Phenol	13.73	94	937365m	9.719	ug/mL	
9) 2-Methylphenol	15.37	108	17070	0.261	ug/mL	97
10) 3/4-Methylphenol	15.80	108	10149m	0.146	ug/mL	
11) Naphthalene	18.28	128	698331m	2.829	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0602

Quantitation Report (QT Reviewed)

MW-01S-S3
µg/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062509.D
Acq On : 26 Jun 2009 2:41 am
Operator : ERL
Sample : BC090603-06
Misc : 0602 Hon 1S - S3
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Jul 06 12:02:12 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	85500m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	94575	0.663	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	66.00%	
Target Compounds						Qvalue
3) Benzene	7.28	78	4709878	33.364	µg/mL	99
4) Toluene	9.23	91	49654m	0.269	µg/mL	
5) Ethylbenzene	11.30	91	44047m	0.212	µg/mL	
6) m/p-Xylenes	11.47	91	186119m	1.114	µg/mL	
7) o-Xylene	12.02	91	101437m	0.605	µg/mL	
8) Phenol	13.74	94	872164m	9.084	ug/mL	
9) 2-Methylphenol	15.39	108	14415m	0.222	ug/mL	
10) 3/4-Methylphenol	15.84	108	6672m	0.096	ug/mL	.318
11) Naphthalene	18.28	128	524241m	2.119	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

15 0602

Quantitation Report (QT Reviewed)

MW-01S - M3
µg/ml of extract

Data Path : J:\1\DATA\E090625\
Data File : E062510.D
Acq On : 26 Jun 2009 3:59 am
Operator : ERL
Sample : BC090603-07
Misc : 0602 Hon 1S - M3
LS Vial : 10 Sample Multiplier: 1

Quant Time: Jul 06 12:03:32 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 06 11:49:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.62	164	89992m	1.000	µg/mL	-0.09
System Monitoring Compounds						
2) Toluene-d8	9.15	98	105497	0.703	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	70.00%	
Target Compounds						Qvalue
3) Benzene	7.28	78	4717952	31.753	µg/mL	99
4) Toluene	9.23	91	54402	0.281	µg/mL#	95
5) Ethylbenzene	11.30	91	45689m	0.208	µg/mL	
6) m/p-Xylenes	11.47	91	194201	1.104	µg/mL	95
7) o-Xylene	12.02	91	106260	0.602	µg/mL	93
8) Phenol	13.73	94	906656m	8.971	ug/mL	
9) 2-Methylphenol	15.38	108	15639m	0.228	ug/mL	
10) 3/4-Methylphenol	15.84	108	9703m	0.133	ug/mL	
11) Naphthalene	18.28	128	625273m	2.408	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0602

Quantitation Report (QT Reviewed)

MW-01S-K4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070874.D
Acq On : 12 Jul 2009 2:22 pm
Operator : ERL/JAR
Sample : BC090702-01
isc : 0701 Hon 1S - K4
LS Vial : 72 Sample Multiplier: 1

Quant Time: Jul 13 11:50:04 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	64065m	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	85088	0.913	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	91.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	2965756m	36.129	µg/mL	
4) Toluene	9.17	91	29219	0.250	µg/mL#	93
5) Ethylbenzene	11.24	91	23784	0.177	µg/mL	98
6) m/p-Xylenes	11.41	91	105140	0.974	µg/mL	96
7) o-Xylene	11.96	91	57858	0.518	µg/mL	97
8) Phenol	13.69	94	518070m	8.520	µg/mL	
9) 2-Methylphenol	15.39	108	8739m	0.193	µg/mL	
10) 3/4 - Methylphenol	15.85	108	4915m	0.110	µg/mL	
11) Naphthalene	18.24	128	366343	2.472	ug/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0701

Quantitation Report (QT Reviewed)

MW-01S-U4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070875.D
Acq On : 12 Jul 2009 3:42 pm
Operator : ERL/JAR
Sample : BC090702-02
isc : 0701 Hon 1S - U4
LS Vial : 73 Sample Multiplier: 1

Quant Time: Jul 13 11:51:49 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	60733	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.08	98	81932	0.927	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	93.00%	
Target Compounds						Qvalue
3) Benzene	7.17	78	3209761m	44.467	µg/mL	
4) Toluene	9.17	91	28128	0.254	µg/mL#	95
5) Ethylbenzene	11.24	91	24586	0.193	µg/mL	98
6) m/p-Xylenes	11.41	91	111043	1.085	µg/mL	96
7) o-Xylene	11.96	91	60511	0.571	µg/mL	97
8) Phenol	13.69	94	435058m	7.548	µg/mL	
9) 2-Methylphenol	15.40	108	8223m	0.191	µg/mL	
10) 3/4 - Methylphenol	15.89	108	4119m	0.097	µg/mL	
11) Naphthalene	18.24	128	317105m	2.257	ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

IS 0701

Quantitation Report (QT Reviewed)

MW-01S-N4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070876.D
Acq On : 12 Jul 2009 5:01 pm
Operator : ERL/JAR
Sample : BC090702-03
isc : 0701 Hon 1S - N4
LS Vial : 74 Sample Multiplier: 1

Quant Time: Jul 13 11:53:00 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	64087	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	89440	0.959	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	96.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	2772263m	32.816	µg/mL	
4) Toluene	9.17	91	29045	0.248	µg/mL#	95
5) Ethylbenzene	11.24	91	21501	0.160	µg/mL	98
6) m/p-Xylenes	11.41	91	89500	0.828	µg/mL	95
7) o-Xylene	11.97	91	50176	0.449	µg/mL	97
8) Phenol	13.69	94	561955m	9.239	µg/mL	
9) 2-Methylphenol	15.40	108	7655m	0.169	µg/mL	
10) 3/4 - Methylphenol	15.88	108	4560m	0.102	µg/mL	
11) Naphthalene	18.24	128	319473m	2.155	ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

IS 0701

Quantitation Report (QT Reviewed)

MW-01S-F4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070877.D
Acq On : 12 Jul 2009 6:21 pm
Operator : ERL/JAR
Sample : BC090702-04
isc : 0701 Hon 1S - F4
LS Vial : 75 Sample Multiplier: 1

Quant Time: Jul 13 11:54:04 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	57821	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	80905	0.962	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	96.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	3087303m	45.261	µg/mL	
4) Toluene	9.17	91	29717	0.282	µg/mL#	93
5) Ethylbenzene	11.24	91	23393	0.193	µg/mL	99
6) m/p-Xylenes	11.41	91	103926	1.067	µg/mL	96
7) o-Xylene	11.96	91	56842	0.564	µg/mL	98
8) Phenol	13.69	94	563167m	10.262	µg/mL	
9) 2-Methylphenol	15.38	108	8477m	0.207	µg/mL	
10) 3/4 - Methylphenol	15.90	108	4088m	0.101	µg/mL	
11) Naphthalene	18.24	128	336247	2.514	ug/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

IS 0701

Quantitation Report (QT Reviewed)

MW-01S-D4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070878.D
Acq On : 12 Jul 2009 7:41 pm
Operator : ERL/JAR
Sample : BC090702-05
isc : 0701 Hon 1S - D4
LS Vial : 76 Sample Multiplier: 1

Quant Time: Jul 13 11:55:14 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	62542m	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	89409	0.983	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	98.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	2846991m	35.261	µg/mL	
4) Toluene	9.17	91	30552	0.268	µg/mL#	95
5) Ethylbenzene	11.24	91	21142	0.161	µg/mL	97
6) m/p-Xylenes	11.41	91	91933	0.872	µg/mL	96
7) o-Xylene	11.96	91	50837	0.466	µg/mL	97
8) Phenol	13.69	94	589855m	9.937	µg/mL	
9) 2-Methylphenol	15.36	108	9081m	0.205	µg/mL	
10) 3/4 - Methylphenol	15.85	108	5370m	0.123	µg/mL	
11) Naphthalene	18.24	128	290974m	2.011	ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0701

Quantitation Report (QT Reviewed)

MW-01S-S4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070879.D
Acq On : 12 Jul 2009 9:00 pm
Operator : ERL/JAR
Sample : BC090702-06
isc : 0701 Hon 1S - S4
LS Vial : 77 Sample Multiplier: 1

Quant Time: Jul 13 11:56:08 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	57661	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.08	98	84197	1.004 µg/mL	-0.07
Spiked Amount 1.000			Recovery	= 100.00%	
Target Compounds					Qvalue
3) Benzene	7.17	78	2998585m	43.269 µg/mL	
4) Toluene	9.17	91	27313	0.260 µg/mL#	93
5) Ethylbenzene	11.24	91	22202	0.183 µg/mL	99
6) m/p-Xylenes	11.41	91	99065	1.020 µg/mL	96
7) o-Xylene	11.96	91	55156	0.548 µg/mL	97
8) Phenol	13.69	94	581331m	10.623 µg/mL	
9) 2-Methylphenol	15.42	108	8215m	0.201 µg/mL	
10) 3/4 - Methylphenol	15.91	108	4134m	0.102 µg/mL	
11) Naphthalene	18.24	128	299260	2.244 ug/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0701

Quantitation Report (QT Reviewed)

MW-01S-M4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070880.D
Acq On : 12 Jul 2009 10:20 pm
Operator : ERL/JAR
Sample : BC090702-07
isc : 0701 Hon 1S - M4
.LS Vial : 78 Sample Multiplier: 1

Quant Time: Jul 13 11:57:21 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 13 11:48:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	60652	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	86024	0.975	µg/mL	-0.07
Spiked Amount 1.000			Recovery	=	98.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	2910924m	38.113	µg/mL	
4) Toluene	9.17	91	27091m	0.245	µg/mL	
5) Ethylbenzene	11.24	91	22074	0.173	µg/mL	98
6) m/p-Xylenes	11.41	91	96419	0.943	µg/mL	95
7) o-Xylene	11.96	91	53425	0.505	µg/mL	97
8) Phenol	13.69	94	542481m	9.424	µg/mL	
9) 2-Methylphenol	15.38	108	8321m	0.194	µg/mL	
10) 3/4 - Methylphenol	15.88	108	4119m	0.097	µg/mL	
11) Naphthalene	18.24	128	310754	2.215	ug/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

1S 0701

Quantitation Report (QT Reviewed)

MW-02S-K1
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041316.D
Acq On : 14 Apr 2009 6:50 am
Operator : RS
Sample : BC090407-01
Misc : 0407 Hon 2S - K1
LS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 15 11:51:56 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 11:51:48 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	139171	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	635298	3.322 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 332.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	129642	0.756 µg/mL	92
4) Toluene	9.02	91	948350	4.091 µg/mL#	95
5) Ethylbenzene	11.07	91	140526	0.497 µg/mL	97
6) m/p-Xylenes	11.23	91	1972942	8.796 µg/mL	99
7) o-Xylene	11.78	91	640253	2.847 µg/mL	99
8) Phenol	13.52	94	825542	5.887 ug/mL	95
9) 2-Methylphenol	15.16	108	5253	0.051 ug/mL 0.11	89
10) 3/4-Methylphenol	15.59	108	12181	0.110 ug/mL	83
11) Naphthalene	18.01	128	5494738	17.412 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\ MW-02S-N7-1
Data File : E041317.D
Acq On : 14 Apr 2009 8:06 am
Operator : RS
Sample : BC090407-02
Misc : 0407 Hon 2S - N7 - 1
ALS Vial : 17 Sample Multiplier: 1

µg/ml of extract

Quant Time: Apr 15 11:55:25 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 11:55:08 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	143948	1.000	µg/mL	-0.07
System Monitoring Compounds						
2) Toluene-d8	8.94	98	667321	3.374	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	337.00%	
Target Compounds						Qvalue
3) Benzene	7.11	78	119962	0.677	µg/mL#	92
4) Toluene	9.02	91	924771	3.844	µg/mL#	95
5) Ethylbenzene	11.07	91	134919	0.461	µg/mL	98
6) m/p-Xylenes	11.23	91	1887250	8.135	µg/mL	99
7) o-Xylene	11.78	91	615696	2.647	µg/mL	99
8) Phenol	13.52	94	1122216	7.737	ug/mL	96
9) 2-Methylphenol	15.17	108	5532	0.052	ug/mL	85
10) 3/4-Methylphenol	15.58	108	13481	0.118	ug/mL#	78
11) Naphthalene	18.01	128	5375372	16.469	µg/mL	94

0.17

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

MW-C2S-N9-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041318.D
Acq On : 14 Apr 2009 9:22 am
Operator : RS
Sample : BC090407-03
Misc : 0407 Hon 2S - N9 - 1
LS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 15 11:56:51 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 11:56:45 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	142942	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	735372	3.744 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 374.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	136371	0.774 µg/mL#	91
4) Toluene	9.02	91	1021214	4.301 µg/mL#	95
5) Ethylbenzene	11.07	91	161431	0.555 µg/mL	98
6) m/p-Xylenes	11.23	91	2225637	9.661 µg/mL	99
7) o-Xylene	11.78	91	730204	3.161 µg/mL	100
8) Phenol	13.52	94	1226321	8.514 ug/mL	96
9) 2-Methylphenol	15.17	108	5960	0.056 ug/mL	86
10) 3/4-Methylphenol	15.58	108	14870	0.131 ug/mL	88
11) Naphthalene	18.01	128	6204184	19.142 µg/mL#	93

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-02S-N11-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041319.D
Acq On : 14 Apr 2009 10:37 am
Operator : RS
Sample : BC090407-04
Misc : 0407 Hon 2S - N - 11 - 1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 15 11:58:31 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 11:58:25 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	141177	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	654237	3.373 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 337.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	124358	0.715 µg/mL#	91
4) Toluene	9.02	91	932838	3.960 µg/mL#	95
5) Ethylbenzene	11.07	91	148351	0.517 µg/mL	98
6) m/p-Xylenes	11.23	91	2045547	8.990 µg/mL	99
7) o-Xylene	11.78	91	669504	2.935 µg/mL	100
8) Phenol	13.52	94	1109545	7.799 ug/mL	96
9) 2-Methylphenol	15.18	108	5501	0.052 ug/mL	89
10) 3/4-Methylphenol	15.58	108	13200	0.117 ug/mL	84
11) Naphthalene	18.01	128	5727840	17.893 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

