ECM
environmental compliance monitoring, inc.

August 2, 2013

Mr. Scott Deyette
Chief, Inspection Unit
Remedial Bureau C
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7014

RE: MW-24 and MW-71 Delineation Program
Operable Unit 1
Former Kay Fries Site; Stony Point, New York
Site No. 344023
ECM Project #1192

Dear Mr. Deyette:

This MW-24 and MW-71 Delineation Workplan (WP) has been prepared by Environmental Compliance Monitoring, Inc. (ECM) on behalf of Evonik Corporation (Evonik), presenting the proposed delineation program at the Former Kay Fries, Inc. site, located in Stony Point, New York. This plan was prepared in response to the New York State Department of Environmental Conservation (NYSDEC) request during the site meeting between NYSDEC, Evonik, ECM, and MBC Contractors (property owners) on July 15, 2013. This plan presents the details of the delineation program for the volatile organic compounds (VOCs) reported in MW-24 and the delineation of a Dense Non-Aqueous Phase Liquid (DNAPL) observed within MW-71, located within the Operable Unit 1 (OU1) section of the Kay Fries site. Figure 1 depicts the location of MW-24 and MW-71 within the OU1 section of the site.

1.0 BACKGROUND

The NYSDEC approved the OU1 MW-31 Workplan on April 23, 2013. This workplan presented the details of the subsurface application of a chemical oxidant (RegenOx®) combined with Advanced Formula Oxygen Release Compounds (ORC Advanced®) to enhance ground water remediation in the area proximal to MW-31. As part of the WP approval, the NYSDEC requested that monitoring well MW-24 be included in the WP as a result of the VOCs (benzene, chlorobenzene, cis-1,2-dichloroethane, trans-1,2-dichloroethene, trichloroethene [TCE], and vinyl chloride) reported in MW-24 above the NYSDEC Ground Water Quality Criteria (GWQC) during the OU1 August 2011 sampling event (as reported in the Periodic Review Report for the period January 2011 through December 2011). Further assessment and recommendations relative to the compounds of concern in MW-24 are presented in Section 2.0 of this WP.

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As proposed in the MW-31 WP, three delineation monitoring wells, MW-70, MW-71 and MW-72, were installed to assess the effectiveness of the in-situ remediation. The three wells were installed up-gradient and cross-gradient of MW-31, (north, west, and south of the in-situ treatment area as depicted on Figure 1). During the December 2012 post-application sampling of MW-71 (up-gradient well), DNAPL was observed within the well. The DNAPL was reported to the NYSDEC in e-mail dated March 18, 2013, entitled *MW-31 Workplan Results Summary*. The Results Summary stated that the DNAPL would be gauged and analyzed to identify the make-up of the material. Further assessment of the DNAPL is presented in Section 3.0 of this WP.

2.0 MONITORING WELL MW-24 DELINEATION

Monitoring Well MW-24 (Figure 1) was added to the MW-31 WP monitoring program due to the compounds of concern reported in MW-24 (benzene, chlorobenzene, cis-1,2-dichloroethane, trans-1,2-dichloroethene, TCE, and vinyl chloride) above the NYSDEC – GWQC during August 2011. Due to the presence of the chlorinated compounds (which RegenOx® and ORC Advanced® are less effective in treating), additional ground water sampling was proposed to assess and confirm the VOC levels in MW-24 over time. The NYSDEC approved two rounds of additional monitoring to evaluate the VOC levels previously reported in this well. The analytical results of the compounds reported in MW-24 are presented in Table 1.

MW-24 was re-sampled during August and December of 2012. The sampling results from these two rounds at MW-24 reported the VOCs previously reported in the well (benzene, chlorobenzene, cis-1,2-dichloroethane, trans-1,2-dichloroethene, TCE, and vinyl chloride). The VOC concentrations reported generally remained within the 10-50 µg/L range. The slight decrease in TCE concentrations and the increase in dichloroethene and vinyl chloride concentrations are probable indicators of the degradation of the chlorinated compounds.

Delineation of the MW-24 is well-documented by the reported not detected results from MW-25, MW70, PZ-23, MW-36, and MW-31, in the northern, eastern (down-gradient), and southern directions. There is currently no existing delineation point to the west (up-gradient) of MW-24.

Based on the above, it is proposed to conduct delineation sampling to the west of MW-24 to address that data gap and then assess possible monitoring strategies, as outlined below:

- Collect a ground water sample via hydropunch sampling technology in the western, up-gradient direction from MW-24 for VOC analyses. The location of the hydropunch sample is presented on Figure 1.
- The results of the MW-24 delineation program will be evaluated and reported to the NYSDEC during September 2013 according to the schedule presented in Attachment 1.
- Based on the MW-24 delineation results, a ground water monitoring program may be proposed to assess VOC data trends over time.

3.0 MONITORING WELL MW-71 DELINEATION

As previously stated, DNAPL was observed in MW-71 during December 2012. Subsequent to the discovery, the product was gauged and a sample collected for fingerprint analysis during the March 2013 ground water sample event. The DNAPL was not observed in the well during the well installation or during the August event and was not detected until the December 2012 sampling event, several months after installation. The product measurement in the well was approximately 5 to 9 inches as measured at the bottom of the well. The product fingerprint analysis was reported as inconclusive, but generally identified the product as a dense, non-water soluble, tar-like material, consisting of tentatively identified (substituted) phenolic compounds and other aromatic mixtures. The fingerprint analytical report is presented in Attachment 1. Additionally, ground water samples were collected from MW-71 and analyzed for semi-volatile

organic compounds and VOCs. The results were reported below the GWQS and/or not detected with the exception of benzene and chlorobenzene reported at 19 ug/L and 210 ug/L, respectively above the GWQC.

