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SHALLOW GROUNDWATER DATA REPORT

Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

September 12, 2008

Prepared for

EMHART INDUSTRIES, INC.
701 East Joppa Road
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Prepared by

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An Employee Owned Company

Comm. No. 15RP601.01

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1 - NEW ENGLAND
1 CONGRESS STREET, BOSTON, MA 02114

November 6, 2008

David Scotti
Loureiro Engineering Associates, Inc.
100 Northwest Drive
Plainville, CT 06062

Re: Shallow Groundwater Data Report prepared by LEA, Inc., dated September 12, 2008, for the Centredale Manor Restoration Project Superfund Site.

Dear Mr. Scotti:

EPA has reviewed the Shallow Groundwater Data Report, prepared by LEA, Inc. on behalf of Emhart Industries, Inc. and dated September 12, 2008, and has the following comments and observations.

- To put the findings of this investigation into a proper context (Section 2.2.3), it needs to be clarified that dioxin contamination is widespread in source area soils (not limited to borings CMS-451, CMS-453, MW-15D, and MW-05S), and that this section focuses on locations in the source area with dioxin contamination in sub-surface soils (> 4 ft bgs) at concentrations that exceed 1,000 ng/kg.

- To clarify, the data in EPA's SPMD report was reported correctly. It was an error in the graph in that report that was pointed out to LEA following submittal of the report. The correct data has been used in EPA's conclusions of the study, as demonstrated by the correct graph on the Battelle presentation poster which was provided to you earlier (Section 2.2).

- There is a typo in referencing the participating laboratories (Section 5.2): according to laboratory reports included in Appendix F, groundwater samples were analyzed by DAT (not AEL) for VOCs.

- **Dioxin/Furan Results** (Sections 6, 7 and Appendices F, G, and H). Environmental Standards, Inc., (ESI) conducted an in-depth review of dioxin/furan results and QC parameters from the DAT laboratory for the one soil sample and the twelve aqueous samples. Based on EPA Quality Assurance Unit's review of ESI's reports and the laboratory results, EPA concurs with its assessment that the dioxin/furan results are

"acceptable for use as reported." None of the dioxin/furan results were qualified as rejected ® and a minority of the results were qualified as estimated (J). When qualification of the results was needed, ESI's reports gave a detailed explanation of the reason. For example, the 2,3,7,8-TCDD result in the soil sample was estimated due to a high surrogate spike recovery. However, the concentration of 2,3,7,8-TCDD reported is similar to the concentration reported at the site previously. It is recommended that the "data users should understand the qualifications and limitations as specified in the Environmental Standards QA review."

- **Volatile Organic Analysis (VOA) Results** (Sections 6, 7 and Appendices F, G, and H). Numerous problems were identified by ESI with the DAT laboratory's VOA results and analysis. Several non-standard laboratory practices came to light during the review of the results. For example,
  - Incorrect and inconsistent dilution purge volume information made it difficult to verify the reported positive results and the detection limits;
  - Irregularities in the performance of the initial calibration prevented the recalculation/checking of the reported results;
  - Inconsistent manual integration of the chromatograph peaks cast doubt on the calibrations;
  - The % recovery of several of the Matrix Spike/Matrix Spike Duplicate compounds were incorrectly calculated; and
  - The Bromofluorobenzene (BFB) instrument tuning requirement was not fulfilled for one instrument on 3/6/2008.

  These problems cast serious doubt and uncertainty on the reported VOA results and point to a laboratory that was operating well below minimum acceptable standards with severe systemic quality issues. Even with these problems, EPA concurs with ESI that the VOA data is qualitatively reliable. This means that the data show that chlorinated volatile compounds are present in the samples. This conclusion is not unexpected given previous findings at the site. However, EPA does not believe that the reported concentration results can be used quantitatively due to the severe systemic problems noted above. This would apply specifically to use of this data in LEA's Shallow Groundwater Data report, dated September 12, 2008, which uses the VOA concentrations in Section 8.1 (Co-solvency) evaluations. Also, the quality of the data does not support making well-to-well quantitative comparisons as was done in the report. The nature and extent of reporting and procedural issues identified by the validators with respect to the VOC data indicate that these data should only be used qualitatively. An additional round of groundwater sampling for VOCs could yield higher quality, more defensible data. In the event that another round of sampling is performed, consider including a blind performance evaluation (PE) sample with study samples submitted for analysis.

- Sections 7 and 8 – This investigation does not support the conclusions disputing the co-solvency and enhanced colloidal transport mechanisms.

- The co-solvency of dioxin could be attributed to other substances, such as surfactants, that were not analyzed for. Furthermore, the conclusions disputing co-solvency rely on limited VOC data, for which there are substantive data quality issues;
- There is also the matter of competitive binding of TCDD to the organic phase of stationary soil which is also a variable between locations LEA-1, 2 and 3. The cosolvency chemical relationship is not just the concentration of PCE and TCDD. It is also the characteristics of the TCDD contaminated soil (e.g., %TOC) in the saturated soil environment with high PCE;
- The positive detection of dioxin in the filtered groundwater at MW-LEA-02 indicates that dioxin is present in dissolved form (per definition of filtered samples). This result supports, rather than disputes, the findings from the SPMD study;
- There is insufficient basis to support the conclusion that dioxin measured in the groundwater (filtered and unfiltered samples) at MW-LEA-02 is an artifact of a disturbed sampling process, and therefore associated with soil particulates rather than colloids discharging with groundwater to the river. Groundwater has been sampled at more than 30 wells at the source area during previous investigations, but elevated concentrations of dioxin have only been detected at MW-05S and MW-LEA-02. There is no data to indicate that a 'disturbed sampling process' was isolated to these two wells alone;
- The extent of contaminated soil beyond MW-05S does not rule out the possibility of colloidal-facilitated transport, which would be characteristic of the data in Tables 6-5 and 6-8. It could be helpful to have a discussion of the LEA-02 data in Tables 6-5 and 6-8. In fact, these data do seem to support the USEPA theory as it pertains to colloidal-facilitated transport. LEA-02 has the highest values for turbidity (13 NTU), TSS (2-11.2 mg/l), and TDS (720-760mg/l) of any sample and is indicative of a large amount of colloids. It too has the highest concentrations of total (2743-6154 pg/l), and most importantly filtered (289-727 pg/l), TCDD. The fact that TCDD is detected in filtered groundwater at levels lower than unfiltered groundwater supports the colloidal-facilitated transport theory. Moreover, if soil from the bore hole was the source of the TCDD in groundwater at LEA-02, then it would *not* have been detected in filtered samples of groundwater (sample and duplicate); and
- Colloidal-facilitated transport may be a "theory" when it comes to characterization of groundwater on site in the vicinity of MW-05S, but it *is not* a scientific theory (Section 8.3). EPA has provided LEA with EPA references and others that proves it has been known to occur in the environment. Therefore, the statement "Moreover, the USEPA's theory of colloidal-facilitated transport does not comport with what is known about the behavior of dioxins in the environment" is incorrect and should be deleted.

- Section 9 – The basis of the $20 million high end cost estimate identified for excavation/dewatering alternatives is not explained. Similarly, the basis of the $500,000 to $750,000 cost estimate for the limited excavation and capping alternative is not provided. It would be helpful to discuss more comprehensive details of this alternative (e.g., footprint, removal volume, etc.) to understand the cost estimates cited.

- Figures – It needs to be clarified that the summary of contaminant data in soil and groundwater is limited to locations within the Brook Village parking lot area, and not intended to illustrate the data distributions throughout the entire source area.

- Figure 2-1 – It would be helpful to show SPMD locations CMS-SMPD1 and CMS-SPMD5 on the figure.

- Figure 2-3 – The summary of detected VOC and dioxin data appears to be incomplete. For example, dioxin concentrations have been measured in surface soils at CMS-060 at substantially higher concentrations than reported (e.g., dioxin TEQ = 116,000 ng/kg, 0-0.25 ft bgs).

- Figure 2-4 – It would be helpful to show contaminant data for river sediment locations CMS-SPMD1, CMS-SPMD2, CMS-SPMD3, CMS-SPMD4, and CMS-SPMD5.

As we also discussed, EPA has decided to analyze dioxin in the archived soil samples from this investigation and I appreciate your cooperation in retrieving and transporting the samples between the laboratories. Please do not hesitate to contact me with any questions.

Sincerely,

Anna Krasko
Remedial Project Manager

cc: Louis Maccarone, RIDEM

EXECUTIVE SUMMARY

On behalf of Emhart Industries, Inc., Loureiro Engineering Associates, Inc. (LEA) conducted shallow groundwater investigation activities at the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island (CMRP). The investigation activities were conducted in the vicinity of monitoring well MW-05S (study area). As part of the investigation activities, three groundwater monitoring wells were installed in this area of the CMRP. The wells were screened within the saturated zone of the shallow overburden materials. Groundwater samples obtained from these wells and from monitoring well MW-05S were analyzed for dioxins/furans, volatile organic compounds, total suspended solids, and total dissolved solids.

The shallow groundwater investigation activities were conducted in accordance with the January 7, 2008 scope of work (SOW) prepared by LEA and approved by the USEPA. The scope of work was designed to assess the USEPA's theory that groundwater contaminated with VOCs in the area of monitoring well MW-05S likely is an ongoing source or migration pathway for dioxins discharging to the Woonasquatucket River (River). Thus, EPA's conceptual transport model is based on the mobilization of dioxin to the River through: (i) cosolvency, defined as an increased potential for migration due to reduced sorption to soil or enhanced solubility of compounds that typically adhere to soil, are repelled by groundwater, and, if present at all, are only present in groundwater in minor concentrations; and/or (ii) colloid-facilitated transport, defined as the increased mobility that results from the sorption of normally immobile compounds to mobile colloids.

Field and laboratory analytical data were obtained from the shallow groundwater investigation activities to evaluate the USEPA's theory. This report documents the field and laboratory methods and procedures used to collect these data. This report also documents the data obtained from the investigation activities. The purpose and objectives of this report are to summarize the relevant CMRP data, including the recently-obtained data, and to evaluate these data in light of what is known about the fate and transport of dioxins in the environment. Specifically, in evaluating the data we seek to answer the following questions:

1. Do the data support the USEPA's theory that dioxins are being transported in groundwater as the result of cosolvency?
2. Do the data support the USEPA's theory that dioxins are being transported in groundwater as the result of colloid-facilitated transport?

An additional purpose of this report is to examine the remedial alternatives presented by the USEPA and Battelle at the April 23, 2007 Dialog Meeting in light of the information obtained from the implementation of the SOW.

Based on the results obtained from the shallow groundwater investigation activities, the data do not support the USEPA's theory that dioxins have mobilized from the study area through colloid-facilitated transport. However, the data clearly demonstrate that cosolvency is not occurring in the study area. In addition, the data clearly demonstrate that the impacted soil and groundwater in the study extends beyond monitoring well MW-05S to the area of the newly-installed monitoring wells. Based on this finding, it is inaccurate for the USEPA to conclude that shallow groundwater in the study area is a migration pathway for dioxin by means of colloid-facilitated transport.

Based on the findings and results of the shallow groundwater investigation activities, the range of remedial alternatives being evaluated by the USEPA should be expanded to include the capping alternatives that the USEPA already has implemented or is considering for other action areas of the CMRP. For example, the universe of potential remedial alternatives for shallow groundwater in the vicinity of monitoring well MW-05S should be expanded to include a limited excavation and capping alternative, a far more cost-effective alternative that is equally as protective of the environment as the USEPA's alternatives currently under evaluation.

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Appendix H Environmental Resource Associates® Performance Evaluation Sample Certification Documentation

LIST OF ACRONYMS

AEL	Averill Environmental Laboratory, Inc.
AMEC	AMEC Earth and Environmental, Inc.
BGS	Below Ground Surface
CLP	Contract Laboratory Program
CMRP	Centredale Manor Restoration Project
DAT	Data/Analysis Technologies, Inc.
ERA	Environmental Resource Associates®
ES	Environmental Standards, Inc.
HSA	Hollow-Stem Auger
IDW	Investigation-Derived Waste
LEA	Loureiro Engineering Associates, Inc.
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAPL	Non-Aqueous Phase Liquids
NTUs	Nephalometric Turbidity Units
OD	Outside-Diameter
ORP	Oxidation-Reduction Potential
PALs	Performance Acceptance Limits™
PCDD	Polychlorinated dibenzodioxin
PCDF	Polychlorinated dibenzofuran
PCE	Tetrachloroethylene
PE	Performance Evaluation
PID	Photoionization Detector
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference

SOPs	Standard Operating Procedures
SOW	Scope of Work
SPMD	Semi-Permeable Membrane Device
TCDD	Tetrachlorodibenzo-p-dioxin
TCE	Trichloroethylene
TDS	Total Dissolved Solids
TEFs	Toxicity Equivalent Factors
TEQs	Toxicity Equivalents
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds
WHO	World Health Organization

LIST OF UNITS

mg/kg	milligrams per kilogram
ng/kg	nanograms per kilogram
µg/kg	micrograms per kilogram
mg/l	milligrams per liter
µg/l	micrograms per liter
pg/l	picograms per liter
ppm	parts per million
%	percent

1. INTRODUCTION

This report is submitted on behalf of Emhart Industries, Inc. (Emhart) to present the data collected by Loureiro Engineering Associates, Inc. (LEA) during an investigation of shallow groundwater in the vicinity of monitoring well MW-05S located adjacent to the Brook Village Associates Limited Partnership (Brook Village) parking lot and east of the Woonasquatucket River (River) at the Centredale Manor Restoration Project Superfund site located in North Providence, Rhode Island (CMRP). The shallow groundwater investigation activities included the installation of monitoring wells screened within the subsurface overburden material. In addition, these activities included groundwater sampling and the laboratory analysis of the groundwater samples obtained during the investigation activities. The data obtained from the shallow groundwater investigation are presented in this report following a description of the methods and procedures used to collect the data.

This report is organized as follows:

- Pertinent background information regarding the investigation activities is provided in Section 2.
- The purpose and objectives of the investigation and this report are presented in Section 3.
- The field methods and procedures used to collect the shallow groundwater data are described in Section 4.
- The laboratory analytical methods used during the investigation are presented in Section 5.
- The laboratory data assurance review procedures are presented in Section 6.
- The results of the shallow groundwater investigation activities are presented in Section 7.
- An evaluation of the results is presented in Section 8.
- The implications of the data on the remedial alternatives under evaluation are discussed in Section 9.
- A recommendation is presented in Section 10.
- References are provided in Section 11.

To support the discussion provided in this report, the shallow groundwater data are summarized in tables and drawings appended to this report.

2. BACKGROUND

2.1 Overview

The United States Environmental Protection Agency (USEPA) is conducting a Remedial Investigation (RI) and Feasibility Study (FS) for the CMRP. In June 2005, the USEPA released the *Interim Final Remedial Investigation Report* (Report) prepared by Battelle (2005a) in which the CMRP data collected by the USEPA up to that time are summarized. In the Report, the USEPA presents what it considers to be plausible fate and transport theories for constituents of concern at the CMRP. One theory postulated by the USEPA is that shallow groundwater in the vicinity of monitoring well MW-05S (the study area), located adjacent to the Brook Village parking lot and east of the River, is a pathway and/or transport mechanism for constituents of concern at the CMRP. The locations of monitoring well MW-05S and other monitoring wells installed to monitor groundwater at the CMRP are shown in the site plan presented as Drawing 2-1.

2.2 Historical Data

2.2.1 RI Data and Post-RI Data

A summary of the relevant background data presented in the Report and the subsequently-collected SPMD data and 2005 Lyman Mill Pond sediment data is provided in this section. These data include the data used by the USEPA to support their fate and transport theory for shallow groundwater beneath the area of monitoring well MW-05S. Data are presented for the following media: soil, groundwater, vapor diffusion samplers, surface water, SPMDs, and sediment.

2.2.2 Groundwater Data

According to the USEPA and the Report, groundwater samples collected from monitoring well MW-05S were reported to contain trichloroethylene (TCE) at concentrations ranging from 1,800 micrograms per liter (µg/l) to 2,500 µg/l and tetrachloroethylene (PCE) at concentrations ranging from 28,000 µg/l to 61,000 µg/l. Also, groundwater samples collected from this well were reported to contain 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) at concentrations ranging from 1,030 picograms per liter (pg/l) to 4,180 pg/l. A summary of volatile organic compounds (VOCs) and dioxins reported to be present in groundwater in the vicinity of monitoring well MW-05S is provided in Drawing 2-2.

2.2.3 Soil Data

The USEPA reported that soil samples collected from borings CMS-451, CMS-453, MW-15D, and MW-05S contained 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). Soil samples collected from a depth of 4 to 6 feet below the ground surface (bgs) at soil borings CMS-451, MW-15D, and MW-05S were reported to contain 140,000 nanograms per kilogram (ng/kg), 2,645 ng/kg, and 20,454 ng/kg, respectively. The maximum 2,3,7,8-TCDD concentration reported for the soil samples collected from soil boring CMS-453 was 62,000 ng/kg (6 to 7 feet bgs). The duplicate soil samples obtained from a depth of 3 to 4 feet bgs at CMS-453 were reported to contain 2,3,7,8-TCDD at concentrations of 11,000 ng/kg and 42,900 ng/kg. A summary of the dioxin concentrations in soil at these soil boring locations is provided in Drawing 2-3.

Based on the laboratory analyses of soil samples collected from soil boring MW-05S, chlorinated VOCs are present in soil at this location. Concentrations of PCE and TCE were reported at 300 milligrams per kilogram (mg/kg) and 26 mg/kg, respectively in the soil sample collected from a depth of 4 to 6 feet below ground surface (bgs) at this boring location. Also, PCE, TCE, and *cis*-1,2-dichloroethylene (cis-1,2-DCE) were detected at 250 mg/kg, 36, mg/kg and 43 mg/kg, respectively in the soil sample collected from a depth of 4 to 6 feet bgs at boring CMS-451. In addition, chlorinated solvents, including PCE and TCE, were found to be present in soil samples obtained from soil borings CMS-417, CMS-419, and CMS-060 advanced in this area of the CMRP. In addition, the USEPA provides in the Report that a small quantity of non-aqueous phase liquid (NAPL) was observed to be present in soil encountered during the advancement of the soil boring for monitoring well MW-05S. However, no NAPL was observed atop the water table in monitoring well MW-05S.

2.2.4 Vapor Diffusion Samples

In the Report, the USEPA suggests that chlorinated VOCs, and possibly dioxins, are migrating in overburden groundwater from the vicinity of monitoring well MW-05S and are discharging into the River. As presented in the Report, the nature and extent of VOCs in groundwater is consistent with the results of the United States Geological Survey (USGS) study in which vapor diffusion samples were collected from the River. This study was conducted to assess the potential extent of the area through which VOC-impacted groundwater arguably flows and discharges to the River. As reported, this study identified the seepage of groundwater contaminated with VOCs along the River immediately downstream of monitoring well MW-05S. As presented in the Report, VOCs are not adversely impacting surface water and sediment quality in the River; however, the USEPA noted that it is possible that VOC contamination in the

vicinity of monitoring well MW-05S has mobilized dioxin, and stated that it may be discharging to the River.

2.2.5 Surface Water

The flux of dioxin from the River bed (sediment) to surface water in Allendale and Lyman Mill Ponds under low-flow, non-resuspending conditions was evaluated as part of a sediment stability study conducted by the USEPA (Battelle, 2004). As part of the sediment stability study, the USEPA collected surface water samples and had them analyzed for dioxins. Based on the surface water results, the USEPA drew preliminary conclusions about dioxin loading to the surface water during non-resuspending conditions in Allendale and Lyman Mill Ponds.

Of relevance, the USEPA concluded that an average dioxin load of approximately 110 milligrams per day (mg/day) are added to the River and the upstream portion of Allendale Pond. The USEPA assumed the mass transfer of pore water from the sediment to the surface water, due to a combination of various processes including diffusion, bioturbation, and groundwater flux, to be the main source of dioxin. The USEPA identified another possible source of dioxin in this area of the CMRP as the discharge of contaminated groundwater in this area of the CMRP. Based on this study, the USEPA also concluded that minimal net export of dioxin from Allendale and Lyman Mill Ponds occurs during low-flow, non-resuspending conditions; the background load of dioxin entering the CMRP is approximately equal to the load over Lyman Mill Dam during low-flow periods.

2.2.6 Semi-Permeable Membrane Devices (SPMDs)

The USEPA explains in the Report that while it is not clear whether or not dioxins are discharging to the River, and whether or not the magnitude of any such discharge is significant, additional investigation is in progress to assess whether overburden groundwater is a significant transport pathway for dioxins. The additional investigation to which the USEPA alluded was a semi-permeable membrane device (SPMD) study through which additional information on dioxin in groundwater, surface water, and sediment was obtained (Battelle, 2005b).

In June 2005, the USEPA conducted the SPMD study, which involved the collection of SPMD and co-located sediment and/or groundwater samples. The SPMDs were deployed in sediment, surface water and in monitoring well MW-05S. As presented by the USEPA, the results of this study may be used to suggest that the highest concentrations of dioxins were detected in the SPMD sediment samples that were collected nearest monitoring well MW-05S (SPMD-03 and SMPD-04) (Drawing 2-1). Lower concentrations of dioxins were reported for the SPMD sediment samples that were collected upstream and downstream of these locations (SPMD-01,

SPMD-02, and SPMD-05). Based on the results of this study, the USEPA concluded that groundwater is the likely ongoing source or migration pathway of dioxins to the River.

2.2.7 Sediment

The USEPA has collected sediment samples from the River bed proximate to monitoring well MW-05S. Based on the analyses performed on these samples, concentrations of dioxin range from 2.58 ng/kg in sediment located upstream of the area of monitoring well MW-05S to 5,096 ng/kg in sediment proximate to monitoring well MW-05S and collocated with SPMD sample SPMD-04 (Drawing 2-4).

The USEPA and Battelle presented the results of the SPMD study at the April 23, 2007 Dialogue Meeting, concluding that groundwater in the vicinity of monitoring well MW-05S is an on-going source or migration pathway of dioxin transport to the River. During this meeting, Battelle and the USEPA presented a series of remedial alternatives being evaluated as part of the FS for groundwater in the vicinity of monitoring well MW-05S. The remedial alternatives identified at that time included: (i) no further action; (ii) de-watering and excavation; (iii) the installation of a hydraulic containment barrier; (iv) the installation of a passive reactive barrier (biowall); and (v) *in-situ* chemical oxidation.

2.3 Current USEPA Transport Theory

In various letters of correspondence to the USEPA, LEA and AMEC, technical consultants for Emhart, challenged the USEPA's conclusion that the CMRP data support the theory that dioxin is being transported via groundwater to the River (LEA, 2007 and AMEC 2007a, b, c). In correspondence dated September 14, 2007, the USEPA reiterated and clarified its position that groundwater contaminated with VOCs in an area around monitoring well MW-05S is likely an ongoing source or migration pathway for dioxins discharging to the River. The USEPA's conceptual transport model is based on the mobilization of dioxin to the River through: (i) cosolvency, defined as an increased potential for migration due to reduced sorption to soil or enhanced solubility of compounds that typically adhere to soil, are repelled by groundwater, and, if present at all, are only present in groundwater in minor concentrations; and/or (ii) colloid-facilitated transport, defined as the increased mobility that results from the sorption of normally immobile compounds to mobile colloids.

With regard to the USEPA's cosolvency theory, the USEPA has postulated that increased solubility of dioxins is occurring in the area of monitoring well MW-05S due to the presence of PCE and/or TCE, which act as a cosolvent. Specifically, the USEPA has suggested that 2,3,7,8-TCDD is preferentially dissolved in the groundwater/cosolvent mixture rather than adsorbing

onto surrounding soils, resulting in an increase in 2,3,7,8-TCDD mobility and transport within groundwater toward the River.

With regard to colloid-facilitated transport, the USEPA has suggested that the normally immobile dioxins have attached to mobile colloids in groundwater and are discharging to the River. Colloids are suspended particles that may be mobilized by groundwater and may move through the interstitial space between soil particles by what is referred to as colloidal transport. The colloids may serve as a transport mechanism for otherwise immobile contaminants that adsorb to the colloids. The increased mobility that results from the sorption of normally immobile compounds to mobile colloids is referred to as colloid-facilitated transport.

The letters of correspondence prepared by AMEC (2007a, b, c) include the available empirical data from the site investigation conducted by the USEPA and information provided in published literature that may be used to refute the transport theories proposed by the USEPA. Based on the assessment of the available empirical data and the published literature, AMEC concluded that the transport theories espoused by the USEPA are unsupported. Additionally, there is some uncertainty regarding the extent of impacted soil and groundwater in the vicinity of monitoring well MW-05S. As discussed below, LEA conducted supplemental data gathering activities to further assess the USEPA's theories regarding the groundwater transport pathway, and to gather additional information on the extent of impacted soil and groundwater in the vicinity of monitoring well MW-05S.

2.4 Scope of Work

To further assess whether or not there is an ongoing source of dioxin discharging to the River from the area of monitoring well MW-05S, LEA installed three groundwater monitoring wells screened within the subsurface, overburden material. The monitoring wells, designated as MW-LEA-01, MW-LEA-02, and MW-LEA-03, were located as close as possible to the River, as shown in Drawing 2-1. Groundwater samples were obtained from these wells and from nearby monitoring well MW-05S. The monitoring wells were installed and sampled in accordance with the Scope of Work (SOW) presented to the USEPA under correspondence dated November 13, 2007, as subsequently amended to address the USEPA's November 21, 2007 comments. The amended SOW that was subsequently approved by the USEPA was presented in correspondence dated January 7, 2008, a copy of which is provided in Appendix A.

3. PURPOSE AND OBJECTIVES

The purpose and objectives of this report are to summarize the relevant CMRP data, including the recently-obtained data, and to evaluate these data in light of what is known about the fate and transport of dioxins in the environment as presented in the published literature. Specifically, in evaluating the data we seek to answer the following questions:

1. Do the data support the USEPA's theory that dioxins are being transported in groundwater as the result of cosolvency?; and

2. Do the data support the USEPA's theory that dioxins are being transported in groundwater as the result of colloid-facilitated transport?

An additional purpose of this report is to examine the remedial alternatives presented by the USEPA and Battelle at the April 23, 2007 Dialog Meeting in light of the information obtained from the implementation of the SOW. Specifically, the adequacy of the range of remedial alternatives under evaluation is discussed. Also, the accuracy of the relative cost information for implementing each such alternative in light of the presently known extent of impacted soil and shallow groundwater beneath the study area is discussed.

4. FIELD METHODS AND PROCEDURES

4.1 Monitoring Well Location

In accordance with the USEPA-approved SOW, LEA installed monitoring wells MW-LEA-01, MW-LEA-02, and MW-LEA-03 along the east embankment of the River at locations that would likely bound the extent of the area through which VOC-impacted groundwater arguably flows and discharges to the River (Drawing 2-1). The wells were located adjacent to the USGS vapor diffusion sample locations for which the highest concentrations of TCE and PCE were reported (VS-012, VS-013, VS-014, VS-015, and VS-016), and the SPMD locations for which the highest dioxin concentrations were reported (SPMD02, SPMD03, and SPMD04). Monitoring well MW-LEA-02 was located approximately 15 to 20 feet west of monitoring well MW-05S. Monitoring well MW-LEA-01 was located approximately 30 feet north of this monitoring well, and monitoring well MW-LEA-03 was installed approximately 30 feet south of this well location. The three monitoring wells were installed to evaluate groundwater conditions downgradient of monitoring well MW-05S.

4.2 Soil Boring Advancement

The wells were installed on January 31, 2008 and February 5, 2008 using hollow-stem auger (HSA) drilling techniques in accordance with LEA's *Standard Operating Procedure for Hollow-Stem Auger Soil Borings* and LEA's *Standard Operating Procedure for Installing and Developing Monitoring Wells and Piezometers* (Appendix B). At each monitoring well location, a soil boring was advanced by Geosearch, Inc. under the direct supervision of an LEA geologist. At the location for monitoring well MW-LEA-01, a soil boring was advanced to a depth of approximately 14 feet bgs; at monitoring well MW-LEA-02, a soil boring was advanced to a depth of approximately 12 feet bgs, and at monitoring well MW-LEA-03, a soil boring was advanced to a depth of approximately 10 feet bgs. The soil boring for monitoring well MW-LEA-01 was advanced to a depth of 14 feet bgs as requested by a field representative of the USEPA, following a discussion with the LEA geologist regarding the subsurface materials encountered at a depth of 10 to 12 feet bgs. The soil borings for monitoring wells MW-LEA-02 and MW-LEA-03 were completed at depths agreed upon by the field representative of the USEPA.

4.3 Soil Sampling

During the soil boring process, discrete samples were collected from each two-foot interval of subsurface materials penetrated with a stainless steel split-spoon sampling device so that the field

geologist could: (i) screen the samples for the presence of VOCs using a photoionization detector (PID); and (ii) prepare a field boring log documenting the visual classification of the soils encountered. The soils were classified using a modified Burmeister soil classification system in accordance with LEA's *Standard Operating Procedure for Geologic Logging of Unconsolidated Sedimentary Materials* (Appendix B). Copies of the Geologic Boring Logs are provided in Appendix C. The Geologic Boring Logs include the identification of fill material and/or contamination based on PID readings and visual and olfactory observations. Copies of the LEA Daily Field Report Forms are provided in Appendix D.

Each discrete soil sample was placed into containers supplied by the analyzing laboratory, Data/Analysis Technologies, Inc. of Plain City, Ohio (DAT). Each container was then labeled by field personnel with the sample identification, requested analysis, date and time of sample collection, and the sampler's initials. Once labeled, the samples were immediately placed on ice in coolers. To meet the objectives of the soil characterization process, a number of quality assurance/quality control (QA/QC) samples were obtained in accordance with LEA's *Standard Operating Procedure for Quality Assurance/Quality Control Measures for Field Activities* (Appendix B). The QA/QC samples included Performance Evaluation (PE) samples, field duplicate samples, and field equipment rinsate blank samples.

The soil and QA/QC samples from each boring were then shipped via overnight courier to DAT in coolers under custody seals and proper chain-of-custody documentation. The QA/QC and soil samples were submitted to the analyzing laboratory with a request that the samples be placed on hold DAT placed the samples on hold, and pending LEA's request to release select samples from hold based on PID readings, visual inspection of the subsurface materials, and/or the results of the groundwater samples that are collected from the monitoring wells, DAT was to analyze the samples for dioxins/furans using USEPA Method 8290A.

4.4 Monitoring Well Construction

At each boring location, a monitoring well was constructed of 1.5-inch diameter, Schedule 40, polyvinyl chloride (PVC) pre-packed (Vee-Pack™) screen, in which factory–installed ceramic beads fill the annulus between the inner (1.5-inch diameter) and outer (2.0-inch diameter) screen barrels. Each well includes a PVC end cap and a five-foot section of continuous-slot screen (0.012-inch slot Vee-Pack™) attached to which a section of 2-inch diameter PVC riser extends to approximately 2.5 feet above the ground surface. During the construction of each well, a secondary filter pack (20/40 mesh (0.33" – 0.016") sand) was placed within the annulus between the outer well screen and the borehole, from the base of the borehole to a minimum of two feet above the top of the well screen. Using bentonite chips, a seal was placed in the annulus above

the sand pack. The borehole was sealed to within two to three feet of the ground surface. The bentonite chips were hydrated with clean, potable water. The wells were completed at the surface within a protective sleeve of 4-inch outside-diameter (OD) steel casing set into two to three feet of concrete. The protective steel casing sticks up approximately two to three feet above the ground surface. The protective steel casing of each well is locked with a steel cover. Copies of the Well Completion Logs are provided in Appendix C.

4.5 Monitoring Well Development

On February 8, 2008, monitoring wells MW-LEA-01, MW-LEA-02, MW-LEA-03, and MW-05S were developed in accordance with LEA's *Standard Operating Procedure for Installing and Developing Monitoring Wells and Piezometers* (Appendix B). In accordance with this procedure, an effort was made to clear the screened interval of each well and the surrounding filter pack of fine material using a surge block and pump. Throughout the well development process, the following geochemical parameters for groundwater were recorded to evaluate the formation water entering the monitoring well: temperature, pH, and turbidity. The specific conductance of the groundwater purged from each well could not be recorded due to a malfunctioning conductivity probe. Each well was purged dry during the development process. Following groundwater recovery, each well was subsequently surged and pumped dry again. Copies of the LEA Daily Field Report Forms documenting the monitoring well development process and the recorded groundwater parameters are provided in Appendix D.

4.6 Monitoring Well Survey

Guerriere & Halnon, Inc., a licensed land surveyor certified by the State of Rhode Island surveyed the locations of the newly installed monitoring wells relative to the existing site features and existing monitoring wells installed at the CMRP. The elevation of the top of the PVC casing of each monitoring well was surveyed relative to the existing datum and monitoring well network. The survey data were used to evaluate the general direction of groundwater flow in the vicinity of monitoring well MW-05S and the newly installed monitoring wells.

4.7 Groundwater Sampling

On February 25, 2008, depth-to-water measurements were recorded at each newly installed well and at existing nearby monitoring wells GEC-2, GEC-3, GEC-4, GEC-5, GEC-6, GEC-7, MW-05S, MW-6, MW-14M, and MW-15D. The depth to the surface water was also measured from the River staff gauge located along the west embankment of the River. As provided by the USEPA, monitoring wells GEC-2 and GEC-7 have since been abandoned by Brook Village Associates Limited Partnership (Brook Village). These two wells were installed by Brook

Village to assess impacts to the subsurface from their underground storage tank fuel oil storage operations. The depth-to-water measurements were obtained to calculate groundwater elevations in the area of investigation using the monitoring well top of PVC casing elevation data.

Once the depth-to-water was recorded at the monitoring wells, groundwater samples were obtained from monitoring wells MW-LEA-01, MW-LEA-02, MW-LEA-03, and MW-05S using low-flow sampling techniques in accordance with LEA's *Standard Operating Procedure for Low Flow (Low Stress) Liquid Sample Collection and Field Analysis* (Appendix B). Consistent with this procedure, a peristaltic pump and dedicated tubing were used to pump groundwater from the mid-section of the saturated, screened interval of each well. Groundwater was then pumped from the wells into a flow-through cell, and the following geochemical parameters for groundwater were recorded: pH, temperature, specific conductance, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity. Measurements of these parameters were recorded approximately every ten minutes until the parameters stabilized, or for a minimum of two hours or until the well pumped dry. Stabilization was generally considered to be achieved when three consecutive readings were within the following limits: pH ± 0.1 units; temperature (± 3 percent (%)); specific conductance (± 3%); dissolved oxygen (± 10%); ORP (± 10 millivolts); and turbidity (± 10% and below 10 nephalometric turbidity units (NTUs)). The groundwater pumping and sampling process was focused on obtaining groundwater samples that were as turbid-free and clear as possible. The parameters were recorded on the Field Sampling Record Forms provided in Appendix D.

Once purged, groundwater samples were collected directly from the pump discharge tubing into pre-preserved containers supplied by the analyzing laboratories, DAT and Averill Environmental Laboratory, Inc. of Plainville, Connecticut (AEL). One field-filtered and one unfiltered groundwater sample were collected from each of the wells for laboratory analysis. One duplicate set of groundwater samples was obtained from monitoring well MW-LEA-02. First, the unfiltered samples were obtained and then, using a 0.45 micron in-line filter, the filtered samples were collected.

Each container was then labeled by field personnel with the sample identification, requested analysis, preservative, date and time of sample collection, and the sampler's initials. Once labeled, the samples were immediately placed on ice in coolers.

To meet the objectives of the shallow groundwater characterization process, a number of QA/QC samples were obtained in accordance with LEA's *Standard Operating Procedure for Quality Assurance/Quality Control Measures for Field Activities* (Appendix B). The QA/QC samples

included double-blind PE samples, field duplicate samples, trip blank samples, and field equipment rinsate blank samples.

The groundwater and QA/QC samples were then shipped via overnight courier to DAT and AEL, as appropriate, in coolers under custody seals and proper chain-of-custody documentation.

4.8 Decontamination of Field Equipment and Materials

All field equipment and materials that were used during the groundwater investigation activities consisted of clean, disposable materials or were decontaminated prior to introducing the equipment and materials into the ground at each monitoring well location. The field equipment decontamination procedures are included in the Standard Operating Procedures (SOPs) presented in Appendix B. The purpose of using standard decontamination procedures was to prevent the potential spread of contamination at monitoring well locations, thereby preventing the extraneous introduction of contamination at a sampling location. During soil boring advancement, soil sampling, and monitoring well installation procedures, the decontamination process involved steam cleaning the hollow-stem augers and the down-hole drilling tools in a decontamination tub. The stainless steel split-spoon sampling device was decontaminated by washing this tool with a phosphate-free detergent and rinsing the tool with de-ionized water. The field decontamination process used during monitoring well development and sampling activities involved the use of a portable decontamination system consisting of decontamination solutions in individual spray containers and a small, portable trough to contain decontamination fluids.

The well development and sampling equipment was decontaminated using the following general procedure:

- Wash and scrub the sampling equipment with a phosphate-free detergent.
- Rinse the equipment with de-ionized water.
- Rinse the equipment with a dilute methanol/water solution.
- Rinse the equipment with de-ionized water.
- Allow the sampling equipment to air dry.

4.9 Management of Investigation-Derived Waste

During the course of the shallow groundwater investigation activities, soil drill cuttings and groundwater purged from the monitoring wells were containerized in 55-gallon drums. Additionally, detergent-containing waters were generated during the decontamination of sampling equipment. These investigation-derived wastes (IDW) were properly containerized in

four separate 55-gallon drums. The drums were properly labeled as either "soil drill cuttings", "monitoring well purge water", or "decontamination fluids", as appropriate. The label on each drum was used to identify the date of containerization and the location from which the material was derived. The 55-gallon drums were stored on Cap No. 1, behind the locked gate of the chain-linked fence, pending transportation to an approved off-site disposal facility.

To characterize the IDW for off-site disposal, one composite sample was collected from the two drums containing the soil drill cuttings. This sample was composited from one grab sample collected at depths of 1/3 and 2/3 into the soil contained within each drum. The grab samples were mixed in a stainless steel bowl to provide a homogenous sample that was placed into containers supplied by DAT. The sample container was then labeled by field personnel with the sample identification, requested analysis, date and time of sample collection, and the sampler's initials. Once labeled, the containers were immediately placed on ice in coolers. The composite sample of the soil drill cuttings was shipped via overnight courier to DAT in coolers under custody seal and proper chain-of-custody documentation.

5. LABORATORY ANALYTICAL METHODS

5.1 Soil and Associated QA/QC Samples

The composite sample of the soil drill cuttings was analyzed by DAT for dioxins/furans using USEPA Method 8290A. The soil samples collected at each soil boring location and the corresponding QA/QC samples were not released from hold, and therefore were not analyzed.

5.2 Groundwater and Associated QA/QC Samples

The unfiltered groundwater samples were analyzed by DAT for dioxins/furans using USEPA Method 8290A. In addition, the unfiltered groundwater samples were analyzed by AEL for VOCs using USEPA Method 8260C; for Total Suspended Solids (TSS) using USEPA Method 160.2; and for Total Dissolved Solids (TDS) using USEPA Method 160.1. The filtered groundwater samples were analyzed by DAT for dioxins/furans using USEPA Method 8290A, and for TDS by AEL using USEPA Method 160.1.

Analyzing the filtered groundwater samples with a 0.45 micron filter would provide data indicative of the dissolved fraction and thus a tool to assess whether or not cosolvency is occurring at the CMRP. Evidence that the cosolvency-effect is not occurring would be provided by laboratory results of filtered groundwater samples that show that dioxins are not present. The presence of dioxin in the filtered groundwater samples, however, would not necessarily indicate that dioxins are dissolved if undisturbed, turbid-free groundwater samples are not obtained. In that event, the presence of dioxins may be attributed to dioxin compounds that are adsorbed to particles not normally in suspension but which are present in the groundwater sample due to the disturbance of the groundwater during the sampling process.

The QA/QC samples obtained at the time of groundwater sampling were analyzed for the same parameters for which the corresponding groundwater samples were analyzed: The PE samples were analyzed for dioxins/furans using USEPA Method 8290A; the trip blank samples were analyzed for VOCs using USEPA Method 8260C; and equipment rinsate blank samples were analyzed by DAT for dioxins/furans using USEPA Method 8290A, and by AEL for VOCs using USEPA Method 8260C, TSS using USEPA Method 160.2, and TDS using USEPA Method 160.1.

6. LABORATORY ANALYTIC DATA QUALITY ASSURANCE REVIEW

The laboratory analytical data generated from the dioxin/furan and VOC analyses were subjected to third-party data validation by Environmental Standards, Inc. of Valley Forge, Pennsylvania (ES), to whom comprehensive Contract Laboratory Program (CLP)-like raw data packages were provided by each laboratory. The dioxin/furan data were validated by ES at a Tier III or full validation level using guidance from the *National Functional Guidelines for Chlorinated Dioxin and Furan Data Review* (USEPA, 2005). The VOC data were validated by ES at a Tier III or full validation level using guidance from the *Region 1, EPA – New England Data Validation Functional Guidelines for Evaluating Environmental Analysis* (USEPA 1996).

As part of the laboratory analytical data QA review, the data were evaluated to assess the usability of the analytical results and compliance relative to SW-846 Method 8290A and SW-846 Method 8260C, as appropriate. In addition, the deliverables prepared according to the CLP-like data packages were evaluated by ES. Based on the evaluations performed by ES, data quality issues for specific samples and specific evaluation criteria were identified. Organic data qualifiers were assigned to laboratory analytical results where necessary to assess the qualitative and/or quantitative reliability of the results based on the criteria evaluated.

7. RESULTS

7.1 Subsurface Soil

As shown in the Geologic Boring Logs provided in Appendix C, the subsurface materials encountered during the advancement of the monitoring well borings consist generally of unsorted silt, sand and gravel with trace amounts of anthropogenic debris to a depth of approximately six feet bgs. Anthropogenic material identified in these deposits included wood, geotextile fabric, glass, and concrete. In general, loose to very dense, fine-grained to coarse-grained sand and sub-angular to sub-rounded gravel are found underlying these deposits.

At depths ranging from approximately four to thirteen feet bgs, dark brown and black discoloration and staining are imparted to the sand and gravel deposits. The highest field PID measurements were recorded for the soil samples obtained from these deposits. A maximum PID reading of 395 parts per million (ppm) total ionizable VOCs, relative to an isobutylene standard of 100 ppm, was recorded for monitoring well MW-LEA-01 at a depth of 8 to 10 feet bgs. A PID reading of 249 ppm total ionizable VOCs, relative to an isobutylene standard of 100 ppm, was recorded for monitoring well MW-LEA-02 at a depth of 8 to 10 feet bgs. The PID responses for the soil samples screened below these samples decrease with depth. Light brown to dark white fine to coarse sand and sub-angular to rounded gravel deposits exist below these stained deposits. The soil samples obtained from the boring advanced for monitoring well MW-LEA-03 did not exhibit a PID response.

A summary of the sampling and analytical information for the composite sample obtained from the soil drill cuttings IDW is provided in Table 6-1. The laboratory analytical results for this sample are presented in Table 6-2. A summary of the laboratory results and the corresponding toxicity equivalent factors (TEFs) and toxicity equivalents (TEQs) is provided in Table 6-3. As shown in Tables 6-2 and 6-3, a number of polychlorinated dibenzodioxin (PCDD) and polychlorinated dibenzofuran (PCDF) compounds were detected in the composite soil sample.

The congeners detected in this sample include: 2,3,7,8-TCDD; 2,3,4,7,8-PeCDF; OCDF; 1,2,3,4,7,8,9-HpCDF; 1,2,3,6,7,8-HxCDD; and OCDD. The 2005 World Health Organization (WHO) TEFs were used to calculate the TEQs. The congener contributing the most to the TEQ was reported to be 2,3,7,8-TCDD, for which a TEQ concentration of 40 micrograms per kilogram (µg/kg) was reported. However, the laboratory result for 2,3,7,8-TCDD was qualified by ES as estimated due to a high surrogate recovery and a high continuing calibration percent difference coupled with increasing instrument sensitivity.

7.2 Groundwater Elevations

On February 25, 2008, groundwater at the site was observed at depths ranging from approximately 2.6 feet bgs (GEC-7) to 8.0 feet bgs (MW-LEA-01). Groundwater elevations were calculated from the depth-to-water measurements and top-of-casing elevations for each well. The groundwater elevations are provided in Table 6-4. Using a site plan as a base map, the groundwater elevations were contoured as depicted in Drawing 6-1. The groundwater elevation contours outside the area of the Brook Village parking lot that are depicted in this drawing represent May 4, 2001 data obtained by Tetra-Tech NUS (2001) as presented in Figure 3-12 of the Report (Battelle 2005). Groundwater is assumed to flow perpendicular to the contour lines from areas of higher groundwater elevation to areas of lower groundwater elevation. As shown in Drawing 6-1, there appears to be a hydraulic mounding affect surrounding piezometer P-2. The cause of this mounding affect is unknown. Based on the data collected, shallow groundwater appears to flow from monitoring well MW-05S toward the River.

7.3 Groundwater Data

7.3.1 Groundwater Geochemical Data

A summary of the geochemical parameters recorded just prior to collecting the groundwater samples is provided in Table 6-5. The laboratory results for the analyses for TSS and TDS are also summarized in this table. Copies of the AEL laboratory reports provided for the analysis for TSS and TDS are included in Appendix E.

As shown in Table 6-5, the highest TDS concentrations were reported for the groundwater samples obtained from monitoring well MW-LEA-02. The TDS concentrations for the duplicate pair of samples obtained from this well were reported to be 730 milligrams per liter (mg/l) and 760 mg/l for the field-filtered samples and 740 mg/l and 720 mg/l for the unfiltered samples. were reported to contain relatively high concentrations of TSS. The TSS concentrations in the duplicate pair of groundwater samples obtained from monitoring well MW-LEA-02 were reported to be 2 mg/l and 11.2 mg/l. The range in reported concentrations is believed to be due to the limited yield of the well, and the fact that groundwater within the well was drawn down and the well was dewatered during the sampling process. These conditions resulted in a significant disturbance to the water column within the well, the well screen annulus and the surrounding formation, which increased the variability of the resulting groundwater chemistry.

The turbidity of the groundwater at the time of sampling at monitoring well MW-LEA-02 is indicative of the disturbance to the formation materials surrounding the well. A turbidity value of 13 NTUs was reported for the groundwater sample obtained from this well location and

turbidity measurements were recorded at values greater than approximately 22 NTUs prior to the final measurement at the time of sampling.

Also, it is believed that the limited yield of monitoring well MW-LEA-02 resulted in the relatively high TDS, TSS, and turbidity values recorded for groundwater at this location. In other words, the values are believed to be an artifact of the groundwater sampling process and not representative of undisturbed groundwater. During the sampling process, the volume of groundwater collected for the desired analyses and the limited yield of the well resulted in drawing down the groundwater and dewatering the well, necessitating that the full sample volume be collected upon recharge of the well. This confluence of factors contributed to the relatively high turbidity, TSS, and TDS values recorded for groundwater at this well location.

The temperature measurements that were recorded are not indicative of groundwater temperature as they were affected by the ambient air temperature at the time of sampling.

7.3.2 Volatile Organic Compound Data

A summary of the sampling and analytical information for the groundwater samples obtained from monitoring wells MW-LEA-01, MW-LEA-02, MW-LEA-03, and MW-05S is provided in Table 6-6. A summary of the VOCs detected in groundwater is provided in Table 6-7. Copies of the DAT laboratory analytical reports are provided in Appendix F. As noted in Section 7.4.2.2, below, the reported concentrations of VOCs were qualified by ES.

As shown in Table 6-7, VOCs were detected in each of the groundwater samples collected. The highest concentrations of VOCs were detected in the groundwater sample collected from monitoring well MW-LEA-01. A PCE concentration of 160,000 µg/l was reported for the groundwater sample obtained from this well. The total concentration of VOCs detected in this sample was 203,000 µg/l. Other VOCs detected in the sample obtained from monitoring well MW-LEA-01 include cis-1,2-DCE, reported to be present at a concentration of 16,000 µg/l, and TCE, reported to be present at a concentration of 27,000 µg/l. Lower concentrations of these VOCs were detected in the samples collected from monitoring wells MW-05S and MW-LEA-02. The sample collected from monitoring well MW-LEA-03 was reported to contain a PCE concentration of 590 µg/l; however, cis-1,2-DCE and TCE were not detected in this sample.

As shown in Table 6-7, only chlorinated VOCs were detected in the groundwater sample obtained from monitoring well MW-LEA-03. No water-miscible compounds such as acetone or methyl ethyl ketone were detected, indicating that a truly mixed solvent system is not present in the shallow groundwater in this area of the CMRP. Thus, a decrease in the sorption coefficient

and retardation factor or an increase in the solubility of the dioxins would not be expected as might occur in a truly mixed solvent system (AMEC 2007b)

7.3.3 Dioxin/Furan Data

A summary of the dioxins/furans detected in groundwater is provided in Table 6-8 along with the corresponding TEFs and TEQs. Copies of the DAT 8290A laboratory analytical reports are provided in Appendix F. As noted in Section 7.4.2.2, below, the reported concentrations of dioxins/furans were qualified by ES.

As shown in Table 6-8, 2,3,7,8-TCDD was detected in each of the unfiltered groundwater samples at concentrations ranging from 68 pg/l (MW-LEA-01) to 6,154 pg/L (MW-LEA-02). Also, 2,3,7,8-TCDD was detected in the duplicate pair of field-filtered samples obtained from monitoring well MW-LEA-02 (727 pg/l and 288 pg/l). Dioxins were not detected in the field-filtered samples obtained from monitoring wells MW-LEA-01, MW-LEA-03, or MW-05S.

7.4 Quality Assurance/Quality Control Data Summary

7.4.1 Quality Control Data Summary

With regard to the soil laboratory analytical results, the recoveries presented in the laboratory analytical report for the matrix spike (MS) and matrix spike duplicate (MSD) samples were within the control limits of the method. The analyte 2,3,7,8-TCDD was apparently not uniformly dispersed within the sample and led to sample MS and MSD results that were not comparable. The laboratory control spikes were within limits and the internal standard recoveries and internal standard ion ratios met the QC guidelines in USEPA Method 8290A.

A summary of the sampling and analytical information for the field QC samples analyzed is provided in Table 6-9. A summary of the results reported for the field duplicate samples obtained from monitoring well MW-LEA-02 is provided in Table 6-10. The VOC results for the duplicate pair of unfiltered groundwater samples were greater than five times (>5x) the lowest calibration standard concentration and the relative percent difference (RPD) was greater than 20 percent. The 2,3,7,8-TCDD results for both samples of each of the filtered and unfiltered field duplicate pair of groundwater samples were greater than five times (>5x) the lowest calibration standard concentration and the relative percent difference (RPD) was greater than 20 percent. Thus, the laboratory precision is considered to be outside the acceptable range provided by the USEPA guidance, and the positive results for the VOCs and the 2,3,7,8-TCDD in the field duplicate pairs should be considered estimated. Accordingly, the results have been flagged "J" by ES. These findings do not affect the overall usability of the data for meeting the objectives of

the investigation: to assess whether or not dioxins are being transported in groundwater as the result of cosolvency or colloid-facilitated transport.

A summary of the constituents detected in the trip blank and field equipment blank samples is provided in Table 6-11. The field samples associated with these QC samples have been qualified appropriately by ES, as documented in the ES Quality Assurance Review Reports provided in Appendix G.

The double-blind groundwater PE sample provided to DAT for 8290A analysis was obtained from Environmental Resource Associates® (ERA). This PE sample was provided by ERA with a 2,3,7,8-TCDD certified value of 3,010 pg/l and Performance Acceptance Limits™ (PALs) ranging from 2,290 pg/l to 3,460 pg/l. A copy of the ERA certification documentation for this PE sample is provided in Appendix H. The PE sample was submitted to DAT with the appearance of a field sample; the PE sample was submitted to DAT as both an unfiltered and a filtered groundwater sample. A summary of the sampling and analytical information for the PE samples analyzed is provided in Table 6-12.