MU-02S-D11-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041320.D
Acq On : 14 Apr 2009 11:53 am
Operator : RS
Sample : BC090407-05
Misc : 0407 Hon 2S - D11 - 1
.LS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 15 12:00:57 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:00:51 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	139717	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	606212	3.158 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 316.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	121503	0.706 µg/mL#	92
4) Toluene	9.02	91	888070	3.801 µg/mL#	95
5) Ethylbenzene	11.07	91	136262	0.480 µg/mL	98
6) m/p-Xylenes	11.23	91	1912264	8.492 µg/mL	99
7) o-Xylene	11.78	91	620376	2.748 µg/mL	100
8) Phenol	13.52	94	1079263	7.666 ug/mL	96
9) 2-Methylphenol	15.18	108	5104	0.049 ug/mL#	78
10) 3/4-Methylphenol	15.58	108	12514	0.112 ug/mL	88
11) Naphthalene	18.01	128	5430965	17.143 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

MW-02S- F7-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041321.D
Acq On : 14 Apr 2009 1:10 pm
Operator : RS
Sample : BC090407-06
Misc : 0407 Hon 2S - F7 - 1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Apr 15 12:02:21 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:02:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	141823	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	572558	2.938 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 294.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	163042	0.933 µg/mL#	90
4) Toluene	9.02	91	865608	3.642 µg/mL#	95
5) Ethylbenzene	11.07	91	120168	0.417 µg/mL	98
6) m/p-Xylenes	11.23	91	1701053	7.442 µg/mL	99
7) o-Xylene	11.78	91	550623	2.402 µg/mL	99
8) Phenol	13.52	94	923694	6.463 ug/mL	95
9) 2-Methylphenol	15.18	108	5076	0.048 ug/mL	85
10) 3/4-Methylphenol	15.58	108	12081	0.107 ug/mL	88
11) Naphthalene	18.01	128	5057988	15.728 µg/mL	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

MW-02S-F9-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041322.D
Acq On : 14 Apr 2009 2:28 pm
Operator : RS
Sample : BC090407-07
Misc : 0407 Hon 2S - F9 - 1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 15 12:04:54 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:04:33 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	142648	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	634384	3.237 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 324.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	133545	0.760 µg/mL#	92
4) Toluene	9.02	91	933990	3.922 µg/mL#	95
5) Ethylbenzene	11.07	91	132870	0.458 µg/mL	98
6) m/p-Xylenes	11.23	91	1861222	8.096 µg/mL	99
7) o-Xylene	11.78	91	603489	2.618 µg/mL	100
8) Phenol	13.52	94	1084781	7.547 ug/mL	96
9) 2-Methylphenol	15.17	108	5449	0.051 ug/mL	85
10) 3/4-Methylphenol	15.59	108	13336	0.117 ug/mL 0.17	83
11) Naphthalene	18.01	128	5269007	16.290 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

MW-02S-F11-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041323.D
Acq On : 14 Apr 2009 3:45 pm
Operator : RS
Sample : BC090407-08
Misc : 0407 Hon 2S - F11 - 1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 15 12:06:24 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:06:18 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	130204	1.000	µg/mL	-0.07
System Monitoring Compounds						
2) Toluene-d8	8.94	98	648862	3.627	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	363.00%	
Target Compounds						Qvalue
3) Benzene	7.10	78	118871	0.741	µg/mL#	90
4) Toluene	9.02	91	841415	3.868	µg/mL#	95
5) Ethylbenzene	11.07	91	126622	0.478	µg/mL	98
6) m/p-Xylenes	11.23	91	1779855	8.482	µg/mL	99
7) o-Xylene	11.78	91	580455	2.759	µg/mL	99
8) Phenol	13.52	94	1088663	8.298	ug/mL	96
9) 2-Methylphenol	15.19	108	5165	0.053	ug/mL	85
10) 3/4-Methylphenol	15.59	108	13388	0.129	ug/mL	94
11) Naphthalene	18.01	128	4978825	16.864	µg/mL	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0407

Quantitation Report (QT Reviewed)

MW-02S-K2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050805.D
Acq On : 8 May 2009 8:06 pm
Operator : RS
Sample : BC090505-01
Misc : 0505 Hon 2S- K2
LS Vial : 5 Sample Multiplier: 1

Quant Time: May 11 09:44:47 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:41:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	114663m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.84	98	434291m	2.757 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 276.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	97984m	0.694 µg/mL	
4) Toluene	8.92	91	709314m	3.694 µg/mL	
5) Ethylbenzene	10.97	91	102914m	0.441 µg/mL	
6) m/p-Xylenes	11.13	91	1532752m	8.294 µg/mL	
7) o-Xylene	11.67	91	495747m	2.675 µg/mL	
8) Phenol	13.43	94	725486	6.279 ug/mL	94
9) 2-Methylphenol	15.08	108	3735	0.044 ug/mL	83
10) 3/4-Methylphenol	15.52	108	9833	0.108 ug/mL	97
11) Naphthalene	17.90	128	4477359m	17.221 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

MW-02S-N7-2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050806.D
Acq On : 8 May 2009 9:24 pm
Operator : RS
Sample : BC090505-02
Misc : 0505 Hon 2S- N7- 2
LS Vial : 6 Sample Multiplier: 1

Quant Time: May 11 09:47:47 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:45:05 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	125745m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.84	98	426928m	2.471 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 247.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	107184m	0.692 µg/mL	
4) Toluene	8.92	91	673610m	3.177 µg/mL	
5) Ethylbenzene	10.97	91	93237m	0.365 µg/mL	
6) m/p-Xylenes	11.12	91	1347578m	6.649 µg/mL	
7) o-Xylene	11.67	91	440146m	2.166 µg/mL	
8) Phenol	13.42	94	813951	6.424 ug/mL	95
9) 2-Methylphenol	15.10	108	3617	0.039 ug/mL	81
10) 3/4-Methylphenol	15.52	108	9421	0.094 ug/mL	86
11) Naphthalene	17.90	128	4064880m	14.256 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050807.D
Acq On : 8 May 2009 10:41 pm
Operator : RS
Sample : BC090505-03
Misc : 0505 Hon 2S- N9- 2
LS Vial : 7 Sample Multiplier: 1

MW-02S-N9-2
µg/ml of extract

Quant Time: May 11 09:49:48 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:48:00 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	124922m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.85	98	425221m	2.477 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 248.00%	
Target Compounds					Qvalue
3) Benzene	7.02	78	92881m	0.604 µg/mL	
4) Toluene	8.92	91	644945m	3.057 µg/mL	
5) Ethylbenzene	10.97	91	89538m	0.353 µg/mL	
6) m/p-Xylenes	11.12	91	1323012m	6.571 µg/mL	
7) o-Xylene	11.67	91	432464m	2.142 µg/mL	
8) Phenol	13.42	94	828030	6.578 ug/mL	95
9) 2-Methylphenol	15.09	108	3791	0.041 ug/mL#	78
10) 3/4-Methylphenol	15.52	108	9490	0.095 ug/mL	96
11) Naphthalene	17.90	128	3914478m	13.819 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

MW-02S-N11-2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050808.D
Acq On : 8 May 2009 11:58 pm
Operator : RS
Sample : BC090505-04
Misc : 0505 Hon 2S- N11- 2
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 11 09:52:45 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:48:00 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	128072m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.85	98	418895m	2.381 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 238.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	108378m	0.687 µg/mL	
4) Toluene	8.92	91	645986m	2.984 µg/mL	
5) Ethylbenzene	10.97	91	92707m	0.356 µg/mL	
6) m/p-Xylenes	11.13	91	1364754m	6.612 µg/mL	
7) o-Xylene	11.67	91	442554m	2.138 µg/mL	
8) Phenol	13.42	94	854814	6.624 ug/mL	95
9) 2-Methylphenol	15.09	108	3596	0.038 ug/mL	88
10) 3/4-Methylphenol	15.53	108	9506	0.093 ug/mL	94
11) Naphthalene	17.90	128	4018162m	13.837 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050809.D
Acq On : 9 May 2009 1:15 am
Operator : RS
Sample : BC090505-05
Misc : 0505 Hon 2S- D11- 2
ALS Vial : 9 Sample Multiplier: 1

MW-02S-D11-2
ug/ml of extract

Quant Time: May 11 09:55:09 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:48:00 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	126275m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.84	98	414666m	2.390 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 239.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	93316m	0.600 µg/mL	
4) Toluene	8.92	91	639388m	2.996 µg/mL	
5) Ethylbenzene	10.97	91	90639m	0.353 µg/mL	
6) m/p-Xylenes	11.13	91	1344669m	6.607 µg/mL	
7) o-Xylene	11.67	91	433292m	2.123 µg/mL	
8) Phenol	13.42	94	853795	6.710 ug/mL	94
9) 2-Methylphenol	15.10	108	3446	0.037 ug/mL	83
10) 3/4-Methylphenol	15.54	108	9007	0.090 ug/mL	99
11) Naphthalene	17.90	128	3946453m	13.783 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

MW-02S-F7-2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050810.D
Acq On : 9 May 2009 2:32 am
Operator : RS
Sample : BC090505-06
Misc : 0505 Hon 2S- F7- 2
LS Vial : 10 Sample Multiplier: 1

Quant Time: May 11 09:58:28 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:48:00 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	128931m	1.000 µg/mL	-0.19
System Monitoring Compounds					
2) Toluene-d8	8.84	98	418480m	2.362 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 236.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	88880m	0.560 µg/mL	
4) Toluene	8.92	91	610451m	2.794 µg/mL	
5) Ethylbenzene	10.97	91	85250m	0.325 µg/mL	
6) m/p-Xylenes	11.12	91	1254455m	6.037 µg/mL	
7) o-Xylene	11.67	91	406961m	1.953 µg/mL	
8) Phenol	13.42	94	858528	6.608 ug/mL	94
9) 2-Methylphenol	15.10	108	3553	0.037 ug/mL#	76
10) 3/4-Methylphenol	15.56	108	9783	0.095 ug/mL	93
11) Naphthalene	17.90	128	3847372m	13.160 µg/mL	

0.13

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

MW-02S-F9-2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050811.D
Acq On : 9 May 2009 3:50 am
Operator : RS
Sample : BC090505-07
Misc : 0505 Hon 2S- F9- 2
LS Vial : 11 Sample Multiplier: 1

Quant Time: May 11 10:00:51 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:48:00 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	125526m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.84	98	423336m	2.455 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 245.00%	
Target Compounds					Qvalue
3) Benzene	7.00	78	96794m	0.626 µg/mL	
4) Toluene	8.92	91	660513m	3.118 µg/mL	
5) Ethylbenzene	10.97	91	90183m	0.353 µg/mL	
6) m/p-Xylenes	11.13	91	1319426m	6.522 µg/mL	
7) o-Xylene	11.68	91	427037m	2.105 µg/mL	
8) Phenol	13.43	94	841063	6.649 ug/mL	94
9) 2-Methylphenol	15.10	108	3414	0.037 ug/mL ?	85
10) 3/4-Methylphenol	15.57	108	9294	0.093 ug/mL	98
11) Naphthalene	17.90	128	3993893m	14.032 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

MW-02S-F11-2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050812.D
Acq On : 9 May 2009 5:08 am
Operator : RS
Sample : BC090505-08
isc : 0505 Hon 2S- F11- 2
LS Vial : 12 Sample Multiplier: 1

Quant Time: May 11 10:03:53 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 09:48:00 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.18	164	124657m	1.000 µg/mL	-0.20
System Monitoring Compounds					
2) Toluene-d8	8.84	98	437531m	2.555 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 255.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	92757m	0.604 µg/mL	
4) Toluene	8.92	91	677107m	3.223 µg/mL	
5) Ethylbenzene	10.97	91	96709m	0.382 µg/mL	
6) m/p-Xylenes	11.13	91	1415279m	7.044 µg/mL	
7) o-Xylene	11.67	91	458186m	2.274 µg/mL	
8) Phenol	13.42	94	845860	6.734 ug/mL	94
9) 2-Methylphenol	15.10	108	3522	0.038 ug/mL	82
10) 3/4-Methylphenol	15.53	108	9817m	0.099 ug/mL	
11) Naphthalene	17.90	128	4123328m	14.588 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0505

Quantitation Report (QT Reviewed)

MW-02S-K3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061310.D
Acq On : 18 Jun 2009 9:36 pm
Operator : JAR
Sample : BC090611-01
isc : 0611 Hon 2S - K3
LS Vial : 24 Sample Multiplier: 1

Quant Time: Jun 19 11:11:21 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	56559	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	81911	0.870	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	87.00%	
Target Compounds						Qvalue
3) Benzene	7.33	78	103583	0.920	µg/mL#	91
4) Toluene	9.30	91	448929	3.819	µg/mL#	94
5) Ethylbenzene	11.37	91	67226	0.489	µg/mL	90
6) m/p-Xylenes	11.55	91	987906	9.547	µg/mL	97
7) o-Xylene	12.09	91	317897	2.928	µg/mL	92
8) Phenol	13.79	94	479547	7.550	ug/mL	95
9) 2-Methylphenol	15.42	108	2527	0.059	ug/mL	93
10) 3/4-Methylphenol	15.81	108	5411	0.118	ug/mL	98
11) Naphthalene	18.37	128	3003532	22.755	µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-N7-3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061311.D
Acq On : 18 Jun 2009 10:53 pm
Operator : JAR
Sample : BC090611-02
isc : 0611 Hon 2S - N7 - 3
LS Vial : 25 Sample Multiplier: 1

Quant Time: Jun 19 11:13:24 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	63249	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.21	98	83673	0.794	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	79.00%	
Target Compounds						Qvalue
3) Benzene	7.32	78	63649	0.504	µg/mL	96
4) Toluene	9.30	91	409781	3.094	µg/mL#	93
5) Ethylbenzene	11.37	91	57170	0.372	µg/mL	90
6) m/p-Xylenes	11.54	91	817235	6.915	µg/mL	96
7) o-Xylene	12.09	91	267030	2.184	µg/mL	92
8) Phenol	13.79	94	619858	8.727	ug/mL	95
9) 2-Methylphenol	15.41	108	2605	0.054	ug/mL	98
10) 3/4-Methylphenol	15.81	108	6063	0.118	ug/mL	89
11) Naphthalene	18.37	128	2512141	15.734	µg/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-N9-3
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061312.D
Acq On : 19 Jun 2009 12:10 am
Operator : JAR
Sample : BC090611-03
isc : 0611 Hon 2S - N9 - 3
LS Vial : 26 Sample Multiplier: 1