Based on the DNAPL observed in MW-71, a soil boring delineation program is proposed utilizing an Ultra Violet Optical Screening Tool (UVOST®) laser-induced fluorescence (LIF) system at the approximate locations depicted on Figure 1 and as outlined below.

- As an interim measure, ECM proposes to install a weighted, hydrophobic, oil-sorbent sock in MW-71 to collect the DNAPL.
- To delineate the DNAPL, soil borings will be advanced starting at 10 foot lateral intervals in the four cardinal directions (north, south east, and west) extending out from MW-71 (Figure 1). The soil borings will be advanced via direct push technology equipped with UVOST®. The UVOST technology is designed to detect petroleum Non-Aqueous Phase Liquid (NAPL) and produce real-time data in the field.
- The initial set of borings will be extended vertically until DNAPL is noted as absent or a maximum of 30 feet below grade.
- Secondary borings may be advanced closer to or further from MW-71, dependent on the findings form the initial borings, to further define the delineation.
- Upon completion of the delineation boring program, a field data log will be generated that will be incorporated into a conceptual site model to depict the distribution of the DNAPL proximal to MW-71.
- Based on the results of the delineation program, a strategy plan will be developed and presented to the NYSDEC during October 2013 as outlined in the delineation schedule provided in Attachment 2. This schedule is subject to change pending driller availability and potential findings during the field activity.

If you have any questions relative to the information presented above, or other matters please call ECM at (908) 874-0990 or Andrew Kruczek of Evonik at (732) 735-0204.

Sincerely,

Environmental Compliance Monitoring, Inc.

Bruce Manganiello

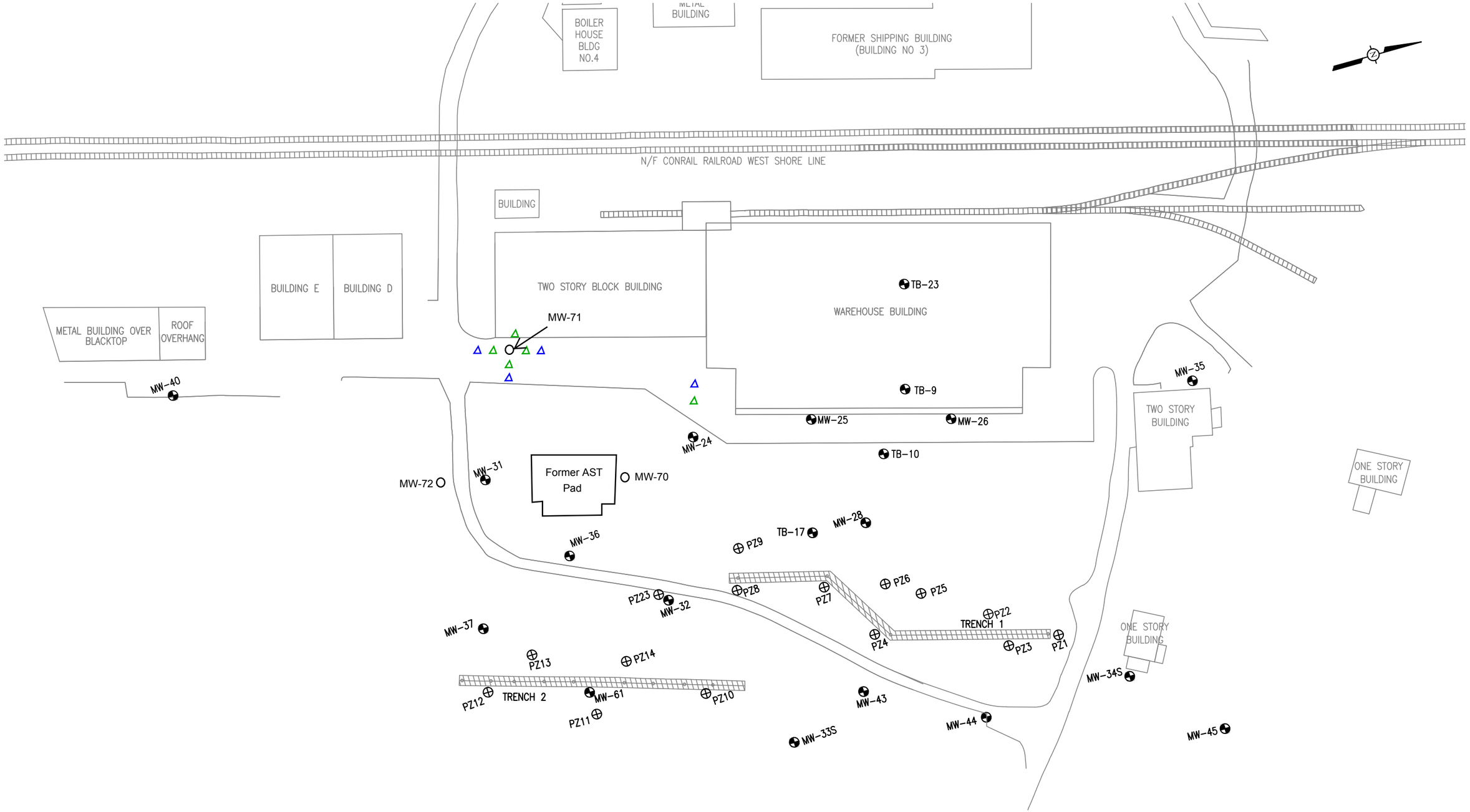
Bruce Manganiello
Operations Manager

cc: A, Kruczek, Evonik
P. Magee, MBC Contractors Inc.
S. Taylor, TaylOrd Environmental
ECM File – 1192- L

Table 1
Summary of Detected Volatile Organic Compounds (ug/L)
Former Kay Fries Site, Stony Point, New York
Monitoring Well MW-24