A summary of the dioxins/furans detected in the PE samples is provided in Table 6-13. A 2,3,7,8-TCDD concentration of 5,101 pg/l was reported by DAT for the PE sample analyzed with the unfiltered groundwater samples. This concentration exceeds the upper acceptance limit of this sample (3,460 pg/l). Accordingly, the positive results for 2,3,7,8-TCDD in all unfiltered groundwater samples are considered to be estimated and have been flagged "J" by ES. A 2,3,7,8-TCDD concentration of 2,850.55 pg/l was reported by DAT for the sample analyzed with the filtered groundwater samples. This result is within the PALs of the sample. Thus, the results for the associated filtered groundwater samples were not qualified. The PE sample findings do not affect the overall usability of the data for meeting the objectives of the investigation.

Based on the data obtained for the quality control samples, LEA assessed the analytical results to be usable for the objectives of the investigation.

7.4.2 Quality Assurance Data Summary

7.4.2.1 Soil Laboratory Analytical Results

Based on the validation of the soil composite and associated QC samples, ES reported that overall the majority of the analytical data are acceptable for use as reported by DAT. ES concluded the data quality for the PCDD/PCDF compounds is generally acceptable; however, there were several aspects of the data that required qualification:

- The result for 2,3,7,8-TCDD was qualified as estimated due to a high surrogate recovery and a high continuing calibration percent difference coupled with increasing instrument sensitivity.

- The results for several PCDD/PCDF compounds were qualified as Estimated Maximum Possible Concentrations due to out-of-criteria ion abundance rations.

- All positive results reported with concentrations less than the concentration of the lowest calibration standard were qualified as estimated

7.4.2.2 Groundwater Laboratory Analytical Results

Based on the validation of the groundwater and associated QC samples, ES concluded that the quality of the data generated from the 8260C analyses was generally adequate; however, the following qualifications were made:

- The results for several compounds in several samples were rejected because the compounds were not recovered in the associated laboratory control samples.

- The positive results for several compounds in several samples should be considered to be "not detected" due to laboratory and equipment blank contamination.

- The reported positive results for several compounds in several samples were qualified as estimated due to calibration issues, low matrix spike recoveries, and field duplicate imprecision.

- The reported positive results for several compounds in several samples should be considered estimated due to undiluted and diluted analysis results' imprecision and quantitation that exceeded the instrument calibration range.

- All reporting limits were raised to the level of the low concentration standard in the initial calibration (with sample-specific dilution adjustments).

Based on the validation of the groundwater and associated QC samples, ES concluded that the quality of the data generated from the 8290A analyses was generally acceptable; however, the following qualifications were made:

- The results for a few PCDD/PCDF compounds in several unfiltered samples were qualified due to blank contamination.

- The results for 2,3,7,8-TCDF in all filtered samples were qualified as estimated due to low recoveries in the laboratory control sample and MS/MSD analyses.

- The results for 2,3,7,8-TCDD in all unfiltered samples were qualified as estimated due to a high performance evaluation sample result.

- The results for 2,3,7,8-TCDD in the filtered and unfiltered field duplicate pair were qualified as estimated due to field duplicate imprecision.

- The results for several PCDD/PCDFs in several samples were qualified as estimated due to high continuing calibration percent differences coupled with decreasing instrument sensitivity.

- All positive results reported with concentrations less than the concentration of the lowest level calibration standard were qualified as estimated.

Based on the results of the quality assurance reviews of the analytical results and CLP-like data packages, the sample analytical results were assessed to be usable for the objectives of the investigation that were presented in Section 3.

8. EVALUATION OF RESULTS

8.1 Cosolvency

The data obtained for monitoring well MW-LEA-01 do not support the USEPA's conceptual model that TCE and/or PCE are acting as a cosolvent, and, thereby increasing the ability of dioxin to dissolve in water, resulting in larger amounts of 2,3,7,8-TCDD in groundwater that may mobilize toward the River. The unfiltered groundwater sample obtained from monitoring well MW-LEA-01 was reported to contain the highest concentration of PCE (160,000 µg/l) and the lowest dioxin TEQ concentration (68 pg/l). More importantly, dioxins were not detected in the filtered groundwater sample obtained from this well.

Although the concentration of PCE in the sample collected from monitoring well MW-05S, 40,000 ug/l, is not as high as the PCE concentration reported for monitoring well MW-LEA-01, it is moderately high compared to the results of samples previously collected from this well. Similar to monitoring well MW-LEA-01, 2,3,7,8-TCDD was detected in the unfiltered sample from MW-05S (339 pg/l), but it was not detected in the filtered sample.

If cosolvency were occurring at the CMRP, this effect most likely would be observed at monitoring well MW-LEA-01 and/or monitoring well MW-05S because the groundwater samples obtained from these wells were reported to contain the highest concentrations of PCE and TCE. Evidence of the cosolvency-effect would be identified by higher concentrations of dioxin indicating larger amounts of dioxin dissolved in groundwater. Also, little to no difference in dioxin concentrations between the unfiltered and filtered samples would be expected. If the dioxin were dissolved, it would not be particle-bound, but rather in solution and in equilibrium with the particle-bound fraction and freely able to pass through the field filter.

In reviewing the results presented in Table 6-8 for the samples obtained from monitoring wells MW-LEA-01 and MW-05S, it is shown that dioxins were not detected in the field-filtered groundwater samples obtained from these monitoring wells. Thus, elevated levels of VOCs do not correlate with elevated levels of dioxins dissolved in groundwater that are allegedly subject to increased mobility and transport. The groundwater data obtained from these wells support the position cited in the technical, peer-reviewed and published literature summarized by AMEC (2007b): in the absence of a very high concentrations of water-miscible compound such as

acetone, there is no increased ability of dioxins or other hydrophobic organic compounds to dissolve in water, and there is no increased potential for migration. The laboratory data provide evidence that dioxins are not dissolved in groundwater at monitoring wells MW-LEA-01 and MW-05S or at monitoring well MW-LEA-03. Therefore, these data may be used to support the theory that cosolvency is not occurring at monitoring wells MW-LEA-01 and MW-05S, and most undoubtedly is not occurring at the CMRP.

Although dioxins were detected in the field-filtered sample obtained from monitoring well MW-LEA-02, it is unlikely that cosolvency is occurring at this location because the concentrations of chlorinated VOCs were reported to be equal to or less than those reported for monitoring wells MW-LEA-01 and MW-05S. Based on the data for the field-filtered groundwater samples obtained for monitoring wells MW-LEA-01 and MW-05S, cosolvency is not occurring. Thus, at monitoring well MW-LEA-02, where concentrations of chlorinated VOCs were reported to be equal to or less than those reported for monitoring wells MW-LEA-01 and MW-05S, it is reasonable to conclude that cosolvency similarly is not occurring.

8.2 Colloid-Facilitated Transport

As discussed, the concentration of dioxin reported to be present in the filtered samples obtained from monitoring well MW-LEA-02 is believed to represent dioxin that passed through the filter while bound to particles suspended in groundwater. This belief is predicated upon the concentrations of TSS and TDS reported for the groundwater samples obtained from this well, the field-measured turbidity of the groundwater at the time of sampling, and the documented behavior of dioxins in the environment (EPA 2006). The degree of suspended particles in a groundwater sample is measured by the turbidity of the groundwater. A turbidity value of 13 NTUs was recorded for groundwater at monitoring well MW-LEA-02. This relatively high turbidity value is believed to be due to the disturbance to the formation caused by the groundwater sampling process, which resulted in the suspension of particles in the groundwater as documented by the relatively high TSS values reported for the samples obtained from this well.

The dioxin concentrations reported for the filtered samples obtained from monitoring well MW-LEA-02 represent the dissolved fraction, the particle-bound fraction, or both. Most, if not all, dioxin occurring in water will adhere to sediments and suspended silts. If any 2,3,7,8-TCDD

is dissolved in groundwater, it will tend to come out of solution and sorb onto the fine soil particles that comprise the till and fill materials within the subsurface at the CMRP. Moreover, it is likely that the soil through which groundwater is flowing would impede the movement of colloids.

The presence of dioxins in groundwater at monitoring well MW-LEA-02 does not support the USEPA's theory that dioxins are mobilizing to the River from monitoring well MW-05S. As discussed above, the presence of dioxins is believed to be attributed to the suspension of immobile particles during the groundwater sampling process. Under undisturbed conditions, these particles would not be dissociated from the formation and suspended in groundwater.

If particle-bound dioxin were being transported via groundwater, then the SPMDs that were buried in the sediment would not be a tool that could be used to detect their presence. As pointed out by AMEC (2007c), SPMDs have been shown to exclude colloidally-bound dioxin and to only adsorb soluble chemicals. As discussed above, dioxins are not dissolved in groundwater that is discharging to the River. Thus, the dioxin concentrations reported by the USEPA for the SPMD samples must be due to the extraneous introduction of sediment into the SPMD samples. The only other manner in which dioxins could enter the SPMD samplers buried in the sediment would be if colloidal-bound material desorbed from the colloid, became freely soluble in groundwater, and then was taken up by the SPMD. This mass transformation process is very highly unlikely to have occurred. Thus, we conclude that the data from the SPMDs buried in the sediment have little utility other than to corroborate that the river sediment contains elevated 2,3,7,8-TCDD, which is known from the collocated sediment samples. More specifically, the data from the SPMDs buried in sediment cannot be used to assess the presence of compounds bound to colloids.

8.3 Expanded Area of Impacted Soil and Groundwater

As discussed above, the presence of dioxins in groundwater at monitoring well MW-LEA-02 does not necessarily signify, in any sense, that dioxins are mobilizing through cosolvency or colloid-facilitated transport to the River, as the USEPA contends. However, if cosolvency and colloid-facilitated transport are not occurring, then what transport mechanisms account for the discharge of dioxins to the River? The simple answer is none. There are no transport mechanisms to account for the mobility of dioxins because dioxins are not discharging to the River. Rather, based on the field observations and laboratory results, dioxins detected in the groundwater samples collected from monitoring well MW-LEA-02 and the other newly-installed

monitoring wells represent the concentrations of dioxins present beneath an area that extends significantly beyond the immediate vicinity of monitoring well MW-05S. This theory of an expanded area of contaminated subsurface is supported by the data and is consistent with what is known about the fate and transport of dioxins and other hydrophobic organic compounds in the environment. This belief is predicated upon the following:

1. Field Observations: Dark stains were observed to be imparted to the subsurface materials encountered during the installation of monitoring well MW-LEA-01 and monitoring well MW-LEA-02 at depths ranging from approximately four feet to twelve feet below the ground surface (bgs). The subsurface materials encountered at these depths were observed to exhibit the maximum photoionization detector (PID) readings at these well locations. A maximum PID reading of 395 parts per million (ppm) total ionizable VOCs relative to an isobutylene standard of 100 ppm was recorded for monitoring well MW-LEA-01 at a depth of 8 to 10 feet. A PID reading of 249 ppm total ionizable VOCs relative to an isobutylene standard of 100 ppm was recorded for monitoring well MW-LEA-02 at a depth of 8 to 10 feet bgs. These field observations suggest that the study area is not defined by the conditions observed at monitoring well MW-05S; rather, it extends at least to monitoring wells MW-LEA-01 and MW-LEA-02. The extent of this area to the north, east and south is still unknown.

2. Laboratory Results for Groundwater - VOCs: Based on the laboratory results, the concentrations of VOCs reported for the groundwater samples obtained from monitoring wells MW-LEA-01 and MW-LEA-02 are some of the highest concentrations reported for groundwater at the CMRP. The maximum PCE concentration reported for the groundwater samples collected from monitoring well MW-05S was 61,000 µg/l. This concentration is less than the PCE concentration reported for the groundwater sample obtained from monitoring well MW-LEA-01 (160,000 µg/l). Based on these data and the field observations noted above, the study area is not defined by conditions observed at monitoring well MW-05S; rather, it extends at least to wells MW-LEA-01 and MW-LEA-02.

3. Laboratory Results for Groundwater – Dioxins: Further, the study area is not defined by the dioxin concentrations reported for monitoring well MW-05S. Based on the

laboratory results, the dioxin concentrations reported for the unfiltered groundwater samples obtained from monitoring well MW-LEA-02 (2,743 pg/l and 6,154 pg/l) exceed or are within the range of concentrations measured in unfiltered groundwater samples obtained from monitoring well MW-05S (4,180 pg/l; 4,144 pg/l; 1,460 pg/l; and 1,030 pg/l). Thus, the study area extends at least to monitoring well MW-LEA-02.

Laboratory Results for Soil – Dioxins: The dioxin TEQ concentration of 39,888 ng/kg reported for the composite soil sample is comparable to the dioxin TEQ concentrations reported by the USEPA for the study area. As provided in the RI, and summarized in Section 3.2, dioxin TEQ concentrations above 1,000 ng/kg were found at depth in soil samples obtained from soil boring CMS-451 (140,000 ng/kg at 4 to 6 feet bgs) and the borings for monitoring wells MW-05S (20,455 ng/kg at 4 to 6 feet bgs), CMS-453 (11,000 ng/kg and 42,900 ng/kg at 3 to 4 feet bgs, and 62,000 ng/kg at 6 to 7 feet bgs) and MW-15D (2,645 ng/kg). Based on the dioxin concentration of the composite sample collected from the soil drill cuttings generated during the installation of monitoring wells MW-LEA-01, MW-LEA-02, and MW-LEA-03, and on the field observations for boring MW-LEA-02, it is reasonable to assume that the soil cuttings from the installation of monitoring well MW-LEA-02, where the highest concentrations of dioxin was detected in groundwater, contributed significantly to the overall concentration of dioxin in the composite sample. Moreover, it is believed that monitoring well MW-LEA-02 is installed in an area defined by elevated dioxin concentrations similar to the area of monitoring well MW-05S.

For the reasons enumerated above, the presence of dioxins in groundwater at monitoring well MW-LEA-02 does not signify that dioxins are mobilizing toward the River from monitoring well MW-05S. Rather, the data indicate that the study area is not limited to the area around monitoring well MW-05S, but extends beyond the area of this well, and, at a minimum, includes the area of monitoring well MW-LEA-02. Moreover, the USEPA's theory of colloid-facilitated transport does not comport with what is known about the behavior of dioxins in the environment. Dioxins occurring in the subsurface have a strong affinity to bind to soil particles. Thus, a more likely scenario, and one that is as equally well supported by the data, is that the dioxin-bound particles are immobile and will not move from the study area.

8.4 Summary of Evaluation

The CMRP data do not support the USEPA's alternative theory that dioxins have mobilized from the study area through colloid-facilitated transport. The data clearly do demonstrate that cosolvency is not occurring in this area of the CMRP, and, that the study area extends beyond monitoring well MW-05S to the area of monitoring well MW-LEA-02. Given that monitoring well MW-LEA-02 appears to be in the study area and that the suspended particle content of the groundwater samples obtained from this well are attributable to the sampling process, it is inappropriate for the USEPA to rely on the groundwater data from monitoring well MW-LEA-02 to support its theory that groundwater is a migration pathway of dioxin by means of colloid-facilitated transport. Based on what is known about the behavior of dioxin in the environment, it is far more likely that the dioxin reported to be present in the groundwater in this area of the CMRP is particle-bound and immobile.

9. IMPLICATIONS OF DATA ON REMEDIAL ALTERNATIVES

In light of the expanded study area discovered by conducting the supplemental sampling program, the USEPA's cost estimates for the remedial alternatives under consideration are too low and do not reflect the actual cost of implementing any of those alternatives. For instance, the USEPA estimated the dewatering and excavation alternative at $2.2 million. This estimate is based on the excavation of soil to approximately four feet below the ground surface, and the removal of approximately 3,400 cubic yards of soil. Based on the data that reveal an expanded study area, it is estimated that the potential cost to implement the dewatering and excavation remedy could be as high as $20 million, nearly an order of magnitude higher than that estimated by the USEPA. Therefore, it is inappropriate to use the estimated costs in evaluating the remedial alternatives for this area of the CMRP, or to screen-out other potential alternatives.

If other potential remedial alternatives were to be evaluated, the remedial costs in this area could be substantially less considering that the data show that dioxins are not being mobilized to the River through cosolvency or colloid-facilitated transport. The dioxin-impacted soils in this area of the CMRP are not any different than impacted soils at adjacent areas that have been capped (Cap No. 1 and Cap No. 2). Accordingly, the soils in the expanded study area should not be addressed any differently than the impacted soils beneath Cap No. 1 and Cap No. 2. Therefore, the range of remedial alternatives being evaluated by the USEPA for shallow groundwater should be expanded to include the capping alternatives that the USEPA already has implemented or is considering for other action areas of the CMRP.

For example, the universe of potential remedial alternatives for shallow groundwater in this area of the CMRP should be expanded to include a limited excavation and capping alternative; a far more cost-effective alternative that is equally as protective of the environment as the USEPA's dewatering and excavation alternative. The elements of such a remedial alternative would include the following steps: (i) incorporate a restriction on the future use of groundwater; (ii) remove impacted soil along the potential discharge area of the east embankment of the River and place the soil in the proposed nearshore confined disposal facility; and (iii) cap the remaining source area. This proposed alternative is consistent with the capping approach selected by the USEPA and implemented at the adjacent areas of the site (Cap No. 1 and Cap No. 2). Moreover, the cost to implement this alternative is estimated to be less than $1 million, and is likely to be between $500,000 and $750,000. This cost is significantly less than the cost estimated to implement any of the alternatives currently being evaluated by the USEPA, even for the impacted subsurface limited to the area surrounding monitoring well MW-05S.

10. RECOMMENDATION

It is recommended that the universe of potential remedial alternatives for shallow groundwater in this area of the CMRP be expanded to include a limited excavation and capping alternative.

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TABLES

Summary of Analytical Qualifiers

Loureiro Engineering Associates, Inc.

Qualifier	Class	Description
*		Result reported from analysis done by EPA Method 8021 (certain 8260 samples)
*	Metal	Duplcate analysis not within control limits
+	Metal	Correlation coefficient for MSA < 0.995
>>		Large but unquantified amount present
A	Organic	TIC is a possible aldol-condensation product
A	SVOL	Detection limit based on signal to noise ratio (8290 - Dioxins/Furans)
B		Analyte also present in laboratory method blank
B	Organic	Analyte was also detected in the blank
B	Metal	Value is less than CRDL, but greater than IDL
C	Pesticide	Pesticide result confirmed by GC/MS
D	Organic	Compound quantitated on a diluted sample
E	Organic	Concentration exceeds the calibration range of the instrument
E	Metal	Estimated due to interference
H		Result exceeds calibration range
J		Estimated value; sample analyzed after two week holding time had expired (AEL 289-28-198)
J	Organic	Estimated value (refer to case or Tier II narrative)
J1		Estimated value; % difference of daily calibration standard outside control limits
J10a		Estimated value; surrogate recoveries outside of control limits
J11		Estimated value; concentration above calibration range
J3		Estimated value; low surrogate % recovery
J4		Estimated value; surrogate recoveries outside of control limits
J5		Estimated value; RPD of duplicate sample outside control limits
J6		Estimated value; compound possibly present in sample but qualified due to low level blank contamination
J7		Estimated value; compound not present in blank but presence in sample believed to be attributable to possible laboratory contamination
L		Spectral evidence confirms presence at a concentration below the calibration limit but above the Method Detection Limit
M	Metal	Duplicate injection precision not met
M	Organic	Methanol extraction used in lab.
N	Organic	Presumptive evidence of a compound (TICs only)
N	Metal	Spike sample not within control limits
N1		Spectral Evidence confirms the presence of this compound at a concentration below the calibration limit
NA		Compound not included in analysis
ND		None detected; less than default detection limit
P	Organic	Concentration difference between primary and confirmation columns greater than 25%
S	Metal	Method of standard additions (MSA) used for calculation
U		None detected; qualified due to presence of compound in the blank
U		Compound was not detected
W	Metal	Post-digestion spike out of control limits
X		Refer to case narrative

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Summary of Analytical Qualifiers

Loureiro Engineering Associates, Inc.

Qualifier	Class	Description
XL		Used to indicate co-elution of two or more compounds
Y		Refer to case narrative
Z		Refer to case narrative

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Table 6-1
SUMMARY OF SAMPLING AND ANALYTICAL INFORMATION - SOIL COMPOSITE SAMPLE
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Sample Information					Analysis Information							
Location ID	Sample ID	Sample Date	Sampled Interval (ft)	Sample Class	LEAAnalyt. Lab.	Volatile Organics	Semivolatile Organics	Herbicides	Pesticides/ PCBs	Fuels/Oils	Metals	Miscellaneous Analyses
DRS-CMRP-001	1314216	02/05/2008		SSC			X					

Legend: x - mass, t - TCLP, s - SPLP, e - EPTOX, z - ZHE, d - Thermal Desorption, r - Charcoal Tube, a - SEM/AVS, m - Methanol, nr - not received; Capitalized - at least one analyte in class detected

Printed on 08/21/2008

Table 6-2
SUMMARY OF LABORATORY ANALYTICAL RESULTS - SOIL COMPOSITE SAMPLE
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	DRS-CMRP-001						
	Sample ID	1314216						
	Sample Date	02/05/2008						
	Sample Time	11:55						
	Laboratory	DAT						
	Lab. Number	0208008-1						
Constituent	Units							
2,3,7,8-TCDD	ug/kg	39.9107 J						
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-Dioxin	ug/kg	0.201135						
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	ug/kg	<0.017247 EMP						
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	ug/kg	<0.000568 U						
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	ug/kg	0.015753						
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	ug/kg	<0.008525 EMP						
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	ug/kg	<0.025657						
Heptachlorodibenzo-p-Dioxins	ug/kg	0.017734						
Hexachlorodibenzo-p-Dioxins	ug/kg	0.090346						
Pentachlorodibenzo-p-Dioxins	ug/kg	0.063171						
Tetrachlorodibenzo-p-Dioxins	ug/kg	40.2707 J						
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ug/kg	<0.005143 EMP						
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ug/kg	0.002159 J						
1,2,3,4,7,8-Hexachlorodibenzofuran	ug/kg	<0.001069 U						
1,2,3,6,7,8-Hexachlorodibenzofuran	ug/kg	<0.000978 U						
1,2,3,7,8,9-Hexachlorodibenzofuran	ug/kg	<0.001268 U						
1,2,3,7,8-Pentachlorodibenzofuran	ug/kg	<0.000497 U						
2,3,4,6,7,8-Hexachlorodibenzofuran	ug/kg	<0.001138 U						
2,3,4,7,8-Pentachlorodibenzofuran	ug/kg	0.010005						
2,3,7,8-Tetrachlorodibenzofuran	ug/kg	<0.006747 EMP						
Heptachlorodibenzofurans	ug/kg	0.002159 J						
Hexachlorodibenzofurans	ug/kg	0.756365						
Octachlorodibenzofuran	ug/kg	0.011286						
Pentachlorodibenzofurans	ug/kg	0.700003						
Total Tetrachlorodibenzofurans, NOS	ug/kg	0.102663						
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TABLE 6-3
DIOXINS/FURANS DETECTED IN SOIL COMPOSITE SAMPLE
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Location ID	DRS-CMRP-001
Sample ID	1314216
Sample Date	2/5/2008
Sample Time	1155
Sample Depth	Composite
Laboratory	DAT
Lab. Number	0208008-6

Constituent	TEF	Result (µg/kg)	TEQ
2,3,7,8-TCDD	1	39.900 J	39.90
1,2,3,7,8-PeCDD	1	0.0256 EMPC	
1,2,3,4,7,8-HxCDD	0.1	0.00057 U	
1,2,3,6,7,8-HxCDD	0.1	0.0157	0.00
1,2,3,7,8,9-HxCDD	0.1	0.00852 EMPC	
1,2,3,4,6,7,8-HpCDD	0.01	0.0172 EMPC	
OCDD	0.0003	0.201	0.00
Total TCDD	-	40.200 J	
Total PeCDD	-	0.0631	
Total HxCDD	-	0.0903	
Total HpCDD	-	0.0177	
2,3,7,8-TCDF	0.1	0.00674 EMPC	
1,2,3,7,8-PeCDF	0.03	0.00050 U	
2,3,4,7,8-PeCDF	0.3	0.010	0.00
1,2,3,4,7,8-HxCDF	0.1	0.00107 U	
1,2,3,6,7,8-HxCDF	0.1	0.00098 U	
1,2,3,7,8,9-HxCDF	0.1	0.00127 U	
2,3,4,6,7,8-HxCDF	0.1	0.00114 U	
1,2,3,4,6,7,8-HpCDF	0.01	0.00514 EMPC	
1,2,3,4,7,8,9-HpCDF	0.01	0.00216 J	
OCDF	0.0003	0.0113	0.00
Total TCDF	-	0.102	-
Total PeCDF	-	0.699	-
Total HxCDF	-	0.756	-
Total HpCDF	-	0.00216 J	-
Total TEQ Concentration	-	-	40

NOTES
TEF = Toxic Equivalency Factors (Human and Mammalian) provided by the World Health Organization (Van den Berg, et al. 2006)
TEQ = Toxic Equivalents; Total TEQ (Human/Mammalian) concentration reported to the nearest µg/kg
DAT = Data/Analysis Technologies, Inc., Plain City, Ohio

Loureiro Engineering Associates, Inc.

TABLE 6-4
DEPTH-TO-WATER MEASUREMENTS
February 25, 2008
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Top of Pipe

Well ID	DTB[1]	Ground Surface Elevation[2]	Well Elevation[2]	Well Diameter (in.)	Cased Interval[3]	Screen Interval[3]	Top of Screen[4]	Bottom of Screen[4]	DTW[1]	Groundwater Elevation[4]
GEC-2	10.18	103.75	103.75	2	0 - 5	5 - 15	98.75	97.75 108.75	7.22	96.53
GEC-3	9.80	103.67	103.67	2	0 - 5	5 - 15	98.67	88.67 108.67	6.65	97.02
GEC-4	11.35	102.75	102.30	2	0 - 5	5 - 15	97.30	87.30 107.30	5.64	96.66
GEC-5	10.47	103.75	103.47	2	0 - 5	5 - 15	98.47	88.47 108.47	6.77	96.70
GEC-6	8.71	99.73	99.73	2	0 - 3	3 - 11	96.73	88.73 104.73	3.30	96.43
GEC-7	7.07	99.05	98.96	2	0 - 3	3 - 12	95.96	85.96 104.96	2.62	96.34
MW-05S	8.95	102.69	102.32	2	0 - 3	3 - 8	99.32	94.32 104.32	5.05	97.27
MW-14M	33.11	99.60	99.26	2	0 - 29	29 - 34	70.26	65.26 75.26	2.68	96.58
MW-15D	53.18	102.73	102.66	2	0 - 48.1	48.1 - 53.1	54.56	49.56 59.56	5.93	96.73
MW-6	8.94	100.73	100.51	NA	NA	NA	NA	NA	4.43	96.08
MW-LEA-01	17.15	104.20	104.10	2	0 - 9	9 - 14	95.10	90.10 100.10	8.05	96.05
MW-LEA-02	15.11	103.73	103.38	2	0 - 6.5	6.5 - 11.5	96.88	91.88 101.88	7.30	96.08
MW-LEA-03	12.56	103.10	103.01	2	0 - 5	5 - 10	98.01	93.01 103.01	6.78	96.23
P-2	9.08	102.85	102.62	1	NA	NA	NA	NA	4.50	98.12
P-20	8.54	102.53	102.26	1	NA	NA	NA	NA	4.58	97.68
P-3	9.59	103.64	103.39	1	NA	NA	NA	NA	6.85	96.54

Notes:
DTB = Depth to Bottom / DTW = Depth to Water
NA = Not Available
[1] Measured to the nearest 0.01 feet from top of casing.
[2] Elevations surveyed by Guerriere & Halnon, Inc.
[3] Feet below ground surface.
[4] Elevation in feet above mean sea level.
in = inches

TABLE 6-5
SUMMARY OF GROUNDWATER GEOCHEMICAL DATA
February 25, 2008
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Parameters[1]	Monitoring Well ID			
		MW-05S	MW-LEA-01	MW-LEA-02	MW-LEA-03
Field Measurement	Temperature (°C)[2]	6.38	11.60	9.57	8.42
	Oxidation-Reduction Potential (mV)	-93.4	25.0	-64.1	81.2
	Specific Conductance (µS/cm)	348	113	1,088	228
	Dissolved Oxygen (mg/l)	0.007	1.37	0.54	3.21
	pH	6.84	6.04	5.98	5.63
	Turbidity (NTU)[3]	6.83	5.45	13	4.92
	Total Liters Removed	5.0	15.5	7.0	9.0
Analytical Parameter	Total Suspended Solids (TSS by USEPA 160.2) (mg/l)	<1.0	<1.0	2; 11.2	14.6
	Total Dissolved Solids (TDS by USEPA 160.1) (mg/l)[4]	180	300	730; 760	460.0
	Total Dissolved Solids (TDS by USEPA 160.1) (mg/l)[5]	210	290.0	740; 720	510

NOTES:

[1] Temperature, oxidation-reduction potential, specific conductance, pH and dissolved oxygen were measured with a YSI Model 6820 flow-through cell.

[2] °C = degree Celsius
mV = milliVolts
µS/cm = microsiemens per centimeter
mg/l = milligrams per liter

[3] Turbidity was measured in nephalometric turbidity units (NTUs) with a Hach Model 2100 P turbidity meter. Turbidity measurements were recorded at values greater than approximately 22 NTUs prior to the final measurement at monitoring well MW-LEA-02.

[4] Field-filtered using an in-line 0.45 micron filter

[5] Laboratory-filtered using a 1.2 micron filter

[6] Data separated by a semi-colon represent data for duplicate samples

Table 6-6
SUMMARY OF SAMPLING AND ANALYTICAL INFORMATION
GROUNDWATER SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Sample Information					Analysis Information							
Location ID	Sample ID	Sample Date	Sampled Interval (ft)	Sample Class	LEAAnalyt. Lab.	Volatile Organics	Semivolatile Organics	Herbicides	Pesticides/ PCBs	Fuels/Oils	Metals	Miscellaneous Analyses
MW-05S	1316060	02/25/2008	3.00 - 8.00	GWS		X	X					X
MW-LEA-01	1316057	02/25/2008	9.00 - 14.00	GWS		X	X					X
MW-LEA-02	1316058	02/25/2008	6.50 - 11.50	GWS		X	X					X
MW-LEA-02	1316061	02/25/2008	6.50 - 11.50	GWS		X	X					X
MW-LEA-03	1316059	02/25/2008	5.00 - 10.00	GWS		X	X					X

Legend: x - mass, t - TCLP, s - SPLP, e - EPTOX, z - ZHE, d - Thermal Desorption, r - Charcoal Tube, a - SEM/AVS, m - Methanol, nr - not received; Capitalized - at least one analyte in class detected

Printed on 09/12/2008

TABLE 6-7
SUMMARY OF VOCs DETECTED IN GROUNDWATER
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Location ID		MW-05S	MW-LEA-01		MW-LEA-02	
Sample ID		1316060	1316057		1316058	
Sample Date		2/25/2008	2/25/2008		2/25/2008	
Sample Time		1540	1305		1340	
Sample Depth		3' - 8'	9' - 14'		6.5' - 11.5'	
Laboratory		DAT	DAT		DAT	
Lab. Number		0208030-18 10µL	0208030-2 10µL	0208030-2 1.0 µL	0208030-5 100 µL	0208030-5 10 µL
Constituent	Units					
Acetone	µg/l					
Ethylbenzene	µg/l				28 J	
Methylcyclohexane	µg/l				100 J	
Methyl tert-Butyl ether	µg/l					
trans-1,2-Dichloroethylene	µg/l				96 J	
cis-1,2-Dichloroethylene	µg/l	1800 J	21000 J	19000 J	1100 J	1500 J
Vinyl Chloride	µg/l		480 J		30 J	
Tetrachloroethylene	µg/l		220000 J	160000 J		
Dibromochloromethane	µg/l			120000 J		
Trichloroethylene	µg/l	2400 J	10000 J		23000 J	22000 J
Chloroform	µg/l					
Toluene	µg/l					
o-Xylene	µg/l				56 J	
Xylenes, m- & p-	µg/l				96 J	

NOTES
Results have been adjusted for dry weight. Results of the original analysis and a second (diluted) re-analysis are provided as reported by DAT.
µg/l = micrograms per liter
J = Estimated result
DAT = Data/Analysis Technologies, Inc., Plain City, Ohio

TABLE 6-7
SUMMARY OF VOCs DETECTED IN GROUNDWATER
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Location ID		MW-LEA-02 (Duplicate)	MW-LEA-03		
Sample ID		1316061	1316059		
Sample Date		2/25/2008	2/25/2008		
Sample Time		1340	1615		
Sample Depth		6.5' - 11.5'	5' - 10'		
Laboratory		DAT	DAT		
Lab. Number		0208030-6 10µL	0208030-20 5.0 mL	0208030-20 100 µL	
Constituent	Units				
Acetone	µg/l		6 J		
Ethylbenzene	µg/l				
Methylcyclohexane	µg/l				
Methyl tert-Butyl ether	µg/l		12 J		
trans-1,2-Dichloroethylene	µg/l				
cis-1,2-Dichloroethylene	µg/l	1900 J	26 J		
Vinyl Chloride	µg/l		2 J		
Tetrachloroethylene	µg/l	11000 J	730 J	590 J	
Dibromochloromethane	µg/l		560 J		
Trichloroethylene	µg/l	42000 J	21 J		
Chloroform	µg/l		2 J		
Toluene	µg/l				
o-Xylene	µg/l				
Xylenes, m- & ρ-	µg/l	240 J			

NOTES
Results have been adjusted for dry weight. Results of the original analysis and a second (diluted) re-analysis are provided, as reported by DAT.
µg/l = micrograms per liter
J = Estimated result
DAT = Data/Analysis Technologies, Inc., Plain City, Ohio

TABLE 6-8
DIOXINS/FURANS DETECTED IN GROUNDWATER
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Location ID		MW-05S				MW-LEA-01			
Sample ID		1316060				1316057			
Sample Date		2/25/2008				2/25/2008			
Sample Time		1540				1305			
Sample Depth		3' - 8'				9' - 14'			
Laboratory		DAT				DAT			
Lab. Number		0208030-19 (UNFILTERED)		0208030-17 (FILTERED)		0208030-3 (UNFILTERED)		0208030-1 (FILTERED)	
Constituent	TEF	Result (pg/l)	TEQ	Result (pg/l)	TEQ	Result (pg/l)	TEQ	Result (pg/l)	TEQ
2,3,7,8-TCDD	1	338.87 J	338.87 J			68.04 J	68.04 J		
1,2,3,7,8-PeCDD	1	424.42	424.42						
1,2,3,4,7,8-HxCDD	0.1			5.73 UJ					
1,2,3,6,7,8-HxCDD	0.1								
1,2,3,7,8,9-HxCDD	0.1								
1,2,3,4,6,7,8-HpCDD	0.01					9.02 B U EMPC			
OCDD	0.0003					21.82 B U EMPC			
Total TCDD	-	338.87 J	-		-	142.46 J	-		-
Total PeCDD	-	1979.69	-		-	9786.43	-	114 .30	-
Total HxCDD	-		-		-		-		-
Total HpCDD	-		-		-	9.02 U EMPC	-		-
2,3,7,8-TCDF	0.1			1.95 UJ				12.26 UJ	
1,2,3,7,8-PeCDF	0.03								
2,3,4,7,8-PeCDF	0.3								
1,2,3,4,7,8-HxCDF	0.1								
1,2,3,6,7,8-HxCDF	0.1								
1,2,3,7,8,9-HxCDF	0.1								
2,3,4,6,7,8-HxCDF	0.1								
1,2,3,4,6,7,8-HpCDF	0.01					11.15 B U EMPC			
1,2,3,4,7,8,9-HpCDF	0.01			4.35 UJ					
OCDF	0.0003					20.84 BU			
Total TCDF	-	541.78	-		-	199.03	-		-
Total PeCDF	-	556.59	-		-	1026.52	-	220.27	-
Total HxCDF	-	188.87	-		-	60.02	-		-
Total HpCDF	-		-		-	11.15 U EMPC	-		-
Total TEQ	-	-	763.29 J	-	-	-	68.04 J	-	-

NOTES
TEF = Toxic Equivalency Factors (Human and Mammalian) provided by the World Health Organization (Van den Berg, et al. 2006)
TEQ = Toxic Equivalents (Human/Mammalian)
DAT = Data/Analysis Technologies, Inc., Plain City, Ohio

TABLE 6-8
DIOXINS/FURANS DETECTED IN GROUNDWATER
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Location ID		MW-LEA-02				MW-LEA-02 (Duplicate)			
Sample ID		1316058				1316061			
Sample Date		2/25/2008				2/25/2008			
Sample Time		1340				1340			
Sample Depth		6.5' - 11.5'				6.5' - 11.5'			
Laboratory		DAT				DAT			
Lab. Number		0208030-11 (UNFILTERED)		0208030-10 (FILTERED)		0208030-13 (UNFILTERED)		0208030-12 (FILTERED)	
Constituent	TEF	Result (pg/l)	TEQ	Result (pg/l)	TEQ	Result (pg/l)	TEQ	Result (pg/l)	TEQ
2,3,7,8-TCDD	1	2742.72 J	2742.72 J	726.82 J	726.82 J	6154.18 J	6154.18 J	288.78 J	288.78 J
1,2,3,7,8-PeCDD	1								
1,2,3,4,7,8-HxCDD	0.1							7.70 UJ	
1,2,3,6,7,8-HxCDD	0.1								
1,2,3,7,8,9-HxCDD	0.1								
1,2,3,4,6,7,8-HpCDD	0.01	2.24 B U EMPC							
OCDD	0.0003					9.51 J	0.03 J		
Total TCDD	-	2742.72 J	-	726.82 J	-	6334.08 J	-	288.78 J	-
Total PeCDD	-		-		-		-		-
Total HxCDD	-		-		-		-		-
Total HpCDD	-	7.21 J	-		-		-		-
2,3,7,8-TCDF	0.1			5.03 UJ				3.25 UJ	
1,2,3,7,8-PeCDF	0.03								
2,3,4,7,8-PeCDF	0.3								
1,2,3,4,7,8-HxCDF	0.1								
1,2,3,6,7,8-HxCDF	0.1								
1,2,3,7,8,9-HxCDF	0.1								
2,3,4,6,7,8-HxCDF	0.1								
1,2,3,4,6,7,8-HpCDF	0.01					3.21 B U EMPC			
1,2,3,4,7,8,9-HpCDF	0.01							6.17 UJ	
OCDF	0.0003								
Total TCDF	-				-		-		-
Total PeCDF	-				-	52.99	-		-
Total HxCDF	-				-	66.01	-		-
Total HpCDF	-				-		-		-
Total TEQ	-	-	2742.72 J	-	726.82 J	-	6154.18 J	-	288.78 J

NOTES
TEF = Toxic Equivalency Factors (Human and Mammalian) provided by the World Health Organization (Van den Berg, et al. 2006)
TEQ = Toxic Equivalents (Human/Mammalian)
DAT = Data/Analysis Technologies, Inc., Plain City, Ohio

TABLE 6-8
DIOXINS/FURANS DETECTED IN GROUNDWATER
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Location ID		MW-LEA-03			
Sample ID		1316059			
Sample Date		2/25/2008			
Sample Time		1615			
Sample Depth		5' - 10'			
Laboratory		DAT			
Lab. Number		0208030-22 (UNFILTERED)		0208030-21 (FILTERED)	
Constituent	TEF	Result (pg/l)	TEQ	Result (pg/l)	TEQ
2,3,7,8-TCDD	1	233.87 J	233.87 J		
1,2,3,7,8-PeCDD	1	102.31	102.31		
1,2,3,4,7,8-HxCDD	0.1			3.28 UJ	
1,2,3,6,7,8-HxCDD	0.1				
1,2,3,7,8,9-HxCDD	0.1				
1,2,3,4,6,7,8-HpCDD	0.01				
OCDD	0.0003				
Total TCDD	-	233.87 J	-		-
Total PeCDD	-	436.27	-		-
Total HxCDD	-		-		-
Total HpCDD	-		-		-
2,3,7,8-TCDF	0.1			2.14 UJ	
1,2,3,7,8-PeCDF	0.03				
2,3,4,7,8-PeCDF	0.3				
1,2,3,4,7,8-HxCDF	0.1				
1,2,3,6,7,8-HxCDF	0.1				
1,2,3,7,8,9-HxCDF	0.1				
2,3,4,6,7,8-HxCDF	0.1				
1,2,3,4,6,7,8-HpCDF	0.01	4.02 B U			
1,2,3,4,7,8,9-HpCDF	0.01			3.11 UJ	
OCDF	0.0003				
Total TCDF	-	38.68	-		-
Total PeCDF	-	473.76	-		-
Total HxCDF	-	81.81	-		-
Total HpCDF	-	4.02 U EMPC	-		-
Total TEQ	-	-	336.18 J	-	-

NOTES
TEF = Toxic Equivalency Factors (Human and Mammalian) provided by the World Health Organization (Van den Berg, et al. 2006)
TEQ = Toxic Equivalents (Human/Mammalian)
DAT = Data/Analysis Technologies, Inc., Plain City, Ohio

Table 6-9
SUMMARY OF SAMPLING AND ANALYTICAL INFORMATION - QA/QC SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Sample Information					Analysis Information							
Location ID	Sample ID	Sample Date	Sampled Interval (ft)	Sample Class	LEAAnalyt. Lab.	Volatile Organics	Semivolatile Organics	Herbicides	Pesticides/ PCBs	Fuels/Oils	Metals	Miscellaneous Analyses
BKE-CMRP-002	1316074	02/25/2008		BKE		X	X					x
BKT-CMRP-001	1316063	02/25/2008		BKT		X	x					
BKT-CMRP-002	1316075	02/25/2008		BKT		x	x					

Legend: x - mass, t - TCLP, s - SPLP, e - EPTOX, z - ZHE, d - Thermal Desorption, r - Charcoal Tube, a - SEM/AVS, m - Methanol, nr - not received; Capitalized - at least one analyte in class detected

Printed on 08/28/2008

Table 6-10
SUMMARY OF LABORATORY ANALYTICAL RESULTS - FIELD DUPLICATE SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	MW-LEA-02	MW-LEA-02	MW-LEA-02	MW-LEA-02			
	Sample ID	1316058	1316058	1316061	1316061			
	Sample Date	02/25/2008	02/25/2008	02/25/2008	02/25/2008			
	Sample Time	13:40	13:40	13:40	13:40			
	Sample Depth	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50			
	Laboratory	AEL	DAT	AEL	DAT			
	Lab. Number	AEL08001917	0208030-10	AEL08001923	0208030-12			
Constituent	Units							
Date Physical Analyzed	-			03/03/2008				
Total Dissolved Solids	mg/L	730		760				
Total Dissolved Solids (unfiltered)	mg/L	740		720				
Total Suspended Solids (unfiltered)	mg/L	2.0		11.2				
2,3,7,8-TCDD	ug/L		0.000727 J		0.000289 J			
2,3,7,8-TCDD (unfiltered)	ug/L		0.00274 J		0.00615 J			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-Dioxin	ug/L		<0.000025 U		<0.000010 U			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-Dioxin (unfiltered)	ug/L		<0.000000 U		0.000009 BJ			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	ug/L		<0.000017 U		<0.000007 U			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin (unfiltered)	ug/L		<0.000002 BU		<0.000000 U			
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	ug/L		<0.000018 U		<0.000007 UJ			
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	ug/L		<0.000015 U		<0.000006 U			
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	ug/L		<0.000015 U		<0.000006 U			
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	ug/L		<0.000016 U		<0.000004 U			
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin (unfiltered)	ug/L		<0.000000 U		<0.000001 U			
Heptachlorodibenzo-p-Dioxins	ug/L		<0.000016 U		<0.000007 U			
Heptachlorodibenzo-p-Dioxins (unfiltered)	ug/L		0.000007 J		<0.000000 U			
Hexachlorodibenzo-p-Dioxins	ug/L		<0.000011 U		<0.000004 U			
Hexachlorodibenzo-p-Dioxins (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
Pentachlorodibenzo-p-Dioxins	ug/L		<0.000016 U		<0.000004 U			
Pentachlorodibenzo-p-Dioxins (unfiltered)	ug/L		<0.000000 U		<0.000001 U			
Tetrachlorodibenzo-p-Dioxins	ug/L		0.000727 J		0.000289 J			
Tetrachlorodibenzo-p-Dioxins (unfiltered)	ug/L		0.00274 J		0.00633 J			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ug/L		<0.000013 U		<0.000004 U			
1,2,3,4,6,7,8-Heptachlorodibenzofuran (unfiltered)	ug/L		<0.000000 U		<0.000003 BU			

Table 6-10
SUMMARY OF LABORATORY ANALYTICAL RESULTS - FIELD DUPLICATE SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	MW-LEA-02	MW-LEA-02	MW-LEA-02	MW-LEA-02			
	Sample ID	1316058	1316058	1316061	1316061			
	Sample Date	02/25/2008	02/25/2008	02/25/2008	02/25/2008			
	Sample Time	13:40	13:40	13:40	13:40			
	Sample Depth	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50			
	Laboratory	AEL	DAT	AEL	DAT			
	Lab. Number	AEL08001917	0208030-10	AEL08001923	0208030-12			
Constituent	Units							
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ug/L		<0.000016 U		<0.000006 UJ			
1,2,3,4,7,8,9-Heptachlorodibenzofuran (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
1,2,3,4,7,8-Hexachlorodibenzofuran	ug/L		<0.000017 U		<0.000009 U			
1,2,3,4,7,8-Hexachlorodibenzofuran (unfiltered)	ug/L		<0.000001 U		<0.000000 U			
1,2,3,6,7,8-Hexachlorodibenzofuran	ug/L		<0.000014 U		<0.000007 U			
1,2,3,6,7,8-Hexachlorodibenzofuran (unfiltered)	ug/L		<0.000001 U		<0.000000 U			
1,2,3,7,8,9-Hexachlorodibenzofuran	ug/L		<0.000020 U		<0.000010 U			
1,2,3,7,8,9-Hexachlorodibenzofuran (unfiltered)	ug/L		<0.000001 U		<0.000000 U			
1,2,3,7,8-Pentachlorodibenzofuran	ug/L		<0.000008 U		<0.000003 U			
1,2,3,7,8-Pentachlorodibenzofuran (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
2,3,4,6,7,8-Hexachlorodibenzofuran	ug/L		<0.000018 U		<0.000009 U			
2,3,4,6,7,8-Hexachlorodibenzofuran (unfiltered)	ug/L		<0.000001 U		<0.000000 U			
2,3,4,7,8-Pentachlorodibenzofuran	ug/L		<0.000008 U		<0.000002 U			
2,3,4,7,8-Pentachlorodibenzofuran (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
2,3,7,8-Tetrachlorodibenzofuran	ug/L		<0.000005 UJ		<0.000003 UJ			
2,3,7,8-Tetrachlorodibenzofuran (unfiltered)	ug/L		<0.000000 U		<0.000001 U			
Heptachlorodibenzofurans	ug/L		<0.000014 U		<0.000005 U			
Heptachlorodibenzofurans (unfiltered)	ug/L		<0.000000 U		<0.000003			
Hexachlorodibenzofurans	ug/L		<0.000017 U		<0.000009 U			
Hexachlorodibenzofurans (unfiltered)	ug/L		<0.000001 U		0.000066			
Octachlorodibenzofuran	ug/L		<0.000022 U		<0.000009 U			
Octachlorodibenzofuran (unfiltered)	ug/L		<0.000000 U		<0.000000 U			
Pentachlorodibenzofurans	ug/L		<0.000008 U		<0.000002 U			
Pentachlorodibenzofurans (unfiltered)	ug/L		<0.000000 U		0.000053			
Total Tetrachlorodibenzofurans, NOS	ug/L		<0.000005 U		<0.000003 U			
Total Tetrachlorodibenzofurans, NOS (unfiltered)	ug/L		<0.000000 U		<0.000001 U			
Naphthalene	ug/L		<2000 U		<2000 U			
Methyl Acetate	ug/L		<2000 U		<2000 U			

Table 6-10
SUMMARY OF LABORATORY ANALYTICAL RESULTS - FIELD DUPLICATE SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	MW-LEA-02	MW-LEA-02	MW-LEA-02	MW-LEA-02			
	Sample ID	1316058	1316058	1316061	1316061			
	Sample Date	02/25/2008	02/25/2008	02/25/2008	02/25/2008			
	Sample Time	13:40	13:40	13:40	13:40			
	Sample Depth	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50			
	Laboratory	AEL	DAT	AEL	DAT			
	Lab. Number	AEL08001917	0208030-10	AEL08001923	0208030-12			
Constituent	Units							
Acetone	ug/L		<2000 U		<2000 U			
Benzene	ug/L		<2000 U		<2000 U			
1,2,3-Trichlorobenzene	ug/L		<2000 U		<2000 U			
1,2,4-Trichlorobenzene	ug/L		<2000 U		<2000 U			
1,2,4-Trimethylbenzene	ug/L		<2000 U		<2000 U			
o-Dichlorobenzene	ug/L		<2000 U		<2000 U			
1,3,5-Trimethylbenzene	ug/L		<2000 U		<2000 U			
m-Dichlorobenzene	ug/L		<2000 U		<2000 U			
p-Dichlorobenzene	ug/L		<2000 U		<2000 U			
Bromobenzene	ug/L		<2000 U		<2000 U			
Butyl Benzene	ug/L		<2000 U		<2000 U			
Chlorobenzene	ug/L		<2000 U		<2000 U			
Ethylbenzene	ug/L		<2000 U		<2000 U			
Isopropylbenzene (Cumene)	ug/L		<2000 U		<2000 U			
Isocumene	ug/L		<2000 U		<2000 U			
sec-Butylbenzene	ug/L		<2000 U		<2000 U			
tert-Butylbenzene	ug/L		<2000 U		<2000 U			
Hexachlorobutadiene	ug/L		<2000 U		<2000 U			
Methyl Ethyl ketone	ug/L		<2000 U		<2000 U			
Carbon Disulfide	ug/L		<2000 U		<2000 U			
Carbon Tetrachloride	ug/L		<2000 U		<2000 U			
Cyclohexane	ug/L		<2000 U		<2000 U			
Methylcyclohexane	ug/L		<2000 U		<2000 U			
4-Isopropyltoluene	ug/L		<2000 U		<2000 U			
1,1,1,2-Tetrachloroethane	ug/L		<2000 U		<2000 U			
1,1,1-Trichloroethane	ug/L		<2000 U		<2000 U			
1,1,2,2-Tetrachloroethane	ug/L		<2000 U		<2000 U			
1,1,2-Trichloroethane	ug/L		<2000 U		<2000 U			

Table 6-10
SUMMARY OF LABORATORY ANALYTICAL RESULTS - FIELD DUPLICATE SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	MW-LEA-02	MW-LEA-02	MW-LEA-02	MW-LEA-02			
	Sample ID	1316058	1316058	1316061	1316061			
	Sample Date	02/25/2008	02/25/2008	02/25/2008	02/25/2008			
	Sample Time	13:40	13:40	13:40	13:40			
	Sample Depth	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50			
	Laboratory	AEL	DAT	AEL	DAT			
	Lab. Number	AEL08001917	0208030-10	AEL08001923	0208030-12			
Constituent	Units							
1,1-Dichloroethane	ug/L		<2000 U		<2000 U			
Ethylene Dibromide	ug/L		<2000 U		<2000 U			
1,2-Dichloroethane	ug/L		<2000 U		<2000 U			
Chloroethane	ug/L		<2000 U		<2000 U			
Methyl tert-Butyl ether	ug/L		<2000 U		<2000 U			
1,1-Dichloroethylene	ug/L		<2000 U		<2000 U			
trans-1,2-Dichloroethylene	ug/L		<2000 U		<2000 U			
cis-1,2-Dichloroethylene	ug/L		1500 J		1900 J			
Vinyl Chloride	ug/L		<2000 U		<2000 U			
Tetrachloroethylene	ug/L		<15000 U		11000 J			
Trichloroethylene	ug/L		22000 J		42000 J			
Hexanone,2-	ug/L		<2000 U		<2000 U			
Bromomethane	ug/L		<2000 U		<2000 U			
Bromochloromethane	ug/L		<2000 U		<2000 U			
Bromodichloromethane	ug/L		<2000 U		<2000 U			
Chloromethane	ug/L		<2000 U		<2000 U			
Chlorodibromomethane	ug/L		<2000 U		<2000 U			
Methylene Dibromide	ug/L		<2000 U		<2000 U			
Methylene Chloride	ug/L		<2000 U		<2000 U			
Dichlorodifluoromethane	ug/L		<2000 U		<2000 U			
Bromoform	ug/L		<2000 U		<2000 U			
Chloroform	ug/L		<2000 U		<2000 U			
Trichlorofluoromethane	ug/L		<2000 U		<2000 U			
Methyl Isobutyl ketone	ug/L		<2000 U		<2000 U			
1,2,3-Trichloropropane	ug/L		R		<2000 U			
1,2-Dibromo-3-Chloropropane	ug/L		<2000 U		<2000 U			
1,2-Dichloropropane	ug/L		<2000 U		<2000 U			
1,3-Dichloropropane	ug/L		<2000 U		<2000 U			