Quant Time: Jun 19 11:14:54 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	68363	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	84495	0.741	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	74.00%	
Target Compounds						Qvalue
3) Benzene	7.32	78	65071	0.476	µg/mL	98
4) Toluene	9.30	91	439114	3.066	µg/mL#	94
5) Ethylbenzene	11.37	91	61018	0.367	µg/mL	91
6) m/p-Xylenes	11.54	91	889360	6.965	µg/mL	97
7) o-Xylene	12.09	91	289820	2.193	µg/mL	93
8) Phenol	13.79	94	575569	7.497	ug/mL	95
9) 2-Methylphenol	15.41	108	2714	0.052	ug/mL	98
10) 3/4-Methylphenol	15.81	108	6098	0.110	ug/mL	90
11) Naphthalene	18.37	128	2616165	15.049	µg/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-N11-3
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061313.D
Acq On : 19 Jun 2009 1:26 am
Operator : JAR
Sample : BC090611-04
Misc : 0611 Hon 2S - N11 - 3
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Jun 19 11:16:15 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	67884	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	91429	0.808	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	81.00%	
Target Compounds						Qvalue
3) Benzene	7.33	78	68169	0.503	µg/mL	94
4) Toluene	9.30	91	472199	3.330	µg/mL#	94
5) Ethylbenzene	11.37	91	66302	0.402	µg/mL	91
6) m/p-Xylenes	11.55	91	965096	7.653	µg/mL	96
7) o-Xylene	12.09	91	312383	2.385	µg/mL	92
8) Phenol	13.79	94	687079	9.013	ug/mL	96
9) 2-Methylphenol	15.41	108	2891	0.056	ug/mL	99
10) 3/4-Methylphenol	15.81	108	6761	0.123	ug/mL	93
11) Naphthalene	18.37	128	2705266	15.798	µg/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-D11-3
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061314.D
Acq On : 19 Jun 2009 2:43 am
Operator : JAR
Sample : BC090611-05
isc : 0611 Hon 2S - D11 - 3
LS Vial : 28 Sample Multiplier: 1

Quant Time: Jun 19 11:19:41 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	71143	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	83592	0.705	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	70.00%	
Target Compounds						Qvalue
3) Benzene	7.33	78	65020	0.457	µg/mL	98
4) Toluene	9.30	91	452562	3.036	µg/mL#	94
5) Ethylbenzene	11.37	91	66259	0.383	µg/mL	91
6) m/p-Xylenes	11.55	91	962129	7.258	µg/mL	97
7) o-Xylene	12.09	91	311201	2.265	µg/mL	92
8) Phenol	13.79	94	593783	7.432	ug/mL	96
9) 2-Methylphenol	15.41	108	2774	0.051	ug/mL	99
10) 3/4-Methylphenol	15.81	108	6716	0.116	ug/mL	99
11) Naphthalene	18.37	128	2863660	15.990	µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-F7-3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061315.D
Acq On : 19 Jun 2009 4:00 am
Operator : JAR
Sample : BC090611-06
isc : 0611 Hon 2S - F7 - 3
LS Vial : 29 Sample Multiplier: 1

Quant Time: Jun 19 11:20:31 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	69428	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	92905	0.803	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	80.00%	
Target Compounds						Qvalue
3) Benzene	7.32	78	67292	0.485	µg/mL	95
4) Toluene	9.30	91	438104	3.011	µg/mL#	94
5) Ethylbenzene	11.37	91	62211	0.368	µg/mL	90
6) m/p-Xylenes	11.54	91	897243	6.917	µg/mL	97
7) o-Xylene	12.09	91	295331	2.201	µg/mL	92
8) Phenol	13.79	94	657272	8.430	ug/mL	95
9) 2-Methylphenol	15.42	108	3178	0.060	ug/mL	100
10) 3/4-Methylphenol	15.81	108	7533	0.134	ug/mL	90
11) Naphthalene	18.37	128	2786556	15.934	µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-F9-3
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061316.D
Acq On : 19 Jun 2009 5:16 am
Operator : JAR
Sample : BC090611-07
Misc : 0611 Hon 2S - F9 - 3
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Jun 19 11:21:19 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	70437	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	86127	0.733	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	73.00%	
Target Compounds						Qvalue
3) Benzene	7.33	78	76741	0.545	µg/mL	95
4) Toluene	9.30	91	448539	3.039	µg/mL#	94
5) Ethylbenzene	11.37	91	62465	0.365	µg/mL	91
6) m/p-Xylenes	11.55	91	909325	6.909	µg/mL	96
7) o-Xylene	12.09	91	295730	2.172	µg/mL	92
8) Phenol	13.79	94	599554	7.580	ug/mL	95
9) 2-Methylphenol	15.42	108	2937	0.055	ug/mL	99
10) 3/4-Methylphenol	15.80	108	6946	0.122	ug/mL	95
11) Naphthalene	18.37	128	2694847	15.045	µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-F11-3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090612\
Data File : E061317.D
Acq On : 19 Jun 2009 6:33 am
Operator : JAR
Sample : BC090611-08
isc : 0611 Hon 2S - F11 - 3
LS Vial : 31 Sample Multiplier: 1

Quant Time: Jun 19 11:23:21 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.71	164	69828	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.22	98	86420	0.742	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	74.00%	
Target Compounds						Qvalue
3) Benzene	7.32	78	66131	0.474	µg/mL	97
4) Toluene	9.30	91	443365	3.030	µg/mL#	94
5) Ethylbenzene	11.37	91	64179	0.378	µg/mL	90
6) m/p-Xylenes	11.55	91	931767	7.155	µg/mL	96
7) o-Xylene	12.09	91	303322	2.249	µg/mL	92
8) Phenol	13.79	94	623107	7.946	ug/mL	96
9) 2-Methylphenol	15.42	108	2762	0.052	ug/mL	96
10) 3/4-Methylphenol	15.81	108	6926	0.122	ug/mL	94
11) Naphthalene	18.37	128	2743060	15.528	µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0611

Quantitation Report (QT Reviewed)

MW-02S-K4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070889.D
Acq On : 13 Jul 2009 10:04 am
Operator : ERL/JAR
Sample : BC090708-01
Misc : 0708 Hon 2S - K4
ALS Vial : 87 Sample Multiplier: 1

Quant Time: Jul 17 09:35:41 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	64091	1.000	µg/mL	-0.02
System Monitoring Compounds						
2) Toluene-d8	9.09	98	85796	0.920	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	92.00%	
Target Compounds						Qvalue
3) Benzene	7.19	78	41843	0.389	µg/mL	95
4) Toluene	9.17	91	295162	2.569	µg/mL	98
5) Ethylbenzene	11.24	91	42610	0.317	µg/mL	96
6) m/p-Xylenes	11.41	91	640606	6.111	µg/mL	98
7) o-Xylene	11.96	91	204579	1.830	µg/mL	98
8) Phenol	13.70	94	282836m	4.650	µg/mL	
9) 2-Methylphenol	15.34	108	1066m	0.023	µg/mL	
10) 3/4 - Methylphenol	15.94	108	3337m	0.074	µg/mL	
11) Naphthalene	18.23	128	2106771	14.210	ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-N7-4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070890.D
Acq On : 13 Jul 2009 11:21 am
Operator : ERL/JAR
Sample : BC090708-02
isc : 0708 Hon 2S - N7-4
LS Vial : 88 Sample Multiplier: 1

Quant Time: Jul 17 09:36:32 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	57688	1.000 µg/mL	-0.02
System Monitoring Compounds					
2) Toluene-d8	9.09	98	86797	1.035 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 103.00%	
Target Compounds					Qvalue
3) Benzene	7.20	78	38767	0.400 µg/mL	95
4) Toluene	9.17	91	258709	2.500 µg/mL	98
5) Ethylbenzene	11.24	91	36605	0.303 µg/mL	96
6) m/p-Xylenes	11.41	91	535926	5.665 µg/mL	99
7) o-Xylene	11.96	91	174183	1.731 µg/mL	98
8) Phenol	13.70	94	296186	5.410 µg/mL	98
9) 2-Methylphenol	15.37	108	1252m	0.031 µg/mL	
10) 3/4 - Methylphenol	15.96	108	3401m	0.084 µg/mL	
11) Naphthalene	18.23	128	1828338	13.701 ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-N9-4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070891.D
Acq On : 13 Jul 2009 12:38 pm
Operator : ERL/JAR
Sample : BC090708-03
Misc : 0708 Hon 2S - N9-4
LS Vial : 89 Sample Multiplier: 1

Quant Time: Jul 17 09:44:17 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	57444	1.000 µg/mL	-0.02
System Monitoring Compounds					
2) Toluene-d8	9.09	98	83785	1.003 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 100.00%	
Target Compounds					Qvalue
3) Benzene	7.19	78	40959	0.425 µg/mL	94
4) Toluene	9.17	91	267944	2.602 µg/mL	98
5) Ethylbenzene	11.24	91	37022	0.307 µg/mL	96
6) m/p-Xylenes	11.41	91	549119	5.835 µg/mL	99
7) o-Xylene	11.96	91	178587	1.782 µg/mL	98
8) Phenol	13.70	94	275766	5.058 µg/mL	98
9) 2-Methylphenol	15.36	108	1170m	0.029 µg/mL	
10) 3/4 - Methylphenol	15.95	108	3047m	0.076 µg/mL	
11) Naphthalene	18.23	128	1769042	13.313 ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-N11-4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070892.D
Acq On : 13 Jul 2009 1:56 pm
Operator : ERL/JAR
Sample : BC090708-04
isc : 0708 Hon 2S - N11-4
LS Vial : 90 Sample Multiplier: 1

Quant Time: Jul 17 09:45:56 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	61383m	1.000	µg/mL	-0.02
System Monitoring Compounds						
2) Toluene-d8	9.09	98	88003	0.986	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	99.00%	
Target Compounds						Qvalue
3) Benzene	7.20	78	44542m	0.432	µg/mL	
4) Toluene	9.17	91	268931	2.441	µg/mL	98
5) Ethylbenzene	11.24	91	40475	0.314	µg/mL	96
6) m/p-Xylenes	11.41	91	586074	5.828	µg/mL	99
7) o-Xylene	11.96	91	188863	1.764	µg/mL	99
8) Phenol	13.70	94	306578	5.262	µg/mL	98
9) 2-Methylphenol	15.35	108	1155m	0.027	µg/mL	
10) 3/4 - Methylphenol	15.93	108	2866m	0.067	µg/mL	
11) Naphthalene	18.23	128	1895697	13.351	ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-D11-4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070893.D
Acq On : 13 Jul 2009 3:14 pm
Operator : ERL/JAR
Sample : BC090708-05
Misc : 0708 Hon 2S - D11-4
ALS Vial : 91 Sample Multiplier: 1

Quant Time: Jul 17 09:46:44 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	63841	1.000	µg/mL	-0.02
System Monitoring Compounds						
2) Toluene-d8	9.08	98	87082	0.938	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	94.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	42821	0.399	µg/mL	94
4) Toluene	9.16	91	303535	2.653	µg/mL	98
5) Ethylbenzene	11.24	91	46349	0.346	µg/mL	96
6) m/p-Xylenes	11.41	91	670475	6.434	µg/mL	99
7) o-Xylene	11.96	91	216054	1.940	µg/mL	99
8) Phenol	13.69	94	332666	5.490	µg/mL	98
9) 2-Methylphenol	15.35	108	1159m	0.026	µg/mL	
10) 3/4 - Methylphenol	15.91	108	3428m	0.077	µg/mL	
11) Naphthalene	18.23	128	2093292	14.175	ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-F7-4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070894.D
Acq On : 13 Jul 2009 4:34 pm
Operator : ERL/JAR
Sample : BC090708-06
Misc : 0708 Hon 2S - F7-4
ALS Vial : 92 Sample Multiplier: 1

Quant Time: Jul 17 09:47:26 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	59568	1.000	µg/mL	-0.02
System Monitoring Compounds						
2) Toluene-d8	9.08	98	83271	0.961	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	96.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	39933	0.399	µg/mL	96
4) Toluene	9.16	91	268954	2.517	µg/mL	98
5) Ethylbenzene	11.24	91	39520	0.316	µg/mL	97
6) m/p-Xylenes	11.41	91	565289	5.791	µg/mL	99
7) o-Xylene	11.96	91	182754	1.759	µg/mL	98
8) Phenol	13.70	94	278042	4.918	µg/mL	98
9) 2-Methylphenol	15.38	108	1101m	0.026	µg/mL	
10) 3/4 - Methylphenol	15.95	108	3278m	0.079	µg/mL	
11) Naphthalene	18.23	128	1915173	13.899	ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-F9-4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070895.D
Acq On : 13 Jul 2009 5:54 pm
Operator : ERL/JAR
Sample : BC090708-07
isc : 0708 Hon 2S - F9-4
LS Vial : 93 Sample Multiplier: 1

Quant Time: Jul 17 09:48:09 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	64747	1.000	µg/mL	-0.02
System Monitoring Compounds						
2) Toluene-d8	9.08	98	83040	0.881	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	88.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	40898	0.376	µg/mL	94
4) Toluene	9.17	91	288226	2.481	µg/mL	98
5) Ethylbenzene	11.24	91	42080	0.310	µg/mL	96
6) m/p-Xylenes	11.41	91	620408	5.850	µg/mL	99
7) o-Xylene	11.96	91	199402	1.766	µg/mL	98
8) Phenol	13.69	94	321497	5.232	µg/mL	98
9) 2-Methylphenol	15.35	108	1244m	0.027	µg/mL	
10) 3/4 - Methylphenol	15.93	108	3203m	0.071	µg/mL	
11) Naphthalene	18.23	128	2021548	13.497	ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

2S 0708

Quantitation Report (QT Reviewed)

MW-02S-F11-4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070896.D
Acq On : 13 Jul 2009 7:14 pm
Operator : ERL/JAR
Sample : BC090708-08
Misc : 0708 Hon 2S - F11-4
ALS Vial : 94 Sample Multiplier: 1

Quant Time: Jul 17 09:48:51 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.57	164	63952	1.000	µg/mL	-0.02
System Monitoring Compounds						
2) Toluene-d8	9.09	98	85278	0.916	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	92.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	46374	0.432	µg/mL	94
4) Toluene	9.17	91	310490	2.711	µg/mL	98
5) Ethylbenzene	11.24	91	44992	0.336	µg/mL	95
6) m/p-Xylenes	11.41	91	657425	6.292	µg/mL	99
7) o-Xylene	11.96	91	210536	1.887	µg/mL	98
8) Phenol	13.69	94	314791	5.186	µg/mL	98
9) 2-Methylphenol	15.36	108	1354m	0.030	µg/mL	
10) 3/4 - Methylphenol	15.92	108	3066m	0.068	µg/mL	
11) Naphthalene	18.23	128	2106738	14.241	ug/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