Volatile Organics	Aug-11	Aug-12	Dec-12	GWQS
Benzene	**1.7**	0.93 J	**1.3**	1
Chlorobenzene	**43**	**41**	**55**	5
Cis-1,2-dichloroethene	**20**	**31**	**48**	5
Trans-1,2-dichloroethene	**10**	**18**	**29**	5
Trichloroethene (TCE)	**32**	**28**	**29**	5
Vinyl chloride	**6.7**	**9.3**	**18**	2
Toluene	ND	ND	ND	5

Note:
ND = Compound Not Detected
Bold = Compound Reported Above GWQC



Legend:

- Existing Shallow Monitor Well
- Existing Piezometer
- Delineation Location
- Supplemental Step-Out Delineation Locations

SCALE:	CHECKED BY:	
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY
DATE:	PROJECT NO:	
7/12/2013	1192	

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Figure 1
MW-24 & MW-71 Proposed Delineation Locations

ATTACHMENT 1

MW-71 DNAPL FINGERPRINT ANALYTICAL REPORT

CORE LABORATORIES

201 Deerwood Glen Dr
Deer Park, TX 77536
281-478-1300

TESTAMERICA - NEW JERSEY
GRACE CHANG
777 NEW DURHAM ROAD
EDISON, NJ 08817

Report Number : 57801-130891
Date Reported: 4/3/13
Date Received: 3/15/13

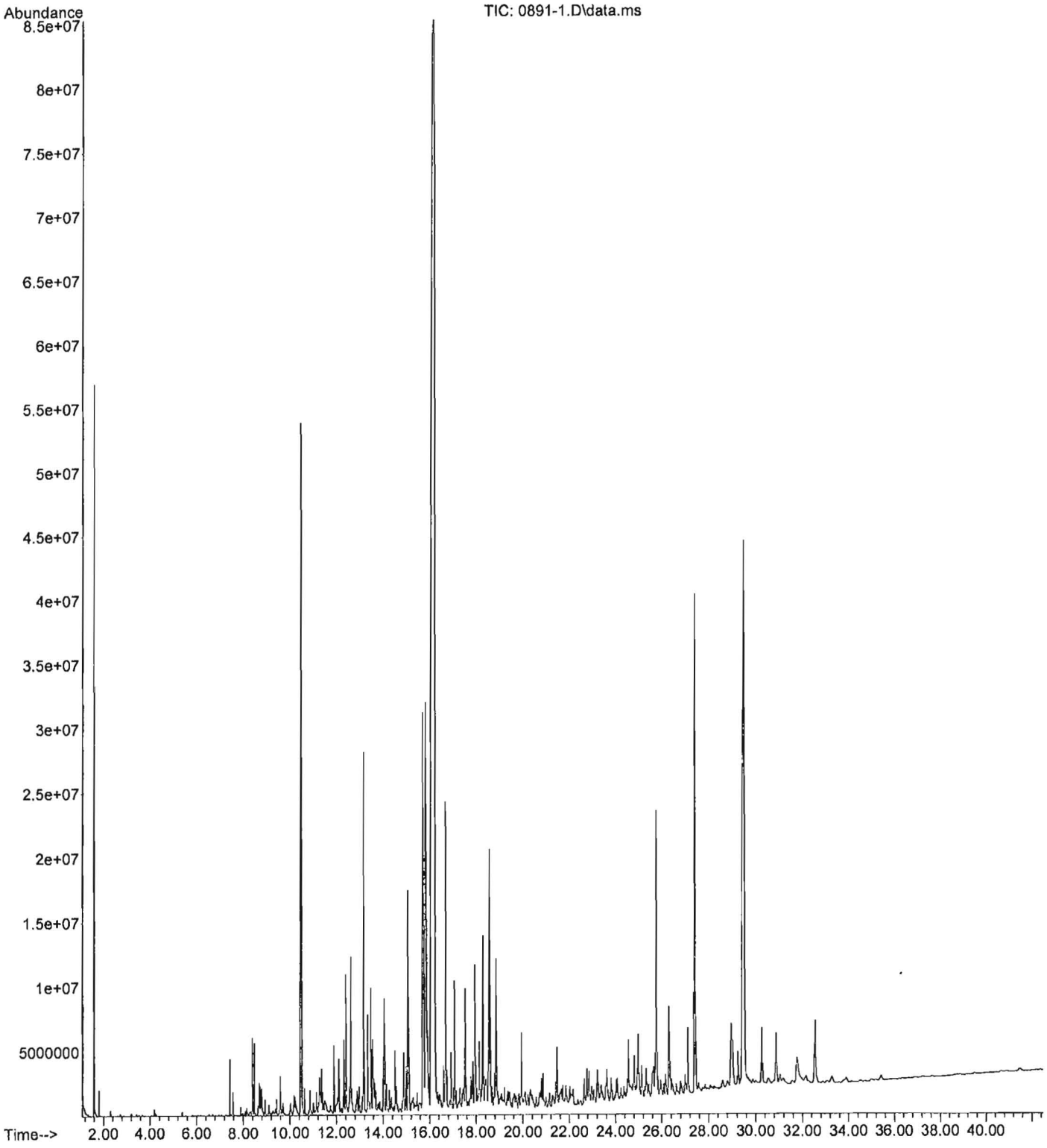
Analytical Report

Sample No.: 130891-001 Sample ID MW-71-05 **Date Sampled 3/14/13 11:40:00 AM**

Test	Result	Units	Method	Date	Analyst
GCMS Target Compound					
GCMS Target Compounds	See Attached		GCMS	3/20/13	CC