Table 6-10
SUMMARY OF LABORATORY ANALYTICAL RESULTS - FIELD DUPLICATE SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	MW-LEA-02	MW-LEA-02	MW-LEA-02	MW-LEA-02			
	Sample ID	1316058	1316058	1316061	1316061			
	Sample Date	02/25/2008	02/25/2008	02/25/2008	02/25/2008			
	Sample Time	13:40	13:40	13:40	13:40			
	Sample Depth	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50	6.50' - 11.50			
	Laboratory	AEL	DAT	AEL	DAT			
	Lab. Number	AEL08001917	0208030-10	AEL08001923	0208030-12			
Constituent	Units							
sec-Dichloropropane	ug/L		<2000 U		<2000 U			
1,1-Dichloropropene	ug/L		<2000 U		<2000 U			
Styrene	ug/L		<2000 U		<2000 U			
Toluene	ug/L		<2000 U		<2000 U			
o-Chlorotoluene	ug/L		R		<2000 U			
p-Chlorotoluene	ug/L		R		<2000 U			
o-Xylene	ug/L		<2000 U		<2000 U			
Xylenes,m- & p-	ug/L		<2000 U		240 J			

Table 6-11
SUMMARY OF CONSTITUENTS DETECTED IN TRIP BLANK AND EQUIPMENT RINSATE BLANK SAMPLES
Centredale Manor - North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	BKE-CMRP-002	BKE-CMRP-002	BKT-CMRP-001				
	Sample ID	1316074	1316074	1316063				
	Sample Date	02/25/2008	02/25/2008	02/25/2008				
	Sample Time	12:55	12:55	11:20				
	Laboratory	DAT	DAT	DAT				
	Lab. Number	0208030-15	0208030-7 10u	0208030-4a 5.				
Constituent	Units							
2,3,7,8-TCDD (unfiltered)	ug/L	0.000009 J						
Tetrachlorodibenzo-p-Dioxins (unfiltered)	ug/L	0.000009 J						
Naphthalene	ug/L		430 J					
Methyl Acetate	ug/L			1 J				
Acetone	ug/L			16 J				
Tetrachloroethylene	ug/L		20000 J					
Trichloroethylene	ug/L		960 J					
Methylene Chloride	ug/L		45000 J					
Toluene	ug/L		2600 J					

Table 6-12
SUMMARY OF SAMPLING AND ANALYTICAL INFORMATION FOR PE SAMPLES
Centredale Manor- North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

Sample Information					Analysis Information							
Location ID	Sample ID	Sample Date	Sampled Interval (ft)	Sample Class	LEAAnalyt. Lab.	Volatile Organics	Semivolatile Organics	Herbicides	Pesticides/ PCBs	Fuels/Oils	Metals	Miscellaneous Analyses
PEW-CMRP-001	1316062	02/25/2008		PEW			X					

Legend: x - mass, t - TCLP, s - SPLP, e - EPTOX, z - ZHE, d - Thermal Desorption, r - Charcoal Tube, a - SEM/AVS, m - Methanol, nr - not received; Capitalized - at least one analyte in class detected

Printed on 09/12/2008

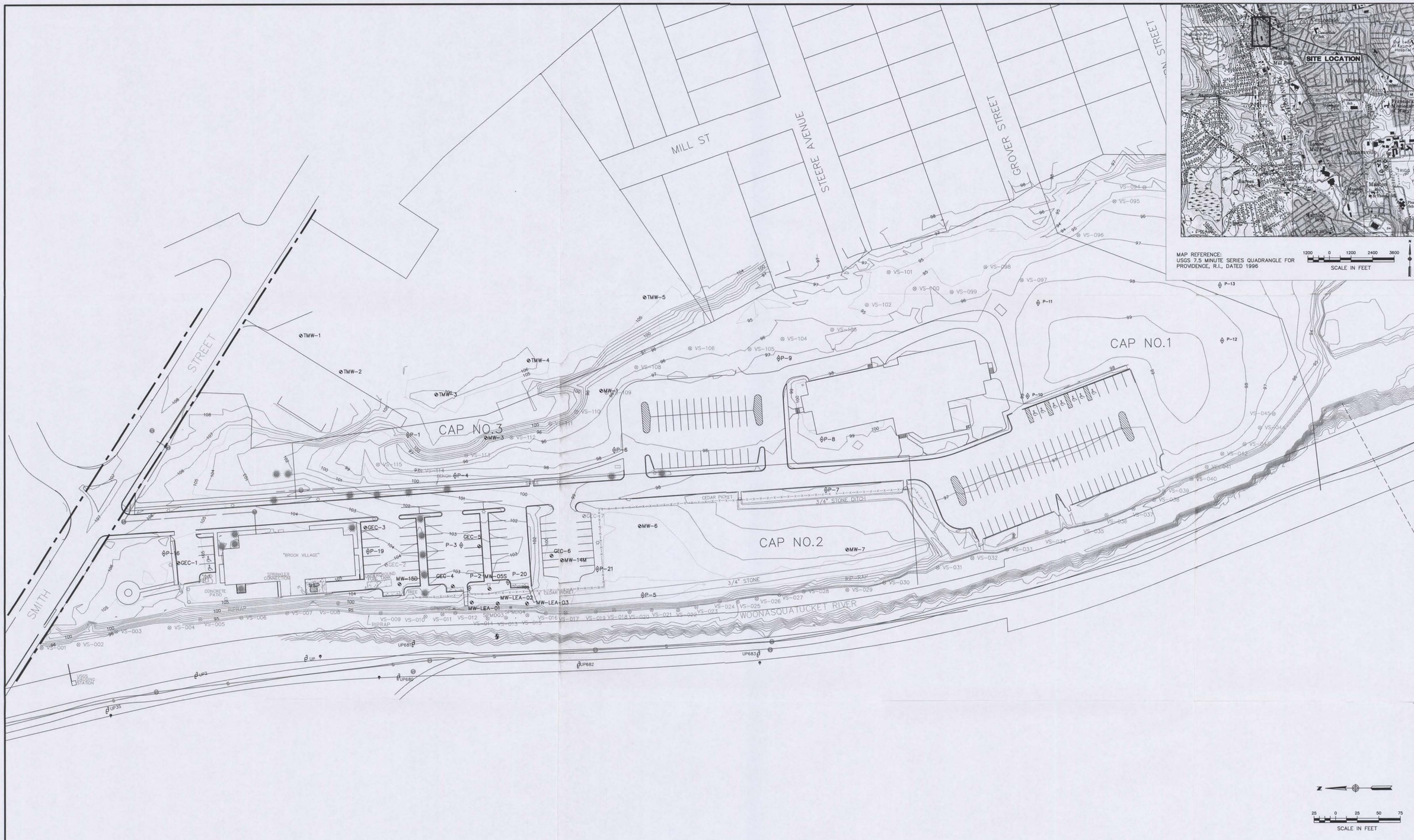
Table 6-13
SUMMARY OF DIOXINS/FURANS DETECTED IN PE SAMPLES
Centredale Manor- North Providence, Rhode Island

Loureiro Engineering Associates, Inc.

	Location ID	PEW-CMRP-001	PEW-CMRP-001					
	Sample ID	1316062	1316062					
	Sample Date	02/25/2008	02/25/2008					
	Sample Time	11:25	11:25					
	Laboratory	DAT	DAT					
	Lab. Number	0208030-8	0208030-9					
Constituent	Units							
2,3,7,8-TCDD	ug/L	0.00285						
2,3,7,8-TCDD (unfiltered)	ug/L		0.00510					
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-Dioxin (unfiltered)	ug/L		0.000016 B					
Pentachlorodibenzo-p-Dioxins (unfiltered)	ug/L		0.000441					
Tetrachlorodibenzo-p-Dioxins	ug/L	0.00285						
Tetrachlorodibenzo-p-Dioxins (unfiltered)	ug/L		0.00527					
Hexachlorodibenzofurans (unfiltered)	ug/L		0.000053					

DRAWINGS

DRAWINGS



NOTES

1. SITE TOPOGRAPHIC SURVEY PERFORMED BY GUERRIERE & HALNON, INC. ENGINEERING & LAND SURVEYING OF FRANKLIN, MASSACHUSETTS; HORIZONTAL DATUM: RI STATE PLANE (1983), VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929; DATUM ORIGIN: NARRAGANSETT BAY COMMISSION (NBC) DISK #40, #46, & #47.
2. SAMPLE LOCATION INFORMATION OBTAINED FROM BATTLLE MICROSOFT ACCESS DATABASE, MAY 7, 2008.
3. MONITORING WELLS MW-LEA-01, MW-LEA-02, MW-LEA-03 ELEVATIONS SURVEYED BY GUIERRERE AND HALNON, INC. RELATIVE TO THE (NGVD) 1929.

LEGEND

- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- EXISTING PIEZOMETER
- VAPOR DIFFUSION SAMPLE LOCATION
- STAFF GAUGE
- SEMI-PERMEABLE MEMBRANE DEVICE LOCATION
- 103 — GROUND SURFACE ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
- EXISTING LIGHT POLE
- UP680 — EXISTING UTILITY POLE
- EXISTING STORM SEWER
- ELEC HH — EXISTING ELECTICAL BOX
- EXISTING TREE

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

SCALE: 1" = 50'
COMM. NO.: 15RP601
DATE: 09/12/08
DRAWN BY: A.C.L.
DATE: 09/12/08
APP. BY: D.N.S.

CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SITE PLAN

An Employee Owned Company

DRAWING
2-1

SHEET NO. 1 NO. OF SHEETS 1

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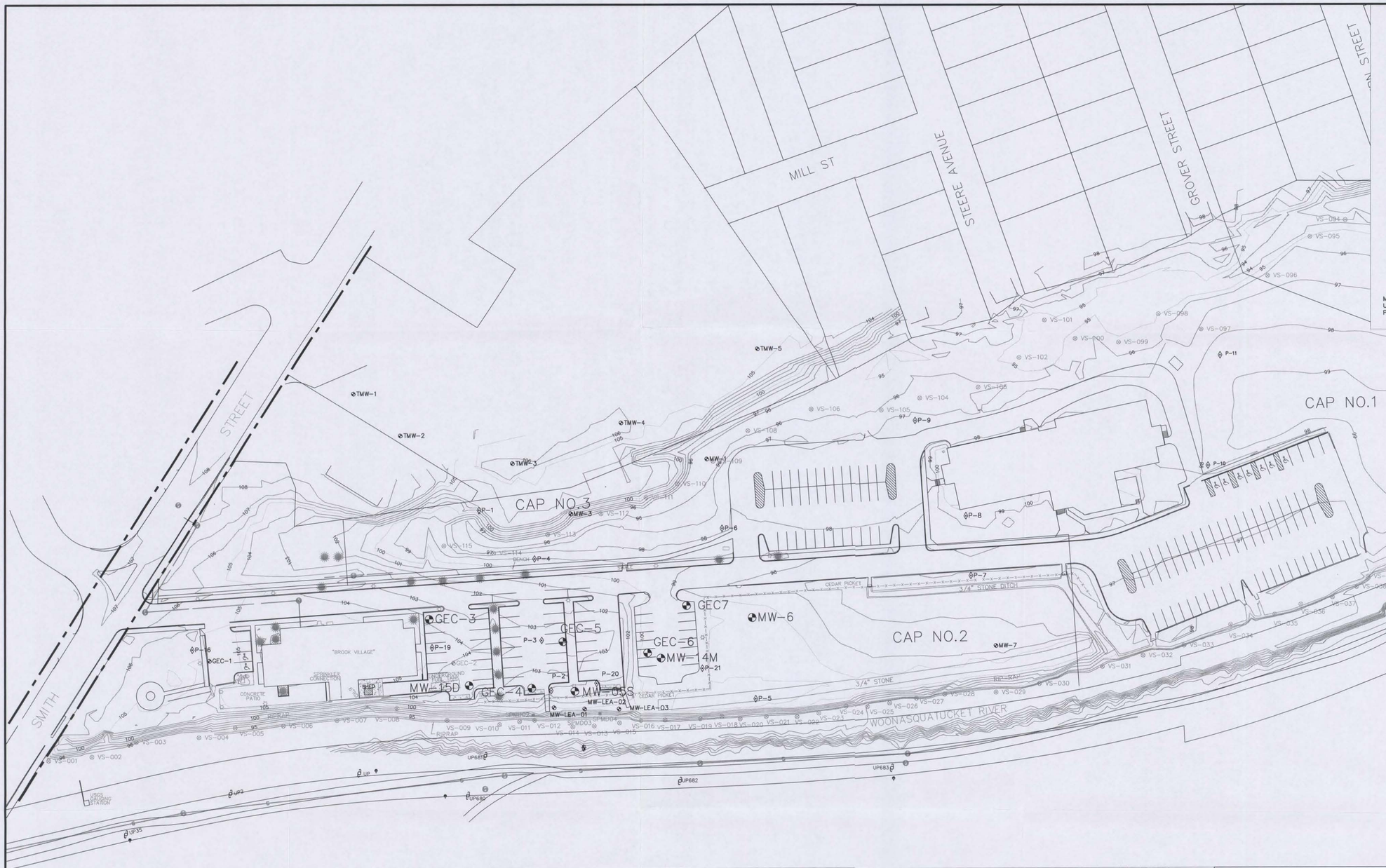

MW-055	15-Aug-01	24-Oct-02	21-Nov-02	30-Jun-05
Dioxins/Furans	--	NA	--	--
1,2,3,4,6,7,8-HpCDD	ND	NA	ND; ND	2.88
1,2,3,4,6,7,8-HpCDF	ND	NA	ND; ND	1.41
1,2,3,6,7,8-HxCDF	1.6 EMPC	NA	ND; ND	ND
1,2,3,7,8,9-HxCDF	3.0 EMPC	NA	ND; ND	ND
1,2,3,7,8-PeCDD	202	NA	ND; ND	6.19
1,2,4,5,7,8-hexachloro(dibenzo)furan	270 J	NA	ND; ND	ND
2,3,4,6,7,8-HxCDF	3.1 J	NA	ND; ND	ND
2,3,7,8-TCDD	4180 J	NA	1032.69; 1455.06	4144.76
2,3,7,8-TCDF	9.3 J	NA	ND; 0.92 J	1.82
OCDD	10.2 EMPC	NA	ND; ND	16.53
OCDF	ND	NA	ND; ND	4.5
VOCs	--	--	NA	NA
Tetrachloroethene	61000 *	28000	NA	17000; 22000
Trichloroethene	2500	1800	NA	1400; 1500
cis-1,2-dichloroethylene	ND	ND	NA	ND; 1200

MW-6	22-Feb-01	15-Aug-01	23-Oct-02
Dioxins/Furans	--	--	NA
1,2,3,7,8-PeCDF	ND	2.3 J	NA
2,3,7,8-TCDD	ND	6.6 J	NA
OCDD	12.6 J	ND	NA
VOCs	--	--	--
Phenol, 4,4'-(1-methylethylidene)bis-	ND	12 NJ	ND
Phenol, 4-(2,2,4-trimethylpentyl)-	ND	3 NJ	ND
Phenol, M-tert-butyl-	ND	5 NJ	ND
Phenylbutazone	ND	9 NJ	ND
1,2-dichlorobenzene	21	4 J	13
1,4-dichlorobenzene	5 J	3 J	4.9 J
1,2,4-trimethylbenzene	ND	ND	2.1 J
Benzene	5 J	6 J	6.8 J
Chlorobenzene	100	58	160
cis-1,2-dichloroethylene	4 J	4 J	2.8 J
Cyclohexane	ND	4 J	ND
Ethylbenzene	7 J	ND	1.2 J
Isopropylbenzene	1 J	ND	ND
Methylcyclohexane	13	5 J	ND
Toluene	5 J	ND	3.3 J
Total Xylenes	69	3 J	ND
m,p-- Xylenes	NA	NA	9.2 J
o-- Xylenes	NA	NA	9.5

MW-14M	21-Aug-01	23-Oct-02
Dioxins/Furans	--	NA
OCDF	3.9 EMPC	NA
VOCs	--	--
Tetrachloroethene	ND	1900

MW-15D	21-Aug-01	23-Oct-02
Dioxins/Furans	--	NA
OCDD	17.0 EMPC	NA
OCDF	15.4 EMPC	NA
VOCs	--	--
Methylene Chloride	ND	0.2 J

GEC-3	22-Mar-99
Dioxins/Furans	NA
VOCs	ND

GEC-4	22-Mar-99
Dioxins/Furans	NA
VOCs	--
Vinyl Chloride	27

GEC-5	22-Mar-99
Dioxins/Furans	NA
VOCs	--
Tetrachloroethylene	2.2
Trichloroethylene	1.3

GEC-6	22-Mar-99
Dioxins/Furans	NA
VOCs	--
Tetrachloroethylene	150

GEC-7	22-Mar-99
Dioxins/Furans	NA
VOCs	--
Benzene	1.3
Tetrachloroethylene	11
Trichloroethylene	2
Total Xylenes	4
Vinyl Chloride	6.9

DATA BLOCK LEGEND

MW-055	15-AUG-01
Dioxin	--
2,3,7,8-TCDD	ND
PCBs	--
Aroclor-1254	260

- SAMPLE LOCATION IDENTIFIER
- SAMPLE DATE
- DASH INDICATES DETECT(S) – SPECIFIC CONSTITUENTS DETECTED ARE IDENTIFIED BELOW (VALUES SEPARATED BY SEMI-COLON REPRESENT FIELD DUPLICATE VALUES)
- CONSTITUENT CONCENTRATION–DIOXINS/FURANS PRESENTED IN PICOGRAMS PER LITER (pg/l)
  VOCs PRESENTED IN MICROGRAMS PER LITER (ug/l)

LABORATORY DATA QUALIFIERS

*	Value reported as the Estimated Maximum Possible Concentration (EMPC)
EMPC	Estimated maximum possible concentration
J	Estimated; Detected but below the laboratory quantitation limit.
N	Presumptive evidence of compound presence
NA	Not Analyzed
ND	Not Detected

ACRONYMS

HpCDD	HEPTACHLORODIBENZO-p-DIOXIN
HpCDF	HEPTACHLORODIBENZOFURAN
HxCDF	HEXACHLORODIBENZOFURAN
PeCDD	PENTACHLORODIBENZO-p-DIOXIN
TCDD	TETRACHLORODIBENZO-p-DIOXIN
TCDF	TETRACHLORODIBENZOFURAN
OCDD	OCTACHLORODIBENZODIOXIN
OCDF	OCTACHLORODIBENZOFURAN

LEGEND

- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- EXISTING PIEZOMETER
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- EXISTING STORM SEWER
- ELEC HH — EXISTING ELECTICAL BOX
- EXISTING TREE

NOTES

1. SITE TOPOGRAPHIC SURVEY PERFORMED BY GUERRIERE & HALNON, INC. ENGINEERING & LAND SURVEYING OF FRANKLIN, MASSACHUSETTS; HORIZONTAL DATUM: RI STATE PLANE (1983), VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929; DATUM ORIGIN: NARRAGANSETT BAY COMMISSION (NBC) DISK #40, #46, & #47.
2. SAMPLE LOCATION INFORMATION OBTAINED FROM BATTLLE MICROSOFT ACCESS DATABASE, MAY 7, 2008.
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REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

SCALE 1" = 50'
COMM. NO. 15RP601
DATE 09/12/08
DRAWN BY A.C.L.
DATE 09/12/08
APP. BY D.N.S.

CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SUMMARY OF VOCs AND DIOXINS/FURANS DETECTED IN GROUNDWATER

An Employee Owned Company

DRAWING 2-2

SHEET NO. 1 NO. OF SHEETS 1

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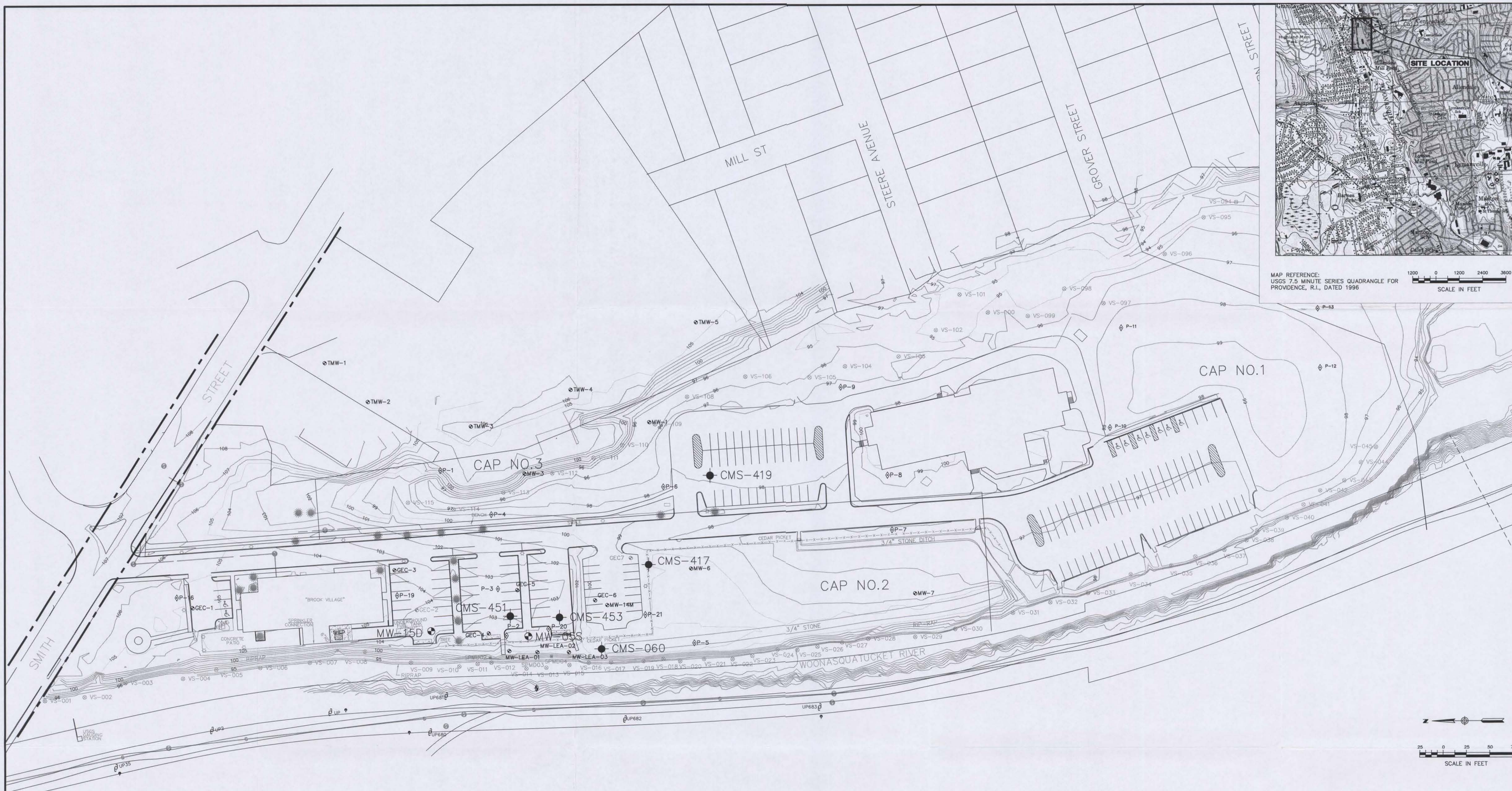

CMS-060	30-Jun-99				
Constituent	0' – 1'	1' – 2'	2' – 3'	3' – 4'	4' – 5'
Dioxins/Furans	–; –	–	–	ND	–
2,3,7,8-TCDD	820 J; 491	1400	500 J	ND	140 J
VOCs	–	–	–	–	–
1,2-dichlorobenzene	ND	ND	ND	ND	7.1
1,4-dichlorobenzene	ND	ND	ND	ND	6.5
cis-1,2Dichloroethylene	ND	ND	ND	10	11
Naphthalene	ND	1800 J	ND	ND	ND
Trichloroethylene	ND	1000 J	ND	8.3	13
Tetrachloroethene	88 J	25000 J	860	110	110

CMS-417	24-Jun-99			
Constituent	0' – 1'	1' – 2'	2' – 3'	3' – 4'
Dioxins/Furans	–	–	–	–
2,3,7,8-TCDD	2700	1400	1900	1600
VOCs	–	–		
1,1-Dichloroethane	ND	ND	7000 J	150 J
1,1,1-trichloroethane	27000 J	110000 J	ND	ND
1,2,3-trichlorobenzene	180000	83000 J	ND	ND
1,2,4-trichlorobenzene	340000	270000	ND	ND
1,2,4-trimethylbenzene	86000	160000	ND	130 J
1,2-dichlorobenzene	1500000	2800000	59000	4000
1,3,5-trimethylbenzene	29000 J	42000 J	ND	ND
1,4-dichlorobenzene	31000 J	40000 J	ND	ND
Chlorobenzene	360000	1000000	220000	10000
cis-1,2-Dichloroethylene	180000	500000	490000	ND
Ethylbenzene	35000 J	81000 J	5200 J	210 J
m&p-Xylene	110000	270000	ND	2000
N-butylbenzene	18000 J		ND	ND
Naphthalene	47000 J	84000 J	ND	ND
o-Xylene	48000 J	110000 J	4500 J	270 J
p-Isopropyltoluene	ND	ND	ND	180 J
Tetrachloroethene	820000	1700000	9400 J	120 J
Toluene	140000	430000	110000	430
Trichloroethylene	630000	2400000	34000	580
Styrene	ND	ND	10000 J	ND

CMS-419	07-Jul-99							
Constituent	0' – 1'	1' – 2'	2' – 3'	3' – 4'	4' – 5'	5' – 6'	6' – 7'	7' – 8'
Dioxins/Furans	ND	ND; ND	ND	ND	ND	ND	ND	ND
2,3,7,8-TCDD	ND	ND; ND	ND	ND	ND	ND	ND	ND
VOCs	NA	–; NA	NA	–	NA	–	NA	–
1,2,3-trichlorobenzene	NA	ND	NA	53 J	NA	ND	NA	ND
1,2,4-trichlorobenzene	NA	62000	NA	160 J	NA	ND	NA	19
1,2,4-trimethylbenzene	NA	93000	NA	140 J	NA	5	NA	20
1,2-dichlorobenzene	NA	84000	NA	160 J	NA	ND	NA	13
1,3,5-trimethylbenzene	NA	19000 J	NA	ND	NA	ND	NA	8.2
1,3-dichlorobenzene	NA	13000 J	NA	ND	NA	ND	NA	6.4
1,4-dichlorobenzene	NA	32000	NA	100 J	NA	2.7 J	NA	9
4-chlorotoluene	NA	8700 J	NA	56 J	NA	2.3 J	NA	6.1
Benzene	NA	ND	NA	ND	NA	ND	NA	5.9
Chlorobenzene	NA	300000	NA	950	NA	18	NA	77
cis-1,2-Dichloroethylene	NA	73000	NA	ND	NA	ND	NA	2.5 J
Ethylbenzene	NA	68000	NA	140 J	NA	ND	NA	22
Isopropylbenzene	NA	5400 J	NA	84 J	NA	4.3 J	NA	7
m&p-Xylene	NA	170000	NA	340	NA	3.3 J	NA	57
N-butylbenzene	NA	7200 J	NA	ND	NA	ND	NA	2 J
N-propylbenzene	NA	ND	NA	ND	NA	ND	NA	3 J
Naphthalene	NA	39000	NA	310 J	NA	ND	NA	19
o-Xylene	NA	80000	NA	170 J	NA	ND	NA	28
Tert-butylbenzene	NA	10000 J	NA	ND	NA	ND	NA	ND
Styrene	NA	10000 J	NA	ND	NA	ND	NA	ND
Tetrachloroethene	NA	40000	NA	ND	NA	ND	NA	ND
Toluene	NA	75000	NA	ND	NA	ND	NA	12
Trichloroethylene	NA	16000 J	NA	ND	NA	ND	NA	1.4 J

CMS-451	20-Jul-99					
Constituent	4' – 5'	5' – 6'	6' – 7'	7' – 8'	8' – 9'	9' – 10'
Dioxins/Furans	ND	ND	ND	ND	ND	ND
2,3,7,8-TCDD	ND	ND	ND	ND	ND	ND
VOCs	NA	–	NA	–	NA	–
cis-1,2-Dichloroethylene	NA	433000	NA	ND	NA	33
m&p-Xylene	NA	ND	NA	95 J	NA	ND
o-Xylene	NA	ND	NA	360 J	NA	ND
Tetrachloroethene	NA	250000	NA	990 J	NA	2.2 J
Trichloroethylene	NA	36000	NA	160 J	NA	ND

CMS-453	21-Jul-99						
Constituent	3' – 4'	4' – 5'	5' – 6'	6' – 7'	7' – 8'	8' – 9'	9' – 10'
Dioxins/Furans	–; –	–	–	–	–	–	–
2,3,7,8-TCDD	11000 J; 42900	1000	390 J	62000 J	220 J	160 J	70.0 J
VOCs	NA	NA	NA	NA	NA	NA	NA

MW-05S	10-Jul-01	10-Jul-01	10-Jul-01	10-Jul-01	10-Jul-01
Constituent	1' – 2'	2' – 4'	4' – 6'	8' – 10'	10' – 12'
Dioxins/Furans	–	–	–	–	–
1,2,3,4,6,7,8-HpCDD	ND	12.7	61.9 J	ND	1.7 J
1,2,3,4,6,7,8-HpCDF	ND	3.4 J	11.5 J	ND	ND
1,2,3,4,7,8,9-HpCDF	ND	ND	1.1 EMPC	ND	ND
1,2,3,4,7,8-HxCDD	ND	ND	2.1 J	ND	ND
1,2,3,4,7,8-HxCDF	0.46 J	1.0 J	3.6 J	ND	ND
1,2,3,6,7,8-HxCDD	ND	1.1 J	24.8 J	1.9 J	17.3
1,2,3,6,7,8-HxCDF	ND	0.67 J	1.8 J	ND	ND
1,2,3,7,8,9-HxCDD	ND	0.60 EMPC	5.7 J	1.1 J	6.9
1,2,3,7,8,9-HxCDF	ND	ND	ND	ND	ND
1,2,3,7,8-PeCDD	ND	0.75 J	52.2 J	2.8 EMPC	7.8
1,2,3,7,8-PeCDF	0.42 EMPC	ND	3.2 EMPC	0.54 EMPC	ND
1,2,4,5,7,8-hexachloro(9h)xanthene	ND	10.4 J	2350 J	62.2 J	73.8 J
2,3,4,6,7,8-HxCDF	ND	0.61 EMPC	6.7 J	ND	ND
2,3,4,7,8-PeCDF	ND	1.0 J	19.2 J	ND	ND
2,3,7,8-TCDD	2.7 EB	695 $EB	20380 EMPC	745 $EB	330 EB
2,3,7,8-TCDF	0.96 J	695	73.0 J	0.93 EMPC	ND
OCDD	4.2 JEB	1.7	803 JEB	2.9 JEB	ND
OCDF	ND	5.3 J	34.8 J	ND	ND
VOCs	–	–	–	–	–
1,2-dichlorobenzene	ND	ND	3400 J	26 J	40 J
1,3-dichlorobenzene	ND	ND	1000 J	ND	ND
1,4-dichlorobenzene	ND	ND	800 J	ND	ND
Acetone	ND	ND	780 J	ND	ND
Chlorobenzene	ND	ND	130 J	ND	ND
cis-1,2-Dichloroethylene	ND	690	3100 J	220	170
Ethylbenzene	ND	ND	150 J	ND	ND
Isopropylbenzene	ND	ND	120 J	ND	ND
Total-Xylenes	ND	ND	ND	43 J	88 J
Methylene Chloride	ND	ND	ND	58 J	85 J
trans-1,2-Dichloroethylene	ND	84 J	62 J	ND	ND
Vinyl Chloride	ND	290	550 J	ND	ND
Tetrachloroethene	ND	230	300000 J	9000 *	12000 *
Toluene	44 J	ND	130 J	ND	ND
Trichloroethylene	ND	970	26000 *J	290	300

MW-15D	07-Aug-01	07-Aug-01	07-Aug-01	08-Aug-01
Constituent	2' – 4'	4' – 6'	6' – 8'	48' – 50'
Dioxins/Furans	–	–	–	NA
1,2,3,4,6,7,8-HpCDD	2.1 J	87.6 J	1.2 EMPC	NA
1,2,3,4,6,7,8-HpCDF	1.3 J	14.8 EMPC	ND	NA
1,2,3,4,7,8-HxCDF	0.55 J	7.2 J	ND	NA
1,2,4,5,7,8-hexachloro(9h)xanthene	1.8 J	78.8 J	ND	NA
2,3,4,7,8-PeCDF	ND	3.2 J	23.9	NA
2,3,7,8-TCDD	80.1 J	2640 J$	ND	NA
2,3,7,8-TCDF	0.51 J	5.7 J	22.3	NA
OCDD	20.3	813 J	ND	NA
OCDF	2.8 J	35.5 J	35.5 J	NA
VOCs	–	–	ND	ND
Chloroethane	110 JTB	ND	ND	ND
Toulene	ND	35 J	ND	ND

DATA BLOCK LEGEND

CMS-060	15-AUG-01
Dioxin	–
2,3,7,8-TCDD	ND
PCBs	–
Aroclor-1254	260

- SAMPLE LOCATION IDENTIFIER
- SAMPLE DATE
- DASH INDICATES DETECT(S) – SPECIFIC CONSTITUENTS DETECTED ARE IDENTIFIED BELOW (VALUES SEPARATED BY SEMI-COLON REPRESENT FIELD DUPLICATE VALUES)
- CONSTITUENT CONCENTRATION-DIOXINS/FURANS PRESENTED IN NANOGRAMS PER KILOGRAM (ng/kg)
VOCs PRESENTED IN MICROGRAMS PER KILLOGRAM (ug/kg)

LABORATORY DATA QUALIFIERS

- $ Result from second column confirmation analysis – (this qualifier is used interchangeably with # qualifier by EPA validators) & QA value outside the accuracy or decision criteria goal (EPA-NE QAPP worksheet #11b)
- * Value reported as the Estimated Maximum Possible Concentration (EMPC)
- B Detected in blank sample
- E Estimated; significant matrix interference
- EMPC Estimated maximum possible concentration
- J Estimated; Detected but below the laboratory quantitation limit.
- NA Not Analyzed
- ND Not detected

ACRONYMS

HpCDD	HEPTACHLORODIBENZO-p-DIOXIN
HpCDF	HEPTACHLORODIBENZOFURAN
HxCDD	HEXACHLORODIBENZO-p-DIOXIN
HxCDF	HEXACHLORODIBENZOFURAN
PeCDD	PENTACHLORODIBENZO-p-DIOXIN
PeCDF	PENTACHLORODIBENZOFURAN
TCDD	TETRACHLORODIBENZO-p-DIOXIN
TCDF	TETRACHLORODIBENZOFURAN
OCDD	OCTACHLORODIBENZODIOXIN
OCDF	OCTACHLORODIBENZOFURAN

LEGEND

- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- EXISTING PIEZOMETER
- VAPOR DIFFUSION SAMPLE LOCATION
- STAFF GAUGE
- SEMI-PERMEABLE MEMBRANE DEVICE LOCATION
- —103— GROUND SURFACE ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
- EXISTING LIGHT POLE
- UP680 EXISTING UTILITY POLE
- EXISTING STORM SEWER
- ELEC HH EXISTING ELECTICAL BOX
- EXISTING TREE

NOTES

1. SITE TOPOGRAPHIC SURVEY PERFORMED BY GUERRIERE & HALNON, INC. ENGINEERING & LAND SURVEYING OF FRANKLIN, MASSACHUSETTS; HORIZONTAL DATUM: RI STATE PLANE (1983), VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929; DATUM ORIGIN: NARRAGANSETT BAY COMMISSION (NBC) DISK #40, #46, & #47.
2. SAMPLE LOCATION INFORMATION OBTAINED FROM BATTLLE MICROSOFT ACCESS DATABASE, MAY 7, 2008.
3. MONITORING WELLS MW-LEA-01, MW-LEA-02, MW-LEA-03 ELEVATIONS SURVEYED BY GUIERRERE AND HALNON, INC. RELATIVE TO THE (NGVD) 1929.

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SUMMARY OF VOCs AND DIOXINS/FURANS DETECTED IN SOIL

SCALE 1" = 50'
COMM. NO. 15RP601
DRAWN BY A.C.L. DATE 09/12/08
APP. BY D.N.S. DATE 09/12/08

LEA An Employee Owned Company

DRAWING 2-3
SHEET NO. 1 NO. OF SHEETS 1

2-3

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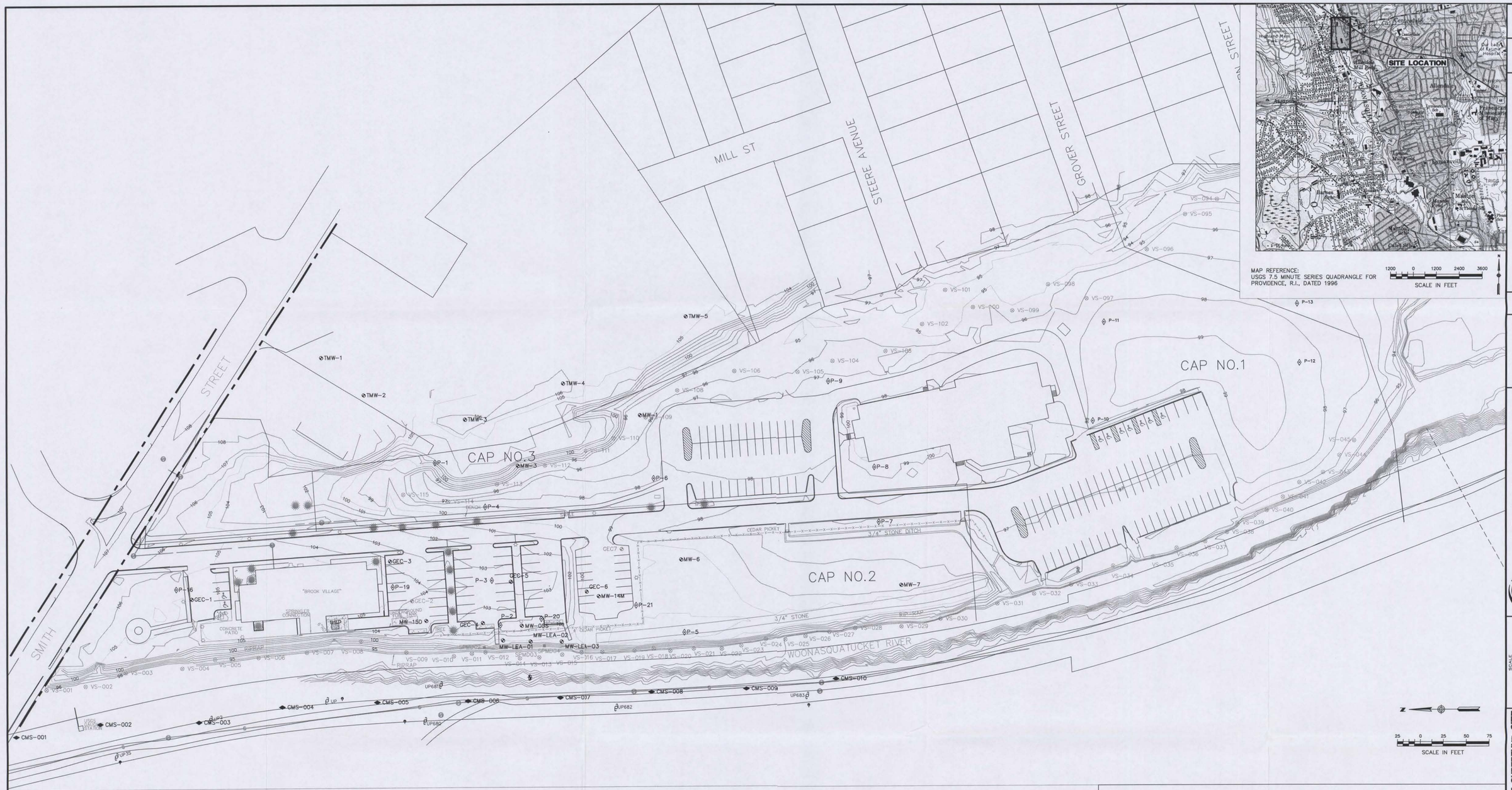

CMS-001	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--;--
2,3,7,8-TCDD	26.1; 19.0

CMS-002	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	125

CMS-003	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	7.81

CMS-004	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--;--
2,3,7,8-TCDD	18.6; 27.1

CMS-005	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--;--
2,3,7,8-TCDD	166; 322

CMS-006	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	14.6

CMS-007	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	485

CMS-008	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	14.9

CMS-009	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	32.2

CMS-010	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--
2,3,7,8-TCDD	18.9

DATA BLOCK LEGEND

CMS-001	17-Feb-99
Constituent	0' – 0.25'
Dioxins/Furans	--;--
2,3,7,8-TCDD	26.1; 19.0

- SAMPLE LOCATION IDENTIFIER
- SAMPLE DATE
- DASH INDICATES DETECT(S) – SPECIFIC CONSTITUENTS DETECTED ARE IDENTIFIED BELOW (VALUES SEPARATED BY SEMI-COLON REPRESENT FIELD DUPLICATE VALUES)
- CONSTITUENT CONCENTRATION–2,3,7,8-TCDD PRESENTED IN NANOGRAMS PER KILLOGRAM (ng/kg)

ACRONYMS

TCDD TETRACHLORODIBENZO-p-DIOXIN

LEGEND

- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- EXISTING PIEZOMETER
- VAPOR DIFFUSION SAMPLE LOCATION
- STAFF GAUGE
- SEMI-PERMEABLE MEMBRANE DEVICE LOCATION
- 103 — GROUND SURFACE ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
- EXISTING LIGHT POLE
- UP680 — EXISTING UTILITY POLE
- EXISTING STORM SEWER
- ELEC HH — EXISTING ELECTICAL BOX
- EXISTING TREE

NOTES

1. SITE TOPOGRAPHIC SURVEY PERFORMED BY GUERRIERE & HALNON, INC. ENGINEERING & LAND SURVEYING OF FRANKLIN, MASSACHUSETTS; HORIZONTAL DATUM: RI STATE PLANE (1983), VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929; DATUM ORIGIN: NARRAGANSETT BAY COMMISSION (NBC) DISK #40, #46, & #47.
2. SAMPLE LOCATION INFORMATION OBTAINED FROM BATTLLE MICROSOFT ACCESS DATABASE, MAY 7, 2008.
3. MONITORING WELLS MW-LEA-01, MW-LEA-02, MW-LEA-03 ELEVATIONS SURVEYED BY GUIERRERE AND HALNON, INC. RELATIVE TO THE (NGVD) 1929.

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

SCALE 1" = 50'
COMM. NO. 15RP601
DRAWN BY A.C.L. DATE 09/12/08
APP. BY D.N.S. DATE 09/12/08

CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

SUMMARY OF DIOXINS/FURANS DETECTED IN SEDIMENT

An Employee Owned Company

DRAWING 2-4

SHEET NO. 1 NO. OF SHEETS 1

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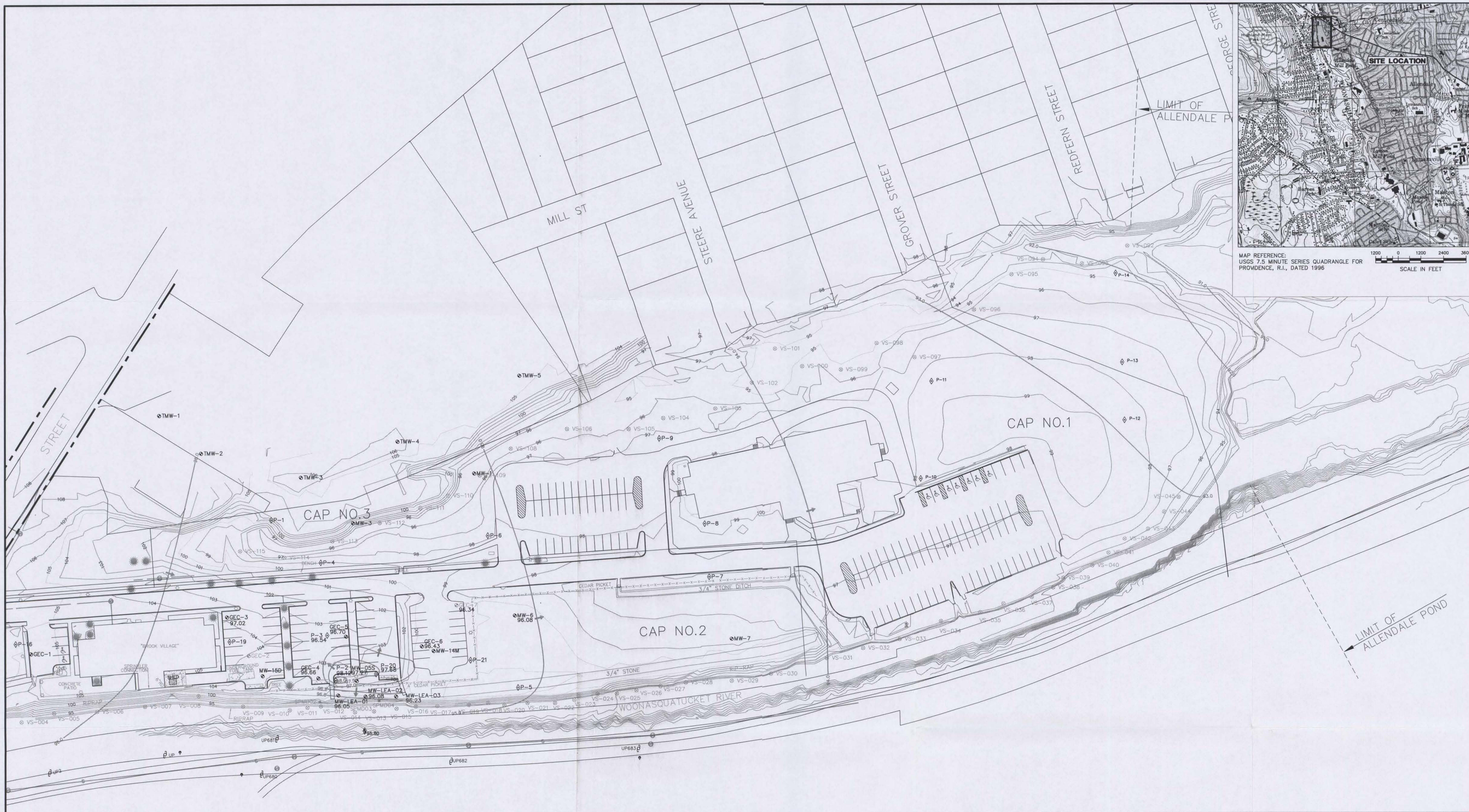

GROUNDWATER ELEVATIONS
February 25, 2008
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Well ID	DTB[1]	Ground Surface Elevation[2]	Well Elevation[2]	Well Diameter (in.)	Cased Interval[3]	Screen Interval[3]	Top of Screen[4]	Bottom of Screen[4]	DTW[1]	Groundwater Elevation[4]
GEC-2	10.18	103.75	103.75	2	0 - 5	5 - 15	98.75	108.75	7.22	96.53
GEC-3	9.80	103.67	103.67	2	0 - 5	5 - 15	98.67	108.67	6.65	97.02
GEC-4	11.35	102.30	102.30	2	0 - 5	5 - 15	97.30	107.30	5.64	96.66
GEC-5	10.47	103.47	103.47	2	0 - 5	5 - 15	98.47	108.47	6.77	96.70
GEC-6	8.71	99.73	99.73	2	0 - 3	3 - 11	96.73	104.73	3.30	96.43
GEC-7	7.07	98.96	98.96	2	0 - 3	3 - 12	95.96	104.96	2.62	96.34
MW-05S	8.95	102.32	102.32	2	0 - 3	3 - 8	99.32	104.32	5.05	97.27
MW-14M	33.11	99.26	99.26	2	0 - 29	29 - 34	70.26	75.26	2.68	96.58
MW-15D	53.18	102.66	102.66	2	0 - 48.1	48.1 - 53.1	54.56	59.56	5.93	96.73
MW-6	8.94	100.51	100.51	NA	NA	NA	NA	NA	4.43	96.08
MW-LEA-01	17.15	104.10	104.10	2	0 - 9	9 - 14	95.10	100.10	8.05	96.05
MW-LEA-02	15.11	103.38	103.38	2	0 - 6.5	6.5 - 11.5	96.88	101.88	7.30	96.08
MW-LEA-03	12.56	103.01	103.01	2	0 - 5	5 - 10	98.01	103.01	6.78	96.23
P-2	9.08	102.62	102.62	1	NA	NA	NA	NA	4.50	98.12
P-20	8.54	102.26	102.26	1	NA	NA	NA	NA	4.58	97.68
P-3	9.59	103.39	103.39	1	NA	NA	NA	NA	6.85	96.54
Staff Gauge	NA	NA	98.15	NA	NA	NA	NA	NA	NA	95.80

Notes:
DTB = Depth to Bottom / DTW = Depth to Water
NA = Not Available
1 Measured to the nearest 0.01 feet from top of casing.
2 Elevations surveyed by Guerriere & Halnon, Inc.
3 Feet below ground surface.
4 Elevation in feet above mean sea level.
in = inches

25 0 25 50 75
SCALE IN FEET

NOTES

1. SITE TOPOGRAPHIC SURVEY PERFORMED BY GUERRIERE & HALNON, INC. ENGINEERING & LAND SURVEYING OF FRANKLIN, MASSACHUSETTS; HORIZONTAL DATUM: RI STATE PLANE (1983), VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929; DATUM ORIGIN: NARRAGANSETT BAY COMMISSION (NBC) DISK #40, #46, & #47.
2. SAMPLE LOCATION INFORMATION OBTAINED FROM BATTLLE MICROSOFT ACCESS DATABASE, MAY 7, 2008.
3. MONITORING WELLS MW-LEA-01, MW-LEA-02, MW-LEA-03 ELEVATIONS SURVEYED BY GUIERRERE AND HALNON, INC. RELATIVE TO THE NGVD 1929.
4. GROUNDWATER ELEVATION CONTOURS OUTSIDE OF THE BROOK VILLAGE PARKING LOT REPRESENT MAY 4, 2001 DATA OBTAINED BY TETRATECH NUS (TTNUS) (2002) AS PRESENTED IN FIGURE 3-12 OF THE INTERIM FINAL REMEDIAL INVESTIGATION REPORT (BATTLLE 2005).