JS 0708

Quantitation Report (QT Reviewed)

MW-03S-K1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040331.D
Acq On : 5 Apr 2009 1:48 am
Operator : JAR
Sample : BC090401-01
Misc : 0331 Hon 3S - K1
LS Vial : 31 Sample Multiplier: 1

Quant Time: Apr 06 13:06:29 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.38	164	118582	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	262621	1.612 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 161.00%	
Target Compounds					Qvalue
3) Benzene	7.15	78	3000660	20.542 µg/mL	95
4) Toluene	9.07	91	3139501	20.356 µg/mL	98
5) Ethylbenzene	11.12	91	45928	0.190 µg/mL	99
6) m/p-Xylenes	11.28	91	416861	2.181 µg/mL	97
7) o-Xylene	11.83	91	170329	0.889 µg/mL	97
8) Phenol	13.55	94	1650575	13.813 ug/mL	97
9) 2-Methylphenol	15.17	108	72043	0.816 ug/mL	88
10) 3/4-Methylphenol	15.55	108	883777	9.357 ug/mL	82
11) Naphthalene	18.09	128	23361	0.087 µg/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0331

Quantitation Report (QT Reviewed)

MW-03S-U1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040332.D
Acq On : 5 Apr 2009 3:03 am
Operator : JAR
Sample : BC090401-02
Misc : 0331 Hon 3S - U1
ALS Vial : 32 Sample Multiplier: 1

Quant Time: Apr 06 13:06:30 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.38	164	115993	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	255385	1.603 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 160.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	2940351	20.579 µg/mL	95
4) Toluene	9.07	91	3105240	20.709 µg/mL	98
5) Ethylbenzene	11.12	91	44979	0.191 µg/mL	98
6) m/p-Xylenes	11.28	91	408729	2.186 µg/mL	97
7) o-Xylene	11.83	91	166413	0.888 µg/mL	98
8) Phenol	13.55	94	1670774	14.294 ug/mL	97
9) 2-Methylphenol	15.17	108	71214	0.825 ug/mL	88
10) 3/4-Methylphenol	15.55	108	874029	9.460 ug/mL	82
11) Naphthalene	18.09	128	24611	0.094 µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0331

Quantitation Report (QT Reviewed)

MW-03S-N1
ug/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040333.D
Acq On : 5 Apr 2009 4:18 am
Operator : JAR
Sample : BC090401-03
isc : 0331 Hon 3S - N1
LS Vial : 33 Sample Multiplier: 1

Quant Time: Apr 06 13:06:31 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.38	164	112104	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	248570	1.614 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 161.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	2847238	20.618 µg/mL	95
4) Toluene	9.06	91	2967037	20.346 µg/mL	98
5) Ethylbenzene	11.12	91	41279	0.181 µg/mL	99
6) m/p-Xylenes	11.28	91	380397	2.105 µg/mL	97
7) o-Xylene	11.83	91	155670	0.859 µg/mL	98
8) Phenol	13.56	94	1571207	13.909 ug/mL	97
9) 2-Methylphenol	15.17	108	67961	0.814 ug/mL	89
10) 3/4-Methylphenol	15.55	108	834821	9.349 ug/mL	81
11) Naphthalene	18.09	128	21648	0.085 µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

EC 0331

Quantitation Report (QT Reviewed)

MW-03S-F1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040334.D
Acq On : 5 Apr 2009 5:32 am
Operator : JAR
Sample : BC090401-04
isc : 0331 Hon 3S - F1
LS Vial : 34 Sample Multiplier: 1

Quant Time: Apr 06 13:06:32 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.37	164	111178	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	243222	1.592 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 159.00%	
Target Compounds					Qvalue
3) Benzene	7.13	78	2905333	21.214 µg/mL	95
4) Toluene	9.06	91	2975153	20.696 µg/mL	98
5) Ethylbenzene	11.12	91	41315	0.183 µg/mL	98
6) m/p-Xylenes	11.28	91	378867	2.114 µg/mL	97
7) o-Xylene	11.83	91	155004	0.863 µg/mL	97
8) Phenol	13.56	94	1599857	14.281 ug/mL	97
9) 2-Methylphenol	15.17	108	68444	0.827 ug/mL	87
10) 3/4-Methylphenol	15.56	108	836303	9.444 ug/mL	81
11) Naphthalene	18.09	128	26918	0.107 µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0331

Quantitation Report (QT Reviewed)

MW-03S-D1
ug/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040335.D
Acq On : 5 Apr 2009 6:47 am
Operator : JAR
Sample : BC090401-05
Misc : 0331 Hon 3S - D1
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Apr 06 13:06:33 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.38	164	111016	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	234099	1.535 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 153.00%	
Target Compounds					Qvalue
3) Benzene	7.13	78	2720978	19.897 µg/mL	95
4) Toluene	9.06	91	2811903	19.043 µg/mL	98
5) Ethylbenzene	11.12	91	39160	0.173 µg/mL	98
6) m/p-Xylenes	11.28	91	358088	2.001 µg/mL	97
7) o-Xylene	11.83	91	146693	0.818 µg/mL	98
8) Phenol	13.56	94	1559332	13.939 ug/mL	97
9) 2-Methylphenol	15.17	108	66107	0.800 ug/mL	88
10) 3/4-Methylphenol	15.56	108	819017	9.262 ug/mL	81
11) Naphthalene	18.09	128	22725	0.090 µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-S1
ug/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040336.D
Acq On : 5 Apr 2009 8:01 am
Operator : JAR
Sample : BC090401-06
isc : 0331 Hon 3S - S1
LS Vial : 36 Sample Multiplier: 1

Quant Time: Apr 06 13:06:34 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.38	164	109806	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	245001	1.624 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 162.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	2881092	21.300 µg/mL	95
4) Toluene	9.06	91	3005750	21.452 µg/mL	98
5) Ethylbenzene	11.12	91	42742	0.191 µg/mL	99
6) m/p-Xylenes	11.28	91	393423	2.223 µg/mL	97
7) o-Xylene	11.83	91	160780	0.906 µg/mL	98
8) Phenol	13.55	94	1639268	14.815 ug/mL	97
9) 2-Methylphenol	15.17	108	70187	0.858 ug/mL	88
10) 3/4-Methylphenol	15.55	108	863263	9.870 ug/mL	82
11) Naphthalene	18.09	128	22779	0.091 µg/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0331

Quantitation Report (QT Reviewed)

MW-03S-M1
µg/ml of extract

Data Path : J:\1\DATA\E090403\
Data File : E040337.D
Acq On : 5 Apr 2009 9:16 am
Operator : JAR
Sample : BC090401-07
isc : 0331 Hon 3S - M1
LS Vial : 37 Sample Multiplier: 1

Quant Time: Apr 06 13:06:35 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Apr 06 13:06:02 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.38	164	110078	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.99	98	232356	1.536 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 154.00%	
Target Compounds					Qvalue
3) Benzene	7.14	78	2857959	21.077 µg/mL	95
4) Toluene	9.06	91	2959536	20.849 µg/mL	98
5) Ethylbenzene	11.12	91	41518	0.186 µg/mL	99
6) m/p-Xylenes	11.28	91	381390	2.150 µg/mL	97
7) o-Xylene	11.83	91	155728	0.875 µg/mL	97
8) Phenol	13.55	94	1397865	12.602 ug/mL	97
9) 2-Methylphenol	15.17	108	65258	0.796 ug/mL	88
10) 3/4-Methylphenol	15.55	108	798299	9.105 ug/mL	81
11) Naphthalene	18.09	128	21612	0.087 µg/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

0331

Quantitation Report (QT Reviewed)

MW-03S-K2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050506.D
Acq On : 5 May 2009 7:46 pm
Operator : ERL
Sample : BC090428-01
isc : 0428 Hon 3S - K2
LS Vial : 6 Sample Multiplier: 1

Quant Time: May 06 11:14:02 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:11:34 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.25	164	101744	1.000 µg/mL	-0.13
System Monitoring Compounds					
2) Toluene-d8	8.88	98	412755m	2.953 µg/mL	-0.11
Spiked Amount 1.000			Recovery	= 295.00%	
Target Compounds					Qvalue
3) Benzene	7.05	78	3230498m	25.776 µg/mL	
4) Toluene	8.96	91	3245923	28.591 µg/mL	98
5) Ethylbenzene	11.02	91	52881	0.256 µg/mL	99
6) m/p-Xylenes	11.18	91	477340	2.911 µg/mL	98
7) o-Xylene	11.72	91	196067	1.192 µg/mL	99
8) Phenol	13.46	94	1863732	18.178 ug/mL	97
9) 2-Methylphenol	15.07	108	87888	1.160 ug/mL	88
10) 3/4-Methylphenol	15.44	108	1037324	12.800 ug/mL	83
11) Naphthalene	17.97	128	32118	0.139 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0428

Quantitation Report (QT Reviewed)

MW-03 S-U2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050507.D
Acq On : 5 May 2009 9:03 pm
Operator : ERL
Sample : BC090428-02
isc : 0428 Hon 3S - U2
LS Vial : 7 Sample Multiplier: 1

Quant Time: May 06 11:15:10 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:11:34 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.25	164	119908	1.000 µg/mL	-0.13
System Monitoring Compounds					
2) Toluene-d8	8.88	98	441057m	2.677 µg/mL	-0.11
Spiked Amount 1.000			Recovery	= 268.00%	
Target Compounds					Qvalue
3) Benzene	7.05	78	3435973	23.262 µg/mL	96
4) Toluene	8.96	91	3451183	23.323 µg/mL	99
5) Ethylbenzene	11.02	91	54126	0.222 µg/mL	99
6) m/p-Xylenes	11.18	91	492820	2.550 µg/mL	98
7) o-Xylene	11.72	91	204039	1.053 µg/mL	98
8) Phenol	13.46	94	1982593	16.408 ug/mL	97
9) 2-Methylphenol	15.07	108	93112	1.043 ug/mL	88
10) 3/4-Methylphenol	15.44	108	1099449	11.511 ug/mL	83
11) Naphthalene	17.97	128	31718	0.117 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0428

Quantitation Report (QT Reviewed)

MW-03S-N2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050508.D
Acq On : 5 May 2009 10:19 pm
Operator : ERL
Sample : BC090428-03
Misc : 0428 Hon 3S - N2
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 06 11:17:32 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:15:51 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.25	164	114297	1.000	µg/mL	-0.13
System Monitoring Compounds						
2) Toluene-d8	8.88	98	391197m	2.491	µg/mL	-0.11
Spiked Amount 1.000			Recovery	=	249.00%	
Target Compounds						Qvalue
3) Benzene	7.05	78	3120878	22.166	µg/mL	96
4) Toluene	8.96	91	3089222	21.022	µg/mL	98
5) Ethylbenzene	11.02	91	46634	0.201	µg/mL	100
6) m/p-Xylenes	11.17	91	428429	2.326	µg/mL	98
7) o-Xylene	11.72	91	175923	0.952	µg/mL	98
8) Phenol	13.45	94	1863703	16.182	ug/mL	97
9) 2-Methylphenol	15.07	108	80319	0.944	ug/mL	89
10) 3/4-Methylphenol	15.44	108	968660	10.640	ug/mL	82
11) Naphthalene	17.97	128	23893	0.092	µg/mL	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-F2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050509.D
Acq On : 5 May 2009 11:35 pm
Operator : ERL
Sample : BC090428-04
'isc : 0428 Hon 3S - F2
.LS Vial : 9 Sample Multiplier: 1

Quant Time: May 06 11:21:16 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:15:51 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.24	164	116140	1.000 µg/mL	-0.14
System Monitoring Compounds					
2) Toluene-d8	8.88	98	397630m	2.492 µg/mL	-0.11
Spiked Amount 1.000			Recovery	= 249.00%	
Target Compounds					Qvalue
3) Benzene	7.04	78	3170481m	22.161 µg/mL	
4) Toluene	8.96	91	3085843m	20.468 µg/mL	
5) Ethylbenzene	11.02	91	44623	0.189 µg/mL	99
6) m/p-Xylenes	11.17	91	407643	2.178 µg/mL	97
7) o-Xylene	11.72	91	166783	0.889 µg/mL	98
8) Phenol	13.45	94	1823299	15.580 ug/mL	96
9) 2-Methylphenol	15.07	108	76625	0.886 ug/mL	89
10) 3/4-Methylphenol	15.44	108	930997	10.064 ug/mL	82
11) Naphthalene	17.97	128	24712	0.094 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0428

Quantitation Report (QT Reviewed)

MW-03S-D2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050510.D
Acq On : 6 May 2009 12:52 am
Operator : ERL
Sample : BC090428-05
Misc : 0428 Hon 3S - D2
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 06 11:23:14 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:15:51 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.25	164	124688	1.000 µg/mL	-0.13
System Monitoring Compounds					
2) Toluene-d8	8.88	98	392952m	2.294 µg/mL	-0.11
Spiked Amount 1.000			Recovery	= 229.00%	
Target Compounds					Qvalue
3) Benzene	7.05	78	3007401	19.580 µg/mL	95
4) Toluene	8.96	91	2921377	17.039 µg/mL	98
5) Ethylbenzene	11.02	91	42264	0.167 µg/mL	99
6) m/p-Xylenes	11.18	91	386574	1.924 µg/mL	98
7) o-Xylene	11.73	91	159691	0.793 µg/mL	98
8) Phenol	13.46	94	1831576	14.577 ug/mL	97
9) 2-Methylphenol	15.07	108	76150	0.820 ug/mL	88
10) 3/4-Methylphenol	15.44	108	923072	9.294 ug/mL	82
11) Naphthalene	17.97	128	24812	0.088 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0428

Quantitation Report (QT Reviewed)

MW-03S-S2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050511.D
Acq On : 6 May 2009 2:08 am
Operator : ERL
Sample : BC090428-06
Misc : 0428 Hon 3S - S2
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 06 11:26:34 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:15:51 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.25	164	121334	1.000	µg/mL	-0.13
System Monitoring Compounds						
2) Toluene-d8	8.88	98	368469m	2.210	µg/mL	-0.11
Spiked Amount 1.000			Recovery	=	221.00%	
Target Compounds						Qvalue
3) Benzene	7.04	78	2841144m	19.009	µg/mL	
4) Toluene	8.96	91	2726264m	16.092	µg/mL	
5) Ethylbenzene	11.02	91	39655	0.161	µg/mL	99
6) m/p-Xylenes	11.18	91	366341	1.873	µg/mL	97
7) o-Xylene	11.73	91	151414	0.772	µg/mL	98
8) Phenol	13.46	94	1687731	13.804	ug/mL	97
9) 2-Methylphenol	15.07	108	73089	0.809	ug/mL	88
10) 3/4-Methylphenol	15.45	108	886927	9.177	ug/mL	82
11) Naphthalene	17.97	128	23594	0.086	µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0428