Approved By: M. Jean Waits

File :C:\msdchem\1\data\March13\0891-1.D
Operator : cc
Acquired : 20 Mar 2013 10:47 using AcqMethod PNAGO.M
Instrument : Short GCMS
Sample Name: 130891-1 TEST AMERICA
Misc Info :
Vial Number: 1



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Quality : 72
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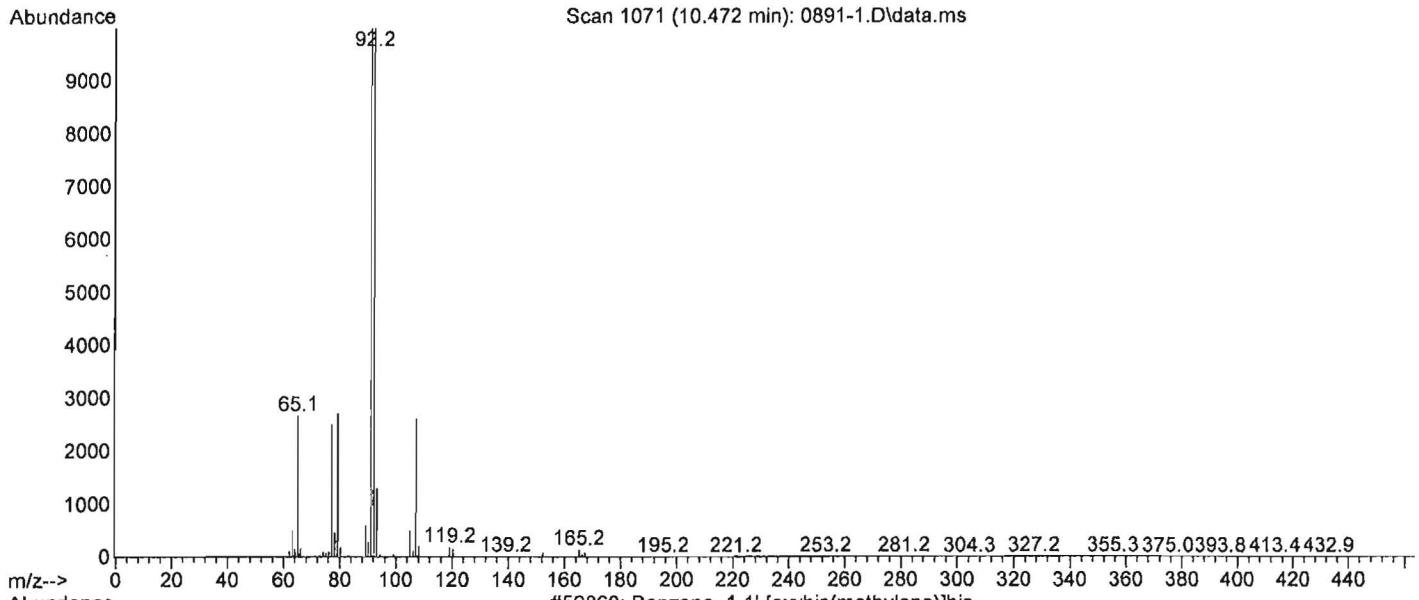