LEGEND

- EXISTING MONITORING WELL
- ABANDONED MONITORING WELL
- EXISTING PIEZOMETER
- VAPOR DIFFUSION SAMPLE LOCATION
- STAFF GAUGE
- SEMI-PERMEABLE MEMBRANE DEVICE LOCATION
- 103 — GROUND SURFACE ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
- 784.0 — GROUNWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL
- GENERAL GROUNWATER FLOW DIRECTION
- EXISTING LIGHT POLE
- UP680 EXISTING UTILITY POLE
- EXISTING STORM SEWER
- ELEC HH EXISTING ELECTICAL BOX
- EXISTING TREE

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

FEBRUARY 25, 2008
GROUNDWATER ELEVATIONS

SCALE 1" = 50'
COMM. NO. 15RP601
DRAWN BY A.C.L. DATE 09/12/08
APP. BY D.N.S. DATE 09/12/08

LEA An Employee Owned Company
DRAWING 6-1
SHEET NO. 1 NO. OF SHEETS 1

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APPENDIX A

APPENDIX A

Project Letters of Correspondence

amec

FOR INCLUSION IN THE ADMINISTRATIVE RECORD

June 8, 2007

Ms. Anna Krasko, Project Manager
United States Environmental Protection Agency
Region 1
One Congress Street
Boston, Massachusetts 02114

RE: Comments on EPA's Conceptual Model for the Groundwater to Surface Water Transport Pathway

Dear Ms. Krasko:

At the April 23, 2007 dialog meeting, the Battelle project team presented EPA's detailed analysis of the remedial alternatives for the source area groundwater. According to Battelle's presentation, it was stated that the shallow groundwater in the immediate vicinity of well MW-05 requires remediation due to the presence and transport of tetrachloroethylene and 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) to the Woonasquatucket River via groundwater flow. We are writing on behalf of Emhart Industries, Inc., to express significant concern with the conceptual site model for the transport pathway and the data that Battelle uses to reach the conclusion that remediation is warranted for the groundwater in the vicinity of MW-05.

Our concern regarding the conceptual site model for this transport pathway stems from the following:

1. The surface water data do not support a zonal influx of 2,3,7,8-TCDD to the Woonasquatucker River water column.

2. The data do not support the idea that 2,3,7,8-TCDD is dissolved in MW-05 groundwater.

3. The Semi-Permeable Membrane Device (SPMD) data cannot be used to assess flux of 2,3,7,8-TCDD to the overlying surface water.

Each of these points is discussed below.

ZONAL INFLUX OF 2,3,7,8-TCDD

According to the Remedial Investigation Report (RI), an analysis of surface water concentrations of dioxin showed that there are two zones in the Woonasquatucket River that display advective and diffusive flux of dioxin from the sediment to the water column, one adjacent to the Source Area Soils, and a second downstream of the Allendale Dam. The RI cites a 2004 sediment

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stability study as the basis for this analysis and conclusion[1]. Because the FS is focusing on the length of the river proximate to (i.e., west of) the source area, we evaluated the data that formed the basis for this conclusion.

The 2004 sediment stability study states that the analysis of dioxin flux is based on "total dioxin" although there are no descriptions as to how total dioxin is defined. Additionally, the sediment stability study states that the effect of sediment resuspension is not expected to be a significant factor in the assessment of the data. This is important because as stated at the April 2007 dialog meeting, EPA's decision to include a groundwater remedy in the FS is based not on total dioxin, but on the apparent need to control influx of 2,3,7,8-TCDD to the surface water. Also, the RI states that the working assumption is that there is an ongoing source of 2,3,7,8-TCDD to the surface water from advection of groundwater, diffusion of sediment pore water, or from bioturbation. However, the only way bioturbation will introduce 2,3,7,8-TCDD into the surface water is through the release of particles caused by macroinvertebrates mixing the sediment surface layer. Thus, bioturbation is by definition a form of sediment resuspension, which is contrary to EPA's conceptual model.

Review of the surface water data collected in 1999[2], which forms the basis for the advective and diffusive flux conceptual model, shows that there is no advective flux of 2,3,7,8-TCDD into the Woonasquatucket River adjacent to the Source Area or in Allendale Pond that can be attributed to the groundwater and/or pore water. Table 1 summarizes the data for surface water samples collected in October and November 1999 and analyzed for 2,3,7,8-TCDD. Table 1 lists the samples in order from upstream to downstream locations on the main stem of the Woonasquatucket River. Relative sample locations are noted in the table. In addition to the sampling notes, data on total and dissolved iron and aluminum are provided as are comments derived from sampling data sheets in TetraTech NUS (2000).

Table 1 shows that of the 10 surface water samples collected in this region, six were non-detect for 2,3,7,8-TCDD. The four samples that had detectable concentrations of 2,3,7,8-TCDD were at stations WRC-SW-2010, WRC-SW-2015, APB-SW-2029, and APB-SW-2034. Although the sediment stability study surmised that the effect of sediment resuspension should not be significant, the data from the field notes and the supplemental analytical data show otherwise.

For example, surface water sample APB-SW-2029 has a total (i.e., unfiltered) 2,3,7,8-TCDD concentration of 4,000 pg/l. However, the field notes for that station describe the water as "organic sheen noted; reddish iron oxide flock; clear to red" (TTNUS, 2000). Additionally, the colocated metals samples were analyzed for both total and dissolved metals. For samples APB-SW-2029, the total iron was 113,000 µg/l, whereas the dissolved (filtered) sample has only 435 µg/l of iron. Similarly, the total aluminum in this sample was 5,070 µg/l, and the dissolved

[1] Battelle, 2004. Final Technical Memorandum Sediment Stability Study. Centredale Manor Restoration Project Superfund Site, Providence RI. November.
[2] TetraTech NUS, 2000. Final Technical Memorandum Woonasquatucket River Sediment Investigation. Centredale Manor Restoration Project Superfund Site, Providence RI. June.

sample did not contain aluminum above the detection limit of 14 µg/l. Clearly, this sample had a significant amount of suspended particles as well as an "organic sheen". It is most likely that any 2,3,7,8-TCDD in this sample was associated with suspended particles.

Similarly, surface water sample WRC-SW-2010 had an estimated total 2,3,7,8-TCDD concentration of 10.3 pg/l. The field notes for this sample state that the water was "Clear w/ muck floating." Also, the turbidity of this station was approximately 3-4 times higher than other samples where the field notes described the water as "clear." Total and dissolved aluminum were 182 µg/l and 49 µg/l, and total and dissolved iron were 571 and 210 µg/l, respectively. Again, the data from the field notes and other supporting analytical data indicate that suspended particles were present. The data for this location is suspect given the apparent presence of suspended particles of "muck".

Sample APB-SW-2034 contained 4.3 pg/l 2,3,7,8-TCDD, though this value is reported as an EMPC value (Estimated Maximum Possible Concentration). The reported turbidity of this sample is approximately 4.5 times that for all samples without detectable levels of 2,3,7,8-TCDD. Also, the total vs. dissolved aluminum is 122 µg/l to 53.4 µg/l. There were no specific notes on the level of clarity of the water sampled in the sample log sheet. However, the turbidity data and the total vs. dissolved data indicate that suspended solids were in fact present at this sampling location.

Based on the data collected and observations of the sampling crew, the only sample whose 2,3,7,8-TCDD cannot be directly attributed to suspended particles is WRC-SW-2015. Thus, only one of the 7 samples collected downstream of MW-05 and upstream of Allendale Dam had detectable levels of 2,3,7,8-TCDD whose presence cannot be explained by the co-occurrence of suspended particles.

Clearly, these data do not support the conceptual model expressed in Section 5.3.2 of the RI report because they do not demonstrate in any way that mass transfer of pore water from the sediment bed to the water column (due to processes such as diffusion and/or groundwater advection) is occurring. Rather, the data demonstrate that where suspended solids occur, dioxin is detected in the surface water sample. This finding is not surprising given the levels of 2,3,7,8-TCDD detected in sediment samples in this stretch of the river.

SEMI-PERMEABLE MEMBRANE DEVICE (SPMD) DATA

EPA's use of the SPMD data to estimate sediment pore water concentrations of 2,3,7,8-TCDD is so uncertain and inaccurate that it makes the data unusable in determining whether the conceptual model is valid. There are many problems with using the SPMD data in the manner in which they have been used, each problem introducing very serious uncertainty. There are three primary areas where the SPMD data fail in terms of its relevance and applicability for use in this assessment. The three areas are:

- Inability to accurately predict dissolved concentrations of 2,3,7,8-TCDD in water;

- Significant lack of credible supporting peer-reviewed or Agency-approved guidance in applying the SMPD data as it has been for this site; and

- High probability for blank contamination interference.

Each of these points is discussed below.

Inability of SPMD to predict concentrations of 2,3,7,8-TCDD in water

As part of the 2005 SPMD sampling event, Battelle deployed an SPMD into monitoring well MW-05[3]. The MW-05 SPMD was deployed for 27 days, which is consistent with the other SPMD deployment times. Upon retrieval of the MW-05 SPMD, Battelle collected an unfiltered groundwater sample from MW-05 (CMS-GW-MW05S-05) that was analyzed for 2,3,7,8-TCDD. The reported result for 2,3,7,8-TCDD from that groundwater sample was 4,144 pg/l. This concentration is roughly consistent with the levels of total 2,3,7,8-TCDD found in this well in the past (approximately between 1,100 pg/l and 4,600 pg/l).

The SPMD sample from MW-05 (CMS-SPMD-MW05S-05) was found to contain 2,3,7,8-TCDD at 2,470 pg/SMPD. Using Equation 1 from Battelle's poster presentation on SPMDs[4] in conjunction with the sampling rate correction factors provided in the Draft Feasibility Study by Battelle (f = 0.25)[5], the following calculation can be made:

$$C_w = 2{,}470 \text{ pg/SPMD}/[(3.8 \text{ l/d} \times 0.25) \times 27 \text{ days}] = 96 \text{ pg/l}$$

Cw in the above equation is the estimated concentration of 2,3,7,8-TCDD in the water column of well MW-05, assuming that the SPMD-to-water sampling conversion used by Battelle is correct.

MW-05 is the *only* location where temporally and spatially colocated groundwater and SPMD data were collected. Thus this location serves as the only source of available data that can be used to evaluate the assumption that the SPMD-to-water conversion of 2,3,7,8-TCDD actually works. When these data are used for that purpose, however, it is clear that the model does not work. In fact, the concentration predicted using the SPMD-to-water conversion (96 pg/l) is only 2 percent of that detected in the MW-05 groundwater sample (4,144 pg/l).

Compared to the sediment-deployed SPMDs, which were likely in direct contact with large quantities of suspended or deposited sediment, and water column-deployed SPMDs, which were highly fouled by vegetation, the SPMD from MW-05 was probably placed in the best location to get good agreement between SPMD-to-water estimates and the actual water concentrations. This is due to the relatively low level of suspended solids in the well and the small amount of

[3] Battelle, 2005. Chemistry Data Report Task RI-13B Semipermeable Membrane Device (SPMD) Investigation. Centredale Manor Restoration Project Superfund Site, Providence RI. November
[4] Dahlen, D., G. Durell, T. Himmer, and C. Rosiu. Semi-Permeable Membrane Device Investigation at the Woonasquatucket River. Poster Presentation .
[5] Pers. Comm. with D. Dahlen. June 2007.

biofouling observed. It appears that the SPMD-to-water conversion use by Battelle was not able to reproduce the water sampling results at MW-05 even in the better than average conditions that existed in MW-05. If the results of the SPMD-to-water conversion are not representative for MW-05, they cannot be expected to be representative of the other locations where sampling rate interferences are likely far more problematic. Therefore, we have no confidence that the water concentrations derived with the SPMD-to-water conversions for either the sediment or the surface water samples are accurate, supportable, or useable for corroborating the Battelle conceptual model. Accordingly, there is no support for the assumption that 2,3,7,8-TCDD is dissolved in the groundwater and is being transported to the Woonasquatucket River via pore water diffusion and/or groundwater advection.

Lack of Peer-Reviewed or Agency-Approved Approach

The use of SPMDs to collect time-integrated water samples for the determination of relative concentrations hydrophobic compounds has been demonstrated in the peer-reviewed literature and has been used in the field with some success. Although there are a limited number of studies that use SPMD data to compute an estimated absolute concentration in the water column, Battelle cites no peer-reviewed or Agency-approved method which mimics the SPMD-to-water conversion approach that they used in the present study. Moreover, an SPMD-to-sediment pore water conversion is not found in the published literature.

Nearly all of the peer-reviewed literature cited by Battelle in support of the SPMD-to-water conversion focused on the sampling of water, primarily in a laboratory setting. Sediment sampling experiments cited by Battelle are also idealized laboratory experiments and cannot be expected to mimic the conditions of the system at the Woonasquatucket River.

Even Battelle states several potentially significant data gaps for this study, including:

- The lack of a known water flow and temperature used to derive the sampling rate value of 3.8 l/d for 2,3,7,8-TCDD;
- The effects of the very low flow rates encountered in the CMRP SPMD study on the sampling rate are not known;
- The flow rates for groundwater, river water and sediment pore water are not known for the CMRP site; and
- The effects of biofouling, temperature and facial velocity-turbulence effects are not known.

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Huckins et al.[6]states that environmental conditions can have a significant impact on the SPMD sampling rates. For example, facial velocity-turbulence effects can affect the sampling rate by an order of magnitude, temperature can affect the sampling rate by a factor of 4, and biofouling can affect the sampling rate by a factor of 3 or 4. Combined these factors can affect the sampling rate by over two orders of magnitude. However, there were no efforts to measure or control for these effects in the CMRP SMPD sampling. As an example, effects from reduced interfacial velocity were assumed to be negligible, when the photographic evidence shows that significant velocity effects were likely at some locations.

Additionally, in the draft portion of the Feasibility Study provided to AMEC, Battelle derives a non-peer reviewed equation for PAH sampling rates vs. flow rate. Although an equation is derived, it is not used in the assessment. Rather, Battelle relies on professional judgment to pick sampling rate correction factors. There is no back up or explanation provided for how the sampling rate correction factors were chosen.

Battelle does not discuss what effect, if any, small particle adherence may play in the higher apparent adsorption of 2,3,7,8-TCDD in sediment. Booij et al.[7] state that small particles could, "escape the [SPMD] cleansing procedure (rinsing and wiping) applied before extraction." Booij et al. go on to state that small particles with a higher sorption capacity than bulk sediment materials, which are not cleansed from the SPMD, could result in a false positive.

Although we have not seen photographs of the SPMD cages as they were retrieved from the sediment, it is very likely that sediment particles backfilled the hole and infiltrated the SPMD cages such that the SPMD surface area was in direct contact with sediment. Indeed, the sediment-deployed SPMD cages that had the highest total 2,3,7,8-TCDD concentrations on a total SPMD basis were also the two locations where there was significantly higher 2,3,7,8-TCDD in the bulk sediment than at the other location. However, the plausibility of the higher levels of dioxin in sediment being the source of the dioxin in the SPMD is not discussed by Battelle.

The methods used to convert the SPMD data to pore water concentrations have not been established in the peer-reviewed literature nor is there an EPA-approved method for such a determination. In addition, there are more unknowns in the conversion process than there are knowns. Unknowns outlined above include media-specific sampling rates, effects of temperature, biofouling, facial velocity-turbulence, water flow rates, effect of sediment in contact with SPMD, and the efficacy of the water rinse/wiping cleaning procedure to effectively clean SPMD of all non-adsorbed 2,3,7,8-TCDD. Each of these unknowns can have a significant impact on the interpretation of the SPMD results. In fact, there are so many unknowns that a

[6] Huckins, J.N., J.D. Petty, J.A. Lebo, F.V. Almeida, K. Booij, D.A. Alvarez, W.L. Cranor, R.C. Clark, and B.B. Mogensen. Development of the Permeability/Performance Reference Compound Approach for In Situ Calibration of Semipermeable Membrane Devices. *Environ. Sci. Technol.* 2002. 36, 85-91.

[7] Booij, K., H.M. Sleiderink, and F. Smedes. Calibrating the Uptake Kinetics of Semipermeable Membrane Devices Using Exposure Standards. *Environ. Toxicol. Chem.* 1998. 17, 1236-1245.

conclusion regarding the disposition of 2,3,7,8-TCDD in the water surrounding the SPMD cannot be made with the available data.

SPMD Blank Contamination

As part of the overall SPMD study, Battelle collected an exposed SPMD trip blank. The jar housing the trip blank is opened during field activities and capped when field activities are completed. However, to our knowledge, the trip blank is neither removed from the jar nor configured inside the jar as are the deployed SPMDs inside the sampling cages so as to ensure maximum surface area exposure to the media of interest. Nevertheless, the trip blank was found to contain 83.37 pg 2,3,7,8-TCDD/SPMD, which is comparable to the quantities detected in the surface water-deployed SPMDs.

Battelle's explanation for the trip blank having such levels of 2,3,7,8-TCDD is the high efficiency of the SPMD at collecting TCDD (i.e., the 2,3,7,8-TCDD was scavenged from the air). The equation used by Battelle to back estimate 2,3,7,8-TCDD concentration requires that the amount of TCDD in the SPMD is proportional to the TCDD in the fluid passing over the sampler (water or air) and the volume of fluid to which the SPMD is exposed. This same variety of equation is used for air samples[8]. Also, Soderstrom and Bergqvist[9] have demonstrated that the wind speed to which the SPMD is exposed affects the sampling rate; increased wind speed = increased sampling rate.

The SPMD in the jar will be exposed to a volume of air determined by the volume of the jar and the time necessary for the air in the jar to be replaced by ambient air through diffusion and, given sufficient wind, air turbulence. Also, as mentioned above, the configuration of the trip blank SPMD is not designed to maximize its exposed surface area.

In contrast, the SPMDs that were deployed in the sediment, surface water and groundwater were exposed to the open air. The exposure volume will depend upon the time and wind velocity during this period of exposure. Based on the photograph taken of the retrieval of the SPMD in MW05 it can be seen that, at least for the case of this SPMD, the volume of air exposed to the MW05 SPMD is likely to be orders of magnitude higher than for the trip blank. This is surmised because the SPMD is in the direct path of the wind, unfurled where maximum exposure to the ambient air can occur. In short, it does not appear that the trip blank was deployed in a manner that would sufficiently determine the equivalent exposure to air-borne 2,3,7,8-TCDD when compared to the field sample. As a result, the data quality for all the SPMDs are considered suspect.

CONCLUSION

[8] Ockenden, W.A., H.F. Prest, G.O. Thomas, A. Sweetman, and K.C. Jones. Passive Air Sampling of PCBs: Field Calculation of the Atmospheric Sampling Rates by Triolein-Containing Semipermeable Membrane Devices. *Environ. Sci. Technol.* 1998. 32 (10), 1538-1543.

[9] Soderstrom, H.S. and P.A. Bergqvist. Passive Air Sampling Using Semipermeable Membrane Devices at Different Wind-Speeds in Situ Calibration by Performance Reference Compounds. *Environ. Sci. Technol.* 2004. 38 (18), 4828-4834.

Based on the observations discussed above, we have significant concerns that EPA is employing a conceptual model of chemical transport that is not supported by valid data. Upon review of the 1999 surface water sampling data underlying the conceptual model, we believe that certain, important data were not included in EPA's initial evaluation of these data. When the complete set of data are considered in the analysis, the conceptual model of sediment pore water to surface water influx of 2,3,7,8-TCDD cannot be substantiated.

We have shown that the SPMD and water sampling data are internally contradictory because the data for MW-05, the only sampling point with data from both the water and the SPMD, shows a 43-fold difference in the concentration of 2,3,7,8-TCDD in water. The data from MW-05 simply does not substantiate the methods used to compute the surface water and sediment pore water concentrations. In fact, the data demonstrate how poorly the SPMDs estimate 2,3,7,8-TCDD concentrations in water. This fact, combined with the overwhelming number of unquantifiable factors, such as sampling rates, flow rates, effects of particles, biofouling, temperature, and facial velocity-turbulence, which are critically important in determining sampling rates, render the data unusable for a meaningful evaluation of the conceptual model.

Finally, we have concerns that contamination to the deployed SPMD samplers cannot be accurately assessed with the trip blank data. The only thing that we can discern from this data is that 2,3,7,8-TCDD may have been present in ambient air. However, as explained above, the degree to which the deployed SPMDs were exposed to the 2,3,7,8-TCDD in ambient air cannot be quantified.

We look forward to discussing this information with you at our June 12 meeting.

Sincerely,

Russ Keenan

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cc: Ms. Deidre Dahlen, Battelle
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FOR INCLUSION IN THE ADMINISTRATIVE RECORD

August 15, 2007

Ms. Anna Krasko, Project Manager
United States Environmental Protection Agency
Region 1
One Congress Street
Boston, Massachusetts 02114

RE: Summary of Findings Regarding Cosolvency at MW-05S – Centredale Manor Restoration Project, North Providence, Rhode Island

Dear Ms. Krasko:

At the June 12, 2007 meeting among Emhart's technical consultants and EPA technical staff, its consultants from Battelle, RIDEM, and the USACE, EPA suggested that there was adequate relevant peer-reviewed literature to substantiate EPA's claim that the elevated concentrations of 2,3,7,8-TCDD reported in unfiltered groundwater samples from monitoring well MW-05S are, at least in part, due to the effects of cosolvency or enhanced solubility as a result of the co-occurrence of tetrachloroethylene (PCE) and trichloroethylene (TCE). Additionally, on June 14, 2007, EPA sent us email correspondence citing seven technical journal articles that purportedly support EPA's theory that cosolvency may be occurring at monitoring well MW-05S.

After review of the technical articles cited by EPA, we conclude that there is no supporting basis for EPA's theory that the occurrence of PCE and TCE in groundwater at monitoring well MW-05S would enhance the aqueous solubility of 2,3,7,8-TCDD. In fact, we conclude that the cited literature invalidates EPA's theory that enhanced solubility is occurring. Moreover, the cited literature refutes EPA's assertion that reduced 2,3,7,8-TCDD sorption to soil is occurring as the result of the co-occurrence of PCE and TCE. Thus, the notion that the mobility of 2,3,7,8-TCDD in the vicinity of monitoring well MW-05S is enhanced due to the presence of PCE and TCE is not supported by the research data.

This correspondence provides a meta-analysis of the literature cited by EPA in its June 14, 2007 email correspondence, and discusses the purported relevance of each referenced article to what is known about the existing conditions at monitoring well MW-05S.

Meta-Analysis of Literature

AMEC conducted a thorough review of the literature cited by EPA and found that the information presented in the papers seems to follow a progression from the investigation of simple systems in the earlier papers to the investigation of more complex systems in the more recent literature. The typical experiment discussing enhanced solubility in the earlier papers involved the use of solutions consisting of water, a solute (e.g., anthracene or another hydrophobic organic compound (HOC)), and a completely miscible solvent, such as methanol or acetone. The investigators evaluated the effect of increasing aqueous-phase solvent concentration on the solubility of the HOC. Typically, these experiments used solvent-water solutions with solvent concentrations ranging from 5% to 100%. Because the solvents used in the experiments were completely miscible, the investigations only evaluated the effect of a single phase on HOC enhanced solubility.

Similarly, earlier experiments conducted to evaluate the effect of cosolvents on reduced soil sorption only evaluated the influence of completely miscible solvents at very high concentrations (e.g., methanol-water solutions at 5% to 100% methanol). Again, because the solvents used were completely miscible, the investigations only evaluated the effect of a single phase on HOC sorption.

Although the experiments using a variety of completely miscible solvents and HOCs showed enhanced solubility and reduced soil sorption with increased solvent concentrations, the conditions applied in these experiments were not similar to the known conditions at monitoring well MW-05S. EPA's June 30, 2005 *Interim-Final Remedial Investigation Report* prepared by Battelle (RI Report) states that the primary chemical constituents in the water and soil in the vicinity of monitoring well MW-05S include PCE and 2,3,7,8-TCDD, with smaller amounts of TCE. There are no data to suggest that a completely miscible solvent, such as methanol or acetone, is present in the soil or groundwater at monitoring well MW-05S. Therefore, the literature cited by EPA evaluating enhanced solubility and/or reduced sorption due to the presence of percent levels of a completely miscible solvent cannot be used to objectively assess the conditions at monitoring well MW-05S.

It is not until data from experiments published in 1990 and 1994, in papers by Pinal et al., Rao et al., and Li and Andren, that the effects of partially miscible solvents on enhanced HOC solubility and decreased sorption were explored. In those experiments, the investigators explored the effects of enhanced solubility of HOCs in water from the addition of TCE, as well as in water-acetone mixtures. The conclusion reached from these studies is that *a partially miscible solvent, such as TCE or PCE, has no appreciable effect on the solubility or sorption of HOCs until the concentration of the partially miscible solvent dissolved in water is 1% (10,000 mg/l) or greater.* This situation will occur for PCE only when it is present in a ternary solution. An example of a ternary solution is TCE, water, and a completely miscible solvent, where the completely miscible solvent is at high percent levels in water. However, as noted above, there is no mention in the RI Report of any completely miscible solvents (like acetone) in the groundwater at MW-05S.

The following discussion provides a synopsis of each of the research papers cited by EPA in

the June 14 email correspondence and addresses the application of the research data to monitoring well MW-05S. The discussion of the papers is presented in the same order in which they were listed in EPA's June 14 email correspondence.

Title: Solubility of Polychlorinated Biphenyls in Water/Alcohol Mixtures. 1. Experimental Data

Authors: An Li and Anders W. Andren

Journal Citation: *Environ. Sci. Technol.* 1994, *28,* 47-52.

Article Summary: Li and Andren (1994) investigate solubility of three PCB congeners in mixtures of water and normal alcohols (1-butanol, 1-pentanol, 1-hexanol, 1-heptanol, and 1-octanol). Li and Andren conclude that "the rapid drop of PCB solubility as the cosolvent alcohols change from butanol to octanol may indicate that cosolvency of water-immiscible solvents is dominantly limited by the amount of cosolvent dissolved in water." Li and Andren also state that the observed decrease in the cosolvency effect of immiscible alcohols as their polarity decreases is in agreement with the findings of Pinal et al. (1990).

Application to MW-05S: Although Li and Andren focused on alcohols and PCBs, neither of which have been reported in soil or water samples from MW-05S, their data supports the findings of Pinal et al. (1990), discussed below. In summary, the immiscible[1] and non-polar solvents reported in groundwater samples from MW-05S, principally PCE and TCE, are not anticipated to increase the solubility of HOCs, such as PCBs or dioxin, in water.

Title: Cosolvency of Partially Miscible Organic Solvents on the Solubility of Hydrophobic Organic Chemicals

Authors: R. Pinal, P.S.C Rao, L.S. Lee, P.V. Cline, and S.H. Yalkowsky

Journal Citation: *Environ. Sci. Technol.* 1990, *24,* 639-647.

Article Summary: Pinal et al. (1990) study the effects of the non-polar partially miscible organic solvent (PMOS) TCE cosolvency on the water solubility of HOCs naphthalene and anthracene (by itself and in the presence of varying amounts of a completely miscible organic solvent (CMOS) (e.g., methanol)). In all cases the PMOS or the PMOS/CMOS solution was mixed with water. Pinal et al. conclude that a non-polar PMOS can alter the HOC solubility if it is present in solution at concentrations in excess of 10,000 mg/l (>1%). The authors further state that "non-polar PMOS, such as TCE, octanol, toluene, and other similar hydrocarbons, are not expected to have appreciable cosolvency."

Application to MW-05S: TCE has been reported in groundwater samples from well MW-05S at concentrations as high as 2.5 mg/l, several orders of magnitude below the 10,000 mg/l

[1] Note that Li and Andren use the term "immiscible" while other authors use the term "partially miscible" to describe compounds that have very limited solubility in water. The terms are interchangeable.

threshold suggested by Pinal et al. for the initiation of cosolvency effects on HOCs (like dioxin) in water. Additionally, the nonpolar solvent, PCE, has been reported in groundwater samples from MW-05S at concentrations up to 61 mg/l, again several orders of magnitude below the 10,000 mg/l threshold suggested by Pinal et al. The combined total of the maximum concentrations of TCE and PCE (63.5 mg/l) is only 0.635% of the threshold level suggested by Pinal et al. for initiation of observable cosolvent effects on HOCs in water. Given this information, it can be concluded that cosolvency effects from PCE and/or TCE are not occurring in MW-05S, and that enhanced dioxin water solubility is not plausible with respect to the groundwater in this well.

Title: Cosolvency and Sorption of Hydrophobic Organic Chemicals

Authors: P.S.C Rao, L.S. Lee, and R. Pinal

Journal Citation: *Environ. Sci. Technol.* 1990, *24,* 647-654.

Article Summary: Rao et al. (1990) study the effects of the non-polar PMOS TCE cosolvency on the sorption of HOCs anthracene and diuran to soil. Rao et al. conclude that non-polar PMOS are likely to have negligible effects on HOC sorption from predominantly aqueous solutions (i.e., where the concentration of a CMOS, such as methanol, is less than 30%). Rao et al. also note that non-polar PMOS, either dissolved in the aqueous phase or present as a separate liquid phase (i.e., NAPL), did not influence HOC sorption to soil, which suggests that the presence of a non-polar PMOS as a separate liquid will have a minimal impact on HOC sorption.

Application to MW-05S: Dissolved TCE and PCE have been reported in soil samples from MW-05S at concentrations as high as 26 and 300 mg/kg, respectively. Also, as discussed above, dissolved TCE and PCE have been reported in groundwater samples from well MW-05S at concentrations as high as 2.5 mg/l and 61 mg/l, respectively. Moreover, TCE and PCE are both non-polar PMOS.

However, there is no indication that a CMOS, such as acetone or methanol, is present at concentrations greater than 30%. Based on the conclusions from Rao et al., there is no evidence that dioxin or any other HOC would have experienced a reduction in sorption to soil as a result of the presence of the non-polar PMOS TCE and PCE. Therefore, it reasonably can be concluded that, even in the presence of TCE and PCE, dioxin in soil would not be expected to undergo enhanced transport from the soil to the underlying groundwater.

Title: Sorption of Organic Chemicals by Soil from Multi-Solvent and Multi-Sorbate Mixtures

Authors: P.S.C Rao and L.S. Lee

Journal Citation: In *Health and Environmental Research on Complex Mixtures,* R.H. Gray, E.K. Chess, P.J Mellinger, R.G Riley (eds.), DOE Symposium Series 62, 24th Hanford Life Science Symposium, Pacific Northwest Labs, Richmand, WA. Pp. 457-471.

Article Summary: The subject paper provides a review of experiments concerning cosolvency that had been conducted to date. The paper addresses solubility and sorption changes of HOCs in the presence of water/CMOS mixtures, water/PMOS mixtures and water HOC sorption from multi-sorbate mixtures. Much of the article presents the results of CMOS/water mixtures. However, one portion titled "HOC Sorption from Immiscible Solvent Mixtures" evaluates how PMOS (in this case, toluene and n-pentane) in water affect the sorption of two herbicides (terbacil and atrazine) to soil. In all cases studied, the volume ratio of water to immiscible solvent was larger than 10. The authors conclude that "the presence of an immiscible organic solvent did not measurably affect herbicide sorption."

Application to MW-05S: Although the chemicals used in the experiments are not identical to those present in MW-05S, the results are consistent with the previously summarized papers in that an immiscible solvent will not have a measurable effect (reduction) on the sorption of HOC to soil. Again, the data presented in Rao and Lee indicate that reduced soil sorption is not occurring at MW-05S as the result of the co-occurrence of 2,3,7,8-TCDD and chlorinated solvents. Thus, enhanced transport of 2,3,7,8-TCDD due to cosolvency is not occurring at MW-05S.

Title: Solvophobic Approach for Predicting Sorption of Hydrophobic Organic Chemicals on Synthetic Sorbents and Soils

Authors: K.B. Woodburn, P.S.C. Rao, M. Fukui, and P. Nkedi-Kizza

Journal Citation: *Journal of Contaminant Hydrology.* 1988, *1*, 227-241.

Article Summary: Woodburn et al. discuss the findings from their experiments evaluating the effects of solute sorption on a model and natural solid phase in the presence of three cosolvents. The solutes used in the experiments included a variety of polycyclic aromatic hydrocarbons, alkylbenzenes, halobenzenes, and pesticides. The cosolvents used included acetone, methanol, and acetonitrile.

Application to MW-05S: The applicability of the information presented in Woodburn et al. to MW-05S is very limited because the systems they evaluated are significantly different than the known conditions at MW-05S. For example, while the cosolvents used by Woodburn et al. span a wide range of polarities, all three are completely miscible in water. This contrasts

with the data from MW-05S, where the potential cosolvents are non-polar compounds with very limited solubility. Additionally, the most dilute solvent solutions used in the experiments were between 5% and 10% dissolved solvent in water. The highest concentration solvent solutions were 100% solvent (i.e., pure solvent). In contrast, the maximum concentration of potential cosolvents reportedly dissolved in water at MW-05S is approximately 0.006 %, about three orders of magnitude lower than the lowest concentration used by Woodburn et al.

In addition, more recent work by co-authors of the present paper, Pinal et al. (1990) and Rao et al. (1990), evaluated the effects of non-polar cosolvents with limited solubility and found that their aqueous (i.e., dissolved) concentration must exceed 1% before appreciable sorption or solubility effects are noted. As noted above, the reported dissolved concentrations of the non-polar solvents in MW-05S are more than two orders of magnitude less than 1%. In fact, the solvents reported in MW-05S, principally PCE and TCE, cannot have dissolved concentrations above 1% unless a suitable ternary solvent, such as methanol, were present at elevated concentrations. Nevertheless, there is simply not enough TCE and PCE to reach the 1% threshold. Thus, no cosolvency effects on dioxin solubility or sorption is expected at MW-05S.

Title: Influence of Organic Cosolvents on Sorption of Hydrophobic Organic Chemicals by Soils.

Authors: P. Nkedi-Kizza, P.S.C Rao and A.G. Hornsby

Journal Citation: *Environ. Sci. Technol.* 1985, *19,* 975-979

Article Summary: Nkedi-Kizza et al. assess the sorption of anthracene, diuron and atrazine by soils from aqueous solutions and binary solvents consisting of methanol-water and acetone-water.

Application to MW-05S: As discussed for Woodburn et al., the solvents used in the binary mixtures, methanol and acetone, are completely miscible in water. Also, the minimum concentration of cosolvents in water is 5%. Using the same information from Pinal et al. (1990) and Rao et al. (1990) expressed above for Woodburn et al., we conclude that no cosolvency effects are occurring at MW-05S.

Title: Sorption and Transport of Hydrophobic Organic Chemicals in Aqueous and Mixed Solvent Systems: Model Development and Preliminary Evaluation

Authors: P.S.C Rao, A.G. Hornsby, D.P Kilcrease, and P. Nkedi-Kizza,

Journal Citation: *J.Environ. Qual.* 1985, Vol. 14, no. 3.

Article Summary: Rao et al. present the theoretical basis for the manner in which HOCs may behave in aqueous and mixed solvent mixtures. To verify these theories, Rao et al. rely on the work presented in Nkedi-Kizza et al. (1985) and Woodburn et al. (1985), both of which are reviewed and summarized above. In general, the work of Nkedi-Kizza et al. (1985) and Woodburn et al. (1985) focus on the evaluation of the effects of CMOS, such as methanol and acetone, on the sorption of HOCs.

Application to MW-05S: The work of Nkedi-Kizza et al. (1985) and Woodburn et al. (1985), and thus the reported findings in Rao et al., (1985), are not comparable to the conditions at MW-05S where there are no reported concentrations of miscible organic solvents, such as methanol or acetone. In contrast, MW-05S is reported to contain concentrations of only partially miscible solvents, PCE and TCE, which have not been shown to have an effect on cosolvency at the levels reported.

Conclusions

Based on the information known about the soil and groundwater at monitoring well MW-05S, and the data presented in the papers cited by EPA, we conclude the following:

- MW-05S contains no free product in groundwater.
- MW-05S is not reported to contain any completely miscible solvents, such as methanol or acetone, in the solid (soil) or liquid (groundwater) phases.
- The highest reported levels of PCE and TCE in groundwater at monitoring well MW-05S are 61 mg/l and 2.5 mg/l, respectively.
- For partially miscible solvents, such as TCE and PCE, to have an appreciable effect on cosolvency or reduced sorption, the concentration in the dissolved aqueous phase must exceed 10,000 mg/l.
- The maximum reported concentration of dissolved, aqueous phase partially miscible solvents in MW-05S is 0.635% of the threshold at which cosolvency effects would be observed.
- The water solubilities of TCE and PCE are 1,100 mg/l and 150 mg/l, respectively.
- Given the absence of a high concentration (percent range) of miscible solvent and the aqueous solubilities of TCE and PCE, the dissolved aqueous phase concentrations of PCE or TCE in groundwater at monitoring well MW-05S could not approach the 10,000 mg/l threshold cited in literature for cosolvency effects by immiscible solvents to occur.
- No cosolvency of dioxin by PCE or TCE is occurring at MW-05S.
- Enhanced transport of 2,3,7,8-TCDD is not occurring at monitoring well MW-05S as

the result of the co-occurrence of PCE and/or TCE.

The papers that EPA has cited to support the theory that there is cosolvency or enhanced solubility of 2,3,7,8-TCDD at monitoring well MW-05S due to the presence PCE and/or TCE do not support EPA's claim. Many of the papers are simply not applicable due to the differences in systems examined by the researchers and the conditions that exist at monitoring well MW-05S. However, even with respect to those papers that examine systems that are similar to the conditions at MW-05S (e.g., the presence of a partially miscible solvent and a hydrophobic organic compound in water), the research clearly demonstrates that enhanced solubility of the hydrophobic organic compound, 2,3,7,8-TCDD, is not occurring. Moreover, the relevant research leads to the conclusion that reduced sorption to soil (and thus higher mobility) of 2,3,7,8-TCDD has not occurred at monitoring well MW-05S.

The results of the meta-analysis further support and augment the information and analysis presented in our June 8, 2007 letter, in which we discuss EPA's flawed conceptual site model for the groundwater to surface water pathway and its inappropriate interpretation of the SPMD results. Given the overwhelming evidence contradicting EPA's position, we request that EPA reconsider its conceptual site model for the groundwater to surface water pathway and its interpretation of the SPMD results.

Sincerely,

Russ Keenan

Russell E. Keenan, Ph.D.
Vice President
Technical Director, Risk Assessment

Patrick O. Gwinn
Senior Environmental Scientist

cc: Ms. Deidre Dahlen, Battelle
Eve Vaudo, Esq., U.S. EPA
Cornell Rosiu, U.S. EPA
Louis Maccarone, RIDEM
Jerome C. Muys, Jr., Esq.
Jeffrey M. Karp, Esq.
Laura Ford Brust, Esq.
Mr. Jeffrey Loureiro (LEA)
Mr. David Scotti (LEA)

Loureiro Engineering Associates, Inc.

FOR INCLUSION IN THE ADMINISTRATIVE RECORD

September 11, 2007

United States Environmental Protection Agency
Region 1 - New England Regional Office
One Congress Street, Suite 1100 (HBO)
Boston, Massachusetts 02114-2023

Attn: Anna Krasko, Project Manager

RE: Remedial Alternatives for Source-area Soil
Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Dear Ms. Krasko:

This letter augments correspondence of June 8 and July 18, 2007, submitted on behalf of Emhart Industries, Inc. ("Emhart"), and responds to the United States Environmental Protection Agency's (EPA's) correspondence of August 14, 2007 regarding the remedial alternatives that EPA is evaluating for source-area soils at the above-referenced site. The remedial alternatives being evaluated by EPA are: (i) no further action; (ii) upgrade and maintain existing caps and parking lots; and (iii) convert to RCRA caps and maintain. These alternatives were presented at the April 23, 2007 dialog meeting. At that meeting, the EPA project team explained that the second alternative contemplates importing soil to re-grade the caps with three percent slopes to direct water away from the capped soils. The EPA project team further explained that the third alternative contemplates the incorporation of a geomembrane liner and importing soil to re-grade the caps with three percent slopes in converting the existing caps to RCRA caps. As presented herein, the remedial alternatives that are being evaluated should include an additional and separate alternative for monitoring and maintenance of the existing caps.

As presented in the June 8 and July 18, 2007 letters, upgrades to the existing caps and parking lots or conversion of the existing caps to RCRA caps are not warranted. In response to the referenced correspondence, EPA stated in its letter dated August 14, 2007 that it will continue to evaluate the three alternatives. Moreover, EPA will reconsider its initial screening efforts to confirm that the three alternatives represent the appropriate universe of potential approaches for the source-area soils. While EPA's reconsideration of its initial screening is certainly appropriate, the constituent concentrations in the source-area soils do not warrant upgrades to the

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existing caps and parking lots, or conversion of the existing caps to RCRA caps, as explained below.

According to EPA, constituents are present in the capped materials at concentrations that exceed the Rhode Island Department of Environmental Management's (RIDEM's) residential direct exposure criteria (RDEC). While it may be argued that EPA's second and third remedial alternatives identified above may minimize the potential for constituents to leach from the capped materials, these alternatives would provide no greater protection to human health via the direct exposure pathways than the protection provided by the existing caps. Monitoring and maintenance of the existing caps will continue to provide a direct barrier to contact with constituents present in the underlying source-area soils. With the implementation of regular monitoring and maintenance, there is no need to upgrade the existing caps or to convert them to RCRA-type systems to ensure the protection of human health from potential risks via direct contact.

The issue regarding whether the existing caps need to be upgraded or converted to minimize the potential for constituents to leach from the capped materials is presented in the remainder of this correspondence. The applicability of the leachability criteria is first presented followed by a summary of the constituent concentrations reported by EPA in the source-area soils. The rationale for understanding why the conditions in the source-area soils do not warrant an upgrade to the existing caps or conversion of the existing caps to RCRA-type systems is then presented, followed by a recommendation for the most prudent and, in our view, the only appropriate long-term remedy for the source-area soils.

Applicability of GB Leachability Criteria

According to EPA and the June 30, 2005 *Interim Final Remedial Investigation Report* prepared by Battelle (Report), constituents are present in the capped materials at concentrations that reportedly exceed RIDEM's leachability criteria. A summary of these constituents is provided in Table 4-4 of the Report. The leachability criteria are intended to ensure protection of the designated groundwater classification. The groundwater beneath and downgradient of the site is classified as GB. In accordance with the RIDEM *Remediation Regulations* (DEM-DSR-01-93), the GB leachability criteria apply to site soils as long as the application of these criteria will not contribute to actual or potential impacts to surface water and/or sediment. As stated in the Report, the constituents identified in the source-area soils at concentrations that exceed RIDEM's leachability criteria are not adversely impacting surface water and sediment quality proximate to the site. Therefore, the GB leachability criteria apply to the site. Pursuant to the RIDEM Remediation Regulations, the GB leachability criteria apply to the soils throughout the vadose zone, which at the site has an average thickness of approximately five feet.

The GB leachability criteria have been established by RIDEM for certain volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) only. For other constituents,

leachability criteria established through a laboratory test such as the Toxicity Characteristic Leaching Procedure (TCLP) or the Synthetic Precipitation Leaching Procedure (SPLP) may be used to demonstrate that the constituents will not leach to groundwater at levels which exceed the groundwater objective. Such demonstrations are only necessary for areas in which groundwater is classified as GA. As explained above, groundwater at the site is classified as GB. Thus, RIDEM's leachability criteria apply only to the specific VOCs and PCBs that may be present in source-area soils, for which such criteria are listed in RIDEM's Remediation Regulations.

Constituent Concentrations

As provided in Table 4-4 of the Report, the constituents reported to exceed the GB leachability criteria include VOCs reported to be present in soil samples collected from borings advanced in the areas of the cap. These borings include soil borings CMS-405, CMS-408, CMS-417, CMS-419, CMS-060, and MW-05S. A summary of the constituents reported to be present at each of these locations is presented as follows:

Soil Borings CMS-405 and CMS-408

Soil borings CMS-405 and CMS-408 are located in the Centerdale Manor south parking lot. Based on laboratory analytical data obtained for soil samples collected from the vadose zone at these boring locations, benzene was reported to be present at maximum concentrations of 130 milligrams per kilogram (mg/kg) (CMS-405) and 480 mg/kg (CMS-408). The reported concentrations of benzene exceed the GB leachability criteria (4.3 mg/kg). No other borings located in this area were characterized to contain constituent concentrations that exceed the GB leachability criteria.

Based on the laboratory analytical results of groundwater samples collected from nearby monitoring well MW-09S, no VOCs were reported to exceed criteria for the GB groundwater objective. Benzene was reported to be present at a maximum concentration of 21 micrograms per liter (µg/l) for this well location. This concentration is less than the criteria established for the GB groundwater objective (140 µg/l).

Soil Borings CMS-417 and CMS-419

Soil boring CMS-417 is located in the Brook Village parking lot at the northern extent of Cap #2. Based on laboratory analytical data obtained for soil samples collected from the vadose zone at this boring location, chlorobenzene, *cis*-1,2-dichloroethylene, ethylbenzene, tetrachloroethylene, trichloroethylene, and toluene were reported to be present at concentrations that exceed the applicable GB leachability criteria as presented in Table 4-4 of the Report. With the exception of trichloroethylene, the same VOCs were reported to be present at concentrations that exceed the applicable GB leachability criteria in the soil samples collected from soil boring CMS-419, located in the Centerdale Manor north parking lot.

The vertical distribution of VOCs reported in the vadose zone at locations CMS-417 and CMS-419 are summarized in Table 4-5 of the Report. As presented in this table, the highest VOC concentrations are found within two feet of the ground surface, with significantly lower concentrations in deeper samples collected from the vadose zone. In fact, the concentrations for all constituents are below the respective GB leachability criteria in the vadose zone samples nearest the water table. For location CMS-417, VOCs were lower than the GB leachability criteria for the deepest sample collected from this boring (3-4 feet below ground surface (bgs)). For location CMS-419, VOCs were lower than the GB leachability criteria for the deepest three samples collected from this boring (3-8 feet bgs). These reported data indicate that the VOCs are primarily present in the upper most horizon of the soil column, and although presumably present for several decades, they are not mobilizing downward in the soil column.

Based on the laboratory analytical results of groundwater samples collected from nearby monitoring wells MW-01S and MW-06S, no VOCs were reported to exceed criteria for the GB groundwater objective. No VOCs were detected in the groundwater at monitoring well MW-01S and except for chlorobenzene, no VOCs were reported to be present in the groundwater samples collected from monitoring well MW-06S at other than estimated concentrations. Chlorobenzene was reported to be present in groundwater at monitoring well MW-06S at a maximum concentration of 190 µg/l. This concentration is less than the criteria established for the GB groundwater objective (3,200 µg/l).

Soil Borings CMS-060 and MW-05S

Soil boring CMS-060 is located in the northern extent of Cap #2. Based on laboratory analytical data obtained for soil samples collected from the vadose zone at this boring location, tetrachloroethylene was reported to be present at a maximum concentration estimated by the analyzing laboratory to be 63 mg/kg. Based on this result, the reported concentration exceeds the GB leachability criteria (4.2 mg/kg). No other VOCs were reported to be present in soil at concentrations that exceed the GB leachability criteria at this location.

Soil boring MW-05S is located in the Brook Village parking lot. Based on laboratory analytical data obtained for soil samples collected from a depth of 4 – 6 feet below the ground surface at this boring location, tetrachloroethylene was reported to be present at a maximum concentration estimated by the analyzing laboratory to be 300 mg/kg. Based on this result, the reported concentration exceeds the GB leachability criteria (4.2 mg/kg). No other VOCs were reported to be present in soil at this location at concentrations that exceed the GB leachability criteria.

Based on the laboratory analytical results of groundwater samples collected from monitoring well MW-05S, *cis*-1,2-dichloroethylene, trichloroethylene, and tetrachloroethylene were reported to be present in groundwater. A maximum *cis*-1,2-dichloroethylene concentration of 1,600 µg/l was reported for this location. This concentration is below the criteria established for the GB groundwater objective (3,200 µg/l). A maximum trichloroethylene concentration of 2,500 µg/l

was reported for this location, which exceeds the criteria established for the GB groundwater objective (540 µg/l). For the groundwater samples collected from this monitoring well, tetrachloroethylene was reported to be present at a concentration of 61,000 µg/l. This concentration exceeds the criteria established for the GB groundwater objective (150 µg/l).

Basis for Long-Term Remedy for Source-Area Soils

Based on the results provided in the Report, the VOCs are believed to be stable within the soil because the soils have been in place under the existing asphalt cap for at least several decades. This is not surprising given that asphalt systems historically have been used as low-permeability caps and may provide barriers to infiltration that are as protective, if not more protective, than geomembrane liners. The fact that VOCs are not present in the groundwater at reported concentrations above the GB groundwater objective at the locations discussed above demonstrates that the existing asphalt parking lots are adequate to protect human health and the environment from potential risks associated with constituents that may leach from source-area soils.

In the area of soil boring MW-05S, trichloroethylene and tetrachloroethylene were reported to be present in the soil sample collected from a depth of 4 – 6 feet below the ground surface and believed to be within the zone of water table fluctuation. As presented in the Report, the average thickness of the vadose zone at the site is approximately five feet. The Report suggests that the presence of trichloroethylene and tetrachloroethylene at this location appears to result from a subsurface release, or lateral migration from a nearby surface source. In this area, as well as in the other source-areas, the impacts to soil are localized and not laterally extensive.

With regard to groundwater, the Report also notes the following:

- Concentrations of VOCs are below the GB groundwater objectives except for trichloroethylene in the sample collected at one location (MW-05S) and tetrachloroethylene in the samples collected at monitoring wells MW-05S, MW-14M, and MW-13D.
- The extent of trichloroethylene and tetrachloroethylene dissolved in groundwater at concentrations that exceed the GB groundwater objectives is limited at the site.
- The VOC concentrations have generally decreased or remained consistent over time.
- The VOCs are not adversely impacting surface water and sediment quality at the site.

In summary, tetrachloroethylene reportedly is present at one location, CMS-060, within the area of the constructed caps at concentrations that reportedly exceed the GB leachability criteria. Tetrachloroethylene and other VOCs are reportedly present in other source-area soils localized under the existing asphalt parking lots at concentrations that reportedly exceed the GB leachability criteria. These constituents are not migrating downward through the vadose zone and are not leaching to groundwater. In the area of soil boring MW-05S, the reported presence of trichloroethylene and tetrachloroethylene appears to be the result of a subsurface release, or

lateral migration from a nearby surface source. At the site, the VOCs reported to be present in groundwater at concentrations that exceed the GB groundwater objectives are limited to trichloroethylene (only at monitoring well MW-05S) and tetrachloroethylene. The extent of the dissolved-phase plume at the site is limited.

Recommendation

In accordance with the RIDEM *Rules and Regulations for Groundwater Quality* (RIDEM Regulation 12-100-006), groundwater classified GB are those groundwater resources not suitable for public or private drinking water use. The GB groundwater designation for the site essentially establishes an incomplete human health exposure pathway. Thus, there is no adverse impact on human health from the potential leaching of constituents through source-area soils. Because VOCs are not adversely impacting surface water and sediment quality at the site, there is no potential risk to the environment from the potential leaching of constituents through source-area soils. The concern regarding purported effects of cosolvency or enhanced solubility as a result of the reported co-occurrence of VOCs and 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) at monitoring well MW-05S was addressed in AMEC's letters dated June 8 and August 15, 2007. Therefore, the constructed caps and existing asphalt cap are protective of human health and the environment, and the cap enhancements under consideration by EPA are unnecessary.

As suggested, we have reviewed the Battelle document entitled, *Final Technical Memorandum – Approach for Developing a Long-term Remedy for Source-area Soils* (July 2004) (Memorandum). Battelle prepared the Memorandum to evaluate source-area soil and groundwater data relative to applicable regulatory criteria, identify contaminant transport and exposure pathways, and to recommend an approach for developing a long-term remedy to address the transport and exposure pathways. According to Battelle, the caps were constructed to minimize human exposure to contaminated soils and to prevent soil erosion and transport. Based on the evaluation presented in the Memorandum, Battelle recommended that the long-term remedial approach for the source-area soils should focus on preventing direct exposure to and erosion of contaminated soils. Battelle also recommended that because there is little evidence that leaching of contaminants from soil to groundwater is occurring, additional measures to prevent leaching should not be necessary, provided that the paved and capped surfaces are maintained.