Quantitation Report (QT Reviewed)

MW-03S-M2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090505\
Data File : E050512.D
Acq On : 6 May 2009 3:24 am
Operator : ERL
Sample : BC090428-07
isc : 0428 Hon 3S - M2
LS Vial : 12 Sample Multiplier: 1

Quant Time: May 06 11:28:12 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed May 06 11:15:51 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.25	164	123126	1.000 µg/mL	-0.13
System Monitoring Compounds					
2) Toluene-d8	8.88	98	366841m	2.169 µg/mL	-0.11
Spiked Amount 1.000			Recovery	= 217.00%	
Target Compounds					Qvalue
3) Benzene	7.05	78	3005477	19.816 µg/mL	95
4) Toluene	8.96	91	2893127	17.107 µg/mL	98
5) Ethylbenzene	11.02	91	43575	0.174 µg/mL	99
6) m/p-Xylenes	11.17	91	400174	2.017 µg/mL	98
7) o-Xylene	11.72	91	164079	0.825 µg/mL	98
8) Phenol	13.45	94	1721589	13.876 ug/mL	97
9) 2-Methylphenol	15.07	108	74981	0.818 ug/mL	89
10) 3/4-Methylphenol	15.45	108	914806	9.328 ug/mL	82
11) Naphthalene	17.97	128	24403	0.087 µg/mL	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0428

Quantitation Report (QT Reviewed)

MW-03S-K3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060438.D
Acq On : 6 Jun 2009 5:00 pm
Operator : JAR
Sample : BC090604-01
Misc : 0604 Hon 3S - K3
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Jun 09 14:52:48 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 14:52:42 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.86	164	100371	2.000 µg/mL	-0.04
System Monitoring Compounds					
2) Toluene-d8	9.33	98	90346	1.030 µg/mL	-0.05
Spiked Amount 1.000			Recovery	= 103.00%	
Target Compounds					Qvalue
3) Benzene	7.45	78	2481604	25.695 µg/mL	99
4) Toluene	9.42	91	2412775	24.056 µg/mL	98
5) Ethylbenzene	11.49	91	35033	0.274 µg/mL	93
6) m/p-Xylenes	11.66	91	315252	3.118 µg/mL	97
7) o-Xylene	12.21	91	129793	1.262 µg/mL	93
8) Phenol	13.91	94	1408869	16.239 ug/mL	98
9) 2-Methylphenol	15.52	108	59510	0.959 ug/mL	98
10) 3/4-Methylphenol	15.91	108	710147	10.783 ug/mL	89
11) Naphthalene	18.50	128	18333	0.115 µg/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-U3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060439.D
Acq On : 6 Jun 2009 6:17 pm
Operator : JAR
Sample : BC090604-02
Misc : 0604 Hon 3S - U3
ALS Vial : 40 Sample Multiplier: 1

Quant Time: Jun 09 14:54:34 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 14:54:11 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.85	164	89202	2.000 µg/mL	-0.05
System Monitoring Compounds					
2) Toluene-d8	9.33	98	88802	1.140 µg/mL	-0.05
Spiked Amount 1.000			Recovery	= 114.00%	
Target Compounds					Qvalue
3) Benzene	7.44	78	2429496	28.716 µg/mL	99
4) Toluene	9.42	91	2343835	26.653 µg/mL	98
5) Ethylbenzene	11.49	91	33265	0.293 µg/mL	92
6) m/p-Xylenes	11.66	91	296298	3.300 µg/mL	97
7) o-Xylene	12.21	91	121589	1.331 µg/mL	94
8) Phenol	13.91	94	1263439	16.386 ug/mL	97
9) 2-Methylphenol	15.52	108	56465	1.024 ug/mL	98
10) 3/4-Methylphenol	15.91	108	678674	11.596 ug/mL	90
11) Naphthalene	18.51	128	14922	0.106 µg/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-N3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060440.D
Acq On : 6 Jun 2009 7:34 pm
Operator : JAR
Sample : BC090604-03
Misc : 0604 Hon 3S - N3
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Jun 09 14:59:02 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 14:58:53 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.85	164	84659	2.000 µg/mL	-0.05
System Monitoring Compounds					
2) Toluene-d8	9.33	98	92500	1.251 µg/mL	-0.05
Spiked Amount 1.000			Recovery	= 125.00%	
Target Compounds					Qvalue
3) Benzene	7.44	78	2412302	30.269 µg/mL	99
4) Toluene	9.42	91	2288513	27.550 µg/mL	98
5) Ethylbenzene	11.49	91	31955	0.296 µg/mL	92
6) m/p-Xylenes	11.66	91	286819	3.367 µg/mL	97
7) o-Xylene	12.21	91	119132	1.374 µg/mL	94
8) Phenol	13.91	94	1305208	17.836 ug/mL	98
9) 2-Methylphenol	15.52	108	58306	1.114 ug/mL	98
10) 3/4-Methylphenol	15.91	108	705769	12.706 ug/mL	90
11) Naphthalene	18.51	128	17581	0.131 µg/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-F3
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060441.D
Acq On : 6 Jun 2009 8:50 pm
Operator : JAR
Sample : BC090604-04
Misc : 0604 Hon 3S - F3
LS Vial : 42 Sample Multiplier: 1

Quant Time: Jun 09 15:00:17 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 15:00:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.85	164	103066	2.000 µg/mL	-0.05
System Monitoring Compounds					
2) Toluene-d8	9.33	98	90544	1.005 µg/mL	-0.05
Spiked Amount 1.000			Recovery	= 101.00%	
Target Compounds					Qvalue
3) Benzene	7.45	78	2369531	23.665 µg/mL	99
4) Toluene	9.42	91	2222366	21.271 µg/mL	98
5) Ethylbenzene	11.49	91	31209	0.238 µg/mL	92
6) m/p-Xylenes	11.66	91	276182	2.656 µg/mL	97
7) o-Xylene	12.21	91	114552	1.084 µg/mL	94
8) Phenol	13.91	94	1353025	15.188 ug/mL	98
9) 2-Methylphenol	15.52	108	57537	0.903 ug/mL	99
10) 3/4-Methylphenol	15.91	108	689852	10.201 ug/mL	90
11) Naphthalene	18.50	128	19106	0.117 µg/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-D3
mg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060442.D
Acq On : 6 Jun 2009 10:07 pm
Operator : JAR
Sample : BC090604-05
Misc : 0604 Hon 3S - D3
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Jun 09 15:01:16 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 15:01:11 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.85	164	90189	2.000 µg/mL	-0.05
System Monitoring Compounds					
2) Toluene-d8	9.33	98	86485	1.098 µg/mL	-0.05
Spiked Amount 1.000			Recovery	= 110.00%	
Target Compounds					Qvalue
3) Benzene	7.45	78	2219492	25.559 µg/mL	99
4) Toluene	9.42	91	2084149	22.999 µg/mL	98
5) Ethylbenzene	11.49	91	28528	0.248 µg/mL	93
6) m/p-Xylenes	11.66	91	253099	2.783 µg/mL	97
7) o-Xylene	12.21	91	106283	1.150 µg/mL	93
8) Phenol	13.91	94	1309573	16.799 ug/mL	98
9) 2-Methylphenol	15.52	108	54943	0.985 ug/mL	98
10) 3/4-Methylphenol	15.91	108	669512	11.314 ug/mL	89
11) Naphthalene	18.50	128	15559	0.109 µg/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 1601

Quantitation Report (QT Reviewed)

MW-03S-S3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060443.D
Acq On : 6 Jun 2009 11:23 pm
Operator : JAR
Sample : BC090604-06
Misc : 0604 Hon 3S - S3
LS Vial : 44 Sample Multiplier: 1

Quant Time: Jun 09 15:02:16 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 15:02:11 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.85	164	86691	2.000	µg/mL	-0.05
System Monitoring Compounds						
2) Toluene-d8	9.33	98	89139	1.177	µg/mL	-0.05
Spiked Amount 1.000			Recovery	=	118.00%	
Target Compounds						Qvalue
3) Benzene	7.44	78	2272923	27.480	µg/mL	99
4) Toluene	9.42	91	2138939	24.784	µg/mL	98
5) Ethylbenzene	11.49	91	29523	0.267	µg/mL	93
6) m/p-Xylenes	11.65	91	266803	3.055	µg/mL	97
7) o-Xylene	12.21	91	111472	1.255	µg/mL	94
8) Phenol	13.91	94	1251947	16.708	ug/mL	97
9) 2-Methylphenol	15.52	108	55680	1.039	ug/mL	98
10) 3/4-Methylphenol	15.91	108	674450	11.857	ug/mL	89
11) Naphthalene	18.51	128	18363	0.134	µg/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 0604

Quantitation Report (QT Reviewed)

MW-03S-M3
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090604\
Data File : E060444.D
Acq On : 7 Jun 2009 12:40 am
Operator : JAR
Sample : BC090604-07
Misc : 0604 Hon 3S - M3
ALS Vial : 45 Sample Multiplier: 1

Quant Time: Jun 09 15:03:10 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090601A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Tue Jun 09 15:03:05 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.85	164	91190	2.000	µg/mL	-0.05
System Monitoring Compounds						
2) Toluene-d8	9.33	98	90313	1.134	µg/mL	-0.05
Spiked Amount 1.000			Recovery	=	113.00%	
Target Compounds						Qvalue
3) Benzene	7.44	78	2396719	27.558	µg/mL	99
4) Toluene	9.42	91	2293276	25.334	µg/mL	98
5) Ethylbenzene	11.49	91	31992	0.275	µg/mL	92
6) m/p-Xylenes	11.66	91	287947	3.135	µg/mL	97
7) o-Xylene	12.21	91	120318	1.288	µg/mL	94
8) Phenol	13.91	94	1291227	16.382	ug/mL	97
9) 2-Methylphenol	15.52	108	55716	0.988	ug/mL	98
10) 3/4-Methylphenol	15.91	108	679081	11.350	ug/mL	90
11) Naphthalene	18.51	128	17327	0.120	µg/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-K4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070881.D
Acq On : 12 Jul 2009 11:39 pm
Operator : ERL/JAR
Sample : BC090707-01
Misc : 0707 Hon 3S - K4
ALS Vial : 79 Sample Multiplier: 1

Quant Time: Jul 17 09:24:44 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.59	164	58542m	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	87724	1.030	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	103.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	1525167	17.501	µg/mL	98
4) Toluene	9.17	91	1490158	15.778	µg/mL	100
5) Ethylbenzene	11.24	91	20211	0.164	µg/mL	96
6) m/p-Xylenes	11.41	91	180714	1.841	µg/mL	100
7) o-Xylene	11.96	91	74297	0.728	µg/mL	98
8) Phenol	13.68	94	848973m	15.280	µg/mL	
9) 2-Methylphenol	15.33	108	32545	0.785	µg/mL	99
10) 3/4 - Methylphenol	15.71	108	402661m	9.819	µg/mL	
11) Naphthalene	18.28	128	11384	0.084	ug/mL#	87

(#) = qualifier out of range (m) = manual integration (+) = signals summed

3S 070

Quantitation Report (QT Reviewed)

MW-03S-U4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070882.D
Acq On : 13 Jul 2009 12:58 am
Operator : ERL/JAR
Sample : BC090707-02
isc : 0707 Hon 3S - U4
LS Vial : 80 Sample Multiplier: 1

Quant Time: Jul 17 09:25:50 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.61	164	57518m	1.000	µg/mL	0.01
System Monitoring Compounds						
2) Toluene-d8	9.08	98	80352	0.960	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	96.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	1557983	18.306	µg/mL	98
4) Toluene	9.17	91	1516194	16.429	µg/mL	100
5) Ethylbenzene	11.24	91	19889	0.165	µg/mL	97
6) m/p-Xylenes	11.41	91	177727	1.843	µg/mL	100
7) o-Xylene	11.96	91	74342	0.741	µg/mL	98
8) Phenol	13.69	94	651225m	11.929	µg/mL	
9) 2-Methylphenol	15.33	108	29290	0.719	µg/mL	99
10) 3/4 - Methylphenol	15.71	108	365040m	9.060	µg/mL	
11) Naphthalene	18.31	128	10942	0.082	ug/mL#	60

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-N4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070883.D
Acq On : 13 Jul 2009 2:16 am
Operator : ERL/JAR
Sample : BC090707-03
isc : 0707 Hon 3S - N4
LS Vial : 81 Sample Multiplier: 1

Quant Time: Jul 17 09:26:50 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.60	164	53780m	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.09	98	83579	1.069 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 107.00%	
Target Compounds					Qvalue
3) Benzene	7.18	78	1533999	19.443 µg/mL	98
4) Toluene	9.17	91	1458018	16.976 µg/mL	100
5) Ethylbenzene	11.24	91	18497	0.164 µg/mL	96
6) m/p-Xylenes	11.41	91	163985	1.818 µg/mL	100
7) o-Xylene	11.96	91	68011	0.725 µg/mL	98
8) Phenol	13.68	94	821603m	16.097 µg/mL	
9) 2-Methylphenol	15.33	108	31135	0.818 µg/mL	99
10) 3/4 - Methylphenol	15.71	108	382345m	10.149 µg/mL	
11) Naphthalene	18.30	128	9153	0.074 ug/mL#	60

(#) = qualifier out of range (m) = manual integration (+) = signals summed

35 0.07

Quantitation Report (QT Reviewed)

MW-03S-F4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070885.D
Acq On : 13 Jul 2009 4:56 am
Operator : ERL/JAR
Sample : BC090707-04
isc : 0707 Hon 3S - F4
LS Vial : 83 Sample Multiplier: 1

Quant Time: Jul 17 09:30:02 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.60	164	59587m	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.08	98	82949	0.957	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	96.00%	
Target Compounds						Qvalue
3) Benzene	7.18	78	1495947	16.773	µg/mL	98
4) Toluene	9.16	91	1402441	14.424	µg/mL	100
5) Ethylbenzene	11.24	91	17599	0.141	µg/mL	96
6) m/p-Xylenes	11.41	91	156739	1.566	µg/mL	100
7) o-Xylene	11.96	91	65335	0.629	µg/mL	98
8) Phenol	13.68	94	762552m	13.484	µg/mL	
9) 2-Methylphenol	15.33	108	29562	0.701	µg/mL	100
10) 3/4 - Methylphenol	15.71	108	379014m	9.080	µg/mL	
11) Naphthalene	18.31	128	9212	0.067	ug/mL#	60