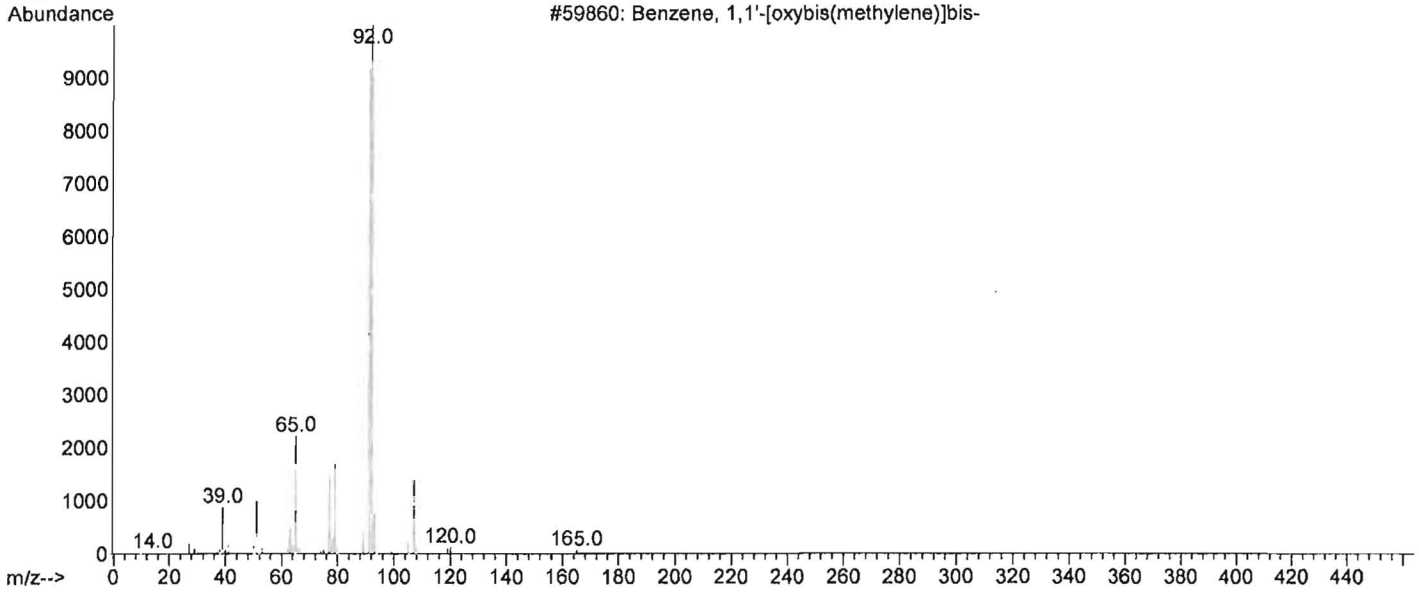

Library Searched : C:\Database\NIST11.L
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