Accordingly, an alternative for monitoring and maintenance of the existing caps should be included in the feasibility study evaluation. Moreover, it is clear that, based on the constituent concentrations in soil and groundwater in the source-area, monitoring and maintenance to ensure the protectiveness and integrity of the existing caps and pavement at the site is the most appropriate long-term remedy for the source-area soils. Therefore, EPA is requested to reconsider the need to evaluate cap enhancements for the source-area soils. As presented in the June 8 and July 18, 2007 letters submitted on Emhart's behalf, the caps constructed over the

source-area soils are protective of human health and the environment, and upgrades to the existing caps and parking lots or conversion of the existing caps to RCRA caps is unwarranted.

Sincerely,

LOUREIRO ENGINEERING ASSOCIATES, INC.

David N. Scotti, P.G.
Project Manager

Copy to: Eve Vaudo (EPA)
Deirdre Dahlen (Battelle)
Louis Maccarone (RIDEM)
Jerry Muys, Esq.
Jeffrey Karp, Esq.
Laura Ford Brust, Esq.
Russell Keenan (AMEC)
Patrick Gwinn (AMEC)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
1 CONGRESS STREET, BOSTON, MA 02114

September 14, 2007

David Scotti
LEA, Inc.
100 Northwest Drive
Plainville, CT 06062

Re: Centredale Manor Restoration Project Superfund Site
North Providence, Rhode Island

Dear Dave:

I am writing in response to a letter dated August 15, 2007 from AMEC as well as some issues raised in your letter dated September 11, 2007, concerning the remedial alternatives that the U.S. Environmental Protection Agency is considering for the area near MW-05 at the Centredale Manor Restoration Project Superfund Site. As far as remedial alternatives for the source area soils which you again raised in your recent correspondence, as EPA explained in the August 14, 2007 letter, we are evaluating and comparing a number of alternatives for each media as required by the National Contingency Plan (NCP), 40 C.F.R. Part 300. EPA is taking issues you raised into consideration as the number and the nature of alternatives to be evaluated are being finalized in the Feasibility Study. We are discussing with Battelle the addition of a separate alternative comprised of monitoring and maintenance of the existing caps.

With regard to an area around MW-05S, EPA believes that the data indicates that groundwater is contaminated with 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) and volatile organic compounds (VOCs), the contaminated groundwater discharges to the Woonasquatucket River, and is a likely ongoing source or migration pathway for 2,3,7,8-TCDD from the site to the river. The characterization of that specific area is the basis for EPA to develop a set of remedial alternatives to address that contamination, which is separate from the basis for the source-area soils alternatives. The objective of the Semi-Permeable Membrane Device (SPMD) study at this location was to gain a better understanding of such migration. The objective was met in so far as the data from analysis of samples collected from groundwater, sediment, and sediment SPMD deployments indicate the presence of a site-derived contaminant plume containing 2,3,7,8-TCDD discharging to the Woonasquatucket River. The SPMD study evaluation, when issued as part of the FS report, will discuss uncertainties and assumptions associated with this study, including several mechanisms (http://www.epa.gov/ada/download/issue/facili.pdf), which individually or in combination, could be associated with the observed groundwater data. The references provided to AMEC on the subject of hydrophobic organic chemical transport are only a part of all literature on this subject.

EPA welcomes your additional thoughts and suggestions in connection with our evaluation of remedial alternatives for the Site. We look forward to working with you and the other PRPs to address the contamination at the Site.

Sincerely,

Anna Krasko

cc: Eve Stolov Vaudo
Louis Maccarone, RIDEM

amec

October 15, 2007
Ms. Anna Krasko, Project Manager
United States Environmental Protection Agency
Region 1
One Congress Street
Boston, Massachusetts 02114

RE: Centredale Manor Site: Alleged Facilitated Transport of Dioxin from MW-05S to the Woonasquatucket River

Dear Ms. Krasko:

We are writing on behalf of Emhart Industries, Inc. in furtherance of our prior correspondence disputing EPA's assertion that groundwater at the above-referenced Site is an ongoing source or a migration pathway of dioxin to the Woonasquatucket River. In your September 14, 2007 letter to David Scotti of Loureiro Engineering Associates, Inc. (LEA), you state that EPA believes that the data indicate the area around monitoring well MW-05S is likely acting as an ongoing source of 2,3,7,8-TCDD and volatile organic compounds (VOCs) discharging to the Woonasquatucket River. In our previous letters dated June 8, 2007 and August 15, 2007 on the matter of monitoring well MW-05S, we have provided the reasons why we do not believe the data are indicative of a dissolved 2,3,7,8-TCDD groundwater plume discharging to the Woonasquatucket River. In the September 14, 2007 letter, you provided a hyperlink (http://www.epa.gov/ada.download/issue/facili.pdf) in the context of explaining that there are several mechanisms at work which, individually or in combination, could be associated with the observed groundwater data.

The hyperlinked document, Superfund Ground Water Issue (Huling, 1989)[1], discusses the potential for enhanced solubility of hydrophobic organic compounds (HOC) as the result of cosolvency with other organic solvents present, and/or colloidal transport. Our August 15, 2007 letter provided a detailed review and analysis of the literature pertaining to the alleged cosolvency effect. It is important to note that the Huling (1989) document was published in August 1989; therefore, the author of that document did not have the benefit of the literature published after that date. This timing point is particularly important because the peer-reviewed literature that is most pertinent to conditions observed at monitoring well MW-05S was not published until 1990 and later. All of the literature cited for the effect of cosolvency in the Huling (1989) document evaluated the effect of high concentrations (percent levels) of completely miscible solvents (e.g., acetone, methanol, etc.) on the solubility of HOC. As discussed in our August 15, 2007 letter, these conditions do not exist at monitoring well MW-05S.

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[1] Huling, 1989. Superfund Ground Water Issue – Facilitated Transport. U.S. Environmental Protection Agency, Office of Research and Development, Office of Solid Waste and Emergency Response. EPA/540/4-89/003. August.

The literature published subsequent to Huling (1989) evaluated the effect of chlorinated solvents on HOC solubility. The studies discussed found that for partially miscible solvents, such as trichloroethylene (TCE) and tetrachloroethylene (PCE), to have an appreciable effect on cosolvency or reduced sorption, the concentration in the dissolved aqueous phase must exceed 10,000 milligrams per liter (mg/l). Given the absence of a high concentration (percent range) of a completely miscible solvent and the aqueous solubilities of TCE and PCE, the dissolved aqueous phase concentrations of PCE or TCE in groundwater at monitoring well MW-05S could not approach the 10,000 mg/l threshold cited in literature for cosolvency effects by immiscible solvents to occur (Pinal et al, 1990[2] and Rao et al, 1990[3]). As a result, a cosolvency effect is not occurring at monitoring well MW-05S.

Further support for the conclusion that a cosolvency effect is not occurring at monitoring well MW-05S is evidenced by the semi-permeable membrane device (SPMD) data from monitoring well MW-05S. Based on Battelle's estimates, these data demonstrate that only approximately 2% of the dioxin present in the unfiltered water sample is in the dissolved formed. If chemical cosolvency were occurring at monitoring well MW-05S, a much higher percentage of the dioxin would be expected in the dissolved form. Clearly, however, this is not the case.

The other mechanism for enhanced solubility discussed in Huling (1989) is a colloidal process whereby HOC preferentially sorbs to colloids that are small enough to travel with groundwater through the soil pores. The data collected by EPA and its consultants cannot be used to confirm EPA's inference that dioxin is being mobilized toward the river via colloidally facilitated transport. For example, other than the SPMD deployment in the groundwater at monitoring well MW-05S, EPA has not attempted to quantify the proportion of dioxin sorbed to colloidal material. EPA's data derived from the SPMDs buried in the contaminated river bank sediment are in no way indicative of colloidal transport because SPMDs do not account for colloidally-bound chemicals. As the USGS states:[4]

> "Nonporous polymeric films such as low-density polyethylene (membrane of choice for SPMDs) contain transient cavities with maximum diameters of about 10 Å. These cavities are far too small to accommodate colloids or macromolecular dissolved organic carbon (DOC) such as humic acids.
>
> Also, comparisons of chemical concentrations determined by using traditional analytical methods for ultra-filtered river water (colloids and DOC > 50 Å diameter were removed)

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[2] R. Pinal, P.S.C Rao, L.S. Lee, P.V. Cline, and S.H. Yalkowsky. *Environ. Sci. Technol.* 1990, *24,* 639-647.

[3] P.S.C Rao, L.S. Lee, and R. Pinal. *Environ. Sci. Technol.* 1990, *24,* 647-654.

[4] http://wwwaux.cerc.cr.usgs.gov/SPMD/SPMD_questions.htm#7.%20Do%20SPMDs%20sample%20only%20dissolved%20or%20vapor%20phase%20chemicals?

and those estimated from SPMDs exposed to river water appear to confirm that SPMDs sample only dissolved residues, which are readily bioavailable."

Based on the USGS statements, the data from the SPMDs buried in the contaminated sediment cannot be used to assess whether colloids are transporting dioxin via groundwater because the SPMDs exclude colloids and, by extension, the chemicals that may be sorbed on the colloid.

Moreover, if EPA is theorizing that dioxin is being transported by colloids in groundwater, then the methods used by Battelle to estimate corresponding pore water concentrations of dioxins are not appropriate or valid. This is because the theory concerning the sampling of water by SPMDs includes only dissolved chemicals and does not include chemicals transported via colloids. As a result, the equations used by Battelle, their other shortcomings notwithstanding, are not appropriate to estimate pore water concentrations of dioxins sorbed to colloidal material.

To date, EPA's discussions regarding the theory that dioxin is being transported from monitoring well MW-05S to the Woonasquatucket River involve a notion that facilitated transport of dioxin is occurring due to cosolvency, colloidal transport, or some combination thereof. However, the most relevant peer-reviewed literature on the matter of cosolvency as it relates to monitoring well MW-05S, Pinal et al. (1990) and Rao et al. (1990), clearly demonstrates that the TCE and PCE present in groundwater at monitoring well MW-05S is not affecting the solubility of dioxin. This conclusion is substantiated by the results of the concurrent SPMD and unfiltered groundwater sampling at monitoring well MW-05S which, according to Battelle's calculations, demonstrates that approximately 2% of the dioxin in the unfiltered groundwater is actually dissolved in the water. The remaining 98% of the dioxin is particle-bound. Thus, if enhanced solubility due to cosolvency were occurring, the SPMD and unfiltered groundwater sampling results should be in relatively good agreement, yet they are not.

As for the notion that facilitated transport of dioxin is occurring due to colloidal transport, the data collected to date cannot possibly be used to confirm this theory. The data from monitoring well MW-05S (SPMD and unfiltered groundwater) suggest that a majority of the dioxin in water is sorbed to suspended particles. This outcome is not unexpected. As discussed above, SPMDs simply do not sample chemicals that are sorbed to suspended particles or colloids. Hence the difference in the unfiltered groundwater and SPMD samples' results from monitoring well MW-05S. Therefore, the SPMDs buried in the contaminated sediment did not sample chemicals that are sorbed to suspended particles or colloids in pore water.

The foregoing discussion raises the following question: If dioxin is not being transported as a result of chemical cosolvency and the SPMDs do not sample colloidally-bound chemicals, why are there relatively high levels of dioxin present in the SPMDs buried in the contaminated sediment? The likely answer is that the SPMDs were not adequately cleaned; therefore, contaminated sediment residue remained on the SPMD during the sample extraction phase. This answer is sensible because of the intimate contact of the sediment with the sediment-deployed SPMDs. Also, no studies ever have been conducted to assess the efficacy of the method employed by Battelle to clean the SPMDs of sediment residue. Thus, it is possible, and likely probable, that the Kimwipe cleaning was not effective in removing all sediment residue from the

surface of the SPMD. In addition, this answer is the only one that does not defy the available data, nor does it contradict all peer-reviewed scientific literature on cosolvency and SPMD sampling characteristics. In contrast, EPA's present position contradicts this literature.

To use the existing data in support of EPA's current theory, one must make the unreasonable and far-reaching assumptions that (1) the dioxin (which based on Battelle's data and calculations is overwhelmingly bound to suspended particles) in monitoring well MW-05S desorbs and becomes dissolved during the transport from monitoring well MW-05S to the Woonasquatucket River; and (2) by the time the dioxin reaches the SPMDs buried in the sediment, it is dissolved and available for SPMD uptake. This hypothesis is untenable, and there are no data to corroborate it. In fact, all the data and the scientific literature point to the conclusion that dioxin is not being transported from monitoring well MW-05S to the Woonasquatucket River. Accordingly, Emhart again requests that EPA reconsider its conceptual site model for the groundwater to surface water pathway, and its interpretation of the SPMD results.

Sincerely,

Russ Keenan

Russell E. Keenan, Ph.D.
Vice President
Technical Director, Risk Assessment

Patrick O. Gwinn
Senior Environmental Scientist

cc: Ms. Deidre Dahlen, Battelle
Eve Vaudo, Esq., U.S. EPA
Cornell Rosiu, U.S. EPA
Louis Maccarone, RIDEM
Jerome C. Muys, Jr., Esq.
Jeffrey M. Karp, Esq.
Laura Ford Brust, Esq.
Mr. Jeffrey Loureiro (LEA)
Mr. David Scotti (LEA)

APPENDIX B

APPENDIX B

Loureiro Engineering Associates, Inc. Standard Operating Procedures

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
For
Hollow Stem Auger Soil Borings

SOP ID: 10008
Date Initiated: 02/20/94
Revision No. 007: 12/31/01

Approved By: *<u>/s/ Kimberly M. Clarke</u>* *<u>12/19/01</u>*
Kimberly M. Clarke **Date**
Senior Project Scientist

<u>/s/ Nick D. Skoularikis</u> *<u>12/19/01</u>*
Nick D. Skoularikis **Date**
Director Of Quality

REVISION RECORD

Rev #	Date	Additions/Deletions/Modifications
Initial Issue	02/20/94	Initial Issue
001-004	NR	No record.
005	06/13/97	No record.
006	07/29/00	Changes to SOP format and new company logo.
007	12/31/01	Revisions throughout. Revised to conform to new SOP format.

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
For
Hollow Stem Auger Soil Borings

1. Purpose and Scope

This section discusses procedures for conducting soil borings either for exploration or for the installation of monitoring wells. The Loureiro Engineering Associates, Inc. (LEA) representative should be aware that the drillers are responsible for the operation and safety of the drilling rig itself, but should ensure that proper procedures are used with respect to sampling and cleaning of equipment. This document was prepared in accordance with method American Society of Testing Materials (ASTM) D 1452-80. Soil sampling for chemical analysis is covered under LEA *SOP for Soil Sampling* (SOP ID 10006).

2. Definitions

2.1. None

3. Equipment

3.1. Equipment supplied by LEA that is required for conducting hollow stem auger borings includes:

- Spatula.
- Distilled water.
- Hand towels.
- Portable VOC analyzer (such as Photovac MicroTIP® or equivalent).
- Polyethylene plastic sheeting.
- Sample collection jars.
- Clean disposable gloves.
- Field documentation.
- Indelible marker.
- Three 5-gallon buckets.
- Non-phosphate detergent, methanol (less than 10 percent solution), 10

percent nitric acid solution, hexane, distilled water.

- Cooler and cold packs.
- Graduated cylinder.
- Analytical balance (accurate to 0.1 gram).
- 500-ml disposable beakers.
- EPA Volatile Organic Analysis (VOA) vial (40 ml).
- Field forms.
- Custody seals and sample labels.
- Field paperwork.
- Decontamination brushes.
- Personal protective equipment.
- Clipboard.
- 100 foot measuring tape.
- Re-sealable plastic bags.
- Chain of custody forms.

3.2. Drilling Rig

Unless otherwise specified, all soil borings will be conducted using hollow stem auger equipment powered by an appropriate rig. It is the responsibility of the LEA representative to inform the driller prior to entering the site as to the probable depth of borings; probable materials, if known; and desired size of boring. It is the responsibility of the driller to provide the appropriate rig and augers in good working order considering the above factors.

3.3. Water

3.3.1. Water is occasionally required to maintain the stability of the boring. If water is used, the source(s), quality, and volume(s) will be recorded in the drilling log.

3.3.2. No other drilling fluid or compressed air may be used without specific authorization from the project manager.

3.4. Central Auger Opening Plug

In order to maintain clean, accurate samples, no hollow stem auger drilling may be conducted without the use of the central plug bit. The driller must be aware of this prior to entering the site.

4. Procedure

4.1. Utilities

4.1.1. Notify the appropriate "one call" utility notification service (e.g., Call Before You Dig in Connecticut at 1-800-922-4455) at least three working days prior to commencing operations on a site. The locations of all proposed borings must be clearly marked in the field prior to notification. The Project Engineer/Manager **must** call and confirm that each utility has been to the site and has marked their respective lines.

4.1.2. On private sites, consult with the owner or other person knowledgeable about the site as to locations of potential private or abandoned utilities and locate these prior to beginning work. Upon the discretion of the project manager, a pipe locator can also be used to assist in locating utilities.

4.1.3. Note that OSHA may have additional requirements for location of utilities.

4.1.4. All efforts to locate (including names of owner or designee and time) underground utilities should be properly documented in the field logbook prior to onset of the work scheduled.

4.2. OSHA

The Foreman or Supervisor of the drilling crew shall be the Competent Person as required by OSHA for all of their work. However, this does not relieve the other LEA representatives from bringing to his or her attention conditions which may be unsafe or present a hazard to the drilling crew, the general public, or other workers on the site. The LEA representatives will be responsible for ensuring that LEA activities are performed in accordance with the site-specific Health & Safety Plan.

4.3. Public Health

Since drilling equipment may be used elsewhere to construct other types of wells, including wells for private water supplies, all equipment, including the rig,

augers, and tools must be thoroughly decontaminated prior to leaving the site. On sites with known contamination, testing may be required to confirm adequacy of cleaning.

4.4. VOC Monitoring

4.4.1. A portable volatile organic compound (VOC) analyzer shall be available on site and shall be used to screen all cuttings and fluids (if any) removed from the hole.

4.4.2. Since, in general, it cannot be presumed that a site is clean, all cuttings and/or fluids that show a reading on the VOC analyzer above background shall be containerized or drummed, as appropriate, on the site. The cuttings and fluids should also be containerized when the presence of other contaminants is suspected. Section 4.12 provides additional information on management of potentially contaminated fluids and materials.

4.5. Site Preparation

4.5.1. A sufficient area shall be cordoned off to restrict access to the work area. This area shall be termed an "Exclusion Zone".

4.5.2. An equipment decontamination area shall be assembled, as described in Section 4.8, within the exclusion zone.

4.5.3. All personal protective equipment shall be donned.

4.5.4. The representative of LEA will bring to the attention of the rig operator the requirements of sampling, health and safety, utility restrictions, decontamination procedures, and well construction specifications.

4.6. Rig Operation

4.6.1. Rig operation is the responsibility of the drilling crew foreman or supervisor.

4.6.2. The rig should be inspected upon arrival on-site to ensure: that it is in good working order; that all required equipment and supplies are present; and that the rig is free of loose debris, oil leaks, or defective equipment. Only when the representative of LEA is satisfied that these requirements have been met will the drilling crew be allowed to decontaminate the rig and begin work.

4.6.3. The rig operator must demonstrate operation and effectiveness of the kill switch on the drill rig prior to initiating drilling activities.

4.7. Decontamination

4.7.1. Prior to conducting a boring, the LEA representative will ensure that all necessary equipment is clean and decontaminated, including the rig, all augers and bits, samplers, brushes, and any other tools or equipment. Decontamination procedures may vary slightly from those presented below, dependent upon the particular types of contaminants encountered.

4.7.2. A section of 5 mil (minimum) plastic sheeting shall be cut of sufficient size to underlie the decontamination area to contain any discharge of decontamination solutions.

4.7.3. The following solutions (as appropriate for the anticipated contaminants) shall be prepared and placed in 500-ml laboratory squirt bottles:

- Less than 10 percent methanol solution.
- Ten percent nitric acid solution.
- 100 percent hexane solution.
- Distilled deionized (DI) water.

4.7.4. A fifth solution of phosphate-free detergent and tap water (approximately 2.5 gallons) shall be prepared in a five-gallon bucket.

4.7.5. All loose debris shall be removed from the augers and spatulas into an empty five-gallon bucket or plastic sheeting using a stiff bristled brush.

4.7.6. The order of decontamination solutions is as follows:

- Detergent scrub.
- DI water rinse.
- Hexane rinse (to be used only if separate-phase petroleum product, other than gasoline, is present).
- DI water rinse.

- 10 percent nitric acid rinse (to be used only when metals are suspected as potential contaminants).
- DI water rinse.
- Methanol rinse (less than 10 percent solution).
- Air dry.

4.7.7. Wrap each piece of decontaminated sampling equipment in aluminum foil to maintain cleanliness.

4.7.8. An alternative to the procedure described above requires that the equipment be cleaned using high-pressure wash and steam cleaning. Alternative methods of cleaning may be more appropriate for an individual piece of equipment based upon knowledge of site contaminants, and may be used at the discretion of the LEA representative. Section 4.12 provides additional information on management of potentially contaminated fluids and materials in an area constructed to contain spent decontamination fluid and debris (plastic sheeting bermed with timber is usually sufficient).

4.7.9. At the end of the project day, all used equipment shall be decontaminated. All spent decontamination solutions will be handled and disposed of in accordance with all applicable municipal, state and federal regulations.

4.8. Sampling

4.8.1. All shallow soil sampling, unless otherwise specified by the site-specific work plan, shall be conducted using a split spoon (or similar) sampling device operating through hollow stem augers.

4.8.2. The hollow stem augers and central auger plug shall be advanced to the depth of the sampling interval.

4.8.3. After removing the central auger plug, the split spoon sampler will be lowered into the augers. It will then be driven 18 to 24 inches into the soil using a 140-pound hammer with a fall of three feet. A heavier hammer may be used in exceptionally dense materials provided its use is recorded in the boring log. The driller and the LEA representative will count and record the blows for each six-inch increment.

4.8.4. The split spoon shall be opened and immediately scanned using a VOC analyzer and following the approach described in Section 4.9, Field Analysis.

4.8.5. The LEA representative will record on the boring log as a minimum: description of the material in the sampler, blow counts, depth, VOC analyzer reading, material gradation using the Burmister system, color, moisture, and density.

4.8.6. Prior to reuse, the sampling device shall be decontaminated using the procedures described in Section 4.7, Decontamination.

4.8.7. Soil samples collected for archive purposes shall be placed into soil jars and labeled with the sample number, date, time, and LEA commission number.

4.8.8. The procedures for collection of soil samples for chemical analysis are described in *LEA's SOP for Soil Sampling* (SOP ID 10006).

4.9. Field Analysis

4.9.1. The portable VOC analyzer shall be either a Photovac MicroTIP® equipped with a photoionization detector (PID) or a Foxboro OVA® equipped with a flame ionization detector (FID) or equivalent and calibrated in accordance with the instructions provided with each piece of equipment. Calibration shall be performed prior to each sampling event and checked after each day of sampling.

4.9.2. The following procedure shall be used to obtain readings of the VOCs present in a soil sample:

- Obtain an aliquot of soil (approximately 50 grams) from the split spoon, place it into a re-sealable plastic bag, and seal it.
- Lightly agitate the sample, assuring that all soil aggregates are broken, for two minutes.
- Carefully break the seal of the bag enough to insert the VOC probe. Care shall be taken so that soil particles or liquid does not enter the portable VOC analyzer.
- Record the maximum reading obtained on the appropriate forms, as described in Section 3.5.

4.10. Field Documentation

4.10.1. The following general information shall be recorded in the field log book and/or on the appropriate field form(s):

- Project and site identification.
- LEA commission number.

- Field personnel.
- Name of recorder.
- Identification of borings.
- Collection method.
- Date and time of collection.
- Types of sample containers used, sample identification numbers and QA/QC sample identification.
- Field analysis method(s).
- Field observations on sampling event.
- Name of collector.
- Climatic conditions, including air temperature.
- Chronological events of the day.
- Status of total production.
- Record of non productive time.
- QA/QC data.
- Name of drilling firm.
- Location of boring(s) on-site in sufficient detail to relocate boring at a future time (include sketch). Tape off boring locations to an affixed permanent site feature.

4.10.2. The following information shall be recorded on the boring log:

- Project name, location, and LEA commission number.
- Borehole number, borehole diameter, boring location, drilling method, contractor, groundwater observations, logger's name and date.
- Depth below grade, sample number, duplicate numbers, VOC analyzer reading, number of blows required for a six inch penetration of a two inch diameter split spoon using a 140-pound hammer, rig behavior (i.e., drilling effort, etc.).
- A complete sample description, including as a minimum: depth, material size gradation using the Burmister system, color, moisture, and density. Should a well be constructed in a borehole, a complete well schematic shall be drawn and accurately labeled.
- Use of water, including source(s) and quantity.

4.10.3. The following information shall be recorded on the Daily Field Report QA Checklist:

- Reviewer's name, date, and LEA commission number.
- Review of all necessary site activities and field forms.
- Statement of corrective actions for deficiencies.

4.10.4. The Daily Field Report Instrument Calibration record shall include the following information:

- Client's name, location, LEA commission number, and date.
- Instrument make, model, and type.
- Calibration readings.
- Calibration/filtration lot numbers.
- Field personnel and signature.

4.11. Disposal of Potentially Contaminated Materials

Potentially contaminated cuttings or fluids, as indicated by knowledge of the site, discoloration, VOC analyzer readings, or other evidence, shall be containerized on the site pending sampling and determination of hazardous waste status.

4.12. Refusal

Refusal is defined as failure to penetrate with a split spoon sampler more than one inch with 100 blows using a 140-pound hammer.

4.13. Bedrock

The term "bedrock" will not be used in a boring log or other description unless a minimum of five feet of bedrock core is recovered using an appropriate core drill, and in the opinion of a competent geologist, the core is representative of bedrock in the region.

4.14. Boring Abandonment

4.14.1. If the boring is not to be used for other purposes (i.e., monitoring well, soil vapor probe, soil vapor extraction well, etc.), it shall be abandoned.

4.14.2. The boring shall be filled and sealed as the augers are withdrawn with neat cement grout or high-density bentonite clay grout (granular bentonite).

4.14.3. Excess cuttings shall be containerized, labeled and analytical results of the contents reviewed and profiled before disposal.

4.14.4. In paved areas, the upper three feet of the borehole shall be filled with sand, up to two inches below the existing grade, to allow for repairing of the pavement.

4.14.5. Pavement shall be repaired using cold patch asphalt filler or concrete.

5. Quality Assurance/Quality Control

Review procedures outlined in Section 3 of this SOP to ensure QA/QC during hollow stem auger drilling and soil sampling.

6. References

6.1. None.

END OF DOCUMENT

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Installing and Developing Monitoring Wells and Piezometers

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Approved By: _____ 8/12/02
Joseph T. Trzaski **Date**
Senior Scientist

_____ 08/12/02
Nick D. Skoularikis **Date**
Director of Quality

REVISION RECORD

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Initial Issue	02/20/90	
001-004	-	No record.
005	12/31/01	Formatting and minor revisions throughout.
006	08/12/02	Added section on utility clearance.

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Installing and Developing
Monitoring Wells and Piezometers

1. Purpose and Scope

This standard operating procedure (SOP) is designed to describe the methods and procedures used to install and develop monitoring wells and piezometers in a water-table aquifer. Monitoring well and piezometer installation and development shall generally follow the guidelines presented in the "*Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells*" (United States Environmental Protection Agency (EPA), 1989), the "*RCRA Ground Water Monitoring Technical Enforcement Guidance Document*" (EPA, 1986), and any state or local guidance, or regulatory documents which are available.

This SOP describes general procedures and guidelines to be followed or consulted for the proper methods to be used when installing monitoring wells or piezometers in unconsolidated deposits and bedrock. Because each site is unique and the purpose of the monitoring wells may vary from installation to installation, no definitive rules can be established. Throughout this SOP reference to monitoring wells is also intended to mean piezometers unless specifically indicated otherwise. This SOP also applies to monitoring wells and piezometers installed by Geoprobe® direct push technologies.

2. Definitions

Geoprobe® Direct Push Machine: A vehicle-mounted, hydraulically-powered machine that uses static force and percussion to advance small-diameter sampling tools into the subsurface for collecting soil, vapor , or groundwater samples. Geoprobe® machines ad tools are manufactured by Geoprobe Systems®, Salina, Kansas.

Prepacked Well Screen (0.5 in and 1.5 in): An assembly consisting of a clotted polyvinyl chloride (PVC) pipe surrounded by environmental grade sand contained within a stainless steel wire mesh cylinder. The inner component of the prepacked screen is a flush-threaded, 0.5 inch Schedule 80 PVC pipe with 0.01 in slots. (Alternatively, a 1.5 inch Schedule 80 PVC pipe can be used). Stainless steel wire mesh with a pore size of 0.011 in makes up the outer component of the prepack. The space between the inner slotted pipe and outer wire mesh is filled with 20/40 mesh silica sand. Geoprobe®

prepacked screens are available in sections of various lengts (3 ft or 5 ft)and a nominal inside diameter of 0.5 in or 1.5 in.

3. Equipment and Decontamination

3.1. Equipment Supplied by the Drilling Contractor:

- Drilling rig.
- Monitoring well casing.
- Monitoring well screen.
- Bottom caps, plugs or points.
- Centering guides (if they are to be used).
- Filter pack sand.
- Bentonite.
- Cement-bentonite grout.
- Mud-scale to measure densities.
- Protective casing or road box.
- Steam-cleaning apparatus and supplies.
- Suitable containers (e.g., Department of Transportation (DOT)-approved 55-gallon drums with liners) for soil cuttings, well development water, and water generated from steam cleaning.
- Metal stamps for permanently marking wells.
- All necessary permits and licenses.
- If the Geoprobe® is used for well installation, Geoprobe®-specific equipment for well installation.

3.2. Equipment Supplied by Loureiro Engineering Associates, Inc. (LEA)

- Field forms.
- Indelible markers.
- Lock(s) and keys.
- Well development equipment (pumps, surge block, bailers, etc.).
- Analytical instrumentation (Analytical instrumentation includes, but is not necessarily limited to turbidity meters, pH meters, specific conductivity meters, and thermometers.).
- Calibration supplies for all analytical instrumentation, as appropriate.
- Alconox®, or other non-phosphate laboratory grade detergent.
- 5-gallon buckets.
- Decontamination brushes.
- Distilled, de-ionized water.
- Decontamination fluids (<10% methanol in water, 100% n-hexane, and

10% nitric acid).

3.3. Equipment Selection and Specifications

The following specifications will be followed:

Cement-Bentonite Grout: If cement-bentonite is utilized, the cement-bentonite grout will be a mixture of 95 pounds of Type II Portland cement, 4 to 6 pounds of powdered sodium bentonite, and 5 gallons of potable water. The bentonite must be thoroughly mixed with the water before the cement is added. The cement bentonite grout shall have a density of 14 pounds/gallon.

Filter Pack Sand: All filter pack sand will be clean, well-rounded silica sand, in factory-sealed bags. The sand will conform to the most recent version of the American Water Works Association (AWWA) Standard AWWA/ANSI A100 for water wells. In brief, the standard states that filter pack sand will have an average specific gravity of 2.5 with not more than 1% of the material having a specific gravity less than 2.25. Thin, flat or elongated particles shall not exceed 2% of the material, no more than 5% of the material shall be soluble in hydrochloric acid, and the material shall be washed and free of shale, mica, clay, dirt, loam, and organic impurities.

Bentonite: All bentonite will be pure, additive-free bentonite whether it is pellets, chips, or powder.

3.4. Equipment Decontamination

3.4.1. Equipment Decontamination for Monitoring Well Installation

All well materials and drilling equipment which are used to construct a monitoring well or piezometer must be clean and free of any potential contaminants. All well construction materials not certified by LEA personnel as decontaminated when delivered will be decontaminated by steam cleaning before being installed. Drilling equipment must also be decontaminated, prior to beginning work, by steam cleaning. Geoprobe® equipment shall be cleaned using a detergent such as Liquinox®.

All decontamination activities shall be completed at a specially constructed decontamination pad (or a portable decontamination unit). The decontamination pad shall be constructed before any drilling

activity begins. The pad shall be constructed of high-density polyethylene (HDPE) liner material, of sufficient size and strength to allow the drill rig access to the pad, and bermed to contain the generated wastewaters.

3.4.2. Equipment Decontamination for Sampling Equipment and Well Development.

All materials and equipment used to sample soil or which enter a well must be clean and free of any potential contaminants. In general, the choice of decontamination procedures shall be based upon the site-specific contaminants and outlined in the site-specific work plan.

For sites at which the contaminants are unknown, but contamination is suspected, the decontamination procedures outlined below shall be followed.

3.4.2.1. Prior to commencing any field activities, the following solutions (as appropriate for the anticipated contaminants) shall be prepared and placed into 500-ml laboratory squirt bottles: <10% methanol in water; 10% nitric acid in water; 100% n-hexane; distilled, de-ionized water. Other chemicals may be used for decontamination of site-specific contaminants if needed for decontamination of those contaminants.

3.4.2.2. In the field, prepare approximately 2.5 gallons of a solution of Alconox® (or other suitable non-phosphate laboratory grade detergent) in tap water in a 5-gallon bucket.

3.4.2.3. Prepare a piece of 5-mil polyethylene sheeting to underlie the decontamination area. The sheeting shall be of sufficient size to contain any accidental discharge of decontamination solutions. The plastic shall be bermed to contain spills. The decontamination for Geoprobe® equipment shall be performed in buckets or in tubs.

3.4.2.4. The order for decontaminating equipment is as follows:

1) Detergent scrub.
2) De-ionized (DI) water rinse.
3) Hexane rinse (to be used only if separate-phase petroleum product, other than gasoline, is present).
4) DI water rinse.

5) 10% nitric acid rinse (to be used only when metals are suspected as potential contaminants).
6) DI water rinse.
7) Methanol rinse (<10% solution).
8) Air dry.

The order of decontamination may change if different chemicals are used.

3.4.2.5. Disposable materials such as cord shall not be decontaminated and shall be disposed of after use.

3.4.3. At the end of the project day, all spent decontamination fluids and materials, such as the polyethylene sheeting and personal protective equipment, shall be managed and/or disposed of in accordance with all applicable municipal, state, and federal regulations.

4. Procedures

4.1. Utilities

4.1.1. Notify the appropriate "one call" utility notification service (e.g. Call Before You Dig at 1-800-922-4455, Contractor ID: 10502) at least three working days prior to commencing operations on a site. The locations of all proposed borings must be clearly marked in the field prior to notification. The Project Engineer/Manager **must** call and confirm that each utility has been to the site and has marked their respective lines.

4.1.2. On private sites, consult with the Owner or other person knowledgeable about the site as to the locations of potential private or abandoned utilities and locate these prior to beginning work. Upon the discretion of the Project Engineer/Manager, a pipe locator can also be used to assist in locating utilities.

4.1.3. Note that OSHA may have additional requirements for location of utilities.

4.1.4. All efforts to locate underground utilities (including names of owner or designee and time) should be properly documented in the field logbook prior to onset of the work scheduled.

4.2. OSHA

4.2.1. The Senior LEA representative shall be the Competent Person required by OSHA for all work. However, this does not relieve other LEA representatives from bringing to his or her attention conditions, which may be unsafe or present a hazard to the drilling crew, the general public, or other workers on the site.

4.3. Monitoring Well and Piezometer Installation

The specific monitoring well installation methodologies are dependent upon the specific drilling method used. In general, monitoring wells will be constructed through the inside of the drill stem, once the borehole has been advanced to the desired depth. For Geoprobe® monitoring wells, the wells will be constructed through the inside of stainless steel casing.

4.3.1. Borehole Advancement

If the borehole has been drilled to a depth greater than that at which the well is to be set, the borehole must be backfilled with bentonite pellets, bentonite chips, or a bentonite-cement slurry to a depth of approximately one foot below the intended well depth. Approximately one foot of clean sand must be placed on top of the backfill to return the borehole to the proper depth for the well installation.

For bedrock monitoring wells, the borehole shall be advanced to approximately one foot into competent bedrock and the isolation casing grouted into place. The grout is to be allowed to cure for at least 24 hours before drilling continues. After the grout has cured, the borehole is to be advanced using the appropriate technique (e.g., coring, air rotary, mud rotary) to the desired depth. If the borehole is advanced to a depth greater than that at which the well is to be set, the borehole shall be backfilled as described above.

For Geoprobe® installed wells and piezometers, the steel casing will be drilled to the specified depth of the bottom of the well using the Geoprobe® and in certain cases manually.

4.3.2. Installation of Well Screen and Casing

The appropriate lengths of well screen (with bottom cap, or plug, or well point) and casing must be joined watertight and carefully lowered inside the drill stem to the bottom of the borehole. If centering guides are used, they must be placed at intervals around the well casing, beginning no lower than 5 feet above the top of the screen.

4.3.3. Design and Installation of the Filter Pack

After the well screen and casing are installed in the borehole, the filter pack shall be installed. For monitoring wells in unconsolidated materials, the selection of the appropriate filter pack material shall be based upon a grain-size analysis of a sample collected from the intended screen interval. The selection of the appropriate filter pack material shall be based upon the methodologies presented in the "*Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells*" (EPA, 1989), the "*RCRA Ground Water Monitoring Technical Enforcement Guidance Document*" (EPA, 1986), or any state or local guidance, or regulatory documents which are available. In the absence of grain size analyses, the filter pack material shall be selected based upon an experienced geologist's best judgment as to the appropriate material.

For bedrock monitoring wells, the well screen and filter pack are emplaced primarily to stabilize the borehole and are therefore not sized in the same manner as for a monitoring well in unconsolidated sediments. For typical bedrock monitoring wells, 10-slot well screen is appropriate. The selection of the appropriate filter pack material shall be based upon the slot size selected for the well screen.

A filter pack of clean silica sand will be placed around the well screen. Place the filter pack into the borehole at a uniform rate in a manner that will allow even placement of the sand. The drill stem shall be raised slowly while the sand is being placed to avoid caving of the borehole walls; the drill stem shall never be raised above the top of the filter pack during installation. Using a stainless steel weight on the end of a fiberglass tape, continuously sound the top of the filter pack as it is being installed. The filter pack shall extend from a depth of approximately one foot below the screened interval to a minimum height of one to two feet above the top of the well screen. However, this length may be adjusted if it would create the potential for cross-contamination or in the case of shallow water tables.

A finer-grained sand cap shall be installed for a minimum of one foot above the filter pack. This height may also be adjusted in the case of shallow water tables.

4.3.4. Installation of Impermeable Seal

An impermeable seal at least two feet thick must be placed on top of the fine sand cap. The seal may be composed of either bentonite pellets or a bentonite slurry. The pellets must be placed into the borehole in a slow and continuous manner that prevents bridging. This is especially important in deeper monitoring wells where

the pellets may have to be emplaced through a considerable depth of standing water in the borehole.

The bentonite slurry shall be prepared by mixing approximately 15 pounds of bentonite powder with 7 gallons of water for each one cubic foot of slurry needed. The slurry shall be emplaced in the borehole via a tremie pipe. The tremie pipe must be plugged on the bottom and have openings along the sides of the bottom one foot of pipe. This will allow the slurry to be emplaced into the borehole without disturbing the fine sand cap. This procedure is especially important for the relatively deeper wells.

Verify the position of the top of the bentonite seal using a weighted tape measure. If all or a portion of the bentonite seal must be emplaced above the water table, hydrate the bentonite with clean water. Allow 30 minutes after adding the water for the bentonite to hydrate.

The thickness of the bentonite seal may be adjusted for wells completed in aquifers with shallow water tables.

4.3.5. Installation of Grout Backfill

Place an annular seal of cement-bentonite grout above the bentonite seal. Install the cement-bentonite grout continuously from the bottom of the annular space to the ground surface through a tremie pipe. The tremie pipe must be plugged on the bottom and have openings along the sides of the bottom one-foot length of pipe. This will allow the grout to be emplaced into the borehole without disturbing the bentonite seal. Alternatively, a bentonite slurry can be used.

4.3.6. Surface Completion

All monitoring wells will be finished at the surface with a concrete pad (Figure 1). The concrete pad shall typically be two-feet square and at least four inches thick. The concrete shall fill the borehole to a depth below the frost line. The pad shall be constructed in one continuous pour of concrete. Note that some of the cement-bentonite grout used for the annular seal may have to be removed to install the concrete pad. A survey pin may be installed in the concrete pad before it dries, if necessary.

For monitoring wells that will be completed above-grade, a locking steel protective casing shall be installed in the concrete. The protective casing shall extend at least three feet into the ground and two feet above ground. For monitoring wells that will be completed flush, a steel roadbox, suitable for traffic loads, with a gasketed cover and drain shall be installed.

Each well will be properly labeled on the exterior of the locking cap or protective steel casing with a metal stamp indicating the permanent well identifier.

4.3.7. Well Protection Bollards

Guard posts may be installed in high-traffic areas for additional protection. One to four guard posts would be installed around the protective casing, within the edges of the concrete pad. If used, guard posts will consist of concrete-filled steel tubes, at least 3 inches in diameter, painted with multiple coats of epoxy-based paint to prevent rust. The guard posts would extend at least two feet below ground and approximately three feet above ground.

4.3.8. Geoprobe® Prepacked Screen Monitoring Well Installation

The installation of prepacked screen monitoring wells in general follows the following four steps (Figure 2):

4.3.8.1. Anchoring the Well Assembly at Depth

In the first step, an expendable anchor point is driven to the desired depth on the end of a 2.125 outside diameter probe rod string. A prepacked screen assembly is inserted into the inside diameter of the rod string with 5-ft sections of PVC riser. The screens and riser pipe are attached to the anchor point via a snap-lock connector. If the monitoring well is to have a flush-mount finish, it is suggested to prepare a large enough hole to accept a standard well protector before driving the probe rods.

4.3.8.2. Providing a Sand Pack and Grout Barrier

The natural formation will sometimes collapse around the well screens as the probe rod string is withdrawn. This is frequently encountered in sandy formations below the water table. This provides an effective barrier between the screens and grout material used to seal the well annulus. If the formation does not collapse, a sand barrier must be placed from the surface while retracting the well casing. This procedure needs to be followed carefully to prevent the grout from reaching the well screens, potentially giving rise to non-representative samples.

Using a flat tape measure or water level sounder, determine the depth from the top of the PVC riser to the bottom of the annulus between the riser and probe rods. If unstable conditions have resulted in formation collapse (measured depth of 2 to 3 ft), then proceed to 4.3.8.3. if the borehole has not collapsed, then retract the casing to 1 ft above the screen while adding

sand. Take measurements with a weighted tape. Continue until 2 ft of sandpack have been established above the well screen.

4.3.8.3. Installing a Bentonite Seal above the Screen

Proceed as in section 4.3.4. above. Bring the bentonite seal to within 2 ft from ground surface to allow well completion

4.3.8.4. Installing Well Protection.

Proceed as in Section 4.3.6. above.

5. Well Development

Monitoring well development may be accomplished by surging and bailing (or pumping), or over pumping. Other methods, such as air jetting, backwashing, or air-lift pumping, shall be avoided because these methods introduce fluids into the formation and may have unexpected influences on groundwater quality, if only for a short period of time.

Immediately upon opening the well, the air in the wellhead will be sampled for VOCs using a portable VOC analyzer, such as a Photovac MicroTIP®. The well cap shall be opened slightly and the sampling port of the VOC analyzer shall be inserted into the well. The maximum reading shall be recorded on the appropriate field paperwork. The instrument shall be zeroed with ambient air prior to the measurement, and the initial and final readings shall be recorded for each well.

Measures shall be taken during well sampling to prevent surface soils from coming in contact with the purging equipment and lines. Typically, a polyethylene sheet is placed on the ground providing adequate coverage for the equipment being used.

In addition, the procedures described in LEA SOP ID 10004 in the sections for Field Analysis, Well Evacuation, and Sample Withdrawal shall be followed.

5.1. Surging and Bailing

In surging and bailing, a well is developed by alternately surging a short section of the screen with a tight-fitting surge block. Begin by lowering the surge block to the top of the screened interval and swab the well with a pumping action with a typical stroke of 2 to 3 feet. (Begin surging at the top of the well intake to avoid having loosened material from "sand-locking" the surge block.) Do not surge the well too violently to avoid damaging the well screen or the filter pack. Remove the surge block at regular intervals and bail (or pump) the fine material from the well. Proceed with surging throughout the length of the well screen, being careful

to avoid hitting the bottom of the well. Check the quality of the bailed water at regular intervals, as described in Section 5.3.

In cases where a considerable volume of sediment may initially be drawn into the well, begin surging the well gently in the casing above the well screen. Proceed with surging and bailing to the bottom of the screened interval.

5.2. Overpumping

In overpumping, a well is developed by operating a pump in the well at a capacity which greatly exceeds the formation's ability to supply water. The flow velocity into the well during overpumping usually greatly exceeds the flow velocity induced during normal sampling. This increased velocity causes movement of particles from the formation into the well.

Begin developing the well by installing a suitable pump at the bottom of the well. Alternatively, a surface-mounted pump with a suction hose may be used if the drawdown inside the well will not exceed the pump's available lift. The discharge from the pump shall be directed to approved containers. The pump (or intake hose) must be equipped with a backflow-prevention valve to prevent introducing aerated water into the aquifer.

Start the pump and discharge water at the highest practical rate. If the well runs dry, stop the pump and allow the well to recharge. Check the quality of the discharged water at regular intervals as described in Section 4.3.

5.3. Completing Well Development

During bailing or pumping, measure and record water quality parameters to gauge the degree and effectiveness of development. Typically, pH, temperature, specific conductivity, and turbidity shall be checked at periodic intervals (but at least every three well-volumes) until the purge water begins to appear clear. Then measurements shall be made after each well volume until the parameters stabilize. The water quality parameters may be considered stable when:

- pH, temperature, and specific conductivity of consecutive measurements have relative percent differences (RPD), as defined below, of less than 10%; and,
- The turbidity is 5 NTU or less (applicable only in aquifers with low percentages of fines. This may not be achievable in all situations, but the turbidity shall be less than 50 NTU and shall stabilize with an RPD of less than 10%).

However, in no case shall the development stop before the above criteria are met, and:

- At least 3 well volumes have been removed; or,
- The well has been surged and pumped for at least 30 minutes.

The RPD between two measurements (e.g., M1 and M2) is calculated as follows:

$$RPD = \frac{|M1 - M2|}{(M1 + M2)/2} \times 100\%$$

All well development equipment and supplies shall be thoroughly decontaminated prior to and between each monitoring well. Place all development water into properly labeled, suitable containers; leave all filled containers in an appropriate location.

6. Documentation

6.1. Well Development

Well development activities will be documented on the appropriate field forms, and specifically on the "Field Data Record Groundwater" and "Well Development Report" forms. Information provided on those forms includes: purge method, amount of water per well volume, instrument readings after purging of each well volume.

6.2. Monitoring Well Completion Log Forms

During the installation of a monitoring well, complete records must be kept of quantities and types of all well construction materials used.

A complete geologic log shall be kept during advancement of the borehole for the well. The procedures for completing geologic logs are presented in *Standard Operating Procedure for Geologic Logging of Unconsolidated Sedimentary Materials* (SOP ID 10015). However, the additional information pertinent to monitoring well installations shall be recorded on a separate form. A monitoring well completion form is provided in Attachment 1. In addition typical wellhead details – one for flush-mount well completions and one for above-grade completions - are provided as Figure 1. Whenever a monitoring well is installed, record all appropriate information concerning the quantity of materials used, the

type and manufacturer of the materials, the mixtures of grouts or slurries, and any pertinent notes regarding the installation of each well.

After the project is completed, submit a copy of the attached Geologic Soil Boring/Well Completion Log Request Form along with copies of all Monitoring Well Completion forms for final typing and entry into the LEA database. The request form provides information on the types of final logs to be produced, the scale at which to plot the final forms, and notes common to all reports.

7. Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) procedures will be followed in compliance with the site-specific work plan.

8. References

8.1. EPA, *RCRA Groundwater Monitoring Technical Enforcement Guidance Document*, OSWER 9950.1, September 1986.

8.2 EPA, *Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells*, EPA/600/4-89/034, 1989.

8.3 Geoprobe, *Geoprobe® 0.5-in x 1.4 in OD and 0.75 in x 1.4 in OD Prepacked Screen Monitoring Wells, Standard Operating Procedure*, Technical Bulletin No. 962000, September 1996, revised; June 2002.