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-D4
ug/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070886.D
Acq On : 13 Jul 2009 6:14 am
Operator : ERL/JAR
Sample : BC090707-05
isc : 0707 Hon 3S - D4
LS Vial : 84 Sample Multiplier: 1

Quant Time: Jul 17 09:31:00 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.59	164	60096m	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.09	98	79508	0.909	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	91.00%	
Target Compounds						Qvalue
3) Benzene	7.19	78	1462975	16.195	µg/mL	97
4) Toluene	9.17	91	1383131	14.062	µg/mL	99
5) Ethylbenzene	11.25	91	17468	0.138	µg/mL	96
6) m/p-Xylenes	11.41	91	157016	1.555	µg/mL	100
7) o-Xylene	11.97	91	65540	0.625	µg/mL	98
8) Phenol	13.68	94	795204m	13.942	µg/mL	
9) 2-Methylphenol	15.33	108	30366	0.714	µg/mL	100
10) 3/4 - Methylphenol	15.71	108	372656m	8.852	µg/mL	
11) Naphthalene	18.28	128	10595m	0.076	ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-S4
mg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070887.D
Acq On : 13 Jul 2009 7:31 am
Operator : ERL/JAR
Sample : BC090707-06
Misc : 0707 Hon 3S - S4
ALS Vial : 85 Sample Multiplier: 1

Quant Time: Jul 17 09:32:21 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.61	164	56002m	1.000 µg/mL	0.01
System Monitoring Compounds					
2) Toluene-d8	9.09	98	83661	1.027 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 103.00%	
Target Compounds					Qvalue
3) Benzene	7.19	78	1416297	16.915 µg/mL	97
4) Toluene	9.17	91	1335631	14.643 µg/mL	100
5) Ethylbenzene	11.24	91	16470	0.140 µg/mL	96
6) m/p-Xylenes	11.41	91	147826	1.572 µg/mL	100
7) o-Xylene	11.96	91	62550	0.640 µg/mL	98
8) Phenol	13.68	94	813883m	15.313 µg/mL	
9) 2-Methylphenol	15.33	108	30125m	0.760 µg/mL	
10) 3/4 - Methylphenol	15.72	108	376156m	9.589 µg/mL	
11) Naphthalene	18.30	128	8974	0.069 ug/mL#	70

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-03S-M4
µg/ml of extract

Data Path : J:\1\DATA\E090708\
Data File : E070888.D
Acq On : 13 Jul 2009 8:47 am
Operator : ERL/JAR
Sample : BC090707-07
Misc : 0707 Hon 3S - M4
ALS Vial : 86 Sample Multiplier: 1

Quant Time: Jul 17 09:33:31 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jul 17 09:23:40 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.60	164	55253m	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.08	98	87569	1.090 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 109.00%	
Target Compounds					Qvalue
3) Benzene	7.18	78	1569726	19.352 µg/mL	98
4) Toluene	9.16	91	1505609	17.077 µg/mL	100
5) Ethylbenzene	11.24	91	19522	0.168 µg/mL	96
6) m/p-Xylenes	11.41	91	175270	1.892 µg/mL	100
7) o-Xylene	11.96	91	72510	0.752 µg/mL	98
8) Phenol	13.68	94	798684m	15.230 µg/mL	
9) 2-Methylphenol	15.33	108	30574m	0.782 µg/mL	
10) 3/4 - Methylphenol	15.71	108	388738m	10.044 µg/mL	
11) Naphthalene	18.31	128	10282m	0.080 ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-16S - K1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041326.D
Acq On : 14 Apr 2009 7:38 pm
Operator : RS
Sample : BC090410-01
Misc : 0409 Hon 16S - K1
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 15 12:09:15 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:07:52 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	126525	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.95	98	205941	1.185 µg/mL	-0.05
Spiked Amount 1.000			Recovery	= 118.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	1148753	7.371 µg/mL#	91
4) Toluene	9.02	91	1024929	4.918 µg/mL#	95
5) Ethylbenzene	11.06	91	1091260	4.242 µg/mL	99
6) m/p-Xylenes	11.24	91	857930	4.207 µg/mL	99
7) o-Xylene	11.79	91	4897	0.024 µg/mL	100
8) Phenol	13.51	94	1754362	13.760 ug/mL	97
9) 2-Methylphenol	15.22	108	993m	0.011 ug/mL	0.026
10) 3/4-Methylphenol	15.71	108	1471	0.015 ug/mL	81
11) Naphthalene	18.04	128	28510	0.099 µg/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409

Quantitation Report (QT Reviewed)

MW-16S-7-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041327.D
Acq On : 14 Apr 2009 8:55 pm
Operator : RS
Sample : BC090410-02
Misc : 0409 Hon 16S - 7 - 1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Apr 15 12:16:26 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:12:08 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	137004	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	254625	1.353 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 135.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	1217514	7.214 µg/mL#	91
4) Toluene	9.02	91	1044880	4.611 µg/mL#	95
5) Ethylbenzene	11.06	91	1132740	4.067 µg/mL	99
6) m/p-Xylenes	11.24	91	892519	4.042 µg/mL	99
7) o-Xylene	11.79	91	2722	0.012 µg/mL	95
8) Phenol	13.52	94	1439986	10.431 ug/mL	96
9) 2-Methylphenol	15.24	108	838m	0.008 ug/mL	
10) 3/4-Methylphenol	15.71	108	1545m	0.014 ug/mL	0.022
11) Naphthalene	18.03	128	37619m	0.121 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409

Quantitation Report (QT Reviewed)

MW-16S-7M-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041328.D
Acq On : 14 Apr 2009 10:12 pm
Operator : RS
Sample : BC090410-03
Misc : 0409 Hon 16S - 7M - 1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 15 12:15:58 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:14:08 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	138812	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	221228	1.160 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 116.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	1090207	6.376 µg/mL#	91
4) Toluene	9.02	91	991300	4.300 µg/mL#	95
5) Ethylbenzene	11.06	91	1078853	3.823 µg/mL	99
6) m/p-Xylenes	11.24	91	851271	3.805 µg/mL	99
7) o-Xylene	11.79	91	2521	0.011 µg/mL	91
8) Phenol	13.51	94	1541774	11.022 ug/mL	96
9) 2-Methylphenol	15.23	108	741m	0.007 ug/mL	
10) 3/4-Methylphenol	15.76	108	953m	0.009 ug/mL	0.016
11) Naphthalene	18.04	128	25519m	0.081 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0[illegible]

Quantitation Report (QT Reviewed)

MW-16S-9-1
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041329.D
Acq On : 14 Apr 2009 11:28 pm
Operator : RS
Sample : BC090410-04
isc : 0409 Hon 16S - 9 - 1
LS Vial : 29 Sample Multiplier: 1

Quant Time: Apr 15 12:30:38 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:16:43 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	137299	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	238150	1.262 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 126.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	1231717	7.283 µg/mL#	91
4) Toluene	9.02	91	1053307	4.640 µg/mL#	95
5) Ethylbenzene	11.06	91	1141660	4.090 µg/mL	99
6) m/p-Xylenes	11.24	91	896974	4.053 µg/mL	99
7) o-Xylene	11.79	91	3648	0.016 µg/mL#	85
8) Phenol	13.54	94	557227	4.028 ug/mL	95
9) 2-Methylphenol	0.00	108	0	N.D. d	
10) 3/4-Methylphenol	15.73	108	952m	0.009 ug/mL	
11) Naphthalene	18.03	128	36775m	0.118 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

165 [illegible]

Quantitation Report (QT Reviewed)

MW-16S-9D-1
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041331.D
Acq On : 15 Apr 2009 2:01 am
Operator : RS
Sample : BC090410-06
Misc : 0409 Hon 16S - 9D - 1
LS Vial : 31 Sample Multiplier: 1

Quant Time: Apr 15 12:32:23 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:27:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	136412	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	229540	1.225 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 122.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	1146502	6.823 µg/mL#	91
4) Toluene	9.02	91	1021006	4.520 µg/mL#	95
5) Ethylbenzene	11.06	91	1115310	4.021 µg/mL	99
6) m/p-Xylenes	11.24	91	877359	3.991 µg/mL	99
7) o-Xylene	11.79	91	1685	0.008 µg/mL#	83
8) Phenol	13.54	94	365935	2.662 ug/mL	94
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4-Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.04	128	29055m	0.094 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S

Quantitation Report (QT Reviewed)

MW-16S- 9M-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041330.D
Acq On : 15 Apr 2009 12:45 am
Operator : RS
Sample : BC090410-05
Misc : 0409 Hon 16S - 9M1 -1
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Apr 15 12:31:42 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:27:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	137025	1.000	µg/mL	-0.07
System Monitoring Compounds						
2) Toluene-d8	8.94	98	221168	1.175	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	117.00%	
Target Compounds						Qvalue
3) Benzene	7.11	78	1128903	6.688	µg/mL#	91
4) Toluene	9.02	91	971939	4.269	µg/mL#	95
5) Ethylbenzene	11.06	91	1052296	3.777	µg/mL	99
6) m/p-Xylenes	11.24	91	828176	3.750	µg/mL	99
7) o-Xylene	11.79	91	3094	0.014	µg/mL	94
8) Phenol	13.54	94	530883	3.845	ug/mL	95
9) 2-Methylphenol	0.00	108	0	N.D.		
10) 3/4-Methylphenol	15.78	108	785m	0.007	ug/mL	0.007
11) Naphthalene	18.04	128	32052	0.103	µg/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409

Quantitation Report (QT Reviewed)

MW-16S-11-1
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090413\
Data File : E041332.D
Acq On : 15 Apr 2009 3:16 am
Operator : RS
Sample : BC090410-07
Misc : 0409 Hon 16S - 11 - 1
ALS Vial : 32 Sample Multiplier: 1

Quant Time: Apr 15 12:28:58 2009
Quant Method : \\INST-E\HPCHEM\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Wed Apr 15 12:27:07 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.31	164	139263	1.000 µg/mL	-0.07
System Monitoring Compounds					
2) Toluene-d8	8.94	98	265775	1.389 µg/mL	-0.06
Spiked Amount 1.000			Recovery	= 139.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	1197511	6.981 µg/mL#	91
4) Toluene	9.02	91	1192078	5.218 µg/mL#	95
5) Ethylbenzene	11.06	91	1292123	4.564 µg/mL	98
6) m/p-Xylenes	11.24	91	1017788	4.535 µg/mL	99
7) o-Xylene	11.79	91	3036	0.013 µg/mL	99
8) Phenol	13.53	94	538208	3.835 ug/mL	95
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4-Methylphenol	0.00	108	0	N.D. d	
11) Naphthalene	18.04	128	19053m	0.060 µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409

Quantitation Report (QT Reviewed)

MW-16S-K1- repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052030.D
Acq On : 22 May 2009 6:58 am
Operator : RS/JAR
Sample : BC090519-01
Misc : 0409 HON 16S-K1 Repeat 0519
ALS Vial : 26 Sample Multiplier: 1

Quant Time: May 22 15:48:37 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	69544	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	8.73	98	97934	0.994	µg/mL	0.00
Spiked Amount 1.000			Recovery	=	99.00%	
Target Compounds						Qvalue
3) Benzene	6.87	78	581666	5.709	µg/mL	94
4) Toluene	8.81	91	518981	4.047	µg/mL	96
5) Ethylbenzene	10.85	91	634245	4.130	µg/mL	95
6) m/p-Xylenes	11.03	91	493537	4.052	µg/mL	96
7) o-Xylene	11.58	91	3290	0.027	µg/mL	92
8) Phenol	13.32	94	826446	8.992	ug/mL	96
9) 2-Methylphenol	15.03	108	645m	0.009	ug/mL	
10) 3/4-Methylphenol	15.52	108	993m	0.014	ug/mL	
11) Naphthalene	17.81	128	11417	0.061	µg/mL	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409 repeat

Quantitation Report (QT Reviewed)

MW-16S-7-1 - repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052031.D
Acq On : 22 May 2009 8:15 am
Operator : RS/JAR
Sample : BC090519-02
isc : 0409 HON 16S-7-1 Repeat 0519
ALS Vial : 27 Sample Multiplier: 1

Quant Time: May 22 15:52:27 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	75303	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.73	98	122173	1.145 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 114.00%	
Target Compounds					Qvalue
3) Benzene	6.87	78	616397	5.587 µg/mL	94
4) Toluene	8.81	91	530771	3.815 µg/mL	96
5) Ethylbenzene	10.85	91	655834	3.944 µg/mL	95
6) m/p-Xylenes	11.03	91	509354	3.862 µg/mL	96
7) o-Xylene	11.58	91	2047	0.015 µg/mL	92
8) Phenol	13.32	94	748983	7.526 ug/mL	95
9) 2-Methylphenol	15.00	108	495m	0.006 ug/mL	
10) 3/4-Methylphenol	15.50	108	744m	0.009 ug/mL	
11) Naphthalene	17.81	128	16047	0.079 µg/mL	93

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409 report

Quantitation Report (QT Reviewed)

MW-16S-7M-1 - repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052032.D
Acq On : 22 May 2009 9:33 am
Operator : RS/JAR
Sample : BC090519-03
isc : 0409 HON 16S-7M-1 Repeat 0519
ALS Vial : 28 Sample Multiplier: 1

Quant Time: May 22 15:52:41 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	73093	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.72	98	124862	1.205 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 121.00%	
Target Compounds					Qvalue
3) Benzene	6.86	78	576848	5.387 µg/mL	94
4) Toluene	8.81	91	587599	4.371 µg/mL	96
5) Ethylbenzene	10.85	91	645751	4.001 µg/mL	95
6) m/p-Xylenes	11.03	91	503497	3.933 µg/mL	96
7) o-Xylene	11.59	91	1912	0.015 µg/mL	96
8) Phenol	13.32	94	831218	8.604 ug/mL	96
9) 2-Methylphenol	15.05	108	475m	0.006 ug/mL	
10) 3/4-Methylphenol	15.53	108	782m	0.010 ug/mL	
11) Naphthalene	17.81	128	10872	0.055 µg/mL	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16 0409 repeat

Quantitation Report (QT Reviewed)

MW-16S-9-1 repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052033.D
Acq On : 22 May 2009 10:50 am
Operator : RS/JAR
Sample : BC090519-04
isc : 0409 HON 16S-9-1 Repeat 0519
ALS Vial : 29 Sample Multiplier: 1