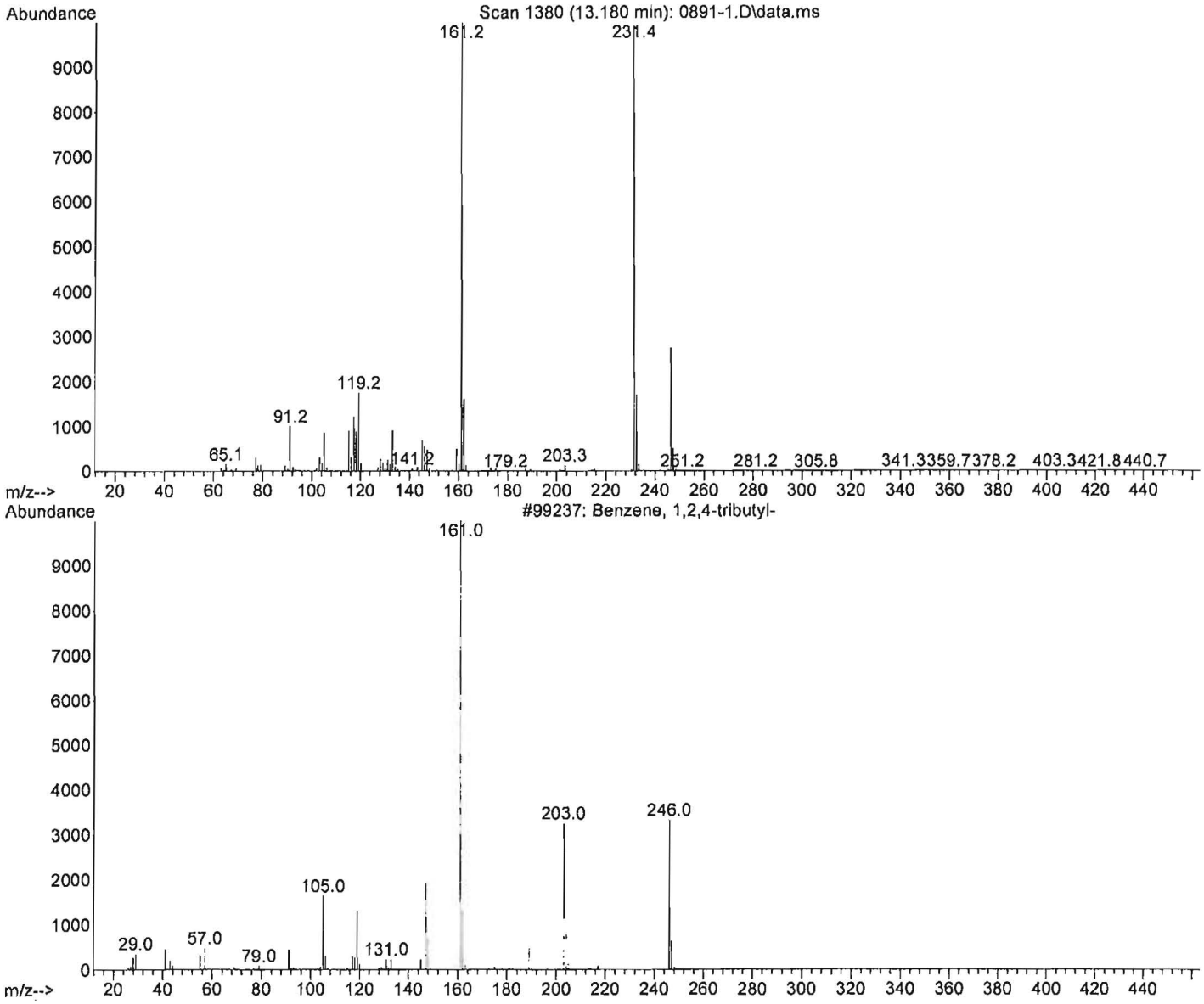
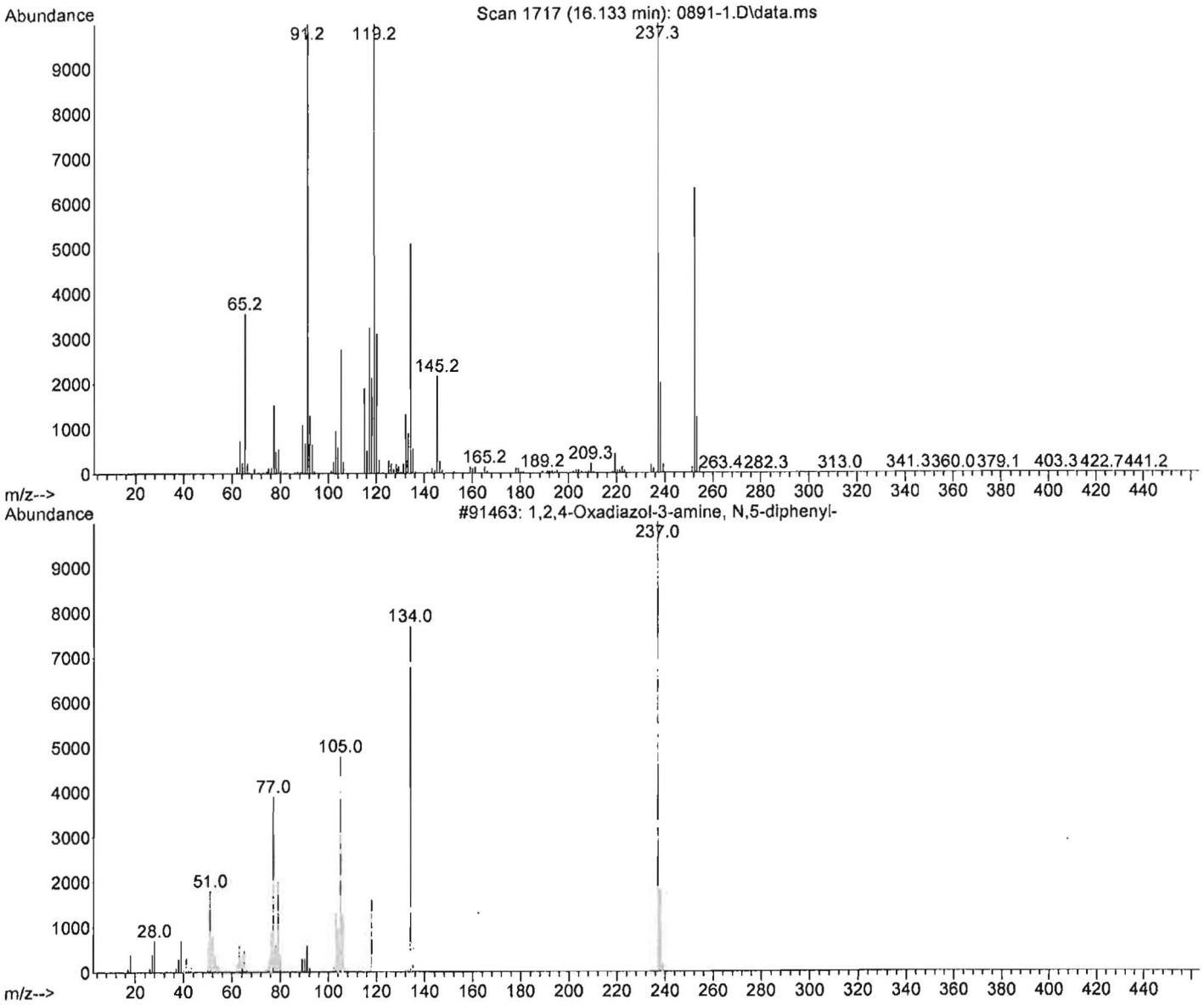
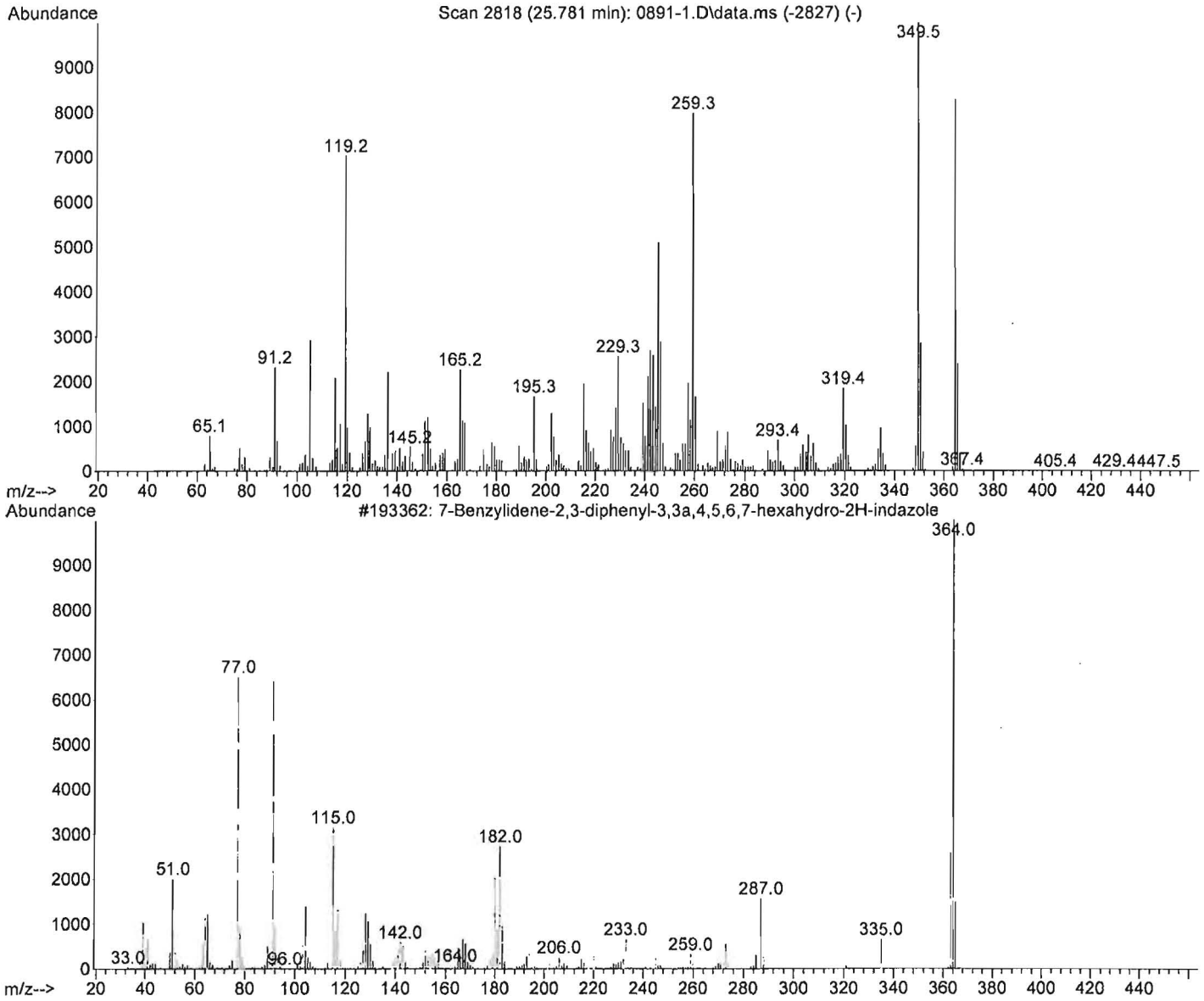