END OF DOCUMENT

ATTACHMENT 1

Monitoring Well Completion Report and Well Development Forms

WELL COMPLETION REPORT

Project:
LEA Comm. No.
Client
Location _____

Start Date _____
End Date _____

Well ID

Drilling Contractor _____
Drilling Method _____
Sampling Method _____
Groundwater Observation
Depth _____ **at** _____ **Hours**

Logged by
Drilling Foreman _____
Drill Rig _____
GPS Latitude _____
GPS Longitude _____

Protector
- Material _____
- Diameter _____
- Length _____ Ground _____
- Stickup _____
- Key # _____
- Cover Type _____

Top Seal
- Top _____
- Bottom _____
- Material _____

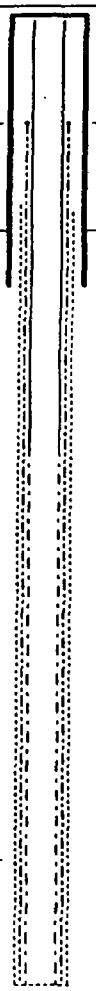
Backfill
- Top _____
- Bottom _____
- Material _____

Secondary Sand
- Top _____
- Bottom _____
- Size _____

Filter Pack
- Top _____
- Bottom _____
- Material _____

Reported depth to bottom of boring _____

Comments



Concrete Diameter _____
Concrete Thickness _____

Reference
- Stickup _____
- Description _____

Casing
- Diameter _____
- Material _____
- Length _____
- Stickup _____

Seal
- Top _____
- Bottom _____
- Material _____

Screen
- Top _____
- Bottom _____
- Material _____
- Diameter _____
- Length _____
- Slot Size _____

Miscellaneous Materials (Quantity Used/Item)
- Cement _____
- Bentonite Chips _____
- Bentonite Pellets _____
- Bentonite Powder _____
- Grout Weight _____
- Filter Pack Sand _____
- Capping Sand _____
- Well Point _____
- Well Plug _____

Signature _____

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FIELD SAMPLING RECORD
WELL DEVELOPMENT

LEA Comm. No.
Project
Location
Client

Page ____ of ____
Date __/__/____
Time __:__

Monitoring Well Number _____ Sample Number(s) _____ _____

Initial Field Data and Measurements

Depth of Well _____ Reference Used _____
Depth to Water _____ PID/FID Reading _____
Height of Column _____ Interface Yes / No If yes, Depth _____ Lighter / Heavier

Well Casing Diameter _____ Material _____
Protector Road Box / Stickup
Ground to Reference _____
Comments _____

General Condition	OK	Bad
Casing Secure		
Collar Intact		
Cover Locked		
Other (describe)		

Development Information

Purge Volume Factors
0.5" - 0.01
1" - 0.041
1.5" - 0.091
2" - 0.16
4" - 0.65
6" - 1.5

Initial Sample Observations
Clear ☐
Colored ☐
Cloudy ☐
Turbid ☐
Odor ☐
Sheen ☐

Volumes \ Parameter	Gallons	Temp (C)	pH (SU)	Spec.Con.	Turbidity	Other
Initial						

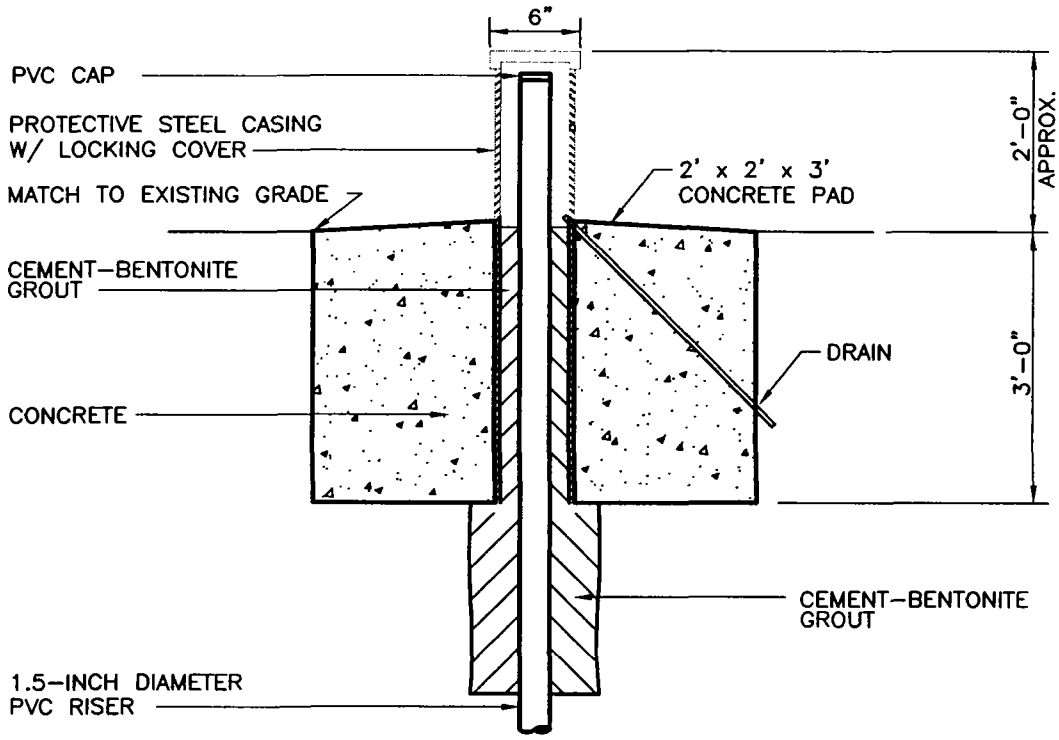
Developement Method Peristaltic Pump / Bailer / Inertial Pump / Other _____

Field Decontamination? Yes / No If Yes, with what? _____
Waste Container ID _____

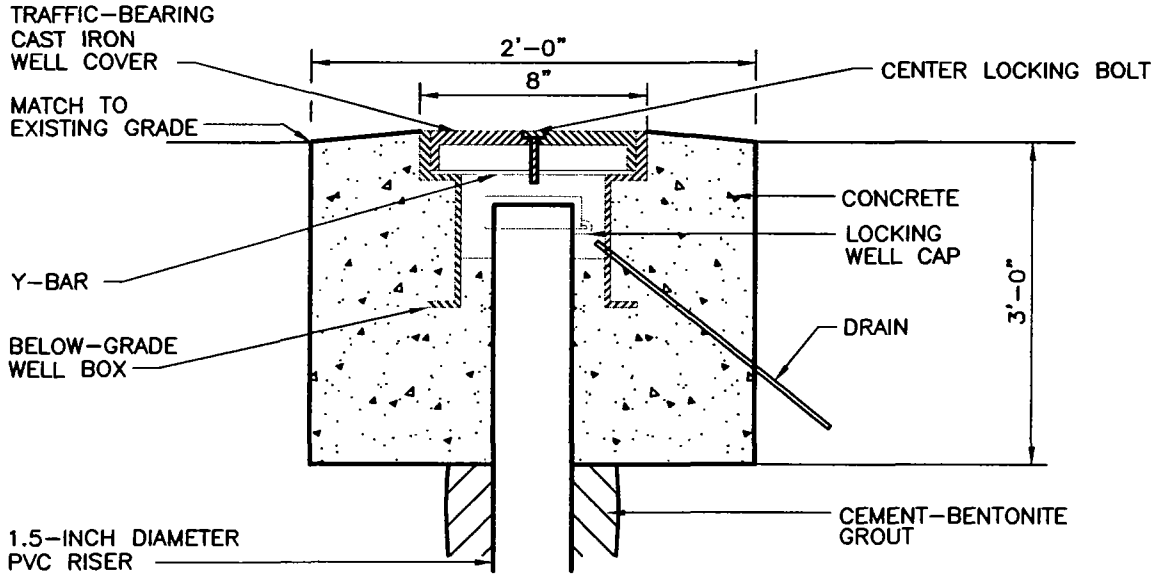
Additional Comments

Field Personnel _____ _____ *Signature*

FIGURES



ABOVE GRADE WELLHEAD
CONSTRUCTION DETAIL – NOT TO SCALE



FLUSH TO GRADE WELLHEAD
CONSTRUCTION DETAIL – NOT TO SCALE

REFERENCES:

EPA, "RCRA GROUNDWATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT", OSWER 9950.1, SEPTEMBER 1986.

EPA, "HANDBOOK OF SUGGESTED PRACTICES FOR THE DESIGN AND INSTALLATION OF GROUNDWATER MONITORING WELLS", EPA/600/4-89/034, 1989.

LEA SOP for Installing & Developing Monitoring Wells & Piezometers

TYPICAL WELLHEAD DETAILS
Modified March 2008

Comm.No.	
100	**FIGURE 1**

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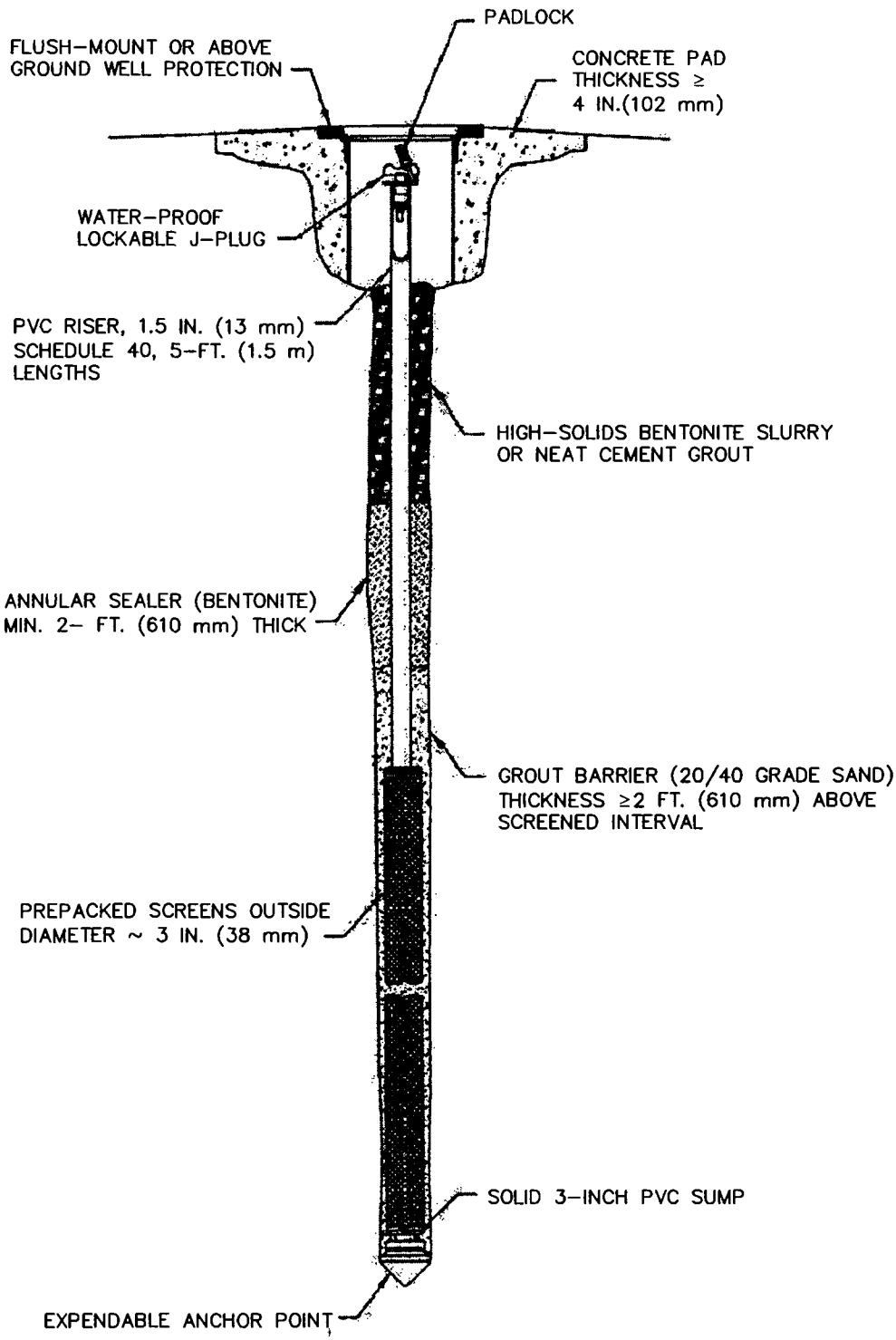


ADAPTED FROM "GEOPROBE ® SYSTEMS – THE COMPLETE PROBING SYSTEM", TECHNICAL BULLITEN 99250, AUG. 1999, REVISED DEC. 2002.

LEA SOP for Installing & Developing Monitoring Wells & Piezometers

COMPLETED PRE-PACKED SCREEN WELL

Modified March 2008

Comm.No.		
100	**FIGURE 2**	LEA

G:\AUTOCAD\PROJECTS\0000100\SOPS\PREPACK-SCREEN-WELL.DWG Tab:REV MARCH 2008 Saved: 3/5/2008 2:16 PM Plotted: 3/5/2008 2:20 PM

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Geologic Logging of Unconsolidated Sedimentary Materials

SOP ID: 10015
Date Initiated: 12/27/94
Revision No. 002: 01/15/02

Approved By: ***/s/ Kimberly C. Clarke*** ***01/15/02***
Kimberly C. Clarke **Date**
Senior Project Scientist

/s/ Nick D. Skoularikis ***01/15/02***
Nick D. Skoularikis **Date**
Director Of Quality

REVISION RECORD

Rev #	Date	Additions/Deletions/Modifications
Initial Issue	12/27/94	
001	11/20/96	No record
002	01/15/02	Formatting and minor revisions throughout

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Geologic Logging of Unconsolidated Sedimentary Materials

1. Purpose and Scope

This document presents the methods and procedures used to describe unconsolidated sedimentary materials for geological purposes in a uniform and consistent manner. It includes procedures for properly recording the observations by providing guidelines for completing boring logs and submitting those logs for computer entry. This Standard Operating Procedure (SOP) refers only to geologic logging of soils and sediments (including artificial fill and other man-made deposits) and specifically is not intended to describe logging of soils or sediments for geotechnical or other engineering purposes. Although the SOP presents a system for describing sediments, it is not intended to be a definitive reference for classifying sedimentary materials, nor is it intended to replace experience or training. Individuals using this SOP should be trained and competent in field methodologies and geologic logging prior to commencing field activities.

2. Definitions

2.1. None

3. Equipment

3.1. Equipment required for the geologic logging of soil/sediment samples shall include the following items:

- Tape measure or scale.
- Hand lens.
- Color chart.
- Grain-size comparator.
- Field forms.
- Indelible marker(s).
- Small table.
- Field Paperwork.
- Clipboard.

4. Procedures

4.1. Sample Collection

Samples of soil and unconsolidated sedimentary materials will be collected in general accordance with the SOPs for Soil Sampling (SOP ID 10006), Hand Auger Borings (SOP ID 10003), Hollow Stem Auger Soil Borings (SOP ID 10008), and Geoprobe® Probing and Sampling (SOP ID 10011). Those SOPs include procedures for decontamination of equipment required for sample collection, as well as providing the methodologies for sample collection and documentation.

4.2. Descriptions of Unconsolidated Sedimentary Materials

4.2.1. General Sediment Description Guidelines

For the purposes of geologically logging unconsolidated soils and sedimentary materials, a Modified Burmister method of description and classification should be used. The Modified Burmister Sediment Classification System (or simply, Burmister System) is intended as a rapid field method for identifying and classifying sediments. The system is based upon visual identification of the generalized grain-size distribution and description of the physical characteristics of the sample.

A Burmister System description is comprised of three parts: a color descriptor; a grain-size descriptor; and modifier(s). The color descriptor indicates the overall color or colors of the wet sample. The descriptor consists of a color name or names and (if possible) the color code from a standard color reference (for example, a Munsell[7] Color Chart). The grain-size description indicates the predominant grain size in the sample, as well as the relative percentages of other grain sizes present.

Modifiers are used to further describe the geologic character of the sample. Modifiers may include descriptions of moisture content, sorting, sphericity, angularity, sedimentary structures or other pertinent information.

4.2.2. Color Description

The color of the wet sediment should be determined with reference to a standard color comparator (for example, a Munsell[7] Color Chart) for rocks or sediment. The included color descriptor should contain both the color name and, when a color comparator is used, the appropriate hue-chroma value code, for example "Reddish brown (5YR 4/4)". The color of a sample should always be gauged when the sample is wet, or it should be noted otherwise.

4.2.3. Predominant Grain-Size Description

The first step in describing a sediment sample is visually estimating the size range and percentage of the various grain sizes in the sample. Reference should be made to standard geologic comparators for assessment of the grain size(s).

The primary grain-size descriptor indicates the predominant grain size, as judged visually, of the sample. The descriptor is always capitalized and underlined. Possible descriptors include: CLAY, SILT, SAND, and GRAVEL (GRANULES, PEBBLES, COBBLES, and BOULDERS). These correspond to the standard Wentworth size-classification scheme used for describing sediments for geologic purposes. Size classifications for CLAY through GRAVEL are presented in Table 1. The descriptor should also include an indication of the relative size range of the sample within the predominant grain size (for example, "fine-to-medium sand", "coarse sand", etc.). Although Table 1 includes divisions of the silt category, this is applicable only to sediment samples analyzed by pipette or hydrometer and cannot be distinguished in the field.

The presence of other grain sizes, in addition to the predominant material is also included in the grain-size descriptor. Appropriate grain sizes are the same as for the predominant grain size of the material (clay, silt, etc.), however only the initial letter of the word is capitalized. The description should also include an indication of the relative amount of the minor components. Appropriate indicators for the relative percentages present are provided in Table 2.

It is generally not considered possible to visually distinguish between clay and silt. Estimation of the silt/clay content of a sample should be based upon the plastic properties of the sample. The plastic properties of the sample may be estimated by taking an approximately 1 cubic centimeter ball of the sediment and attempting to roll a thread of the material between the palms of the hand. The minimum size of the thread which may be rolled may be compared to the values presented in Table 3 and the plasticity estimated. A comparison of the minimum thread diameter which may be formed with the information presented in Table 3 provides an approximate silt/clay content estimate for sand-silt-clay sediments and composite clay sediments.

4.2.4. Modifiers

Various modifiers may be added to the basic sediment description to further describe the geologic character of the sample.

For sand or coarser-sized material, the relative degree of sorting, the sphericity, and angularity should also be recorded. Sorting may be visually estimated. Sphericity and angularity, however, should be made with reference to an accepted comparator. A chart illustrating various degrees of sphericity and angularity is attached as Figure 1.

The mineralogy of the sample should also be recorded. Reference should be made to the relative percentages, grain size(s), and sphericity of the mineral particles (especially where it differs significantly from that of the predominant grain-size material).

Other information which should be recorded for each sample includes an estimate of the density and cohesiveness of the sample (made from blow counts where applicable, or other specific instrumentation where appropriate), the relative moisture content of the sample, visible sedimentary structures, and any odors or staining noticeable during logging. Tables 3 and 4 present appropriate terms for describing the plasticity, density, and cohesiveness of sediment samples.

Especially important is an indication that a specific portion of the material may represent "sluff" or material collapsed from the borehole walls.

4.3. Written Sediment Descriptions

The written sediment description may be made as either an unabbreviated or an abbreviated description. Both methods should relate the same information, however the abbreviated description is better suited for field use.

In an unabbreviated description, all of the words of the description should be written out in their entirety. The descriptor should include pertinent information regarding the sample's size gradation, consistency, color, and relative grain size, as described previously. The color descriptor should precede the primary sediment component name, while additional details such as the plasticity, mineralogy, visible sedimentary structures, etc., should follow the sediment component name.

An example of an unabbreviated description is:

Red-brown (5YR 4/4), fine to coarse SAND, little fine Gravel, little Silt, moist, moderately well sorted, low sphericity, Gravel waterworn, Sand subangular, micaceous.

Since the Burmister system is intended to provide a means for describing uniform sediments, three "special" cases should be addressed.

First, the Burmister system is intended only to describe the sediment. Where a genetic classification of the material is significant, it should be added as a separate statement at the end of the description. For example:

> **Olive gray (5Y 4/2), coarse to fine SAND, some fine Gravel, little Silt, moist, poorly sorted, sub-rounded to angular, dense. TILL.**

A genetic classification should only be used when the origin of the material is very clear and not simply a field interpretation of possible depositional environment.

Second, in the case where the sediment sample is heterogeneous (for example, a varved silt and clay), each component should be described individually, and reference should be made to the relative percentages of each component and to the interlayering. For example:

> **Soft, reddish-brown (5YR 3/4), CLAY and SILT, alternately layered, medium to high overall plasticity. Layers: CLAY layers, 3/8" to 5/8" thick, comprise 60%" of sample. SILT layers, 1/8" to 3/8" thick, comprise 40%" of sample. VARVED CLAY and SILT.**

Third, when one material grades uniformly into a distinct sediment type, the individual components should be described separately and the gradation noted. For example:

> **Soft, reddish-brown (5YR 3/4), CLAY, medium overall plasticity, grading into soft, reddish-brown (5YR 4/4), SILT, trace Clay, low overall plasticity.**

In the abbreviated sediment descriptions, the sample information is presented in a manner analogous to that for the unabbreviated description substituting standard abbreviations for specific portions of the text. Abbreviations for the identifying terms in the Burmister system are presented in Tables 2, 3, and 4. Mineralogic and geologic abbreviations may be found in standard geologic and mineralogic texts and field manuals. Except for the use of abbreviations, the abbreviated description is completely analogous to the unabbreviated description.

For the sake of consistency in describing unconsolidated sedimentary materials, the description should follow the order and general definitions presented in Table 5.

4.4. Recording Descriptions

4.4.1. Geologic Boring Logs

Attached to this SOP is a copy of LEA's standard geologic boring log form. This log should be completed for each boring that is completed. The heading information is self-explanatory. The body of the log contains space for information for each sampled interval in the boring. The following information should be recorded:

Depth Interval	The upper and lower depths from which the sample was collected.
Sample No.	The sample number, as obtained from LEA Data Management, assigned to this sample.
Recovery	The length of the recovered sample and the length of the sampler (in consistent units). The percent recovery will be calculated by the LEA Data Management program.
Blows/6"	The number of blow counts per 6" interval for the sample. Alternately, the downhole pressure or other pertinent information regarding the required drilling or sampling force.
Sample Description	The sample description using the guidelines and order presented in Section 3.0 and Table 5.
PID/FID	The headspace reading from a PID or FID in ppm.

The comments section of the form should be used to record general observations regarding drilling conditions, backfilling of the borehole, or other pertinent information regarding drilling the borehole.

4.5. Computer Data Entry

After a project is completed, copies of the Geologic Boring Log forms should be submitted for computer data entry. A completed copy of the Geologic Soil Boring/well Completion Log Request Form should be attached to the log forms.

5. Quality Assurance/Quality Control

5.1. Soil and sediment logging will be conducted in accordance with this SOP to ensure quality and consistency in field activities.

5.2. Field paperwork will be reviewed by office staff personnel and/or project manager to ensure completeness and accuracy in logging records.

6. References

6.1. None

END OF DOCUMENT

TABLE 1
Wentworth Size Classification System

US Standard Sieve Sizes	Millimeters	Microns	Phi (N)	Wentworth Size Classification	
Use Wire Squares	4096	4,096,000	-20	Boulder	GRAVEL
	1024	1,024,000	-10		
	256	256,000	-8		
				Cobble	
	64	64,000	-6		
				Pebble	
	16	16,000	-4		
5	4	4,000	-2		
				Granule	
6	3.36	3,360	-1.75		
7	2.83	2,830	-1.50		
8	2.38	2,380	-1.25		
10	2.0	2,000	-1.00		
				Very Coarse Sand	SAND
12	1.68	1,680	-0.75		
14	1.41	1,410	-0.50		
16	1.19	1,190	-0.25		
18	1.00	1,000	0.00		
				Coarse Sand	
20	0.84	840	0.25		

TABLE 1
Wentworth Size Classification System

US Standard Sieve Sizes	Millimeters	Microns	Phi (N)	Wentworth Size Classification
25				
	0.71	710	0.50	
30				
	0.59	590	0.75	
35				
	0.50	500	1.00	
				Medium Sand
40				
	0.42	420	1.25	
45				
	0.35	350	1.50	
50				
	0.30	300	1.75	
60				
	0.25	250	2.00	
				Fine Sand
70				
	0.210	210	2.25	
80				
	0.177	177	2.50	
100				
	0.149	149	2.75	
120				
	0.125	125	3.00	
				Very Fine Sand
140				
	0.105	105	3.25	
170				
	0.088	88	3.50	
200				
	0.074	74	3.75	

TABLE 1
Wentworth Size Classification System

US Standard Sieve Sizes	Millimeters	Microns	Phi (N)	Wentworth Size Classification	
230	0.0625	62.5	4.00		
				Coarse Silt	MUD
270	0.053	53	4.25		
325	0.044	44	4.50		
Analyzed by Pipette or Hydrometer	0.037	37	4.75		
	0.031	31	5.0		
				Medium Silt	
	0.0156	15.6	6.0		
				Fine Silt	
	0.0078	7.8	7.0		
				Very Fine Silt	
	0.0039	3.9	8.0		
				Clay (Note: Some use 2: (or 9N) as the clay boundary.)	
	0.0020	2.0	9.0		
	0.00098	0.98	10.0		
	0.00049	0.49	11.0		
	0.00024	0.24	12.0		
	0.00012	0.12	13.0		

TABLE 1
Wentworth Size Classification System

US Standard Sieve Sizes	Millimeters	Microns	Phi (N)	Wentworth Size Classification
	0.00006	0.06	14.0	

Table 2
Modified Burmister System Descriptors

Fractions		Proportion Descriptors		
(+)	Major Fraction	Quantity	Descriptor	Abbreviation
(-)	Minor Fraction	35% - 50%	and	a
e.g., a medium to coarse SAND which is predominantly medium grained would be written as: m(+) - c SAND		20% - 35%	some	s
		10% - 20%	little	l
		1% - 10%	trace	t
Modifiers: (+) Upper a of the range (-) Lower a of the range				

Table 3
Plasticity of Sediment Samples

Material	Symbol	Feel	Ease of Rolling Thread	Minimum Thread Diameter	Plasticity Index	Plasticity
Clayey SILT	CyM	Rough	Difficult	1/4"	1 to 5	Slight (Sl)
SILT & CLAY	M & C	Rough	Less Difficult	1/8"	5 to 10	Low (L)
CLAY & SILT	C & M	Smooth, dull	Readily	1/16"	10 to 20	Medium (M)
Silty CLAY	MyC	"Shiny"	Easy	1/32"	20 to 40	High (H)
CLAY	C	Waxy, very shiny	Easy	1/64"	40 +	Very High (VH)

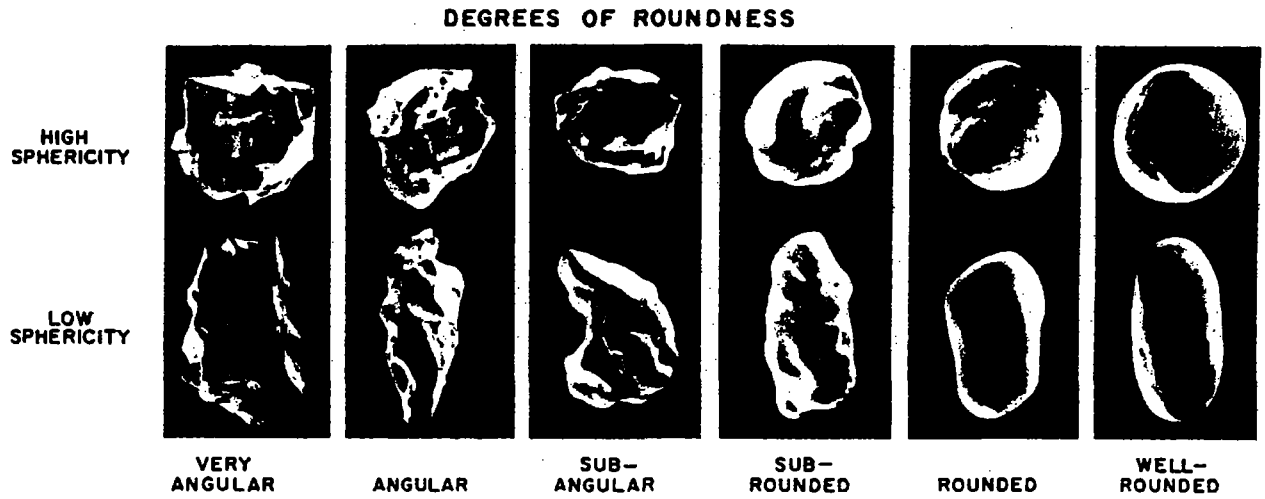
Table 4
Density and Cohesiveness of Sediment Samples

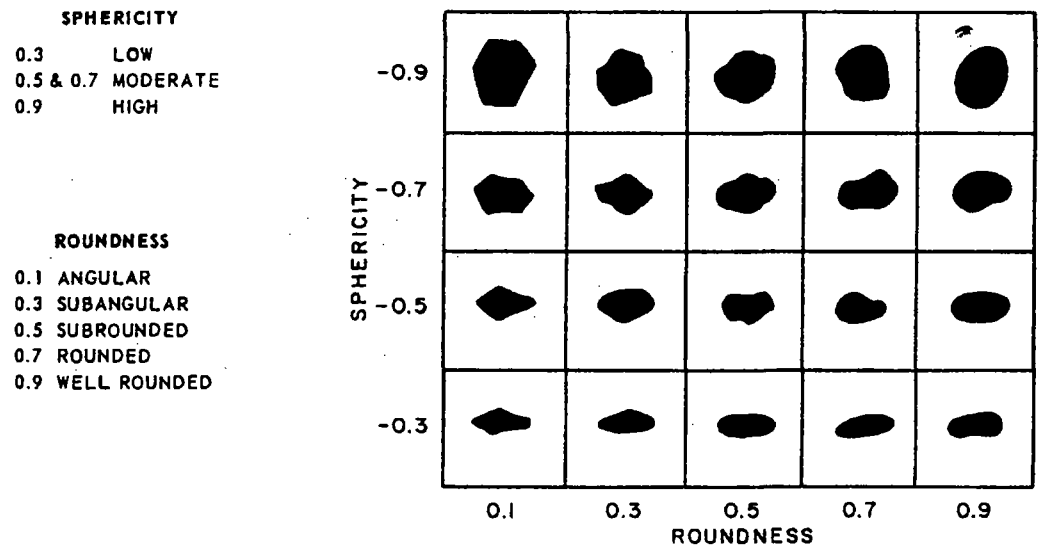
Density of Cohesionless Soils		Consistency of Cohesive Soils	
Blow Counts	Relative Density	Blow Counts	Consistency
0 to 4	Very Loose	0 to 2	Very Soft
5 to 9	Loose	2 to 4	Soft
10 to 29	Medium Dense	4 to 8	Medium
30 to 49	Dense	8 to 15	Stiff
50 to 79	Very Dense	15 to 30	Very Stiff
80 or more	Extremely Dense	30 or more	Hard

Table 5
Description of Sediment Properties

Sediment Parameter	Properties
Color	The color of the sample should be described for the wet sediments. If possible the color should be referenced to a standard color chart such as a Munsell7 Color Chart.
Primary Grain Size	Primary grain size refers to the size of the predominant sedimentary size class within the material (as judged visually). The grain size divisions should conform to the standard Wentworth Scale divisions, as shown in Table 1.
Secondary Grain Size(s)	Secondary grain size(s) refer to material which, as a grain-size group, comprises less than the majority of the sediment. Aside from stating the size classification, the relative percentage of the material must be stated. The grain size divisions should conform to the standard Wentworth Scale divisions as shown in Table 1. To describe the approximate percentage of the secondary grain size(s) present, qualifiers shown in Table 2 should be used.
Moisture Content	The moisture content of the sample should be described as dry, slightly moist, moist, or wet. Gradation from one state to another should be recorded as, for example, moist to wet, or moisty wet.
Sorting	The relative degree of sorting of the sediment should be indicated as poor, moderate, good, or very good. The degree of sorting is a function of the number of grain size classes present in the sample; the greater the number of classes present the poorer the sorting. In addition, for samples composed only of sand, the relative degree of sorting is a function of the number of sand-size subclasses present.
Sphericity	Sphericity is a measure of how well the individual grains, on average, approximate a sphere. The average sphericity of the sand and larger size fractions should be described as low, moderate or high. A chart illustrating various degrees of sphericity is presented in Figure 1.
Angularity	Angularity, or roundness, refers to the sharpness of the edges and corners of a grain (or the majority of the grains). Five degrees of angularity are shown in Figure 1: Angular (sharp edges and corners, little evidence of wear); Subangular (edges and corners rounded, faces untouched by wear); Subrounded (edges and corners rounded to smooth curves, original faces show some areas of wear); Rounded (edges and corners rounded to broad curves, original faces worn away); and, Well Rounded (no original edges, faces, or curves, no flat surfaces remain on grains).
Sedimentary Structures	Sedimentary structures are such things as varved layers, distinct bedding, or stratification.
Density -or- Cohesiveness	The density of cohesion of a sample (for the purposes of this application) refer to the sample's resistance to penetration by a sampling device. Density is used in reference to sediments primarily silt-size and coarser while cohesiveness is used in reference to primarily clay-sized sediments. Density or cohesiveness can be assessed from the number of blows from "standard" split-spoon sampling (i.e., 140# hammer, 30" fall, 2" X 2" (O.D., 1 3/8" I.D.)) split-spoon samplers according to the scale in Table 3.

FIGURE 1


DEGREES OF ROUNDNESS
HIGH SPHERICITY
LOW SPHERICITY
VERY ANGULAR
ANGULAR
SUB-ANGULAR
SUB-ROUNDED
ROUNDED
WELL-ROUNDED


SPHERICITY
0.3 LOW
0.5 & 0.7 MODERATE
0.9 HIGH
ROUNDNESS
0.1 ANGULAR
0.3 SUBANGULAR
0.5 SUBROUNDED
0.7 ROUNDED
0.9 WELL ROUNDED
SPHERICITY
-0.9
-0.7
-0.5
-0.3
0.1
0.3
0.5
0.7
0.9
ROUNDNESS

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Quality Assurance/Quality Control Measures
for
Field Activities

SOP ID: 10005
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Approved By: ***/s/ Jeffrey J. Loureiro*** ***12/19/01***
Jeffrey J. Loureiro **Date**
President

/s/ Nick D. Skoularikis ***12/19/01***
Nick D. Skoularikis **Date**
Director of Quality

REVISION RECORD

Rev #	Date	Additions/Deletions/Modifications
Initial Issue	02/20/90	
001-003	-	No record.
004	12/31/01	Updated to reflect new SOP format. Added section 4.3, Results Evaluation. Minor revisions throughout.

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Quality Assurance/Quality Control Measures
for
Field Activities

1. Statement of Purpose

This document describes procedures to be followed for proper Quality Assurance Quality Control (QA/QC) practices which shall incorporate all activities associated with sampling tool and instrument preparation, field measurements and sampling, proper documentation of field and post-field activities, QC sample preparation, chain-of-custody protocol and laboratory analytical procedures. The use of specific QA/QC measures is project-specific as defined in the project work plan. This standard operating procedure (SOP) was adopted in accordance with the Environmental Protection Agency (EPA) document *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846).

2. Definitions

2.1. Trip Blank: An aliquot of organic-free water or equivalent neutral reference material carried into the field but not exposed.

2.2. Equipment Blank: An aliquot of analyte-free deionized water processed through all sample collection equipment.

2.3. Replicate Samples: Samples that have been divided into two or more portions in the field.

2.4. Collocated Samples: Independent samples collected under identical circumstances in a way that they are equally representative of the parameter of interest.

2.5. Performance Evaluation (PE) Sample: A sample that mimics actual samples in all possible aspects, except that its composition is known to the auditor and unknown to the analyst.

3. Equipment

None

4. Procedure

4.1. General

4.1.1. All QA/QC sample preparation procedures shall be properly documented including:

- Name of person(s) or laboratory involved in sample preparation.
- Reagents used.
- Sample number.
- Analyses required.
- Concentration calculations.
- Accuracy of measurements.
- Number, type, size of containers used.
- Preservation method.
- Date and time of sample preparation.

4.1.2. All information shall be included in the field logbook and/or appropriate field forms, but not necessarily in the chain-of-custody record except as needed for proper sample identification and analysis. Blind sample numbers are being used in order not to disclose the nature of the sample to the laboratory. No information that would identify the sample as a QA/QC sample shall be included in the chain-of-custody record.

4.1.3. At the conclusion of each sampling day, a quality control review shall be conducted using the Field Quality Review Checklist and the Daily Field Report.

4.2. QC Sample Preparation

4.2.1. Trip Blank

4.2.1.1. Contaminated trip blanks may indicate contamination of the samples during the field trip or shipment to the lab, cross-contamination between the samples, contaminated sample vials, or improper handling.

4.2.1.2. Trip blanks shall be used only with samples that are to be analyzed for volatile organic compounds.

4.2.1.3. One trip blank shall be included per shipping container (cooler) carrying sample soil and/or groundwater samples that are to be analyzed for volatile organic compounds

4.2.1.4. Trip blanks are prepared using analyte-free deionized organic-free water prior to field activities associated with the sampling event, usually by the laboratory providing the sampling containers. Each trip blank is placed in a 40-ml glass VOA vial and is carried in the same shipping container as the sample(s). Trip blanks should not be opened at any time during transport.

4.2.2. Equipment Blank

4.2.2.1. The purpose of an equipment/rinsate blank is to determine if decontamination procedures were adequate or if any of the equipment might contribute contaminants to the sample.

4.2.2.2. An equipment blank is prepared by running analyte-free deionized water through all sample collection equipment (bailers, pumps, filters, split-spoon) and placing it in the appropriate sample containers for analysis. If equipment has been decontaminated in the field, the equipment blank shall be collected after decontamination procedures have been performed.

4.2.2.3. Equipment blanks shall be used when sampling surface water, groundwater, soil, and sediment.

4.2.2.4. One equipment blank shall be collected for each sample bottle/preservation technique/analysis procedure per matrix per sampling event, or as otherwise specified in project-specific documents.

4.2.3. Replicate Samples

4.2.3.1. Replicate samples provide precision information on handling, shipping, storage, preparation and laboratory analysis.

4.2.3.2. Replicate samples are samples that have been divided into two or more portions in the field. An example of a replicate sample is two identical sample bottles filled with water from the same bailer retrieval. To ensure homogeneity, the bailer should be emptied into a clean, decontaminated beaker used exclusively

for the purpose and containing sufficient volume for both sample containers, and from that into the sample containers.

4.2.3.3. Replicate samples cannot be used when sampling for volatile organic compounds.

4.2.3.4. One replicate sample shall be obtained for each sample bottle/preservation technique/analysis procedure per sampling event or one out of every 20 samples, unless collocated samples are used (see below), or as otherwise specified in project-specific documents.

4.2.4. Collocated Samples

4.2.4.1. Collocated samples provide precision information on sample acquisition, homogeneity, handling, shipping, storage, preparation and laboratory analysis.

4.2.4.2. Collocated samples are independent samples collected in such a way so that presumably they are equally representative of the parameter of interest. Examples of collocated samples are groundwater samples collected sequentially, soil core samples collected side-by-side, or air samples collected essentially at the same time from the same manifold.

4.2.4.3. Collocated samples are especially useful when sampling for volatile organic compounds, for which replicate samples cannot be used.

4.2.4.4. Collocated samples shall be obtained for each sample bottle/preservation technique/analysis procedure per sampling event or one out of every 20 samples, unless replicate samples are used (see above), or as otherwise specified in project-specific documents.

4.2.5. Split Samples

4.2.5.1. The purpose of split samples is to provide an assessment of the laboratory analytical procedure.

4.2.5.2. Split samples are collocated or replicate samples sent to two (or more) different laboratories.

4.2.5.3. Split samples can be used with any sample media. Split samples can be used in conjunction with spiked samples (see

below). In case contradictory results are obtained from the samples split between different laboratories, the spiked samples can be used to verify the analytical data (provided that the spiked samples were properly prepared and the appropriate documentation is available).

4.2.5.4. When used, one split/spiked sample per sample bottle/preservation technique/analysis procedure per sampling event or every 20 samples shall be included, or as specified in project-specific documents.

4.2.6. Spiked Samples

4.2.6.1. The purpose of spiked samples is to provide information on the precision of the laboratory analytical procedure. However, besides a wrong preparation, several other sources of error exist such as analyte stability, holding time and interactions with the sample matrix.

4.2.6.2. Spiked samples are samples spiked with the contaminants of interest. The compounds used for spiking should be of the same chemical group as the contaminants being investigated, but they do not have to be the exact chemical compounds. Spiking should be carefully designed and performed prior to the field investigations. Field matrix spikes are not generally recommended because of the high level of technical expertise required for proper preparation and documentation.

4.2.6.3. Can be used with any sample media, however, liquid matrices are preferred due to uniformity of mixing.

4.2.6.4. When used, one split/spiked sample per sample bottle/preservation technique/analysis procedure per sampling event or every 20 samples shall be included, or as otherwise specified in project-specific documents. In order to ensure defensible data, performance evaluation (PE) samples, prepared by an independent vendor, are typically being used. The ordering and handling procedures and record keeping requirements are discussed in Loureiro Engineering Associates, Inc. (LEA's) *SOP for Preparation of PE Samples* (SOP 10030).

4.3. Result Evaluation

4.3.1. The analytical results on QA/QC samples should be evaluated along with the remaining analytical data as follows:

4.3.1.1. No constituents should be detected in the trip blank or equipment blank.

4.3.1.2. The relative percent differences (RPDs) shall be computed for all constituents detected in both duplicate samples used.

The RPD between two measurements (e.g., M1 and M2) is calculated as follows:

$$RPD = \frac{|M1 - M2|}{(M1 + M2)/2} \times 100\%$$

4.3.1.3. Any deviations in the performance evaluation samples shall be brought to the attention of the laboratory. An investigation shall then be performed by the laboratory of the method used, laboratory QA/QC procedures followed, and computations performed. The laboratory shall report the results of their investigation and any corrective actions taken.

5. References

5.1. EPA, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846).

END OF DOCUMENT

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
for
Low Flow (Low Stress)
Liquid Sample Collection and Field Analysis

SOP ID: 10039
Date Initiated: 06/11/01
Revision No. 003: 04/01/05

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/s/ Nick D. Skoularikis ***04/01/05***
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Director of Quality

REVISION RECORD

Rev #	Date	Additions/Deletions/Modifications
Initial Issue	06/11/01	
001	04/01/02	Updated to reflect new SOP format.
002	12/02/02	Updated to reflect stabilization procedures.
003	04/01/05	Incorporated modified low-flow sampling procedure to include the use of a peristaltic pump.

Loureiro Engineering Associates, Inc.
Standard Operating Procedure
For
Low Flow (Low Stress)
Liquid Sample Collection and Field Analysis

1. Purpose and Scope

This standard operating procedure (SOP) describes the procedures to be followed for measurement of static water level elevations, detection of immiscible layers, well evacuation, sample withdrawal, and field analyses utilizing low flow sampling techniques.

2. Definitions

2.1. Immiscible layers: The term is used to denote free-phase liquids that may be present in the aquifer as a result of a release. These liquids may have a density lighter than water (light non-aqueous phase liquids (LNAPL) or floaters) or heavier than water (dense non-aqueous phase liquids (DNAPL) or sinkers).

3. Equipment

3.1. Equipment required for the collection and field analysis of liquid samples shall include:

- Water-level indicator (accurate to 0.01 foot).
- Distilled water.
- Hand towels.
- Portable volatile organic compound (VOC) analyzer (Photovac MicroTIP®, Foxboro OVA® or equivalent).
- Interface probe/clear view bailer (to check for light non-aqueous phase liquids only).
- Flow-through cell capable of monitoring pH, temperature, specific-conductance, oxidation reduction potential (Eh), dissolved oxygen (DO), and turbidity.
- Polyethylene plastic sheeting.

- Adjustable rate submersible pump (preferred), adjustable rate centrifugal pump, bladder pump (constructed of stainless steel or Teflon®), or adjustable rate peristaltic pump
- Appropriate tubing for the pump used, for instance polyethylene tubing (1/4 to 3/8 inch outer diameter (O.D.)) for the peristaltic pump
- Clean disposable gloves.
- Alconox®, or other non-phosphate laboratory grade detergent.
- Three 5-gallon buckets.
- Decontamination brushes.
- Distilled, de-ionized (DI) water.
- Decontamination fluids (less than 10 percent methanol in water, 100 percent n-hexane, and 10 percent nitric acid).

4. Procedure

4.1. Health & Safety Requirements

All health and safety requirements described in the site specific Health & Safety Plan and/or Job Hazard analysis shall be observed

4.2. Equipment Decontamination

All materials and equipment that enter a well must be clean and free of any potential contaminants. Do not use any contaminated equipment or materials which are not designed to be used for groundwater monitoring, even if this means that the sampling will not be performed as planned.

In general, the choice of decontamination procedures should be based upon knowledge of the site-specific contaminants and outlined in the site-specific work plan.

For sites at which the contaminants are unknown, but contamination is suspected, the decontamination procedures outlined below should be followed.

4.2.1. Prior to commencing any field activities, the following solutions (as appropriate for the appropriate contaminants) should be prepared and placed into 500-ml laboratory squirt bottles: less than 10 percent

methanol in water; 10 percent nitric acid in water; 100 percent n-hexane; distilled, de-ionized water.

4.2.2. In the field, prepare approximately 2.5 gallons of a solution of Alconox® (or other suitable non-phosphate laboratory grade detergent) in tap water in a 5-gallon bucket.

4.2.3. Prepare a piece of 5-mil polyethylene sheeting to underlie the decontamination area. The sheeting should be of sufficient size to contain any accidental discharge of decontamination solutions. The plastic should be bermed to contain spills.

4.2.4. The order for decontaminating equipment is as follows:

1) Detergent scrub.
2) DI water rinse.
3) Hexane rinse (to be used only if separate-phase petroleum product, other than gasoline, is present).
4) DI water rinse.
5) 10 percent nitric acid rinse (to be used only when metals are suspected as potential contaminants).
6) DI water rinse.
7) Methanol rinse (less than 10 percent solution).
8) Air dry.

4.2.5. Materials such as the bailer cord should not be decontaminated and should just be disposed of after each test. Note: Bailers should be used **only** to check for LNAPL before sample collection using low-flow/low stress procedures. A bailer may be used to check for DNAPL only **after** all sample collection equipment has been removed from the well.

4.2.6. Wrap each piece of decontaminated equipment in aluminum foil, as appropriate, to maintain cleanliness.

4.2.7. At the end of the project day, dispose of all spent decontamination fluids and materials such as the polyethylene sheeting and personal protective equipment in accordance with all applicable municipal, state, and federal regulations.

4.3. Sample Collection

4.3.1. Immediately upon opening the well, the air in the well head will be sampled for VOCs using a portable VOC analyzer, such as a Photovac

MicroTIP® or equivalent. The instrument shall be zeroed with ambient air prior to the measurement, and the highest reading observed shall be recorded for each well. Measurements should be taken until stabilization of the readings has occurred.

4.4. Detection of Immiscible Layers

4.4.1. Should evidence warrant, a sampling event shall include provisions for the detection of immiscible phases prior to well evacuation or sample collection. LNAPLs are relatively insoluble liquid organic compounds with densities less than that of water (1 g/ml), while DNAPLs are organic compounds with densities greater than that of water. Lighter and/or denser immiscible phases may be encountered in a groundwater monitoring well.

4.4.2. An interface probe will be used to determine the existence of any immiscible layers, light or dense. Alternatively, a clear fluorocarbon resin or PVC bailer may be used to determine the existence of the phases or oil sheen in the well when no accurate determination of the immiscible layer thickness is required. As noted above, efforts to detect LNAPL only can be performed prior to sample collection. Efforts to detect DNAPL can be performed only AFTER sample collection has occurred.

4.4.3. Should elevations of the immiscible layers be required, levels of the fluids shall be measured to an accuracy of 0.01 feet using an electronic interface probe capable of detecting the interfaces between air, product, and water. The interface levels shall be recorded in the field form. Adjustments of the observed head to the theoretical hydraulic head shall be calculated based on the density conversion factor associated with the particular non-aqueous phase liquid.

4.4.4. If LNAPL is detected in a well, collection of a groundwater sample from that well is not recommended unless otherwise specified in the site-specific work plan or work instruction. However, if a groundwater sample must be collected from that well, low-flow sampling is the recommended technique, although care must be taken to minimize mobilization of the LNAPL into the zone from which the sample will be collected.

4.5. Measurement of Static Water Level

4.5.1. The static water elevations in each well shall be measured prior to each sampling event. This is performed initially to characterize the site, and in subsequent sampling rounds to determine whether horizontal or vertical flow gradients have changed. A change in hydrologic conditions may necessitate modification of the groundwater monitoring program.

4.5.2. Remove the protective cover and locking cap from the well.

4.5.3. Each well shall have a surveyed reference point located at the top of the well casing with the locking cap removed. The reference point shall be easily recognizable, since the personnel conducting the sampling may differ from one sampling event to the next.

4.5.4. The following parameters shall be measured with an accuracy of 0.01 ft:

- Depth to standing water.
- Depth to bottom of well.

4.5.5. A water-level indicator with a fiberglass tape will be used for measurement. As a result of possible pressure differences between the well atmosphere and the ambient atmosphere, the water level will be allowed fifteen minutes to equilibrate upon removal of the well cap. If excess pressure is encountered the water level will be allowed greater than fifteen minutes to equilibrate upon removal of the well cap. The results shall be recorded on the appropriate field form(s).

4.5.6. Total depth measurements will be compared to original depths to determine the degree of siltation that may have occurred. This information shall be noted on the field forms. Should significant siltation occur in any well, the well shall be redeveloped by an approved method.

4.5.7. The portion of the tape immersed in the well shall be decontaminated during retrieval using a distilled water rinse followed by drying with a clean wipe, prior to use in another well. This decontamination procedure shall be amended, as needed, to accommodate the specific type of contamination anticipated.

4.5.8. The static water level should be monitored and recorded throughout the purging and sampling of each well.

4.6. Field Analysis

4.6.1. Parameters that are physically or chemically unstable shall be tested utilizing a flow-through cell. Such parameters as pH, temperature, specific conductance, DO, Eh, and turbidity will be measured in the field at the temperature of the well sample.

4.6.2. Parameters such as pH, temperature, specific conductance, DO, and Eh shall be measured using a flow-through-cell (YSI model 6820 or equivalent). The meter shall be calibrated prior to use and at the end of the day using supplied solutions in accordance with the instructions provided by the manufacturer. Calibration information will be recorded in the field before and after each calibration.

4.5.3 Turbidity can be measured with a separate turbidimeter, although some flow-through cells include a turbidimeter. It is useful to have a separate turbidimeter on hand to check the validity of the turbidity values obtained using the flow-through cell if there is difficulty reaching low turbidity values or if the turbidity readings recorded do not seem to be consistent with visual observation of the water samples. All samples, including turbidity samples and samples to be submitted for analysis, must be collected before the groundwater passes through the flow-through cell to prevent cross-contamination by potentially stagnant fluid within the flow-through cell. This can be accomplished by using a bypass assembly or disconnecting the tubing from the flow-cell inlet prior to sampling.

4.7. Well Evacuation

4.7.1. Calculate standing water in the well based on the following schedule and record on the appropriate field form:

Well Diameter (inches)	Conversion Factor (gal/feet)
2	0.163
4	0.654
6	1.47

4.7.2. Generally, a submersible, air-lift, bladder, or peristaltic pump equipped with appropriate tubing of inert materials (such as polyethylene), shall be used to evacuate the monitoring wells.

4.7.3. A new piece of polyethylene plastic shall be placed on the ground adjacent to the well. Sampling and purging equipment such as the pump, tubing, containers, etc., shall be placed on the polyethylene sheet, never on the ground.

4.7.4. The pumps and tubing shall be prepared for insertion into the well while wearing disposable gloves. Make sure that any tubing or pump apparatus is of sufficient length to reach the appropriate depth for pumping.

4.7.5. Lower the pump and/or tubing gently into the water column to the midpoint of the saturated portion of the screened interval, unless otherwise specified. A site-specific sampling plan should specify the sampling depth, or provide specific criteria for the selection of intake depth for each well. If possible keep the pump intake two feet above the bottom of the well. Start the pump at the lowest speed setting and slowly increase the speed until discharge occurs. The initial pumping rate shall be approximately 0.1 liters per minute, however, the pumping rate shall not exceed 0.25 liters per minute. Measure the water level to ensure that drawdown in excess of 0.3 feet does not occur in the well. Adjust the pumping rate as necessary until little or no drawdown occurs. If the drawdown exceeds 0.3 feet, reduce pumping rate if possible. If drawdown still does not stabilize at a depth above the pump intake, shut the pump down and allow the well to recharge. It should be noted that stable drawdowns of 0.3 feet are desirable but not mandatory. Stabilization of the drawdown to a depth greater than 0.3 feet is acceptable as long as the depth at which stabilization occurs is above the pump intake. However, it is important that the stabilization depth is clearly recorded and maintained.

4.7.6. Monitor and record the water level and pumping rate at a minimum of every five minutes during purging. Calculate the volume of the discharge tubing, bladder pump (if used), and the flow-through cell. Monitor and record indicator field parameters (turbidity, pH, Eh, DO, temperature and specific conductance) in the well from the first water extracted during the purging process and at least every five minutes thereafter. Stabilization is considered to be achieved when three consecutive readings are within the following limits and no increasing or decreasing trend in the data can be observed:

- Turbidity (10% for values less than 5 and greater than 1 NTU). It should be noted that achievements of turbidity levels less than 5 NTUs are not mandatory but efforts should be made to collect a groundwater samples with the lowest turbidity achievable.
- DO (10%, measured as milligrams per liter).
- Specific Conductance and Temperature (3%).
- pH (+/- 0.1 unit).
- ORP/Eh (+/- 10 millivolts).

4.7.7. If after 2.5 hours of purging or the purging of three well volumes, (whichever comes first) the field parameters have not stabilized, purging may be discontinued to allow sample collection. Similarly, if it is not possible to obtain stabilization as described above as a result of slow recovery of the well, the well shall be evacuated and allowed to recover, at which point the samples should be collected immediately. The appropriate sampling forms shall include a notation that sample collection occurred without stabilization. Samples obtained from slow-yielding wells shall be collected as soon as a sufficient volume is available for a sample for each parameter.

4.7.8. Do **not** re-use purging equipment. Pumps shall be decontaminated between monitoring wells, in accordance with procedures noted in Section 4.1.

4.7.9. Record sampler's name, sampling time, volume of water purged, parameters measured, weather conditions, sample number, analyses required and all other pertinent information in the field notebook and/or appropriate field forms, and complete the chain of custody form.

4.7.10. Any water purged from the monitoring wells shall be stored in appropriate containers until the laboratory analyses are available. Then it should be disposed of in accordance with all applicable local, state and federal requirements.

4.7.11. Storage shall be in containers approved for storage of hazardous materials, and in an appropriate designated location at the facility.

4.8. Sample Withdrawal

4.8.1. In order to ensure that the groundwater sample is representative of the formation, it is important to minimize physical alteration (i.e. agitation during purging and/or sample collection) or chemical contamination of the sample during the withdrawal process.