Quant Time: May 22 15:52:58 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	73397	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.73	98	129876	1.249 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 125.00%	
Target Compounds					Qvalue
3) Benzene	6.87	78	636695	5.921 µg/mL	94
4) Toluene	8.80	91	603001	4.470 µg/mL	96
5) Ethylbenzene	10.85	91	663999	4.097 µg/mL	95
6) m/p-Xylenes	11.03	91	517970	4.029 µg/mL	96
7) o-Xylene	11.58	91	2980	0.023 µg/mL	100
8) Phenol	13.32	94	902154	9.300 ug/mL	96
9) 2-Methylphenol	15.05	108	463m	0.006 ug/mL	
10) 3/4-Methylphenol	15.52	108	779m	0.010 ug/mL	
11) Naphthalene	17.81	128	16580	0.084 µg/mL	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409 repeat

Quantitation Report (QT Reviewed)

MW-16S-9D-1-repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052035.D
Acq On : 22 May 2009 1:26 pm
Operator : RS/JAR
Sample : BC090519-06
isc : 0409 HON 16S-9D-1 Repeat 0519
LS Vial : 3I Sample Multiplier: 1

Quant Time: May 22 15:53:35 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	73769	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.73	98	127248	1.217 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 122.00%	
Target Compounds					Qvalue
3) Benzene	6.87	78	604594	5.594 µg/mL	94
4) Toluene	8.81	91	590216	4.349 µg/mL	96
5) Ethylbenzene	10.85	91	647041	3.972 µg/mL	95
6) m/p-Xylenes	11.03	91	506659	3.921 µg/mL	96
7) o-Xylene	11.59	91	2861	0.022 µg/mL	91
8) Phenol	13.32	94	893588	9.165 ug/mL	96
9) 2-Methylphenol	15.05	108	514m	0.007 ug/mL	
10) 3/4-Methylphenol	15.54	108	1073m	0.014 ug/mL	
11) Naphthalene	17.81	128	12217	0.061 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409 [illegible]

Quantitation Report (QT Reviewed)

MW-16S-9M-1 repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052034.D
Acq On : 22 May 2009 12:08 pm
Operator : RS/JAR
Sample : BC090519-05
isc : 0409 HON 16S-9M-1 Repeat 0519
LS Vial : 30 Sample Multiplier: 1

Quant Time: May 22 15:53:15 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	72520	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.73	98	121353	1.181 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 118.00%	
Target Compounds					Qvalue
3) Benzene	6.87	78	587516	5.530 µg/mL	93
4) Toluene	8.81	91	559315	4.187 µg/mL	96
5) Ethylbenzene	10.85	91	614550	3.838 µg/mL	95
6) m/p-Xylenes	11.03	91	479316	3.774 µg/mL	96
7) o-Xylene	11.59	91	2202	0.017 µg/mL	96
8) Phenol	13.32	94	834624	8.708 ug/mL	96
9) 2-Methylphenol	15.07	108	371m	0.005 ug/mL	
10) 3/4-Methylphenol	15.52	108	913m	0.012 ug/mL	
11) Naphthalene	17.81	128	14006	0.072 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0409 repeat

Quantitation Report (QT Reviewed)

MW-16S-11-1 repeat
µg/ml of extract

Data Path : J:\1\DATA\E090520\
Data File : E052036.D
Acq On : 22 May 2009 2:45 pm
Operator : RS/JAR
Sample : BC090519-07
isc : 0409 HON 16S-11-1 Repeat 0519
LS Vial : 32 Sample Multiplier: 1

Quant Time: May 22 15:53:59 2009
Quant Method : J:\1\METHODS\E090520A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri May 22 15:48:10 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.07	164	73498	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	8.72	98	125644	1.206 µg/mL	0.00
Spiked Amount 1.000			Recovery	= 121.00%	
Target Compounds					Qvalue
3) Benzene	6.86	78	566798	5.264 µg/mL	94
4) Toluene	8.81	91	589904	4.364 µg/mL	96
5) Ethylbenzene	10.85	91	639525	3.941 µg/mL	95
6) m/p-Xylenes	11.03	91	495548	3.849 µg/mL	96
7) o-Xylene	11.59	91	2580	0.020 µg/mL	91
8) Phenol	13.32	94	633590	6.523 ug/mL	95
9) 2-Methylphenol	15.05	108	359m	0.005 ug/mL	
10) 3/4-Methylphenol	15.52	108	639m	0.008 ug/mL	
11) Naphthalene	17.82	128	7290	0.037 µg/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S [illegible]

Quantitation Report (QT Reviewed)

MW-16S-K2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050815.D
Acq On : 9 May 2009 9:01 am
Operator : RS
Sample : BC090507-01
Misc : [redacted] Hon 16S- K2
LS Vial : 15 Sample Multiplier: 1

Quant Time: May 11 10:06:23 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	108628m	1.000 µg/mL	-0.19
System Monitoring Compounds					
2) Toluene-d8	8.84	98	190568m	1.277 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 128.00%	
Target Compounds					Qvalue
3) Benzene	7.00	78	885370m	6.617 µg/mL	
4) Toluene	8.92	91	803995m	4.466 µg/mL	
5) Ethylbenzene	10.96	91	831735m	3.766 µg/mL	
6) m/p-Xylenes	11.14	91	643810m	3.677 µg/mL	
7) o-Xylene	11.70	91	2704	0.015 µg/mL	89
8) Phenol	13.41	94	1705481	15.581 ug/mL	97
9) 2-Methylphenol	15.18	108	838m	0.010 ug/mL	.024
10) 3/4-Methylphenol	15.75	108	1227m	0.014 ug/mL	
11) Naphthalene	17.96	128	14934	0.061 µg/mL	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0507

Quantitation Report (QT Reviewed)

MW-16S-7-2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050816.D
Acq On : 9 May 2009 10:19 am
Operator : RS
Sample : BC090507-02
isc : [redacted] Hon 16S- 7- 2
LS Vial : 16 Sample Multiplier: 1

Quant Time: May 11 10:09:33 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	116851m	1.000	µg/mL	-0.19
System Monitoring Compounds						
2) Toluene-d8	8.84	98	195004m	1.215	µg/mL	-0.15
Spiked Amount 1.000			Recovery	=	121.00%	
Target Compounds						Qvalue
3) Benzene	7.00	78	883788m	6.140	µg/mL	
4) Toluene	8.92	91	795304m	4.086	µg/mL	
5) Ethylbenzene	10.96	91	842876m	3.548	µg/mL	
6) m/p-Xylenes	11.14	91	656017m	3.483	µg/mL	
7) o-Xylene	11.69	91	2066	0.011	µg/mL#	80
8) Phenol	13.42	94	1410886	11.982	ug/mL	96
9) 2-Methylphenol	0.00	108	0	N.D.		
10) 3/4-Methylphenol	0.00	108	0	N.D.		
11) Naphthalene	17.96	128	13698	0.052	µg/mL#	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0507

Quantitation Report (QT Reviewed)

MW-16S-7M-2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050817.D
Acq On : 9 May 2009 11:37 am
Operator : RS
Sample : BC090507-03
Misc : [redacted] Hon 16S- 7M- 2
ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 11 10:12:41 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	119372m	1.000 µg/mL	-0.19
System Monitoring Compounds					
2) Toluene-d8	8.84	98	205733m	1.254 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 125.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	876134m	5.958 µg/mL	
4) Toluene	8.92	91	815471m	4.102 µg/mL	
5) Ethylbenzene	10.96	91	859938m	3.543 µg/mL	
6) m/p-Xylenes	11.14	91	667765m	3.471 µg/mL	
7) o-Xylene	11.69	91	1958	0.010 µg/mL	88
8) Phenol	13.41	94	1458260	12.123 ug/mL	96
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4-Methylphenol	15.71	108	441m	0.005 ug/mL	
11) Naphthalene	17.96	128	10747	0.040 µg/mL#	93

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0507

Quantitation Report (QT Reviewed)

MW-16S-9-2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050818.D
Acq On : 9 May 2009 12:54 pm
Operator : RS
Sample : BC090507-04
Misc : [redacted] Hon 16S- 9- 2
ALS Vial : 18 Sample Multiplier: 1

Quant Time: May 11 10:14:16 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	123077m	1.000 µg/mL	-0.19
System Monitoring Compounds					
2) Toluene-d8	8.85	98	201163m	1.190 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 119.00%	
Target Compounds					Qvalue
3) Benzene	7.02	78	869337m	5.734 µg/mL	
4) Toluene	8.92	91	809436m	3.940 µg/mL	
5) Ethylbenzene	10.96	91	850076m	3.397 µg/mL	
6) m/p-Xylenes	11.14	91	652661m	3.290 µg/mL	
7) o-Xylene	11.70	91	2802	0.014 µg/mL	92
8) Phenol	13.41	94	1626814	13.117 ug/mL	96
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4-Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	17.96	128	8987	0.032 µg/mL	96

N.D.

(#) = qualifier out of range (m) = manual integration (+) = signals summed

165 050

Quantitation Report (QT Reviewed)

MW-16S-9D-2
µg/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050820.D
Acq On : 9 May 2009 3:30 pm
Operator : RS
Sample : BC090507-06
Misc : [redacted] Hon 16S- 9D- 2
LS Vial : 20 Sample Multiplier: 1

Quant Time: May 11 10:18:41 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	118545m	1.000	µg/mL	-0.19
System Monitoring Compounds						
2) Toluene-d8	8.85	98	203493m	1.249	µg/mL	-0.15
Spiked Amount 1.000			Recovery	=	125.00%	
Target Compounds						Qvalue
3) Benzene	7.01	78	888952m	6.088	µg/mL	
4) Toluene	8.92	91	810422m	4.105	µg/mL	
5) Ethylbenzene	10.96	91	852796m	3.538	µg/mL	
6) m/p-Xylenes	11.14	91	653836m	3.422	µg/mL	
7) o-Xylene	11.70	91	2079	0.011	µg/mL#	78
8) Phenol	13.41	94	1520392	12.728	ug/mL	96
9) 2-Methylphenol	0.00	108	0	N.D.	? N.D	
10) 3/4-Methylphenol	0.00	108	0	N.D.		
11) Naphthalene	17.97	128	14464	0.054	µg/mL#	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

165 OSPY

Quantitation Report (QT Reviewed)

MW-16S-9M-2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050819.D
Acq On : 9 May 2009 2:12 pm
Operator : RS
Sample : BC090507-05
Misc : [redacted] Hon 16S- 9M[redacted]- 2
LS Vial : 19 Sample Multiplier: 1

Quant Time: May 11 10:16:00 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	119429m	1.000 µg/mL	-0.19
System Monitoring Compounds					
2) Toluene-d8	8.85	98	197212m	1.202 µg/mL	-0.15
Spiked Amount 1.000			Recovery	= 120.00%	
Target Compounds					Qvalue
3) Benzene	7.01	78	832815m	5.661 µg/mL	
4) Toluene	8.92	91	790824m	3.969 µg/mL	
5) Ethylbenzene	10.96	91	837438m	3.449 µg/mL	
6) m/p-Xylenes	11.14	91	648801m	3.371 µg/mL	
7) o-Xylene	11.69	91	3203	0.017 µg/mL	92
8) Phenol	13.41	94	1659865	13.793 ug/mL	95
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4-Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	17.97	128	7547	0.028 µg/mL#	91

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0507

Quantitation Report (QT Reviewed)

MW-16S-11-2
ug/ml of extract

Data Path : \\INST-E\HPCHEM\1\DATA\E090508\
Data File : E050821.D
Acq On : 9 May 2009 4:48 pm
Operator : RS
Sample : BC090507-07
Misc : [redacted] Hon 16S - 11- 2
ALS Vial : 21 Sample Multiplier: 1

Quant Time: May 11 10:23:42 2009
Quant Method : J:\1\METHODS\E090403A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon May 11 10:04:13 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.19	164	119080m	1.000	µg/mL	-0.19
System Monitoring Compounds						
2) Toluene-d8	8.84	98	188286m	1.151	µg/mL	-0.15
Spiked Amount 1.000			Recovery	=	115.00%	
Target Compounds						Qvalue
3) Benzene	7.01	78	821535m	5.601	µg/mL	
4) Toluene	8.92	91	786611m	3.959	µg/mL	
5) Ethylbenzene	10.96	91	823622m	3.402	µg/mL	
6) m/p-Xylenes	11.14	91	625152m	3.257	µg/mL	
7) o-Xylene	11.70	91	2056	0.011	µg/mL	88
8) Phenol	13.41	94	1550138	12.919	ug/mL	96
9) 2-Methylphenol	0.00	108	0	N.D.	N.D.	
10) 3/4-Methylphenol	0.00	108	0	N.D.		
11) Naphthalene	17.97	128	8607	0.032	µg/mL#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

MW-16S-K3
µg/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062002.D
Acq On : 24 Jun 2009 10:37 pm
Operator : ERL
Sample : BC090617-01
isc : 0617 Hon 16S-K3
LS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 26 11:00:20 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 19 10:31:20 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.67	164	68694m	1.000	µg/mL	-0.04
System Monitoring Compounds						
2) Toluene-d8	9.16	98	91704	0.801	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	80.00%	
Target Compounds						Qvalue
3) Benzene	7.25	78	637716m	4.842	µg/mL	
4) Toluene	9.24	91	626618	4.416	µg/mL#	93
5) Ethylbenzene	11.32	91	655936	4.059	µg/mL	93
6) m/p-Xylenes	11.50	91	509367m	3.875	µg/mL	
7) o-Xylene	12.05	91	2960	0.022	µg/mL	93
8) Phenol	13.76	94	1366319	17.712	ug/mL	94
9) 2-Methylphenol	15.44	108	871m	0.017	ug/mL	
10) 3/4-Methylphenol	15.94	108	1293m	0.023	ug/mL	
11) Naphthalene	18.36	128	14891m	0.073	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0617

Quantitation Report (QT Reviewed)

MW-16S-7-3
µg/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062003.D
Acq On : 24 Jun 2009 11:54 pm
Operator : ERL
Sample : BC090617-02
isc : 0617 Hon 16S-7-3
LS Vial : 3 Sample Multiplier: 1