Library Searched : C:\Database\NIST11.L
Quality : 38
ID : 1,2,4-Oxadiazol-3-amine, N,5-diphenyl-



Library Searched : C:\Database\NIST11.L
Quality : 15
ID : 7-Benzylidene-2,3-diphenyl-3,3a,4,5,6,7-hexahydro-2H-indazole



Library Searched : C:\Database\NIST11.L
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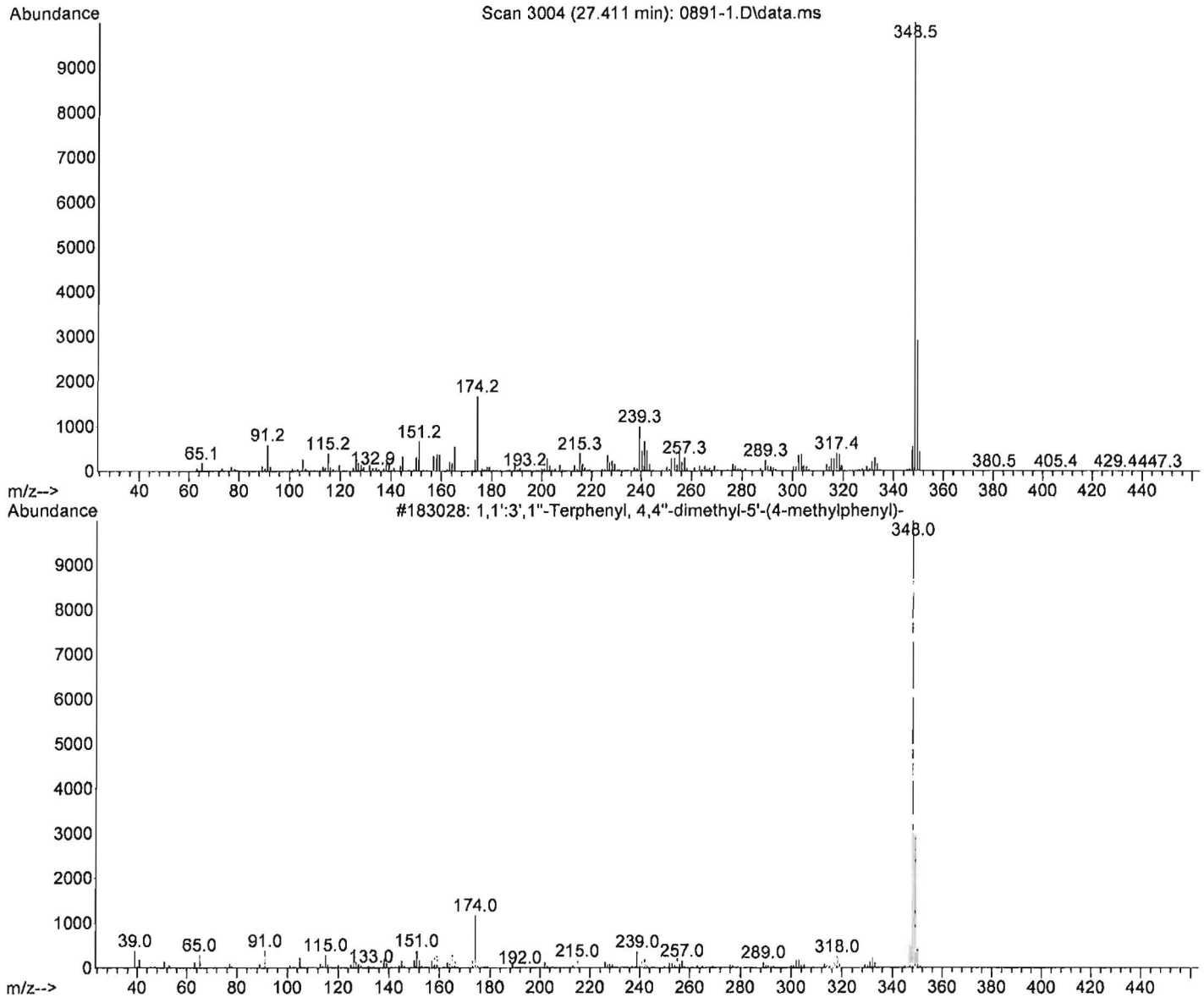
ID : 1,1':3',1''-Terphenyl, 4,4''-dimethyl-5'-(4-methylphenyl)-