4.8.2. Use an appropriate pump to purge each well; the same pump used for purging shall be used for sample withdrawal.

4.8.3. The samples shall be collected at a location before entering the flow-through cell. To minimize the effects of water column agitation on sample quality, samples shall be collected from the pump tubing in the following order into pre-labeled sample containers:

- VOCs.
- Total petroleum hydrocarbons.
- Extractable organics (semivolatiles).
- PCBs.
- Metals.
- Phenols.
- Cyanide.
- Chloride and sulfate.
- Nitrate and ammonia.
- Turbidity.
- Radionuclides.
- Purgeable organic carbon (POCs).
- Purgeable organic halogens (POX).
- Total organic halogens (TOX).
- Total organic carbon (TOC).

4.8.4. Samples shall be obtained from the monitoring wells as soon as possible after purging. This may require waiting an extended period for low-yielding wells.

4.8.5. Samples collected for VOC analysis shall be free of any air bubbles and inverted upon filling. Bacterial samples shall be collected using dedicated gloves; taking care not to allow anything to touch the inside of the sampling container.

4.8.6. Samples collected for metals analysis, which are to be filtered in the field, shall be passed through an appropriately sized filter prior to placement in the sample bottle. Pre-rinse the filter with approximately 25 to 50 milliliters of groundwater prior to collecting the filtered metals sample. Filter sizes will generally be either 0.45 microns for dissolved metals and 10 microns for metals that could be present as colloids or adsorbed onto colloids that could be mobile in the aquifer. The appropriate filter size for the individual project must be provided in site-specific work instructions.

4.9. "What If" Scenarios

4.9.1. Certain field conditions may be encountered that influence the choice of equipment to be used or altogether limit the feasibility of low-flow sampling techniques. The following is a brief description of select scenarios to provide field personnel with a guideline if similar circumstances are encountered

4.9.2. Turbidity

4.9.2.1. If turbidity measurements do not stabilize as described above after 2.5 hours of purging or the evacuation of three well volumes, whichever comes first, sample collection can be initiated. Record observations of the color, clarity, and other observable characteristics of the groundwater (such as the presence or absence of particles) in the field paperwork

4.9.2.2. If samples are being collected for analysis for total (unfiltered) metals and the turbidity has not stabilized below 10 NTU, a sample for additional analysis for metals should also be collected after being filtered in the field through an in-line 10-micron filter, if specified in the work instructions.

4.9.3. Peristaltic Pump

4.9.3.1. Difficulty may be encountered while advancing the flexible polyethylene peristaltic pump tubing to the desired depth within a deep well or older well. Excessive friction may result from the tubing contacting the sidewall of the well casing or accumulations of material on the well casing (i.e. mineral and bacterial deposits). In these scenarios, the tubing may coil within the well during advancement and prevent the desired depth from being attained. Efforts to weight the tubing should be attempted before using alternate pumping techniques.

4.9.3.2. If such well conditions are expected, a bladder pump or similarly submersible pump should be used instead of a peristaltic pump. A bladder pump provides sufficient mass on the tubing to allow for advancement in deep or older wells.

4.9.3.3. A peristaltic pump cannot be used to sample wells in which the depth to water is greater than approximately 25 feet.

4.9.4. Sampling Depth

4.9.4.1. If conditions exist that prevent the appropriate pump or tubing from being advanced to the midpoint of the saturated portion of the screened interval, low-flow sampling techniques shall not be used. Instead, sampling shall be conducted using conventional purging and sampling techniques, as described in LEA SOP 10004 entitled *Liquid Sample Collection and Field Analysis*. Justification for not using low-flow sampling techniques must be provided in the field paperwork.

4.10. Field Documentation

4.10.1. Field documentation shall include at a minimum: a chain-of-custody form, Field Data Record Groundwater Form, Sample Collection Form, Daily Field Report. Sample labels and sample seals shall be used for proper sample identification.

4.10.1.1. The labels shall be sufficiently durable to withstand immersion for 48 hours without detaching and to withstand normal handling. The information provided shall be legible at all times.

4.10.1.2. The following information shall be provided on the sample label using an indelible pen:

- Sample identification number.
- Date and time of collection.
- Place of collection.
- Parameter(s) requested (if space permits).

4.10.1.3. Appropriate field forms will be used to log all pertinent information with an indelible pen. The following information shall be provided:

- Project and site identification.
- LEA commission number.
- Identification of well.
- Static water level measurement technique.
- Presence of immiscible layers and detection method.
- Time well purged.
- Collection method for immiscible layers and sample identification numbers.
- Well evacuation procedure/equipment.
- Sample withdrawal procedure/equipment.
- Date and time of collection.
- Types of sample containers used and sample identification numbers.
- Preservative(s) used.
- Parameters requested for analysis.
- Field analysis method(s).
- Whether or not field filtration was performed and the filter size, if appropriate.
- Field observations on day of sampling event.
- Record of site activities.
- Field personnel.

- Climatic conditions, including air temperature.
- Status of total production.
- Record of non-productive time.

4.10.1.4. The Field Sampling Record shall include at a minimum the following information:

- Identification of well.
- Date and time of collection.
- Name of collector.
- Sample number.

4.10.1.5. The chain-of-custody record shall include the following information:

- Company's name and location.
- Date and time of collection.
- Sample number.
- Container type, number, size.
- Preservative used.
- Signature of collector.
- Signatures of persons involved in the chain of possession.
- Analyses to be performed.
- Type and number of samples.

4.10.1.6. The Field Data Record Groundwater Form shall be updated during the sampling of each well and include the following information:

- Identification of well.
- Well depth, diameter, depth to water.
- Static water level depth and measurement technique.
- Purge volume and pumping rate.
- Time well is purged.

- Measurements of initial field parameters and all subsequent readings.
- Any specific circumstances, as described above, such as field filtering, lack of stabilization of parameters, water characteristics, etc.
- LEA commission number.
- Date.

4.10.1.7. The Daily Field Record shall include the following information:

- Client's name, location, LEA commission number, date.
- Instrument make, model, and type.
- Calibration readings.
- Calibration/filtration lot numbers.
- Field personnel and signature.

4.10.1.8. The Daily Field Record shall assure the completeness of the sampling round and include the following information:

- Reviewer's name, date, and LEA commission number.
- Review of all necessary site activities and field forms.
- Statement of corrective actions for deficiencies.

5. References

5.1. United States Environmental Protection Agency (EPA), Region I. *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells,* July 30, 1996, Revision 2.

5.2. EPA. *Groundwater Sampling Guidelines for Superfund and RCRA Project Managers – Groundwater Forum Issue Paper,* Office of Solid Waste and Emergency Response, (EPA 542-S-02-001), May 2002.

5.3. Robert W. Puls and Michael Barcelona, EPA. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures,* in Groundwater Issue, (EPA/540/S-95/504), April 1996.

5.4. Connecticut Department of Environmental Protection, Bureau of Water Management, Permitting Enforcement and Remediation Division. *Site Characterization Guidance Document,* Draft, June 12, 2000.

END OF DOCUMENT

APPENDIX C

APPENDIX C

Geologic Boring Logs and Well Completion Logs

GEOLOGIC BORING LOG

Project: Additional Engineering Support Services
LEA Commission Number 15RP601.001
Client Sullivan & Worcester, LLP
Location Centredale Manor

Start Date 01/31/2008
End Date 01/31/2008

Boring ID
MW-LEA-01

Drilling Contractor Geosearch, Inc.
Drilling Method Hollow Stem Auger
Sampling Method Split Spoon
Groundwater Observation
Depth 11.0 **at** D.D. **Hours**
Depth **at** **Hours**

Logged by Mark Winbourne
Drilling Foreman Robert Gerard - Maillet
Drill Rig Davey DK525
Surface Elevation
Latitude
Longitude

Depth	Sample Information			Soil Description	PID/FID ppm
	Sample No.	Recovery (%)	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structure, Density, Cohesiveness, Other	
0-	1314197	67	4/8/11/17	0"-4": Topsoil 4"-11": Light brown fine to medium SAND, moist, medium dense 11"-16": Dark brown SILT, fine to coarse SAND and subrounded GRAVEL, moist, medium dense, trace Fill (piece of geotextile fabric, wood fragment)	0.5
2-	1314198	50	17/17/11/11	0"-4": Dark brown fine to coarse SAND and fine to coarse subrounded GRAVEL, moist, medium dense 4"-12": Dark brown fine to coarse SAND and fine to coarse subrounded GRAVEL, wet, medium dense	0.6
4-	1314199	58	10/9/10/13	0"-10": Strong brown, black, and grey fine to coarse SAND, trace Silt, trace fine subrounded Gravel, wet, medium dense, trace Fill (glass fragment) 10"-14": Black SILT, fine to coarse SAND and fine to coarse subrounded GRAVEL, moist, medium stiff	2.0
6-	1314200	79	30/120/63/35	Black and dark brown fine to coarse SAND, and fine to coarse subrounded GRAVEL, trace Silt, wet, dense	4.0
8-	1314201, 1314202	75	30/59/53/49	Black and dark brown fine to coarse SAND, and fine to coarse subrounded GRAVEL, trace Silt, wet, dense	395
10- V	1314203	75	35/60/74/53	0"-12": Black and dark brown fine to coarse SAND, and fine to coarse subrounded GRAVEL, trace Silt, wet, dense 12"-18": Reddish brown fine to coarse SAND and fine to coarse subrounded GRAVEL, trace Silt, wet, dense	350
12- 14	1314204	67	17/30/30/42	0"-10": Black fine to coarse SAND and fine to coarse subrounded GRAVEL, wet, dense 10"-16": Light brown fine to coarse SAND and fine to coarse subrounded GRAVEL, wet, dense	145

WELL COMPLETION LOG

Project: Additional Engineering Support Services **LEA Commission Number** 15RP601.001 **Client** Sullivan & Worcester, LLP **Location** Centredale Manor	**Start Date** 01/31/2008 **End Date** 01/31/2008	**Well ID** **MW-LEA-01**

Drilling Contractor Geosearch, Inc.
Drilling Method Hollow Stem Auger
Sampling Method
Groundwater Observation
Depth 6 **at** D. **Hours**
Average depth to water is 11.03

Logged by Mark Winbourne
Drilling Foreman Robert Gerard - Maillet
Drill Rig Davey DK525

Protector
- Material Steel
- Diameter 4"
- Length 5' Ground
- Stickup 3.05
- Key # Battelle
- Cover Type Locking

Top Seal
- Top 2'
- Bottom 9'
- Material Bentonite

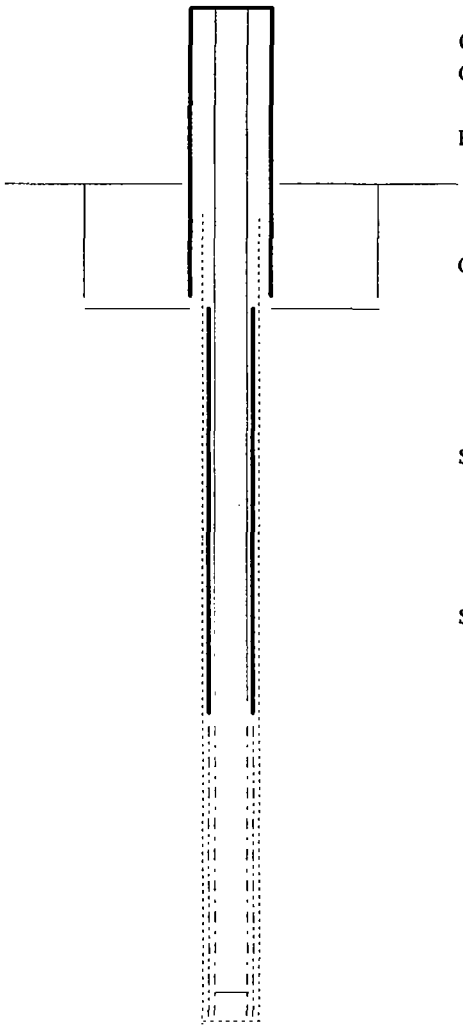
Backfill
- Top
- Bottom
- Material

Secondary Sand
- Top 8'
- Bottom 14'
- Size 20/40

Filter Pack
- Top 9.0
- Bottom 14.0
- Material Prepack / PVC

Reported depth to bottom of boring 14.50
Last measured depth 17.15

Comments



Concrete Diameter 10"
Concrete Thickness 2'

Reference
- Elevation 104.10
- Description

Casing
- Diameter 2"
- Material PVC
- Length 10
- Top Elevation 104.10

Seal
- Top 2.0
- Bottom 9.0
- Material Bentonite chips

Screen
- Top 9.00
- Bottom 14.00
- Material PVC
- Diameter 2"
- Length 5.0
- Slot Size 0.012"

Vertical scale ~ 1:40

GEOLOGIC BORING LOG

Project: Additional Engineering Support Services
LEA Commission Number 15RP601.001
Client Sullivan & Worcester, LLP
Location Centredale Manor

Start Date 01/31/2008
End Date 01/31/2008

Boring ID
MW-LEA-02

Drilling Contractor Geosearch, Inc.
Drilling Method Hollow Stem Auger
Sampling Method Split Spoon
Groundwater Observation
Depth 10.3 **at** **Hours**
Depth **at** **Hours**

Logged by Mark Winbourne
Drilling Foreman Robert Gerard - Maillet
Drill Rig Davey DK525
Surface Elevation
Latitude
Longitude

Depth	Sample Information			Soil Description	PID/FID ppm
	Sample No.	Recovery (%)	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structure, Density, Cohesiveness, Other	
0-	1314205	100	17/53/21/20	0"-4": Topsoil 4"-16": Light yellowish brown and brown fine to medium SAND, little Silt, moist, dense 16"-24": Concrete fragments	2.5
2-	1314206	8	20/20/13/9	Yellowish brown fine to medium SAND, little Silt, moist, medium dense	1.2
4-	1314207	42	4/4/6/16	Brown fine to coarse SAND, some Silt, moist, medium dense / loose, black staining at bottom 2"	52.4
6-	1314208	58	60/60/54/50	Brown fine to coarse SAND, some Silt, wet, medium dense / loose, black staining observed sporadically throughout	147
8-	1314209	13	124/ / /124	Dark brown and black fine to coarse SAND and fine to coarse subrounded GRAVEL, trace Silt, wet, very dense Blow counts: 124/124 for 4"	249
10- V 12	1314210	58	27/25/30/22	0"-10": Dark brown and black fine to coarse SAND and fine to coarse subrounded GRAVEL, trace Silt, wet, very dense 10"-14": Yellowish brown and dark white fine to coarse SAND and fine to coarse subrounded to rounded GRAVEL, wet, dense	146

WELL COMPLETION LOG

Project: Additional Engineering Support Services **LEA Commission Number** 15RP601.001 **Client** Sullivan & Worcester, LLP **Location** Centredale Manor	**Start Date** 01/31/2008 **End Date** 01/31/2008	**Well ID** **MW-LEA-02**

Drilling Contractor Geosearch, Inc.
Drilling Method Hollow Stem Auger
Sampling Method
Groundwater Observation
Depth 9.4 **at** **Hours**
Average depth to water is 10.33

Logged by Mark Winbourne
Drilling Foreman Robert Gerard - Maillet
Drill Rig Davey DK525

Protector
- Material Steel
- Diameter 4"
- Length 5' Ground
- Stickup 3.15
- Key # Battelle
- Cover Type Locking

Top Seal
- Top 2'
- Bottom 5'
- Material Bentonite

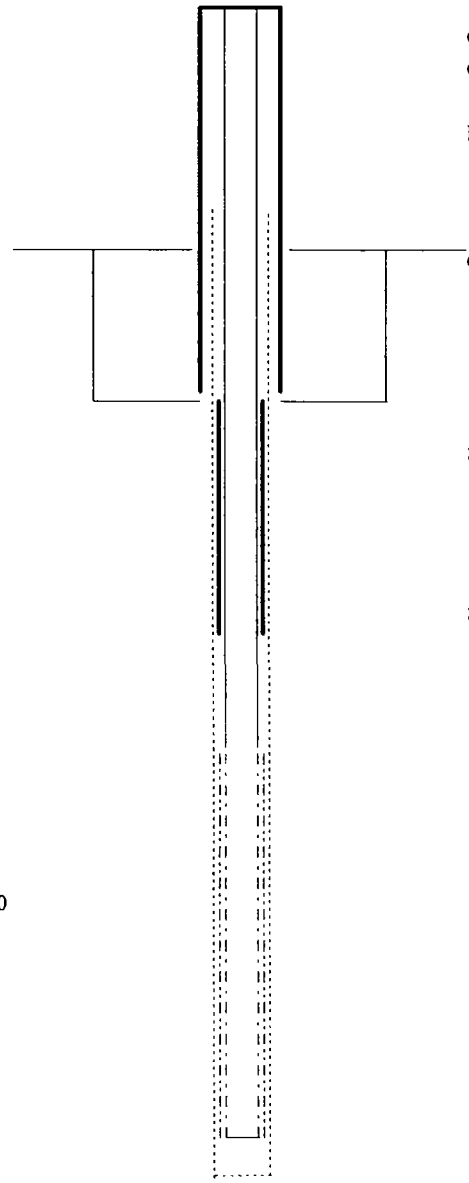
Backfill
- Top
- Bottom
- Material

Secondary Sand
- Top 5
- Bottom 11.5
- Size 20/40

Filter Pack
- Top 6.5
- Bottom 11.5
- Material Prepack / PVC

Reported depth to bottom of boring 12.00
Last measured depth 15.11

Comments



Concrete Diameter 10"
Concrete Thickness 2'

Reference
- Elevation 103.38
- Description

Casing
- Diameter 2"
- Material PVC
- Length 10
- Top Elevation 103.38

Seal
- Top 2.0
- Bottom 5.0
- Material Bentonite chips

Screen
- Top 6.50
- Bottom 11.50
- Material PVC
- Diameter 2" ID
- Length 5.0
- Slot Size 0.012"

Vertical scale ~ 1:30

GEOLOGIC BORING LOG

Project: Additional Engineering Support Services
LEA Commission Number 15RP601.001
Client Sullivan & Worcester, LLP
Location Centredale Manor

Start Date 02/05/2008
End Date 02/05/2008

Boring ID MW-LEA-03

Drilling Contractor Geosearch, Inc.
Drilling Method Hollow Stem Auger
Sampling Method Split Spoon
Groundwater Observation
Depth 9.6 **at** D.D. **Hours**
Depth **at** **Hours**

Logged by Mark Winbourne
Drilling Foreman Joe Burke
Drill Rig Davey DK525
Surface Elevation
Latitude
Longitude

Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Soil Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0-	1314211	42	2/11/9/7	0"-2": Topsoil 2"-10": Light brown fine to medium SAND, some Silt, moist, medium dense, 3 pieces of geotextile fabric	0.0
2-	1314212	50	21/17/12/11	0"-3": Light brown fine to medium SAND, some Silt, moist, medium dense 3"-12": Black SILT, little fine to medium Sand, trace wood fragments, moist, stiff	0.0
4-	1314213	29	14/17/24/36	0"-3": Light brown fine to coarse SAND, trace fine Gravel, moist, very dense 3"-7": Geotextile fabric and black SILT, fine to coarse Sand, fine angular Gravel, moist, very dense	0.0
6-	1314214	58	46/24/100/4	0"-14": Black fine to coarse SAND and fine to coarse subangular to subrounded GRAVEL, dense, wet Blow counts: 46/24/100 for 4"	0.0
8- V 10	1314215	83	34/73/77/68	Yellowish brown fine to coarse SAND and fine to coarse subangular to subrounded GRAVEL, very dense, wet	0.0

WELL COMPLETION LOG

Project: Additional Engineering Support Services **LEA Commission Number** 15RP601.001 **Client** Sullivan & Worcester, LLP **Location** Centredale Manor	**Start Date** 02/05/2008 **End Date** 02/05/2008	**Well ID** **MW-LEA-03**

Drilling Contractor Geosearch, Inc.
Drilling Method Hollow Stem Auger
Sampling Method
Groundwater Observation
Depth 6 **at** D. **Hours**
Average depth to water is 9.65

Logged by Mark Winbourne
Drilling Foreman Joe Burke
Drill Rig Davey DK525

Protector
- Material Steel
- Diameter 4"
- Length 5' Ground
- Stickup 3.09'
- Key # Battelle
- Cover Type Locking Cap

Top Seal
- Top 2'
- Bottom 4'
- Material Bentonite

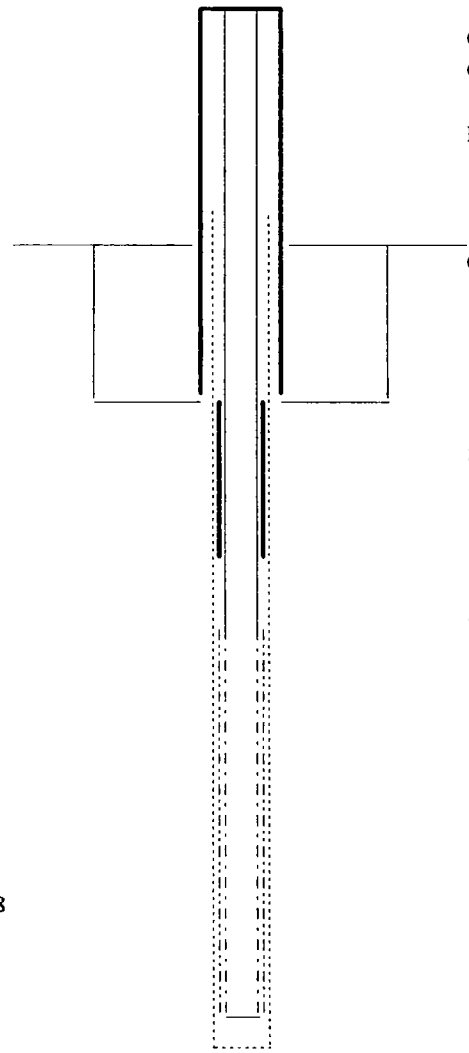
Backfill
- Top
- Bottom
- Material

Secondary Sand
- Top 4'
- Bottom 10.38'
- Size 20/40

Filter Pack
- Top 5.0
- Bottom 10.0
- Material V-wire / PVC

Reported depth to bottom of boring 10.38
Last measured depth 12.56

Comments



Concrete Diameter 10"
Concrete Thickness 2'

Reference
- Elevation 103.01
- Description Top of PVC Riser

Casing
- Diameter 2"
- Material PVC
- Length 7.0
- Top Elevation 103.01

Seal
- Top 2.0
- Bottom 4.0
- Material Bentonite

Screen
- Top 5.00
- Bottom 10.00
- Material PVC
- Diameter 2"
- Length 5.0
- Slot Size 0.012

Vertical scale ~ 1:30

APPENDIX D

APPENDIX D

Loureiro Engineering Associates, Inc. Daily Field Report Forms

DAILY FIELD REPORT

Loureiro Engineering Associates, Inc.

LEA Comm. No.	15RP601.001	Page 1 of 2	
Project	Additional Engineering Support Services	Date 1/22/08	
Location	Centredale Manor, North Providence, RI		
Client	Swidler Berlin Shereff Friedman-JMu		

Arrived at Site 1335 Departed from Site 1425 Vehicle Ford Escape

Odometer (Start) 98178 Return 98410

Site Activities

- [ ] Soil Sampling
- [ ] Groundwater Sampling
- [ ] Surface Water Sampling
- [ ] Vapor/Air Sampling
- [ ] Concrete Sampling
- [ ] Other Sampling
- [ ] Other Sampling
- [ ] Well Development
- [ ] Geoprobe Work
- [ ] Concrete Coring
- [ ] Construction
- [ ] Waste Management
- [x] Utility Markout
- [ ] Inspection
- [x] Site Walk Over
- [ ] Surveying
- [ ] Other (Describe)

Current Project Information

Last Sample Number Used	N/A
Last Location ID Used	
Current Location (if not complete)	
Sampling for	
Laboratories used	N/A
Paperwork & Equipment left at/in	
Site Contact	Doreen Glosko, Brook Valley
Contractors on Site	LEA, CorBuilt
Time and place to meet contractors	1330 on-site

Non-productive Time

- [x] None
- [ ] Equipment Breakdown
- [ ] Late
- [ ] Weather
- [ ] Missing Equipment
- [ ] Other (Describe)

Quality Assurance Checks

Yes	N/A	No	
	✓		Sample labels complete
	✓		Sample/cooler seals OK
	✓		All samples obtained
	✓		Chains of custody
✓			All forms/logs complete
✓			Site condition OK
		✓	Site H&S Plan on site
		✓	Instruments calibrated

Residuals Disposition

Item	Approx. Amount	Container ID
Soil/Solid		
Groundwater		
Decon Fluid		
PPE		
Other		

Checked By

M. Winbourne

Weather Conditions

Temperature 35°F Precipitation Drizzle Wind 10-25mph, E/NE

Comments

Expendable Items Used

Qty	Item	LEA Number
	Decontamination Supplies	081
	Drum, Open Top 55 Gallon	086
	Miscellaneous Health & Safety Items	060
	Water, Distilled	025
3	Pin Flags	

Equipment Used

Qty	Item	LEA Number
	Balance, Ohaus	031
	Drill, Core Saw, w/ Attachment	009
	Drill, Hilti, incl. Concrete Anchors	010
	Hand Auger, w/ attachments	013
	Locator, Metrotech Pipe	053
1	Miscellaneous Small Tools & Equipment	152
	VOC Analyzer, Photovac 2020 (PID)	012

Field Personnel Mark Winbourne

Signature Mark Winbourne

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT

Supplemental Sheet

LEA Comm. No.	**15RP601.001**	Page 2 of 2
Project	Additional Engineering Support Services	Date 1/22/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Description of Site Activities

1335: Mark Winbourne (MW) arrived on-site. Rich Cormier (RC) of CorBuilt already on-site and using GPR to "clear" proposed monitoring well area of underground utilities. Mark Winbourne marked proposed monitoring well locations (3) using orange pin flags. RC completed GPR survey, stated no underground utility in area of proposed monitoring wells.
1415: RC departed site. MW attempted to pay property manager a visit, but noone answered door. MW later called property manager to inform her of on-site activities.
1425: MW departed site.

Field Personnel Mark Winbourne

Signature

DAILY FIELD REPORT

Loureiro Engineering Associates, Inc.

LEA Comm. No.	15RP601.001	Page 1 of 9
Project	Additional Engineering Support Services	Date 1/31/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Arrived at Site 0700 Departed from Site 1800 Vehicle LEA F150

Odometer (Start) 132062 Return 132254

Site Activities

- [x] Soil Sampling
- [ ] Groundwater Sampling
- [ ] Surface Water Sampling
- [ ] Vapor/Air Sampling
- [ ] Concrete Sampling
- [ ] Other Sampling
- [ ] Other Sampling
- [x] Well Installations
- [ ] Well Development
- [ ] Geoprobe Work
- [ ] Concrete Coring
- [ ] Construction
- [ ] Waste Management
- [ ]
- [ ] Inspection
- [ ] Site Walk Over
- [ ] Surveying
- [ ] Other (Describe)

Non-productive Time

- [ ] None
- [ ] Equipment Breakdown
- [x] Late (Drillers)
- [ ] Weather
- [ ] Missing Equipment
- [x] Other (Describe)

Current Project Information

Last Sample Number Used	1314219
Last Location ID Used	MW-LEA-02
Current Location (if not complete)	N/A
Sampling for	Dioxins/Furans
Laboratories used	DAT, Inc.
Paperwork & Equipment left at/in	DNS' office
Site Contact	Doreen Glasgow
Contractors on Site	LEA, EPA, GeoSearch, Inc.
Time and place to meet contractors	0730 on-site

Quality Assurance Checks

Yes	N/A	No	
✓			Sample labels complete
✓			Sample/cooler seals OK
		✓	All samples obtained
✓			Chains of custody
✓			All forms/logs complete
✓			Site condition OK
✓			Site H&S Plan on site
✓			Instruments calibrated

Checked By

M. Winbourne

Residuals Disposition

Item	Approx. Amount	Container ID
Soil/Solid	30 gal.	RP-OT-001
Groundwater		
Decon Fluid	30 gal.	RP_CT-001
PPE		
Other		

Weather Conditions

Temperature 30-42°F Precipitation None Wind 10-20mph, N

Comments

Expendable Items Used

Qty	Item	LEA Number
1	Decontamination Supplies	081
	Drum, Open Top 55 Gallon	086
1	Miscellaneous Health & Safety Items	060
1	Water, Distilled	025
1	Gloves, nitrile, box	
13	Baggies, Ziplock, 1-gallon	
	~~Buckets~~	

Equipment Used

Qty	Item	LEA Number
	Balance, Ohaus	031
	Drill, Core Saw, w/ Attachment	009
	Drill, Hilti, incl. Concrete Anchors	010
	Hand Auger, w/ attachments	013
	Locator, Metrotech Pipe	053
2	Miscellaneous Small Tools & Equipment	152
1	VOC Analyzer, Photovac 2020 (PID)	012
1	Microcore Tray	
1	Folding Table	
6	Buckets, 5-gal (for samples)	

Field Personnel Mark Winbourne

D. Scotti

Signature

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT

Supplemental Sheet

LEA Comm. No.	**15RP601.001**	Page 2 of 9
Project	Additional Engineering Support Services	Date 1 / 31 / 08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Description of Site Activities

0700: Mark Winbourne (MW) arrived on-site. Shovelled snowbank from in front of access gate.
0720: David Scutti (DS) arrived on-site.
0800: Drillers arrived on-site. DS met over scope with drillers
0830: Carnell Rosciu of EPA arrived on-site.
0840: Dave, Rivers Village maintenance superintendent arrived on-site. Voiced concerns over settled walkway on a few previously installed wells.
0940: Drillers decon-ed augers. River level estimated to be ~6 ft below top of embankment.
1010: Started drilling MW-LEA-01, after HASP briefing.
1120: High PID observed 8-10' of MW-LEA-01. Drill to 10-12'. Also high PID. Work suspended temporarily while DS and EPA determine course of action (suspended @ 1200).
1220: EPA decided to sample 12-14'. Work resumed. After finishing well, drillers decon-ed downhole equipment with steam cleaner.
1415: Began drilling MW-LEA-02.
1530: Finished drilling MW-LEA-02. Drillers began cleanup, and finishing surface completions of wells MW-LEA-01 and MW-LEA-02.
1700: Drillers continued cleanup and well completions. MW off-site to ship samples.
1730: MW back on-site. Drillers took 2 55-gallon drums to Cap 1 area for disposal. Drums left on pallet inside locked gate in Cap 1 area.
1800: MW and drillers departed site.

Field Personnel	Mark Winbourne	*Signature*
	D. Scutti	

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT
CALIBRATION RECORD

LEA Comm. No.	**15RP601.001**	Page 3 of 9
Project	Additional Engineering Support Services	Date 1/31/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

pH Meter/Serial # _____

	Time	pH 4.01	pH 7.00	pH 10.01	Spec. Cond.	ORP	DO
Initial Calibration							
Calibration Check							
Calibration Check							

Turbidity Meter/Serial # _____

	Time	0 NTU	20 NTU	100 NTU	~~800 NTU~~
Initial Calibration					
Calibration Check					
Calibration Check					

PID Meter/Serial # _____

	Time	Standard	Meter Reading	Zero with
Initial Calibration	0800	100 ppm	91.5 ppm	Ambient
Calibration Check				
Calibration Check				

Balance/Serial # _____

	Time	Standard	Balance
Initial Calibration			
Calibration Check			
Calibration Check			

Comments: NJ Envir. 866 287-8700

Field Personnel: Mark Winbourne; D. Scotti

Signature: Mark Winbourne

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
MISCELLANEOUS SAMPLES

LEA Comm. No.	**15RP601.001**	Page 4 of 9
Project	Additional Engineering Support Services	Date 1/31/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Sample ID	Location ID	Time	Sample Type	Depth (ft)	PID/FID Reading	Comments	Waste Cont. ID
1314218	~~MW-LEA-01~~ N/A (MW) PES-CMRP-001	0915	PES	N/A	N/A	PE Sample	N/A
2229066	MW-055	0935	GWL	4.96	158	ranged from 120-150 after initial 158 reading	Dist. from t.o. PVC to PVC ~5" below grade
1314219	~~Equip. Blank~~ (MW) BKE-CMRP-001	1215	BKE	N/A	N/A	off of decontaminated split spoon	N/A

Field Personnel: Mark Winbourne, D. Scotti

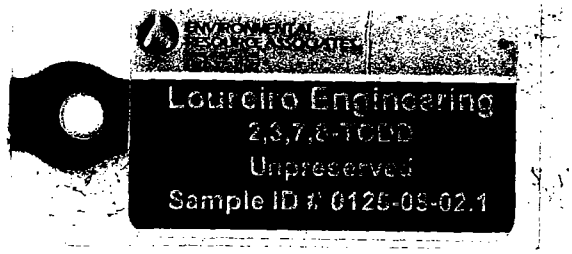
Signature: Mark Winbourne

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
PERFORMANCE SAMPLE

LEA Comm. No.	**15RP601.001**	Page 5 of 9
Project	Additional Engineering Support Services	Date 1/31/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

LEA Sample ID 1314218



LEA Sample ID

LEA Sample ID

LEA Sample ID

LEA Sample ID

LEA Sample ID

Field Personnel	Mark Winbourne	Signature
	D. Sotti	

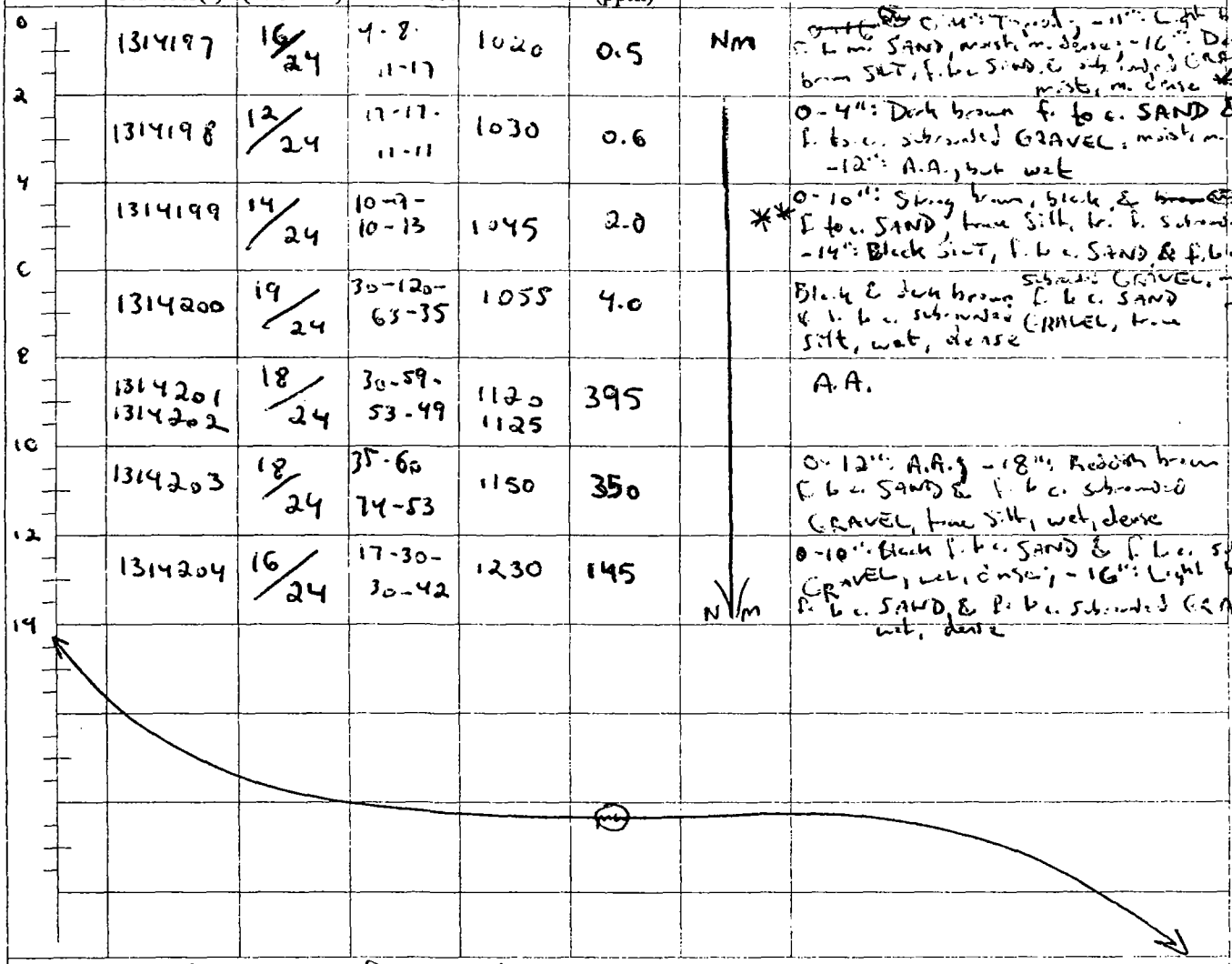
Loureiro Engineering Associates, Inc.

FIELD BORING LOG

BORING ID: MW-LEA-01

LEA Comm. No.	**15RP601.001**		Page 6 of 9
Project	Additional Engineering Support Services		Date 1/31/08
Location	Centredale Manor	GPS Latitude	
Client	Swidler Berlin Shereff Friedman-JMu	GPS Longitude	
Drilling Method	Hollow Stem Auger	Drilling Contractor	Geo Search, Inc.
Sampling Method	Split Spoon	Drill Foreman	Robert Gerard-Maillet
Groundwater Depth	~6' at D.D.	Drill Rig	Davey ~~Dave~~ DK 525

Elevation/ Depth	Sample Number(s)	Recovery (% or n/n)	Blows/6" / Downforce	Time	PID/FID (ppm)	Mass	Description of Recovered Material (Color, primary grain size and amount, other grain size(s) and amounts, density, moisture, coherence, structure, sorting, other characteristics)
0	1314197	16/24	4-8-11-17	1020	0.5	NM	~~0-4"~~ 0-4": Topsoil, -11": Light brown f. to m. SAND, moist, m. dense, -16": Dark brown SILT, f. to c. SAND & subrounded GRAVEL, moist, m. dense *
2	1314198	12/24	17-17-11-11	1030	0.6		0-4": Dark brown f. to c. SAND & f. to c. subrounded GRAVEL, moist, m. dense, -12": A.A., but wet
4	1314199	14/24	10-9-10-13	1045	2.0	**	0-10": Strong brown, black & ~~brown~~ gray f. to c. SAND, trace Silt, tr. f. subrounded Gravel, -14": Black SILT, f. to c. SAND & f. to c. subrounded GRAVEL, moist, m. dense
6	1314200	19/24	30-12-63-35	1055	4.0		Black & dark brown f. to c. SAND & f. to c. subrounded GRAVEL, trace Silt, wet, dense
8	1314201 1314202	18/24	30-59-53-49	1120 1125	395		A.A.
10	1314203	18/24	35-60 74-53	1150	350		0-12": A.A., -18": Reddish brown f. to c. SAND & f. to c. subrounded GRAVEL, trace Silt, wet, dense
12	1314204	16/24	17-30-30-42	1230	145	NM	0-10": Black f. to c. SAND & f. to c. subrounded GRAVEL, wet, dense, -16": Light brown f. to c. SAND & f. to c. subrounded GRAVEL, wet, dense
14							



Comments *: piece geotextile fabric, wood fragment

** glass fragment

After observing a PID reading of 350 from the 10-12' sample, EPA rep. Cornell Rosiu requested we drill deeper w/ spoon 12-14'

Waste Container RP-OT-001 Trip Blank ID(s) N/A Cooler ID N/A

Field Personnel Mark Winbourne, D. Scotti

Signature

WELL COMPLETION REPORT

Project: Additional Engineering Support Services
LEA Comm. No. 15RP601.001
Client Swidler Berlin Shereff Friedman-JMu
Location Centredale Manor

Start Date 1/31/08
End Date 1/31/08

Well ID MW-LEA-01

Drilling Contractor GeoSearch
Drilling Method Hollow Stem Auger
Sampling Method Split Spoon
Groundwater Observation
Depth 6' **at** D.D. **Hours**

Logged by M. Wilbourne
Drilling Foreman Robert Gerard-Meillet
Drill Rig Davey (MW) ~~Dete~~ DK525
GPS Latitude
GPS Longitude

Protector
- Material: Steel
- Diameter: ~~6~~ (MW) 4"
- Length: ~~4'~~ (MW) 5' Ground
- Stickup: ~2'
- Key #: Battelle
- Cover Type: Locking

Top Seal
- Top: 2'
- Bottom: 9'
- Material: Bentonite

Backfill
- Top
- Bottom
- Material

Secondary Sand
- Top: 8'
- Bottom: 14'
- Size: 20/40

Filter Pack
- Top: 9'
- Bottom: 14'
- Material: Johnson Vee-Wire 2"Ø (inner), 3"Ø (outer) PVC } Prepack

Reported depth to bottom of boring: 14.5'

Comments: 0.5' long sump on bottom of screen

Concrete Diameter: 10"
Concrete Thickness: ~2'

Reference
- Stickup: ~2'
- Description: Top of PVC Riser

Casing
- Diameter: 2"
- Material: PVC
- Length: ~10'
- Stickup: ~2'

Seal
- Top: ~~2'~~
- Bottom: 9'
- Material: Bentonite Chips

Screen
- Top: 9'
- Bottom: 14'
- Material: PVC-Vee-Wire
- Diameter: 2"
- Length: 5'
- Slot Size: 0.012"

Miscellaneous Materials (Quantity Used/Item)

	Cement	1 bag
Cetco-Pure →	Bentonite Chips	1 bag
Gold-Medium Bent. Chips	Bentonite Pellets	
	Bentonite Powder	
	Grout Weight	
U.S. Silica →	Filter Pack Sand	3/4 bag
Filpro Filtration Sand	Capping Sand	
	Well Point	
	Well Plug	

Signature Mark Wilbourne

LEA

Loureiro Engineering Associates, Inc.

Loureiro Engineering Associates, Inc.

FIELD BORING LOG

BORING ID: MW-LEA-02

LEA Comm. No.	**15RP601.001**		Page 8 of 9
Project	Additional Engineering Support Services		Date 1/31/08
Location	Centredale Manor	GPS Latitude	
Client	Swidler Berlin Shereff Friedman-JMu	GPS Longitude	
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascarch
Sampling Method	Split Spoon	Drill Foreman	Robert Gerard-Maillet
Groundwater Depth	6' at D.D.	Drill Rig	Davey DK525

Elevation/ Depth	Sample Information: Sample Number(s)	Recovery (% or n/n)	Blows/6" / Downforce	Time	PID/FID (ppm)	Mass	Description of Recovered Material (Color, primary grain size and amount, other grain size(s) and amounts, density, moisture, coherence, structure, sorting, other characteristics)
0	1314205	24/24	17-53-21-20	1425	2.5	NM	0-4": Topsoil; -16": Lt. yellowish brown & brown f. to m. SAND, little Silt, moist, dense; -24": Concrete fragments
2	1314206	2/24	20-20-13-9	1435	1.2		Yellowish brown f. to m. SAND, little Silt, moist, m. dense
4	1314207	10/24	4-4-6-16	1455	52.4		Brown f. to c. SAND, some Silt, moist, m. dense/loose, black staining @ bottom 2"
6	1314208	14/24	60-60-54-50	1500	147		A.A., but wet, stock staining observed spottedly throughout
8	1314209	3/24	124-124/4"	1515	249		Brown & black f. to c. SAND & f. to c. Subrounded GRAVEL, trace Silt, wet, very dense
10	1314210	14/24	27-25-30-22	1530	146 / 92	NM	0-10": A.A.; -14": Yellowish brown & dark white f. to c. SAND & f. to c. subrounded to rounded GRAVEL, wet, dense
12							

MS/MSD

Comments: Screen @ 5-11.5'

Waste Container: RP-OT-001 Trip Blank ID(s): N/A Cooler ID: N/A

Field Personnel: Mark Winbourne, D. Scott

Signature: Mark Winbourne

WELL COMPLETION REPORT

Project: Additional Engineering Support Services
LEA Comm. No. 15RP601.001
Client Swidler Berlin Shereff Friedman-JMu
Location Centredale Manor

Start Date 1/31/08
End Date 1/31/08

Well ID MW-LEA-02

Drilling Contractor GeoSearch
Drilling Method Hollow Stem Auger
Sampling Method Split Spoon
Groundwater Observation
Depth 6' **at** D.D. **Hours**

Logged by M. Winborne
Drilling Foreman Robert Gerard - Maillet
Drill Rig Davey ~~Dave~~ DK525
GPS Latitude
GPS Longitude

Protector
- Material: Steel
- Diameter: 4"
- Length: ~~4'~~ 5' Ground
- Stickup: ~2'
- Key #: Buttelle
- Cover Type: Locking

Top Seal
- Top: 2'
- Bottom: 5'
- Material: Bentonite

Backfill
- Top: ~~2'~~
- Bottom: ~~5'~~
- Material: ~~Berto~~

Secondary Sand
- Top: 5'
- Bottom: ~~11'~~ 11.5'
- Size: 20/40

Filter Pack
- Top: 6.5
- Bottom: 11.5
- Material: Johnson V-Pack PVC 2"ϕ I.D.

Prepack

Reported depth to bottom of boring ~~11.5'~~ 12'

Comments 0.5' long sump on bottom of screen

~~13262~~

Concrete Diameter 10"
Concrete Thickness ~2'

Reference
- Stickup: ~2'
- Description: Top of PVC riser

Casing
- Diameter: 2"
- Material: PVC
- Length: ~10'
- Stickup: ~2'

Seal
- Top: 2'
- Bottom: 5'
- Material: Bentonite

Screen
- Top: 6.5'
- Bottom: 11.5'
- Material: PVC
- Diameter: 2" I.D.
- Length: 5'
- Slot Size: 0.012"

Miscellaneous Materials (Quantity Used/Item)

Cement	1 bag
Bentonite Chips	1 bag
Bentonite Pellets	
Bentonite Powder	
Grout Weight	
Filter Pack Sand	1 bag
Capping Sand	
Well Point	
Well Plug	

Cetco → Bentonite Chips: Pure Gold - Medium Chips

US Silica → Filter Pack Sand: Filpro Filtration Sand

Signature Mark Winborne

LEA

Loureiro Engineering Associates, Inc.

p.10/10 (MW)

CHAIN OF CUSTODY

Loureiro Engineering Associates, Inc.

Case Number

CHAIN NUMBER ~~002~~ (MW) 13141970

Page ____ of ____

Date 1/31/08

LEA Comm. No.	15RP601.001
Project	Additional Engineering Support Services
Location	Centredale Manor
Project Manager	Dave Scotti

Sampling Method: Hollow Stem Auger / Split Spoon

Matrix: Soil Vapor Water Other

Container Type: Plastic Bag and/or 5-gal. bucket

	No. of Cont.	LEA Sample ID	Time	Mass (gm)	PID/FID Reading	Sample Matrix	Analysis(es) Requested
1	1	1314197	1020	NM	0.5	Soil	Sieve Analysis : HOLD
2	1	1314198	1030		0.6		
3	1	1314199	1045		2.0		
4	1	1314200	1055		4.0		
5	2	1314201	1120		395		
6	2	1314203	1150		350		
7	2	1314204	1230		145		
8	1	1314205	1425		2.5		
9	1	1314206	1435		1.2		
10	1	1314207	1455		52.4		
11	2	1314208	1500		147		
12	2	1314209	1515		249		
13	2	1314210	1520	NM	146	Soil	Sieve Analysis : HOLD
14							
15							
16							
17							
18							
19							
20							

Comments

Cooler ID(s)

Transfer Number	Item No.	Transfer: Relinquished By	Transfer: Accepted By	Date	Time
1	1-13	Mark Winbourne	Stored in LEA Geotech Lab	1/31/08	2000
2					
3					
4					

Field Personnel: Mark Winbourne (MW)

Signature: Mark Winbourne

100 North Drive, Plainville, CT 06062 Tel: 860.747.6181 Fax: 860.747.8822 Email: tmclemmey@loureiro.com

DAT®
Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL NO. 27695

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centerdale Manor	15RP601.001	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
R.I.	Mark Lindbourne	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Langan Engineering Assoc.	Dan J Scelfi

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] Farmington Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (Oil, solvent, etc.)

REQUIRED ANALYSIS: Dioxins (8290)

PAGE 1 OF

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	PRESERVATIVE: Ice	NUMBER OF CONTAINERS SUBMITTED					REMARKS
1/31/08	1020		1314197		✓				1 clear glass					none
	1030		1314198		✓				↓					↓
	1045		1314199		✓									
	1055		1314200		✓									
	1120		1314201		✓									
	1125		1314202		✓									
	1150		1314203		✓									
	1230		1314204		✓									
	1425		1314205		✓									
	1435		1314206		✓									
	1455		1314207		✓									
	1500		1314208		✓				↓					↓
	1515		1314209		✓				1 clear glass					none

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature]	1/31/08	1700	[signature]					

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME
[signature] for Shipment (Custody Seal)	1/31/08	1700						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	LOT NO.	DATE DUE	LABORATORY REMARKS

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SERIAL NO. 27694

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Concrete Mixer	15RP601.001	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
K.Z.	[illegible]	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible] Engineering	David Scott

CLIENT ADDRESS (CITY, STATE, ZIP): 100 Northwest Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible]

PAGE 2 OF 2

☑ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	PRESERVATIVE: Ice	NUMBER OF CONTAINERS SUBMITTED					REMARKS
1/31/08	1530	[redacted]	1314210		✓				3 clear glass					MS/MSD: [illegible]
↓	0915	[redacted]	1314218		✓				1 clear glass					[illegible]
1/31/08	1215	[redacted]	1314219	✓					2 Amber					[illegible]

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	1/31/08	1700						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME
[illegible]	1/31/08	1700						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE) | DATE | TIME | LABORATORY NO. | DAT NO. | LABORATORY REMARKS

[redacted]

GEOSEARCH, INC.
ENVIRONMENTAL CONTRACTORS

20 Authority Drive
Fitchburg, MA 01420
Phone: (978) 348-1989
Fax: (978) 348-1128
www.geosearchinc.com

DRILLING VERIFICATION FORM

Site: 2072 Smith St. N. Providence RI Date: 1/31/08

Driller: Shawn Preston, David D. Rob GM Hours on Site Each Day: 10

Item	Description	Units	Total
Rig Type= Davey DK	H. S .A. Diameter= 4 1/4	# of Days	1
Rig Type=	H. S .A. Diameter=	# of days	
Mobilization- Rig, Vac, Probe	Per Hour, Round Trip	Per Hour	3
Mobilization- Support Vehicle	Per Hour, Round trip	Per Hour	3
Overtime	After 8 hours on Site	Per Hour	2
Overnight	Per Crew	Per Night	
Compressor	CFM Size=	Per Day	
Air Hammer Bit Wear	Bit Size=	Per Foot	
	Bit Size=	Per Foot	
Permanent Casing	Casing Diameter=	Per Foot	
Permanent Casing	Casing Diameter=	Per Foot	
Rock Core	HV NX HVWL	Per Foot	
Core Boxes		# of Boxes	
Road Box Repair	2 Man Crew	Per Day	
Debris Removal		Per Well Head	
Saw Cutting	2'x2' Pad	Per Pad	
Jack Hammer		Per Day	
Concrete Corer		Per Day	
Concrete Corer Bit Wear		Per Inch	
Additional Personnel	More Than 2 Man Crew	Per Man/Day	3rd. Man
Grout	Casing Diameter	Per Foot	
Grout	Well Diameter= 4 1/4 H.SA	Per Foot	
Grout	Well Diameter=	Per Foot	

Materials					
1" Screen	Per Foot		3" Manhole	Each	
1" Riser	Per Foot		6" Manhole	Each	
1" Point	Each		8" Manhole	Each	
1"Expansion Plug	Each		12" Manhole	Each	
special- 2" Screen (Pre Pack)	Per Foot	2 5' Each	4" Protective Casing	Each	2
2" Riser	Per Foot	20	6" Protective Casing	Each	
2" Point	Each	2	Silica Sand - 50lb bag	Each	3
2" Expansion Plug	Each	2	Sakrete - 50lb bag	Each	2
4" Screen	Per Foot		Bentonite - 50lb bag	Each	3
4" Riser	Per Foot		Portland - 50lb bag	Each	
4" Point	Per Foot		Sylvex Asphalt Patch	Per Pail	
4" Expansion Plug	Each		5' Soil Liners	Each	
2" Splitter	Each		4' Soil Liners	Each	
4" Splitter	Each		2' Soil Liners	Each	
Steam Clean on Site	Days	1	3.25 Soil Casing Points	Each	
Decon Pad/Tub	Days	1	2" Expendable Point	Each	
Grout Pump	Days		1.5" Expendable Point	Each	
Other	Each		DOT Drums	Each	2
3" split spoons			Traffic Cones	Each	

- MW 14', 12'

Driller Acceptance: _____ Date: 1/31/08

Engineer Acceptance: _____ Date: 1/31/08

DAILY FIELD REPORT

Loureiro Engineering Associates, Inc.