Quant Time: Jun 26 11:02:01 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 26 11:00:47 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.67	164	70994	1.000	µg/mL	-0.04
System Monitoring Compounds						
2) Toluene-d8	9.17	98	95535	0.808	µg/mL	-0.05
Spiked Amount 1.000			Recovery	=	81.00%	
Target Compounds						Qvalue
3) Benzene	7.27	78	627517m	4.600	µg/mL	
4) Toluene	9.25	91	610424	4.151	µg/mL#	93
5) Ethylbenzene	11.32	91	639802	3.823	µg/mL	93
6) m/p-Xylenes	11.51	91	492748m	3.620	µg/mL	
7) o-Xylene	12.05	91	3258	0.023	µg/mL	92
8) Phenol	13.76	94	1471037m	18.451	ug/mL	
9) 2-Methylphenol	15.37	108	535m	0.010	ug/mL	
10) 3/4-Methylphenol	16.04	108	1042m	0.018	ug/mL	
11) Naphthalene	18.36	128	10679m	0.051	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0617

Quantitation Report (QT Reviewed)

MW-16S-7M-3
µg/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062004.D
Acq On : 25 Jun 2009 1:12 am
Operator : ERL
Sample : BC090617-03
Misc : 0617 Hon 16S-7M-3
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 26 11:03:31 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 26 11:00:47 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.66	164	71353m	1.000	µg/mL	-0.05
System Monitoring Compounds						
2) Toluene-d8	9.17	98	94104	0.792	µg/mL	-0.05
Spiked Amount 1.000			Recovery	=	79.00%	
Target Compounds						Qvalue
3) Benzene	7.25	78	624486m	4.552	µg/mL	
4) Toluene	9.25	91	607881	4.111	µg/mL#	93
5) Ethylbenzene	11.32	91	623700m	3.704	µg/mL	
6) m/p-Xylenes	11.51	91	481556m	3.517	µg/mL	
7) o-Xylene	12.05	91	3375m	0.024	µg/mL	
8) Phenol	13.76	94	1331767	16.620	ug/mL	94
9) 2-Methylphenol	15.45	108	366m	0.007	ug/mL	
10) 3/4-Methylphenol	15.96	108	850m	0.015	ug/mL	
11) Naphthalene	18.37	128	13382m	0.064	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0617

Quantitation Report (QT Reviewed)

MW-16S- 9-3
ug/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062005.D
Acq On : 25 Jun 2009 2:29 am
Operator : ERL
Sample : BC090617-04
isc : 0617 Hon 16S-9-3
LS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 26 11:04:47 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 26 11:00:47 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.66	164	71585	1.000	µg/mL	-0.05
System Monitoring Compounds						
2) Toluene-d8	9.16	98	96152	0.806	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	81.00%	
Target Compounds						Qvalue
3) Benzene	7.26	78	630444m	4.582	µg/mL	
4) Toluene	9.25	91	608210	4.099	µg/mL#	93
5) Ethylbenzene	11.32	91	645380	3.824	µg/mL	93
6) m/p-Xylenes	11.50	91	502548m	3.663	µg/mL	
7) o-Xylene	12.05	91	2596m	0.018	µg/mL	
8) Phenol	13.76	94	1454264	18.090	ug/mL	93
9) 2-Methylphenol	15.40	108	373m	0.007	ug/mL	
10) 3/4-Methylphenol	15.93	108	792m	0.014	ug/mL	
11) Naphthalene	18.37	128	15760m	0.075	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0617

Quantitation Report (QT Reviewed)

MW-16S-9D-3
µg/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062007.D
Acq On : 25 Jun 2009 5:04 am
Operator : ERL
Sample : BC090617-06
isc : 0617 Hon 16S-9D-3
LS Vial : 7 Sample Multiplier: 1

Quant Time: Jun 26 11:07:29 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 26 11:00:47 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.66	164	72482m	1.000	µg/mL	-0.05
System Monitoring Compounds						
2) Toluene-d8	9.16	98	97840m	0.810	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	81.00%	
Target Compounds						Qvalue
3) Benzene	7.26	78	660906m	4.752	µg/mL	
4) Toluene	9.25	91	645749	4.308	µg/mL#	93
5) Ethylbenzene	11.32	91	675540	3.959	µg/mL	93
6) m/p-Xylenes	11.50	91	523841m	3.774	µg/mL	
7) o-Xylene	12.05	91	2576m	0.018	µg/mL	
8) Phenol	13.76	94	1397358	17.167	ug/mL	93
9) 2-Methylphenol	15.45	108	423m	0.008	ug/mL	
10) 3/4-Methylphenol	15.97	108	707m	0.012	ug/mL	
11) Naphthalene	18.36	128	15702m	0.073	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0617

Quantitation Report (QT Reviewed)

MW-16S-9M-3
ug/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062006.D
Acq On : 25 Jun 2009 3:47 am
Operator : ERL
Sample : BC090617-05
isc : 0617 Hon 16S-9M-3
LS Vial : 6 Sample Multiplier: 1

Quant Time: Jun 26 11:06:10 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 26 11:00:47 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.67	164	71957m	1.000	µg/mL	-0.04
System Monitoring Compounds						
2) Toluene-d8	9.16	98	103179	0.861	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	86.00%	
Target Compounds						Qvalue
3) Benzene	7.25	78	657501m	4.762	µg/mL	
4) Toluene	9.25	91	650244	4.373	µg/mL#	93
5) Ethylbenzene	11.32	91	670071	3.955	µg/mL	93
6) m/p-Xylenes	11.51	91	520026m	3.774	µg/mL	
7) o-Xylene	12.05	91	3704m	0.026	µg/mL	
8) Phenol	13.76	94	1513855	18.734	ug/mL	93
9) 2-Methylphenol	15.47	108	394m	0.007	ug/mL	
10) 3/4-Methylphenol	15.91	108	677m	0.012	ug/mL	
11) Naphthalene	18.36	128	15118m	0.071	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0617

Quantitation Report (QT Reviewed)

MW-16S-11-3
µg/ml of extract

Data Path : J:\1\DATA\E090619\
Data File : E062008.D
Acq On : 25 Jun 2009 6:22 am
Operator : ERL
Sample : BC090617-07
isc : 0617 Hon 16S-11-3
LS Vial : 8 Sample Multiplier: 1

Quant Time: Jun 26 11:09:20 2009
Quant Method : J:\1\METHODS\E090612A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Fri Jun 26 11:00:47 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.66	164	69889	1.000	µg/mL	-0.05
System Monitoring Compounds						
2) Toluene-d8	9.16	98	94256	0.810	µg/mL	-0.06
Spiked Amount 1.000			Recovery	=	81.00%	
Target Compounds						Qvalue
3) Benzene	7.25	78	630057m	4.696	µg/mL	
4) Toluene	9.25	91	609598	4.214	µg/mL#	93
5) Ethylbenzene	11.32	91	634940	3.855	µg/mL	93
6) m/p-Xylenes	11.50	91	487159m	3.636	µg/mL	
7) o-Xylene	12.05	91	2254m	0.016	µg/mL	
8) Phenol	13.76	94	1201415	15.308	ug/mL	93
9) 2-Methylphenol	15.44	108	362m	0.007	ug/mL	
10) 3/4-Methylphenol	15.96	108	521m	0.009	ug/mL	
11) Naphthalene	18.36	128	14803m	0.072	µg/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

165 0617

Quantitation Report (QT Reviewed)

MW-16S-K4
ug/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071717.D
Acq On : 18 Jul 2009 12:32 pm
Operator : ERL
Sample : BC090714-01
isc : 0714 Hon 16S-K-4
LS Vial : 17 Sample Multiplier: 1

Quant Time: Jul 20 11:58:48 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.47	164	45192	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.02	98	83246	1.268 µg/mL	-0.02
Spiked Amount 1.000			Recovery	= 127.00%	
Target Compounds					Qvalue
3) Benzene	7.12	78	391020m	5.327 µg/mL	
4) Toluene	9.10	91	348126	4.355 µg/mL	99
5) Ethylbenzene	11.17	91	374616	4.058 µg/mL	98
6) m/p-Xylenes	11.35	91	285984	3.817 µg/mL	98
7) o-Xylene	11.90	91	2308m	0.029 µg/mL	
8) Phenol	13.62	94	801103m	18.677 µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4 - Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.17	128	5917m	0.057 ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0714

Quantitation Report (QT Reviewed)

MW-16S-7-4
µg/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071718.D
Acq On : 18 Jul 2009 1:51 pm
Operator : ERL
Sample : BC090714-02
isc : 0714 Hon 16S-7-4
LS Vial : 18 Sample Multiplier: 1

Quant Time: Jul 20 11:59:24 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.47	164	43896	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.02	98	87544	1.374 µg/mL	-0.02
Spiked Amount 1.000			Recovery	= 137.00%	
Target Compounds					Qvalue
3) Benzene	7.12	78	406915m	5.723 µg/mL	
4) Toluene	9.10	91	373430	4.827 µg/mL	98
5) Ethylbenzene	11.17	91	399132	4.464 µg/mL	98
6) m/p-Xylenes	11.35	91	305255	4.204 µg/mL	99
7) o-Xylene	11.89	91	1152m	0.015 µg/mL	
8) Phenol	13.62	94	825731m	19.820 µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4 - Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.17	128	5729m	0.056 ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0714

Quantitation Report (QT Reviewed)

MW-16S-7M-4
ug/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071719.D
Acq On : 18 Jul 2009 3:11 pm
Operator : ERL
Sample : BC090714-03
isc : 0714 Hon 16S--7M-4
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Jul 20 12:00:14 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.48	164	47981	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.01	98	85568	1.228 µg/mL	-0.03
Spiked Amount 1.000			Recovery	= 123.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	405111m	5.194 µg/mL	
4) Toluene	9.09	91	356133	4.191 µg/mL	98
5) Ethylbenzene	11.17	91	368567	3.752 µg/mL	98
6) m/p-Xylenes	11.35	91	279845	3.512 µg/mL	98
7) o-Xylene	11.89	91	1791	0.021 µg/mL	99
8) Phenol	13.62	94	834766m	18.331 µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4 - Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.17	128	7649m	0.069 ug/mL	

#) = qualifier out of range (m) = manual integration (+) = signals summed

165 CPM

Quantitation Report (QT Reviewed)

MW-16S-9-4
ug/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071720.D
Acq On : 18 Jul 2009 4:31 pm
Operator : ERL
Sample : BC090714-04
isc : 0714 Hon 16S-9-4
LS Vial : 20 Sample Multiplier: 1

Quant Time: Jul 20 12:01:04 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	23.48	164	47291	1.000	µg/mL	0.00
System Monitoring Compounds						
2) Toluene-d8	9.01	98	99984	1.457	µg/mL	-0.03
Spiked Amount 1.000			Recovery	=	146.00%	
Target Compounds						Qvalue
3) Benzene	7.11	78	462132m	6.047	µg/mL	
4) Toluene	9.09	91	424939	5.110	µg/mL	99
5) Ethylbenzene	11.17	91	438643	4.557	µg/mL	98
6) m/p-Xylenes	11.35	91	334519	4.278	µg/mL	99
7) o-Xylene	11.90	91	2517	0.031	µg/mL	92
8) Phenol	13.62	94	926777m	20.648	µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.		
10) 3/4 - Methylphenol	0.00	108	0	N.D.		
11) Naphthalene	18.17	128	8536	0.078	ug/mL#	89

(#) = qualifier out of range (m) = manual integration (+) = signals summed

165 0714

Quantitation Report (QT Reviewed)

MW-16S-9D-4
µg/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071722.D
Acq On : 18 Jul 2009 7:12 pm
Operator : ERL
Sample : BC090714-06
Misc : 0714 Hon 16S-9D-4
LS Vial : 22 Sample Multiplier: 1

Quant Time: Jul 20 12:02:47 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.47	164	47814	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.01	98	87542	1.261 µg/mL	-0.03
Spiked Amount 1.000			Recovery	= 126.00%	
Target Compounds					Qvalue
3) Benzene	7.11	78	424973m	5.478 µg/mL	
4) Toluene	9.09	91	373716	4.421 µg/mL	98
5) Ethylbenzene	11.17	91	389507	3.986 µg/mL	98
6) m/p-Xylenes	11.35	91	297318	3.749 µg/mL	98
7) o-Xylene	11.89	91	1784	0.021 µg/mL	96
8) Phenol	13.62	94	858750m	18.924 µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4 - Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.17	128	7350m	0.066 ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0714

Quantitation Report (QT Reviewed)

MW-16S-9M-4
µg/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071721.D
Acq On : 18 Jul 2009 5:52 pm
Operator : ERL
Sample : BC090714-05
isc : 0714 Hon 16S-9M-4
LS Vial : 21 Sample Multiplier: 1

Quant Time: Jul 20 12:01:56 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.47	164	44559	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.01	98	89928	1.390 µg/mL	-0.03
Spiked Amount 1.000			Recovery	= 139.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	436253m	6.058 µg/mL	
4) Toluene	9.09	91	365311	4.646 µg/mL	98
5) Ethylbenzene	11.17	91	382759	4.210 µg/mL	98
6) m/p-Xylenes	11.35	91	291749	3.953 µg/mL	99
7) o-Xylene	11.89	91	1935	0.025 µg/mL	100
8) Phenol	13.62	94	831114m	19.652 µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4 - Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.17	128	7907m	0.077 ug/mL	

#) = qualifier out of range (m) = manual integration (+) = signals summed

165 0714

Quantitation Report (QT Reviewed)

MW-16S-11-4
µg/ml of extract

Data Path : J:\1\DATA\E090717\
Data File : E071723.D
Acq On : 18 Jul 2009 8:32 pm
Operator : ERL
Sample : BC090714-07
Misc : 0714 Hon 16S-11-4
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Jul 20 12:03:33 2009
Quant Method : J:\1\METHODS\E090708A.M
Quant Title : Hydrocarbon Fingerprinting - MS Calibration
QLast Update : Mon Jul 20 11:43:32 2009
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	23.48	164	46384	1.000 µg/mL	0.00
System Monitoring Compounds					
2) Toluene-d8	9.01	98	89358	1.327 µg/mL	-0.03
Spiked Amount 1.000			Recovery	= 133.00%	
Target Compounds					Qvalue
3) Benzene	7.10	78	423607m	5.635 µg/mL	
4) Toluene	9.09	91	384605	4.701 µg/mL	98
5) Ethylbenzene	11.17	91	406920	4.302 µg/mL	97
6) m/p-Xylenes	11.35	91	309172	4.026 µg/mL	99
7) o-Xylene	11.89	91	1410	0.017 µg/mL	93
8) Phenol	13.62	94	754689m	17.143 µg/mL	
9) 2-Methylphenol	0.00	108	0	N.D.	
10) 3/4 - Methylphenol	0.00	108	0	N.D.	
11) Naphthalene	18.17	128	7345m	0.068 ug/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

16S 0714