Library Searched : C:\Database\NIST11.L
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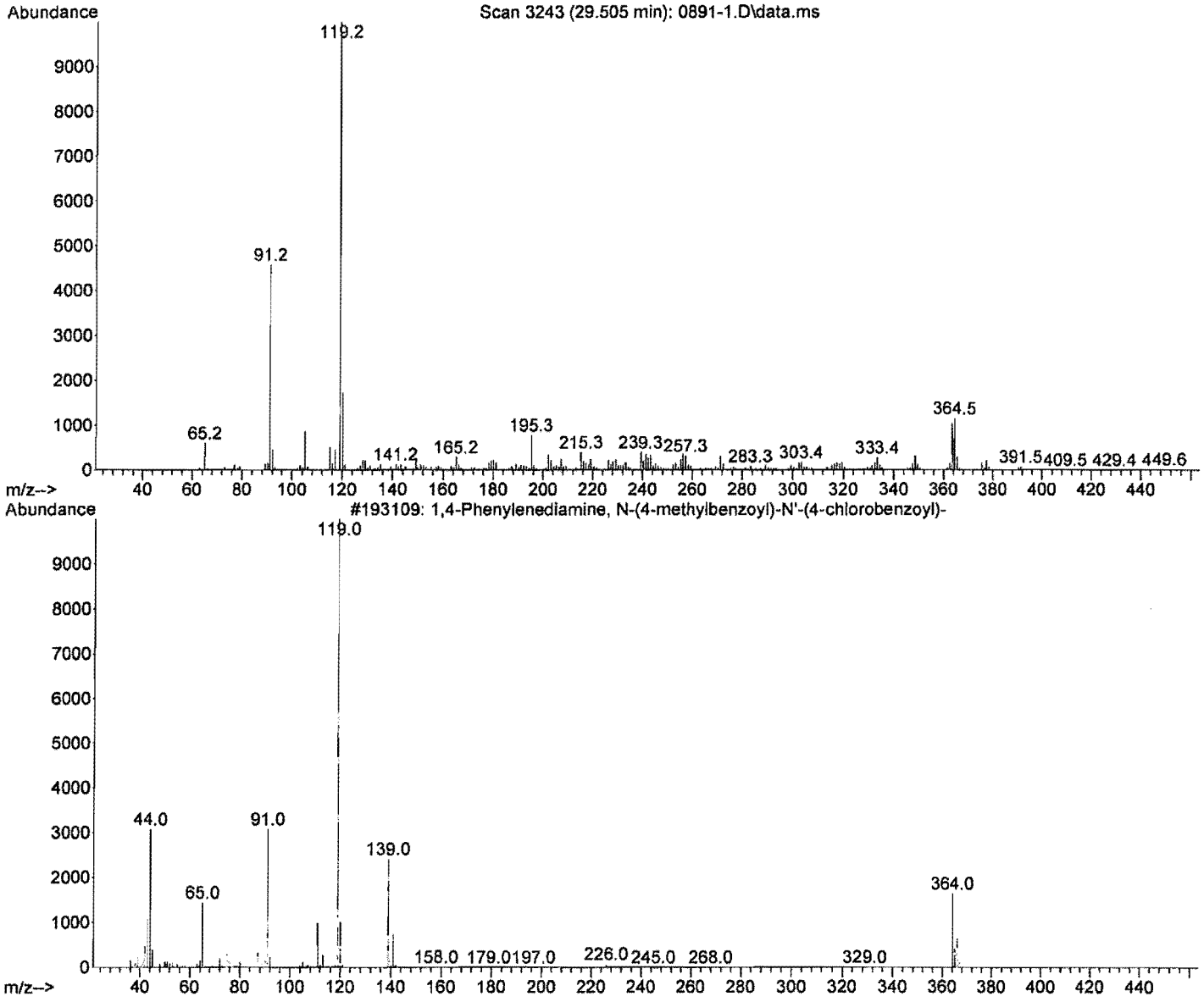
ID : 1,4-Phenylenediamine, N-(4-methylbenzoyl)-N'-(4-chlorobenzoyl)-



777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice) Bruce Munyinoulis	Samplers Name (Printed) C. Bisley/K. Conlin	Site/Project Identification 1142-Stony Point
Company ECM, INC.	P. O. #	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program: NYSDEC
Address 349 Route 206	Analysis Turnaround Time: Standard ☒	
City Hillsborough State NJ	Rush Chrages Authorized For: 2 Week ☐ 1 Week ☐ Other ☐ ______	LAB USE ONLY Project No:
Phone (908) 874-0990/0920 Fax		Job No: 52291

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of. Cont.	Oil Characterization*											Sample Numbers
MW-71-05	3/14/13	1140	Oil	1	X											-1
																0 Deg C. KS 3/15/13

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH — Soil: / Water:
6 = Other ______, 7 = Other ______

7.0 / 8-1°C IR#4 on ice

Special Instructions *Sample to Larry Scott at Core Labs Texas (281) 478-1372

Water Metals Filtered (Yes/No)? ______

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	ECM	3/14/13 0730	1) [signature]	TA EDI (~~Fedex~~)
2) [signature]	Test Amer	3/14/13 1330	2) Kathy Herman	Core Labs (5.X On Ice)
3)			3)	
4)			4)	

Sub Work

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). Massachusetts (M-NJ312), North Carolina (No. 578)

MCS

ATTACHMENT 2

MW-24 & MW-71 DELINEATION SCHEDULE

Former Kay Fries Site
Stony Point, New York
Evonik - MW-24 and MW-71 Delineation Schedule Projection

	Week of:	7/15	7/22	7/29	8/5	8/12	8/19	8/26	9/2	9/9	9/16	9/23	9/30	10/7	10/14	10/21	10/28
Project Initiation																	
	On-Site Meeting; Draft Delineation Plan Review																
	Plan Finalization and NYSDEC Submission																
	NYSDEC Plan Review/Comment/Approval																
	Schedule Drillers and Utility Mark-Outs																
Field Work																	
	Utility Mark-Out																
	Delineation Boring Program (dependent on driller availability)																
Analytical Laboratory																	
	MW-24 Delineation Sample Analyses																
	MW-71 Supplemental Aanalyses (if warranted)																
Technical Review and NYSDEC Reporting/Correspondence																	
	MW-71 UVOST Results/Review; Initial RA Design																
	MW-24 Delineation Results/Review																
	Draft Techincal Findings and Proposed Strategies Plan																
	Submit/Discuss w/NYSDEC																
	Finalize Proposed Strategies Plan and NYSDEC Review/Approval																
Implement Strategies Plan																	
	(To be deteremined based on delineation findings and scope.)																

NOTE: Schedule Subject to Change Based Upon Conditions Encountered (E.G., Site Conditions, Findings During Scope, etc.)

: Task Complete