LEA Comm. No.	**15RP601.001**	Page 1 of 6
Project	Additional Engineering Support Services	Date 2/5/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Arrived at Site 0720 Departed from Site 1245 Vehicle Ford Ranger (LEA)

Odometer (Start)Re 135581 turn 135773 (192 mi R)

Site Activities

- [x] Soil Sampling
- [ ] Groundwater Sampling
- [ ] Surface Water Sampling
- [ ] Vapor/Air Sampling
- [ ] Concrete Sampling
- [ ] Other Sampling
- [ ] Other Sampling
- [x] Well Installation
- [ ] Well Development
- [ ] Geoprobe Work
- [ ] Concrete Coring
- [ ] Construction
- [x] Waste Management
- [ ]
- [ ] Inspection
- [ ] Site Walk Over
- [ ] Surveying
- [ ] Other (Describe)

Non-productive Time

- [x] None
- [ ] Equipment Breakdown
- [ ] Late
- [ ] Weather
- [ ] Missing Equipment
- [ ] Other (Describe)

Current Project Information

Last Sample Number Used	1314216
Last Location ID Used	MW-LEA-03
Current Location (if not complete)	N/A
Sampling for	Dioxins/Furans
Laboratories used	DAT, Berrett Envir.
Paperwork ~~& Equipment~~ left at/in	Dan Scotti office
Site Contact	Noreen Glosco, Brook Village
Contractors on Site	Geosech, LEA, EPA
Time and place to meet contractors	0730 @ Brook Village

Quality Assurance Checks

Yes	N/A	No	
✓			Sample labels complete
✓			Sample/cooler seals OK
✓			All samples obtained
✓			Chains of custody
✓			All forms/logs complete
✓			Site condition OK
✓			Site H&S Plan on site
✓			Instruments calibrated

Checked By

M. Winbourne

Residuals Disposition

Item	Approx. Amount	Container ID
Soil/Solid	30 gal.	RP-OT-002
Groundwater		
Decon Fluid	30 gal.	RP-CT-002
PPE		
Other		

Weather Conditions

Temperature 40°-45°F Precipitation Rain, heavy at times Wind 5mph, E

Comments

@ Yard @ 0500, Left shipping store @ 1300

Expendable Items Used

Qty	Item	LEA Number
	Bailer, Disposable (spec. size)	090
1	Decontamination Supplies	081
	Drum, Closed Top 55 gallon	086
	Filter, In Line	024
1	Miscellaneous Health & Safety Items	060
	Tubing, 1/2", NOS	007
	Tubing, 3/8", NOS	008
1	Water, Distilled	025
1	Gloves, Nitrile, Box	
5	Baggies, Ziplock	
2	5-gallon buckets, for samples	

Equipment Used

Qty	Item	LEA Number
	Generator 3500 Watt	153
	Meter, Conductivity	022
	Meter, pH/Temp	021
2	Miscellaneous Small Tools & Equipment	152
	Pump, Grundfos	073
	Pump, Peristaltic (spec. Master or Isco)	040
	Pump, Submersible	201
	Pump, Watera	038
	Thermo-Anemometer	248
	Turbidimeter	023
1	VOC Analyzer, Photovac 2020 (PID)	012
1	Water Level Indicator	028
1	Folding Table	
1	MacroCore Tray	
2	5-gallon buckets, waste management	

Field Personnel Mark Winbourne Signature Mark Winbourne

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT

Supplemental Sheet

LEA Comm. No.	**15RP601.001**	Page 2 of 6
Project	Additional Engineering Support Services	Date 2/5/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Description of Site Activities

0720: Mark Winbourne (MW) arrived on-site. Drillers already on-site. MW went over HASP w/ drillers, drillers accepted HASP by signing acceptance sheet of HASP.
0800: Drillers mobilized to MW-LEA-03 location and began drilling. Cornell Rosin of EPA on-site.
0845: Auger "kicked off" something in subsurface; drillers forced to move rig to keep hole.
0900: Drillers resumed sampling/drilling.
1010: Finished drilling MW-LEA-03, began installing well and site cleanup.
1145: Proceeded to Centredale Manor to Cap 1 to leave 2 drums (1 soil cuttings, 1 decon water).
1200: Drillers departed site. MW collected waste characterization sample by compositing soil from the 2 soil drums. Used a hand auger to collect an aliquot from each soil drum from 1/3 depth and 2/3 depth.
1240: MW ~~departed site~~ called Dave Scotti to report-in. Progress report heard and approved by Dave Scotti. No more work today @ site.
1245: MW departed site. off-site to ship samples.

Field Personnel Mark Winbourne MW Signature Mark Winbourne

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT
CALIBRATION RECORD

LEA Comm. No.	**15RP601.001**	Page 3 of 6
Project	Additional Engineering Support Services	Date 2/5/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

pH Meter/Serial # _____

	Time	pH 4.01	pH 7.00	pH 10.01	Spec. Cond.	ORP	DO
Initial Calibration							
Calibration Check							
Calibration Check							

Turbidity Meter/Serial # _____

	Time	0 NTU	20 NTU	100 NTU	800 NTU
Initial Calibration					
Calibration Check					
Calibration Check					

PID Meter/Serial # _____

	Time	Standard	Meter Reading	Zero with
Initial Calibration	0800	100 ppm	101 ppm	Ambient
Calibration Check				
Calibration Check				

Balance/Serial # _____

	Time	Standard	Balance
Initial Calibration			
Calibration Check			
Calibration Check			

Comments

Field Personnel Mark Winbourne

Signature

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
MISCELLANEOUS SAMPLES

LEA Comm. No. **15RP601.001** Page 4 of 6
Project Additional Engineering Support Services Date 2/5/08
Location Centredale Manor, North Providence, RI
Client Swidler Berlin Shereff Friedman-JMu

Sample ID	Location ID	Time	Sample Type	Depth (ft)	PID/FID Reading	Comments	Waste Cont. ID
2229067	MW-05S	0905	GWL	3.85 ~~7.14~~ ~~24.1~~	24.5	Flush Mount: T.o.r. ≅ -5"	N/A
1314849	MW-LEA-01	1054	GWL	8.45	2,776	Stickup: T.o.R.: ≅ +33.5"	N/A
1314850	MW-LEA-02	1100	GWL	7.65	1,164	Stickup: T.o.R.: ≅ +33.5"	N/A
1314216	DRS-CMRP-001	1155	SSC	N/A	N/A	Composite from 2 drums	RP-OT-001 RP-OT-002

Field Personnel Mark Winbourne Signature

Loureiro Engineering Associates, Inc.

FIELD BORING LOG

BORING ID: MW-LEA-03

LEA Comm. No.	**15RP601.001**		Page 5 of 6
Project	Additional Engineering Support Services		Date 2/5/08
Location	Centredale Manor	GPS Latitude	
Client	Swidler Berlin Shereff Friedman-JMu	GPS Longitude	
Drilling Method	Hollow Stem Auger	Drilling Contractor	GeoSearch
Sampling Method	Split Spoon	Drill Foreman	Joe Burke
Groundwater Depth	6' at D.D.	Drill Rig	Davey ~~Daniel~~ DK525

Elevation/ Depth	Sample Number(s)	Recovery (% or n/n)	Blows/6" / Downforce	Time	PID/FID (ppm)	Mass	Description of Recovered Material (Color, primary grain size and amount, other grain size(s) and amounts, density, moisture, coherence, structure, sorting, other characteristics)
0	1314211	10/24	2-11-9-7	0830	0.0	Nm	0-2": Topsoil, -10": Light brown f. b. m. SAND, some Silt, moist, m. dense, 3 pieces of geotextile fabric
2	1314212	12/24	21-17-12-11	0840	0.0		0-3": A.A., -12": Black SILT, little f. b. m. SAND, trace wood fragment, moist, stiff
4	1314213	7/24	14-17-24-36	0915	0.0		0-3": Lt. brown f. b. c. SAND, trace f. Gravel, moist, v. dense; -7": Geotextile fabric & black SILT, f. b. c. SAND, & f. angular GRAVEL, moist, v. dense
6	1314214	14/24	46-24-100/4"	0925	0.0		0-14": Black f. b. c. SAND & f. to c. subang. to subrounded GRAVEL, wet, ~~[illegible]~~, dense
8	1314215	20/24	34-73-77-68	1006	0.0	Nm	Yellowish brown f. b. c. SAND & f. b. c. subang. to subrounded GRAVEL, wet, v. dense
10							

Comments

Screen: 5-10' bgs, sump 10'-~~10.42'~~ 10.38'
Sand 4-10'
Seal: 2-4'
Bottom of Protector @ 2', Concrete 0-2'

Boring advanced to ~~10.42'~~ 10.38' to allow for ~~0.42'~~ 0.38' sump on bottom of screen

Waste Container RP-OT-001 Trip Blank ID(s) N/A Cooler ID N/A

Field Personnel Mark Winbourne

Signature Mark Winbourne

WELL COMPLETION REPORT

Project: Additional Engineering Support Services
LEA Comm. No. 15RP601.001
Client Swidler Berlin Shereff Friedman-JMu
Location Centredale Manor

Start Date 2/5/08
End Date 2/5/08
Well ID MW-LEA-03

Drilling Contractor GeoSearch
Drilling Method Hollow Stem Auger
Sampling Method Split Spoon
Groundwater Observation
Depth 6' **at** D.D. **Hours**

Logged by M. Winbourne
Drilling Foreman Joe Burke
Drill Rig Dair DKS35
GPS Latitude
GPS Longitude

Protector
- Material: Steel
- Diameter: 4"
- Length: 5' Ground
- Stickup: ~2'
- Key #: Battelle
- Cover Type: Locking Cap

Top Seal
- Top: 2'
- Bottom: 4'
- Material: Bentonite

Backfill
- Top:
- Bottom:
- Material:

Secondary Sand
- Top: 4'
- Bottom: ~~10'~~ MW 10.38'
- Size: 20/40

Filter Pack
- Top: 5'
- Bottom: 10'
- Material: V-wire / PVC
- #1 Sand

} Prepack 10.38' ~~10.42'~~ MW

Reported depth to bottom of boring

Comments: 4.75" sump on bottom of screen

Concrete Diameter: 10"
Concrete Thickness: 2'

Reference
- Stickup: ~2'
- Description: Top of PVC Riser

Casing
- Diameter: 2"
- Material: PVC
- Length: ~7'
- Stickup: ~2'

Seal
- Top: 2'
- Bottom: 4'
- Material: Bentonite

Screen
- Top: 5'
- Bottom: 10'
- Material: PVC
- Diameter: 2"
- Length: 5'
- Slot Size: 0.012"

Miscellaneous Materials (Quantity Used/Item)
- Cement: 1 bag
- Bentonite Chips: 0.5 bag → Cetco Pure Gold - Medium Chips
- Bentonite Pellets:
- Bentonite Powder:
- Grout Weight:
- Filter Pack Sand: 1 bag → US Silica Filpro Filtration Sand
- Capping Sand:
- Well Point:
- Well Plug:

Signature [signature]

LEA

Loureiro Engineering Associates, Inc.

D.A.T., Inc., 7715 Corporate Blvd, Plain City, OH 43064

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

D.A.T., Inc.
CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: David Scotti
100 Northeast Drive
Plainville, CT 06062

Invoice To: →

Project Mgr.: _____

P.O. No.: _____ RQN: _____

Project No.: 15RP601
Site Name: Cardinale Manor
Location: N. Providence State: RI
Sampler(s): M. Wagner

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8= $NaHSO_4$ 9= Iced 10= _____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

QA Reporting Notes: (check if needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analyses: Volatile Organics (8260)							QA Reporting Notes
	1314211	2/5/08	0830	G	SO	9			1									
	1314212		0840						1									
	1314213		0915						1									Hold until further notice
	1314214		0925						1									
	1314215		1006	G					1									
	1314216	2/5/08	1155	C	SO	9			1		X							

☐ Fax results when available to (____) _____
☑ E-mail to dnscotti@tnvc.com
EDD Format _____

Condition upon receipt: ☐ Iced ☐ Ambient ☐ °C _____

Relinquished by:	Received by:	Date:	Time:
[signature]	Carrier for Shipment	2/5/08	1300

CHAIN OF CUSTODY

Loureiro Engineering Associates, Inc.

Case Number

CHAIN NUMBER ~~-002~~ 1314216001

Page 1 of 1

Date 2/5/08

LEA Comm. No.	**15RP601.001**
Project	Additional Engineering Support Services
Location	Centredale Manor
Project Manager	Dave Scotti

Sampling Method ~~Split S~~ Hand Auger / Composited

Matrix Soil Vapor Water Other Soil

Container Type Clear Glass Jars

Item #	No. of Cont.	LEA Sample ID No.	Time	Mass (gm)	PID/FID Reading	Sample Matrix	Analysis(es) Requested
1	2	1314216	1155	NM	NM	Soil	
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Comments Samples for Benett Environmental / Waste Characterization

Cooler ID(s)

Transfer Number	Item No.	Transfer: Relinquished By	Transfer: Accepted By	Date	Time
1	1	Mark Winbourne	LEA Sample Fridge	2/5/08	2100
2					
3					
4					

Field Personnel Mark Winbourne

Signature Mark Winbourne

100 Northwest Drive, Plainville, CT 06062 Tel: 860.747.6181 Fax: 860.747.8822 e-mail: tmclemmey@loureiro.com

CHAIN OF CUSTODY

Loureiro Engineering Associates, Inc.

Case Number

CHAIN NUMBER ~~002~~ 1314216001

Page 1 of 1

Date 2/5/08

LEA Comm. No.	15RP601.001
Project	Additional Engineering Support Services
Location	Centredale Manor
Project Manager	Dave Scotti
Sampling Method	~~Split S~~ Hand Auger / Composited
Matrix Soil Vapor Water Other	Soil
Container Type	Clear Glass Jars

	No. of Cont.	LEA Sample ID No.	Time	Mass (gm)	PID/FID Reading	Sample Matrix	Analysis(es) Requested
1	2	1314216	1155	NM	NM	Soil	
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Comments: Samples for Bennett Environmental / Waste Characterization

Cooler ID(s)

Transfer Number	Item No.	Transfer: Relinquished By	Transfer: Accepted By	Date	Time
1	1	Mark Winbourne	LEA Sample Fridge	2/5/08	2100
2	1	LEA Sample Fridge / Mark Winbourne	[illegible] / William CEATON	2/6/08	10:55
3					
4					

Field Personnel: Mark Winbourne

Signature: Mark Winbourne

100 Northwe[illegible]ive, Plainville, CT 06062 Tel: 860.747.6181 Fax: 860.747.8822 e-m[illegible] mclemmey@loureiro.com

CHAIN OF CUSTODY

Loureiro Engineering Associates, Inc.

Case Number

CHAIN NUMBER ~~002~~ 131421001

Page 1 of 1

Date 2/5/08

LEA Comm. No.	**15RP601.001**
Project	Additional Engineering Support Services
Location	Centredale Manor
Project Manager	Dave Scotti

Sampling Method: Split Spoon / Hollow Stem Auger

Matrix Soil Vapor Water Other: Soil

Container Type: Plastic Bag / 5-gal. Bucket

	No. of Cont.	LEA Sample ID #'s	Time	Mass (gm)	PID/FID Reading	Sample Matrix	Analysis(es) Requested
1	~~2~~ 1	1314211	0830	NM	0.0	Soil	Sieve Analysis (HOLD)
2	1	1314212	0840	↓	0.0	↓	↓
3	1	1314213	0915	↓	0.0	↓	↓
4	2	1314214	0925	↓	0.0	↓	↓
5	2	1314215	1006	NM	0.0	Soil	Sieve Analysis (HOLD)
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Comments

Cooler ID(s)

Transfer Number	Item No.	Transfer: Relinquished By	Transfer: Accepted By	Date	Time
1	1-5	Mark Winbourne	LEA Geotech Lab for Storage	2/5/08	1900
2					
3					
4					

Field Personnel: Mark Winbourne

Signature Mark Winbourne

100 Northwest Drive, Plainville, CT 06062 Tel: 860.747.6181 Fax: 860.747.8822 e-mail: tmclemmey@loureiro.com

GEOSEARCH, INC.
ENVIRONMENTAL CONTRACTORS

20 Authority Drive
Fitchburg, MA 01420
Phone: (978) 348-1989
Fax: (978) 348-1128
www.geosearchinc.c

DRILLING VERIFICATION FORM

Site: N. Providence, RI smith St. Date: 2-5-08

Driller: Joe Burke Hours on Site Each Day: 4.5

Item	Description	Units	Total
Rig Type= Dare	H. S .A. Diameter= 4 1/4	# of Days	1
Rig Type=	H. S .A. Diameter=	# of days	
Mobilization- Rig, Vac, Probe	Per Hour, Round Trip	Per Hour	3
Mobilization- Support Vehicle	Per Hour, Round trip	Per Hour	3
Overtime	After 8 hours on Site	Per Hour	
Overnight	Per Crew	Per Night	
Compressor	CFM Size=	Per Day	
Air Hammer Bit Wear	Bit Size=	Per Foot	
	Bit Size=	Per Foot	
Permanent Casing	Casing Diameter=	Per Foot	
Permanent Casing	Casing Diameter=	Per Foot	
Rock Core	HV NX HVWL	Per Foot	
Core Boxes		# of Boxes	
Road Box Repair	2 Man Crew	Per Day	
Debris Removal		Per Well Head	
Saw Cutting	2'x2' Pad	Per Pad	
Jack Hammer		Per Day	
Concrete Corer		Per Day	
Concrete Corer Bit Wear		Per Inch	
Additional Personnel	More Than 2 Man Crew	Per Man/Day	
Grout	Casing Diameter	Per Foot	
Grout	Well Diameter=	Per Foot	
Grout	Well Diameter=	Per Foot	

Materials					
1" Screen	Per Foot		3" Manhole	Each	
1" Riser	Per Foot		6" Manhole	Each	
1" Point	Each		8" Manhole	Each	
1"Expansion Plug	Each		12" Manhole	Each	
2" Screen	Per Foot		4" Protective Casing	Each	1
2" Riser	Per Foot	10'	6" Protective Casing	Each	
2" Point	Each		Silica Sand - 50lb bag	Each	2
2" Expansion Plug	Each	1	Sakrete - 50lb bag	Each	1
4" Screen	Per Foot		Bentonite - 50lb bag	Each	1
4" Riser	Per Foot		Portland - 50lb bag	Each	
4" Point	Per Foot		Sylvex Asphalt Patch	Per Pail	
4" Expansion Plug	Each		5' Soil Liners	Each	
2" Splitter	Each		4' Soil Liners	Each	
4" Splitter	Each		2' Soil Liners	Each	
Steam Clean on Site	Days	1	3.25 Soil Casing Points	Each	
Decon Pad/Tub	Days	1	2" Expendable Point	Each	
Grout Pump	Days		1.5" Expendable Point	Each	
Other	Each		DOT Drums	Each	2
5 v rap screen			Traffic Cones	Each	

Driller Acceptance: Joe Burke Date: 2-5-08

Engineer Acceptance: [signature] Date: 2/5/08

DAILY FIELD REPORT

Loureiro Engineering Associates, Inc.

LEA Comm. No.	15RP601.001	Page 1 of 9	
Project	Additional Engineering Support Services	Date 2/8/08	
Location	Centredale Manor, North Providence, RI		
Client	Swidler Berlin Shereff Friedman-JMu		

Arrived at Site 0740 Departed from Site 1545 Vehicle Ranger

Odometer (Start) 136035 Return 136227 192 mi RT

Site Activities

- [ ] Soil Sampling
- [ ] Groundwater Sampling
- [ ] Surface Water Sampling
- [ ] Vapor/Air Sampling
- [ ] Concrete Sampling
- [ ] Other Sampling
- [ ] Other Sampling
- [ ]
- [ ]
- [x] Well Development
- [ ] Geoprobe Work
- [ ] Concrete Coring
- [ ] Construction
- [ ] Waste Management
- [ ]
- [ ] Inspection
- [ ] Site Walk Over
- [ ] Surveying
- [ ] Other (Describe)

Current Project Information

Last Sample Number Used	N/A
Last Location ID Used	N/A
Current Location (if not complete)	N/A
Sampling for	N/A
Laboratories used	N/A
Paperwork & Equipment left at/in	DWS' office
Site Contact	Doreen Glossey, Brook Village
Contractors on Site	LEA
Time and place to meet contractors	N/A

Non-productive Time

- [ ] None
- [ ] Equipment Breakdown
- [ ] Late
- [ ] Weather
- [ ] Missing Equipment
- [x] Other (Describe) Slow well Recharge/Low Yield

Quality Assurance Checks

Yes	N/A	No	
	✓		Sample labels complete
	✓		Sample/cooler seals OK
	✓		All samples obtained
	✓		Chains of custody
✓			All forms/logs complete
✓			Site condition OK
✓			Site H&S Plan on site
✓			Instruments calibrated

Residuals Disposition

Item	Approx. Amount	Container ID
Soil/Solid		
Groundwater	55 gal.	RP-CT-003
Decon Fluid		
PPE		
Other		

19 + 19 + 12 + 8

Checked By

M. Winbourne

Weather Conditions

Temperature 30-35 °F Precipitation Snow, rain Wind Light, NW

Comments

Expendable Items Used			Equipment Used		
Qty	Item	LEA Number	Qty	Item	LEA Number
	Bailer, Disposable (spec. size)	090		Generator 3500 Watt	153
1	Decontamination Supplies	081		Meter, Conductivity	022
1	Drum, Closed Top 55 gallon	086	1	Meter, pH/Temp	021
	Filter, In Line	024	1	Miscellaneous Small Tools & Equipment	152
	Filter, Zap Cap	024		Pump, Grundfos	073
1	Miscellaneous Health & Safety Items	060	2	Pump, Peristaltic (spec. Master or Isco)	040
30	Tubing, 1/2", NOS (feet)	007		Pump, Submersible	201
50	Tubing, ~~3/8", NOS~~ 3/4" ø, (feet)	008		Pump, Watera	038
1	Water, Distilled	025		Thermo-Anemometer	248
1	Plastic Sheeting		2	Turbidimeter	023
1/2	Gloves, Nitrile Box		1	VOC Analyzer, Photovac 2020 (PID)	012
			2	Water Level Indicator	028
			2	Pump, Whale	
			1	Drum Funnel	

Field Personnel Mark Winbourne

C. Scott Brown

Signature Mark Winbourne

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT

Supplemental Sheet

LEA Comm. No.	**15RP601.001**	Page 2 of 9
Project	Additional Engineering Support Services	Date 2/8/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Description of Site Activities

0740: Mark Winbourne (MW) and Scott Brown (SB) arrived on-site. Dropped off drum and installed. Drum dropped-off in Cap 1 Area behind locked gate.
0800: Arrived to area of LEA-installed wells. Began equipment setup on MW-LEA-01 and MW-LEA-02.
0815: Calibrated PID, then used PIDs to measure headspaces of wells MW-055, MW-LEA-01, MW-LEA-02, and MW-LEA-03. After allowing wells to equilibrate to ambient pressure without top caps on (after 15 minutes), initial water levels and depths-to-bottom measured. Then began ~~pumping~~ developing MW-LEA-01 and MW-LEA-02. Developing was performed in accordance with LEA SOP by surging the top of the well screen over a 2 to 3 foot stroke and progressively working to the bottom of the screen. Both peristaltic pumps and whale pumps were used on the four wells (see development records for specifics). When whale pumps were used, surging and pumping was performed simultaneously with pump. When peristaltic pumps were used the well screen was surged with a surge block, then the peristaltic tubing inserted and the well was pumped. Surging by surge block was also performed by starting at the top of the screen with 2 to 3 foot strokes and working progressively downwards to the well screen bottom. All four wells went dry during pumping (see development records for specifics). Generally, the wells were pumped to complete evacuation, then allowed to recharge to the initial water level. Then the well was surged and pumped-down again. MW informed Dave Scotti of situation. Dave Scotti agreed with course of action. Dave Scotti also recommended we determine pump setting (pump rate) needed to eliminate drawdown. At end of workday, after completely evacuating wells MW-055 and MW-LEA-02, the slowest wells, the recharge was measured and timed to determine the recharge rate (see p. 6 for raw data).
1515: Began site cleanup. Locked picket fence gate once finished behind gate. Proceeded to waste management. Drum RP-CT-003, started today, nearly full.
1545: MW and SB departed site.

Field Personnel	Mark Winbourne	
	C. Scott Brown	

Signature

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT
CALIBRATION RECORD

LEA Comm. No.	**15RP601.001**	Page 3 of 9
Project	Additional Engineering Support Services	Date 2/8/98
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

pH Meter/Serial # Rental: YSI

	Time	pH 4.01	pH 7.00	pH 10.01	Spec. Cond.	ORP	DO
Initial Calibration	0710	3.88		10.01	Malfunctioning		
Calibration Check							
Calibration Check							

Turbidity Meter/Serial # Rental: 220

	Time	0 NTU	~~20~~ 10 NTU	~~100~~ NTU	800 NTU
Initial Calibration	0905	0	12		
Calibration Check					
Calibration Check					

PID Meter/Serial # MiniRae

	Time	Standard	Meter Reading	Zero with
Initial Calibration	0815	100ppm	100ppm	Ambient
Calibration Check				
Calibration Check				

Balance/Serial #

	Time	Standard	Balance
Initial Calibration			
Calibration Check			
Calibration Check			

Comments

Field Personnel	Mark Winbourne	Signature
	C. Scott Brown	

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
MONITORING WELL INVENTORY

LEA Comm. No.	**15RP601.001**	Page 4 of 9
Project	Additional Engineering Support Services	Date 2/8/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Sample ID	Location ID	Time	Predicted Depth of Well	Predicted Depth to Water	Actual Depth of Well	Actual Depth to Water	PID/FID	Reference Elevation	Comments
2229104	MW-055	0830	8		9.19	3.17	12.4	All top of PVC riser	
2229105	MW-LEA-01	0835	14		16.78	8.12	1,254		
2229106	MW-LEA-02	0838	12		14.75	7.20	490		
2229107	MW-LEA-03	0845	10		12.00	6.69	26.5		Top of PVC riser ≅35" above grade

Field Personnel: Mark Winbourne, C. Scott Brown

Signature: Mark Winbourne

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
WELL DEVELOPMENT

LEA Comm. No.	15RP601.001	Page 5 of 9
Project	Additional Engineering Support Services	Date 2/8/08
Location	Centredale Manor, North Providence, RI	Time __:__
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-LEA-01 Sample Number(s) ~~10~~ (MW)

Initial Field Data and Measurements

Depth of Well 16.78 Reference Used Top of PVC Riser

Depth to Water 8.12 PID/FID Reading

Height of Column 8.66 Interface Yes / No If yes, Depth _____ Lighter / Heavier

Well Casing Diameter 2" Material PVC

Protector Road Box / Stickup

Ground to Reference

Comments 1 well vol. = 1.39 gallons

General Condition	OK	Bad
Casing Secure	✓	
Collar Intact	✓	
Cover Locked	✓	
Other (describe)	✓	

Development Information

Purge Volume Factors
- *0.5" - 0.01*
- *1" - 0.041*
- *1.5" - 0.091*
- *2" - 0.16*
- *4" - 0.65*
- *6" - 1.5*

Initial Sample Observations
- Clear ☐
- Colored ☐
- Cloudy ☐
- Turbid ✓
- Odor ☐
- Sheen ☐

Volumes / Parameter	Gallons	Temp (C)	pH (SU)	Spec.Con.	Turbidity	Other
Initial <1	1	1.4	7.78	—	>1000	
	4	1.5	7.15		>1000	
	6	1.7	6.63		>1000	
	8	0.9	6.66		170	
	10	1.6	6.67		400	
	13	2.5	6.54		14	
	15	3.2	6.51		~~2.01~~ (MW) 31 (turbidity)	
	17	3.4	6.53		83	
	18	2.2	6.50		11	
	19	2.5	6.43		22	
	20	3.9	6.40		6.2	
	21	3.5	6.48		150	
	22	3.2	6.41		200	
	23	3.0	6.42		70	
	24	3.1	6.44		40	

*

Developement Method ~~Peristaltic Pump~~ / Bailer / Inertial Pump / Other whale Pump

Field Decontamination? Yes / No If Yes, with what? DI Water, Liquinox,

Waste Container ID RP-CT-003

Additional Comments Conductivity meter not responding; well went dry after ~ 8 gallons water purged @ 0935; 0950: Resumed pumping; 0955: Dry again after pumping ~ 2 gallons; Several cycles of surge, pump, and complete evacuation completed; near finish of development, yield nearly doubled to ~4 gallons before complete evacuation.

* Development parameters continue on page 6 *

Field Personnel Mark Winbourne (MW) Signature Mark Winbourne

C. Scott Brown

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
MISCELLANEOUS SAMPLES

LEA Comm. No.	**15RP601.001**	Page 6 of 9
Project	Additional Engineering Support Services	Date 2/8/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

~~Sample ID~~	~~Location ID~~	~~Time~~	Sample Type	Depth (ft)	PID/FID Reading	~~Comments~~	Waste Cont. ID
Location ID	Depth to Water	Gallons	Temp. (C)	pH (SU)	Turbidity	Comments	Waste Cont. ID
MW-LEA-01	N.M.	26	3.1	6.44	4.5	~19 volumes	RP-CT-003
MW-LEA-01	N.M.	27	3.0	6.45	4.9	~19.5 volumes	
MW-LEA-02	14.00	~~1413~~ N.A.	N.A.	N.A.	N.A.	Time: 1437	
	13.60					Time: 1447	
	13.00					Time: 1457	
	12.70					Time: 1507	
	12.35					Time: 1517	
MW-LEA-02	11.90					Time: 1527	
MW-05S	7.47					Time: 1448	
	6.84					Time: 1453	
	6.43					Time: 1458	
	6.10					Time: 1503	
MW-05S	5.86	N.A.	N.A.	N.A.	N.A.	Time: 1508	RP-CT-003

Field Personnel	Mark Winbourne Scott Brown	Signature

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
WELL DEVELOPMENT

LEA Comm. No.	15RP601.001	Page 7 of 9
Project	Additional Engineering Support Services	Date 2 / 8 / 08
Location	Centredale Manor, North Providence, RI	Time ___:___
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-LEA-02 Sample Number(s) ~~H~~ MW

Initial Field Data and Measurements

Depth of Well 14.75 Reference Used

Depth to Water 7.20 PID/FID Reading 490

Height of Column 7.55 Interface Yes / No If yes, Depth _____ Lighter / Heavier

Well Casing Diameter 2" Material PVC

Protector Road Box / Stickup

Ground to Reference

Comments 1 well volume = 1.21 gallons

General Condition	OK	Bad
Casing Secure	✓	
Collar Intact	✓	
Cover Locked	✓	
Other (describe)	✓	

Development Information

Purge Volume Factors
- *0.5" - 0.01*
- *1" - 0.041*
- *1.5" - 0.091*
- *2" - 0.16*
- *4" - 0.65*
- *6" - 1.5*

Volumes \ Parameter	Gallons	Temp (C)	pH (SU)	Spec.Con.	Turbidity	Other
Initial 0	–					
1	1.2	1.3	8.63		over 1000	
2	2.4	1.2	7.32		over 1000	
3	3.6	1.4	7.22		350	
4	4.4	2.1	6.48		85	
5	5.2	2.6	6.42		45	
6	5.6	2.7	6.68		14	
7	6.0	2.9	6.74		11	
8	6.4	3.1	6.61		7.6	
9	6.8	2.7	6.65		8.4	
10	7.2	2.8	6.64		9.0	
11	7.6	2.4	6.53		12.0	
12	7.0	2.6	6.49		5.1	

Initial Sample Observations
- Clear ☐
- Colored ☐
- Cloudy ☐
- Turbid ✓
- Odor ☐
- Sheen ☐

Developement Method (Peristaltic Pump) / Bailer / Inertial Pump / Other Whale Pump - and Surge block

Field Decontamination? Yes / No If Yes, with what?

Waste Container ID RP-CT-003

Additional Comments After one well volume well went dry. changed to peristaltic pump. recharge after 10 minutes only one third of well volume

Field Personnel Mark Winbourne

C. Scott Brown

Signature

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
WELL DEVELOPMENT

LEA Comm. No.	15RP601.001	Page 8 of 9
Project	Additional Engineering Support Services	Date 2/8/08
Location	Centredale Manor, North Providence, RI	Time ___:___
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number ~~MW-LEA 01~~ MW-LEA-03 (MW) Sample Number(s) ~~10~~ (MW)

Initial Field Data and Measurements

Depth of Well 12.00 Reference Used Top of PVC Riser

Depth to Water 6.69 PID/FID Reading

Height of Column 5.31 Interface Yes / (No) If yes, Depth ___ Lighter / Heavier

Well Casing Diameter 2" Material PVC

Protector Road Box / (Stickup)

Ground to Reference

Comments 1 well volume = 0.85 gal.

General Condition	OK	Bad
Casing Secure	✓	
Collar Intact	✓	
Cover Locked	✓	
Other (describe)	✓	

Development Information

Purge Volume Factors
- *0.5" - 0.01*
- *1" - 0.041*
- *1.5" - 0.091*
- *2" - 0.16*
- *4" - 0.65*
- *6" - 1.5*

Volumes \ Parameter	Gallons	Temp (C)	pH (SU)	Spec.Con.	Turbidity	Other
Initial	-	1.5	7.14		over 1000	
1	.45	1.6	7.20		over 1000	
2	1.70	1.4	7.22		140	
3	2.55	2.0	7.09		over 1000	
4	3.40	2.6	6.72		120	
5	4.25	2.4	6.74		23	
6	5.10	2.4	6.63		14	
7	5.95	3.1	6.67		6.5	
8	6.80	2.7	6.65		5.1	

Initial Sample Observations
- Clear ☐
- Colored ☐
- Cloudy ☐
- Turbid ☑
- Odor ☐
- Sheen ☐

Developement Method (Peristaltic Pump) / Bailer / Inertial Pump / Other and Surge Block

Field Decontamination? Yes / (No) If Yes, with what?

Waste Container ID RP-CT-003

Additional Comments well went Dry @ 10:20 before 1 well volume recharge after 10 minutes

Field Personnel Mark Winbourne (MW)
C. Scott Brown

Signature Charles Brown

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
WELL DEVELOPMENT

LEA Comm. No.	**15RP601.001**	Page 9 of 9
Project	Additional Engineering Support Services	Date 2/8/08
Location	Centredale Manor, North Providence, RI	Time ___:___
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-05S Sample Number(s) 12 (MW)

Initial Field Data and Measurements

Depth of Well 9.19 Reference Used Top of PVC Riser

Depth to Water 3.17 PID/FID Reading

Height of Column 6.02 Interface Yes / (No) If yes, Depth ___ Lighter / Heavier

Well Casing Diameter 2" Material PVC

Protector (Road Box) / Stickup

Ground to Reference

Comments 1 well volume = 0.96 gal.

General Condition	OK	Bad	
Casing Secure	✓		
Collar Intact	✓		Manhole
Cover Locked		✓	Bolted but not locked
Other (describe)	✓		

Development Information

Purge Volume Factors
- *0.5" - 0.01*
- *1" - 0.041*
- *1.5" - 0.091*
- *2" - 0.16*
- *4" - 0.65*
- *6" - 1.5*

Volumes \ Parameter	Gallons	Temp (C)	pH (SU)	Spec.Con.	Turbidity	Other
Initial	1	1.5	7.18		32	
~2	2.0	1.0	7.09		25	
~3	3.0	1.6	7.01		35	
~4	4.0	2.4	6.95		150	
~5	5	1.8	7.02		63	
~6	6	1.5	7.01		90	
~7	7	1.2	6.53		16	
~8	8	1.1	6.74		15	
~9	9	0.9	6.64		11	
~10	10	0.9	6.91		17	
~11	11	1.0	6.95		11	
~12	12	1.0	6.99		5.8	
~13	13	1.1	6.96		9.18	

Initial Sample Observations
- Clear ☐
- Colored ☐
- Cloudy ✓
- Turbid ☐
- Odor ☐
- Sheen ☐

Developement Method (Peristaltic Pump) / Bailer / Inertial Pump / Other Surge Block

Field Decontamination? (Yes) / No If Yes, with what? Liquinox, DI Water Scrub

Waste Container ID RP-CT-003

Additional Comments Dry @ 1320, after pumping ~2 gallons; Recharged to 5.45' below top of riser @ 1347; Resumed pumping

Field Personnel Mark Winbourne ___ Signature Mark Winbourne

C. Scott Brown ___

DAILY FIELD REPORT

Loureiro Engineering Associates, Inc.

LEA Comm. No.	15RP601.001	Page 1 of 10	
Project	Additional Engineering Support Services	Date 2/25/08	
Location	Centredale Manor, North Providence, RI		
Client	Swidler Berlin Shereff Friedman-JMu		

Arrived at Site 0830 Departed from Site 1700 Vehicle ST-7

Odometer (Start) 88319 Return 88513

Site Activities

- [ ] Soil Sampling
- [x] Groundwater Sampling
- [ ] Surface Water Sampling
- [ ] Vapor/Air Sampling
- [ ] Concrete Sampling
- [ ] Other Sampling
- [ ] Other Sampling
- [ ] Well Development
- [ ] Geoprobe Work
- [ ] Concrete Coring
- [ ] Construction
- [ ] Waste Management
- [ ] Inspection
- [ ] Site Walk Over
- [ ] Surveying
- [ ] Other (Describe)

Current Project Information

Last Sample Number Used	1316075
Last Location ID Used	MW-LEA-03
Current Location (if not complete)	N/A
Sampling for	VOCs, Dioxins, TSS, TDS
Laboratories used	DAT, AEL
Paperwork & Equipment left at/in	DNS' Office
Site Contact	Dave Biel
Contractors on Site	LEA, Giarrere & Halnon (Surveyors)
Time and place to meet contractors	N/A

Non-productive Time

- [ ] None
- [ ] Equipment Breakdown
- [ ] Late
- [ ] Weather
- [ ] Missing Equipment
- [x] Other (Describe) Slow well yields

Quality Assurance Checks

Yes	N/A	No	
✓			Sample labels complete
✓			Sample/cooler seals OK
✓			All samples obtained
✓			Chains of custody
✓			All forms/logs complete
✓			Site condition OK
✓			Site H&S Plan on site
✓			Instruments calibrated

Residuals Disposition

Item	Approx. Amount	Container ID
Soil/Solid		
Groundwater	15 gal.	RP-CT-004
Decon Fluid		
PPE		
Other		

Checked By M. Winbourne

Weather Conditions

Temperature 25-40 °F Precipitation None Wind Light, NW

Comments

Water: 95.8' (River Elevation)
Top of Gauge: 98.15'
Gauge Read: 5.1' @ 95.8'

Expendable Items Used

Qty	Item	LEA Number
	Bailer, Disposable (spec. size)	090
1	Drum, Closed Top ~~55 gallon~~ (small)	086
5	Filter, In Line	024
1	Miscellaneous Health & Safety Items	060
	Tubing, 1/2", NOS	007
80	Tubing, ~~3/8", NOS~~ 1/4", ft.	008
1	Water, Distilled	025
0.5	Gloves, Nitrile, Box	
1	Plastic Sheeting	
1	Decontamination Supplies	

Equipment Used

Qty	Item	LEA Number
	Generator 3500 Watt	153
	Meter, Conductivity	022
	Meter, pH/Temp	021
2	Miscellaneous Small Tools & Equipment	152
	Pump, Grundfos	073
3	Pump, Peristaltic (spec. Master or Isco)	040
3	~~Pump, Submersible~~ Flo-thru Cell	~~201~~
	Pump, Watera	038
2	Turbidimeter	023
1	VOC Analyzer, Photovac 2020 (PID)	012
2	Water Level Indicator	028
1	Drum Funnel	
1	Cart	
1	Folding Table	

Field Personnel Jason Purdy
Mark Winbourne

Signature

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT

Supplemental Sheet

LEA Comm. No.	15RP601.001	Page 2 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Description of Site Activities

0830: Mark Winbourne (MW) and Jason Purdy (JP) arrived on site. Began equip. setup, calibrations, etc. After calibrations MW began opening wells, measuring headspace w/ PID, and allowing well equilibration.
1030: Surveyors arrived on site. Will survey x,y,z locations of all wells measured today, and will install staff gauge on river.
1330: Surveyors finished on wells. Will not install staff gauge as they do not feel comfortable w/ descending riverbank. Surveyor noticed a gauge across the river. They will try to survey it.
1350: Surveyors get x,y,z on existing gauge, and z value for river.
1400: Surveyors departed.
1630: MW performed waste mgmt. ~15 gals. into new drum RP-CT-004.
1700: Site condition OK, all wells closed. MW and JP proceeded to ship samples, departed site.

Field Personnel	Jason Purdy	
	Mark Winbourne	Signature

Loureiro Engineering Associates, Inc.

DAILY FIELD REPORT
CALIBRATION RECORD

LEA Comm. No.	**15RP601.001**	Page 3 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

pH Meter/Serial # 02F0628 AE | 01A0854AA | 06C2658

	Time	pH 4.01	pH 7.00	pH 10.01	Spec. Cond.	ORP	DO
Initial Calibration	900	–	–	–	–	–	1% | 1% | 1%
Calibration Check							
Calibration Check							

Turbidity Meter/Serial # 3103-1402 | 1760-1800

	Time	0 NTU	~~20~~ 10 NTU	~~100 NTU~~	~~800 NTU~~
Initial Calibration	915	0 | 0	9.9 | 10.1		
Calibration Check					
Calibration Check					

PID Meter/Serial # 2009

	Time	Standard	Meter Reading	Zero with
Initial Calibration	905	ISOBUTYLENE @ 100 ppm	100	AMBIENT AIR
Calibration Check				
Calibration Check				

Balance/Serial #

	Time	Standard	Balance
Initial Calibration			
Calibration Check			
Calibration Check			

Comments NO pH, SPEC. COND., ORP CAL. SOLUTIONS PROVIDED

Field Personnel Jason Purdy, Mark Winbourne

Signature

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
MISCELLANEOUS SAMPLES

LEA Comm. No.	15RP601.001	Page 4 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Sample ID	Location ID	Time	Sample Type	Depth (ft)	PID/FID Reading	Comments	Waste Cont. ID
1316074 1316074uf	BKE-CMRP-002 ~~Equipment Blank~~	1255	BKE	NA	NA		NA
1316063	BKT-CMRP-001 ~~Trip~~	1120	BKT	NA	NA		NA
1316061 1316061uf	mw-LEA-02	1340	GWS	9	608	Duplicate on mw-LEA-02	RP-CT-004
1316057 1316057uf	mw-LEA-01	1305	GWS	~~9-14~~ 11.5	1,863	MS/MSD sample	RP-CT-004
1316062 1316062uf	PEW-CMRP-001	1125	PEW	NA	NA	PE Sample: 1316062 not filtered, labelled to match other samples so that PE samples are submitted "blind"	NA
1316075	~~Trip~~ BKT-CMRP-002	1500	BKT	NA	NA		NA

Field Personnel: Jason Purdy, Mark Winbourne

Signature: [illegible]

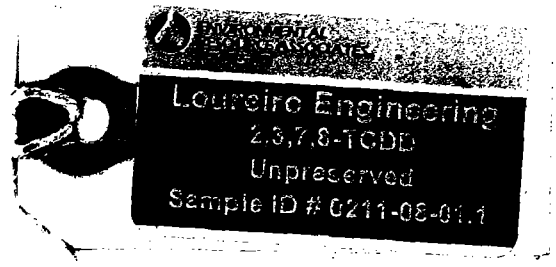
~086

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RF F
PERFORMANCE SAMPI

LEA Comm. No.	**15RP601.001**	Page 5 of 1
Project	Additional Engineering Support Services	Date 2/25/0
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

LEA Sample ID 1316062
~~1316062uf~~



LEA Sample ID

LEA Sample ID

LEA Sample ID

LEA Sample ID

LEA Sample ID

Field Personnel	Jason Purdy	
	Mark Winbourne	Signature Mark Winb

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
MONITORING WELL INVENTORY

LEA Comm. No.	**15RP601.001**	Page 6 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	
Client	Swidler Berlin Shereff Friedman-JMu	

Sample ID	Location ID	Time	Predicted Depth of Well	Predicted Depth to Water	Actual Depth of Well	Actual Depth to Water	PID/FID	Reference Elevation	Comments
2229312	MW-05S	1030			8.95	5.05	5.0	0.00	
2229309	MW-LEA-01	1015			17.15	8.05	1863	0.00	
2229310	MW-LEA-02	1020			15.11	7.30	608	0.00	
2229311	MW-LEA-03	1024			12.56	6.78	0.8	0.00	
1316076	GEC-2	0905			10.18	7.22	0.0		No top cap
1316077	GEC-3	0900			9.80	6.65	0.0		No top cap
1316078	MW-15D	0911			53.18	5.93	0.0		
1316079	GEC-4	0920			11.35	5.64	0.0		No top cap
1316080	GEC-5	0940			10.47	6.77	0.0		
1316081	P-2	0925			9.08	4.50	0.0		No top cap
1316082	P-3	0935			9.59	6.85	0.0		No top cap
1316083	P-20	0945			8.54	4.58	0.0		No top cap
1316084	GEC-6	1000			8.71	3.30	0.0		No top cap
1316085	GEC-7	0955			7.07	2.62	0.0		No top cap
1316086	MW-14M	1005			33.11	2.68	0.0		
1314856	MW-6	1010			8.94	4.43	5.5		

Field Personnel	Jason Purdy Mark Winbourne	Signature

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
LOW FLOW WELL SAMPLE

LEA Comm. No.	**15RP601.001**	Page 7 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	Sample Time 13:05
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-LEA-01 Sample Number(s) 1316057 1316057uf

Initial Field Data and Measurements

Depth of Well 17.15 Reference Used Top of PVC Riser
Depth to Water 8.05 PID/FID Reading 1,863
Height of Column 9.10 Interface Yes / (No) If yes, Depth _____ Lighter / Heavier

Well Casing Diameter 2" Material PVC
Protector Road Box / (Stickup)
Ground to Reference _____
Comments 1 well volume = 1.45 gal / 5.51 L
Purged for 25 hrs, then sampled per SOP

General Condition	OK	Bad
Casing Secure	✓	
Collar Intact	✓	
Cover Locked	✓	
Other (describe)	✓	

Development Information

Parameter / Time	Depth to Water	Pump Setting	Purge Rate (mL/min)	Cum. Liters Purged (L)	Temp (C) ±3%	Spec. Cond. (uS/cm) ±3%	pH (SU) ±0.1	ORP (Eh) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) <5	Comment
1045	8.07	350rpm	100	2	10.94	25,667	6.18	52.3	5.34	7.29	
1100	8.09			3.5	10.50	110	6.14	45.1	3.90	6.69	
1115	8.09			5	11.18	65	6.14	39.9	2.84	6.58	
1130	8.09			6.5	11.43	20	6.09	35.8	2.24	6.67	
1140	8.09			7.5	11.47	6	6.07	34.0	2.03	6.16	
1150	8.05			8.5	11.48	27	6.05	30.9	1.72	5.98	
1200	8.05			9.5	11.55	8	6.06	28.6	1.50	5.72	
1210	8.07			10.5	11.61	31	6.04	27.9	1.41	5.86	
1220	8.08			11.5	11.60	8	6.04	25.7	1.24	5.84	
1225	8.08			12	11.52	63	5.99	26.3	1.32	5.82	
1230	8.08			12.5	11.50	39	6.00	27.0	1.43	5.88	
1235	8.08			13	11.53	37	5.94	26.0	1.35	5.85	
1240	8.08			13.5	11.47	104	5.99	24.1	1.37	5.75	
1245	8.08			14	11.54	86	5.97	25.1	1.33	5.69	
1250	8.08			14.5	11.55	114	5.97	25.5	1.26	5.71	
1255	8.09			15	11.51	128	5.99	25.0	1.36	5.72	
1300	8.09	350rpm	100	15.5	11.60	113	6.04	25.0	1.37	5.45	

Developement Method Peristaltic Pump / Bailer / Inertial Pump / Other _____

Sample Field Treatment *If any ambiguity could exist, be sure to indicate the field treatment applied to each sample aliquot with the appropriate suffix in the sample ID on both the sample bottle label and on the Chain of Custody!*

Field Decontamination? (Yes) / No If Yes, with what? Liquinox, Methanol, Hexane
Waste Container ID RP-CT-004

Additional Comments Pump Start: 1025

Field Personnel Jason Purdy _____ Signature
Mark Winbourne _____ Mark Winbourne

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
LOW FLOW WELL SAMPLE

LEA Comm. No.	**15RP601.001**	Page 8 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	Sample Time 13:40
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-LEA-02 Sample Number(s) 1316058 1316058 uf

Initial Field Data and Measurements

Depth of Well 15.11 Reference Used TOC
Depth to Water 7.30 PID/FID Reading 608
Height of Column 7.81 Interface Yes / No If yes, Depth NM Lighter / Heavier

Well Casing Diameter 2" Material PVC
Protector Road Box / Stickup
Ground to Reference
Comments

General Condition	OK	Bad
Casing Secure	X	
Collar Intact	X	
Cover Locked	X	
Other (describe)		

Development Information

Time \ Parameter	Depth to Water	Pump Setting	Purge Rate (mL/min)	Cum. Liters Purged (L)	Temp (C)	Spec. Cond. (uS/cm)	pH (SU)	ORP (Eh)	DO (mg/L)	Turbidity (NTU)	Comment
10:50	9.06	350	100	1.0	9.28	1094	6.07	-39.6	0.23	42.1	
11:00	9.71	350	100	2.0	9.37	1090	6.04	-43.3	0.25	21.9	
11:10	11.20	350	100	3.0	9.46	1092	6.03	-48.8	0.44	24.1	
11:20	12.22	350	100	4.0	9.58	1091	6.03	-53.1	0.44	23.1	
11:30	13.36	350	100	5.0	9.68	1095	6.01	-59.0	0.46	24.1	
11:40	14.16	350	100	6.0	9.50	1065	5.99	-62.7	0.51	23.6	
11:50	14.32	350	100	7.0	9.57	1088	5.98	-64.1	0.54	22.1	
—	PUMP OFF. ALLOWED TO RECHARGE										JP
12:20	13.13	—	PUMP	STILL	OFF						JP
12:50	12.12	—	PUMP	STILL	OFF						JP
13:40	10.74								JP	13.0	SAMPLED
14:10	— PUMP OFF. ALLOWED TO RECHARGE. TOOK ALL OF 1316058 SET.										
	TOOK VOCs & 1/2L DOWN ON DUPLICATE (1316061 uf)										
15:05	— BEGAN SAMPLING AGAIN, TOOK DOWN FILTERED. ALLOWED										
	TO RECHARGE TO TAKE TDS.										
15:35	14.00	—	PULLED	LAST	SAMPLE						
						JP					

Developement Method Peristaltic Pump / Bailer / Inertial Pump / Other

Sample Field Treatment *If any ambiguity could exist, be sure to indicate the field treatment applied to each sample aliquot with the appropriate suffix in the sample ID on both the sample bottle label and on the Chain of Custody!*

Field Decontamination? Yes / No If Yes, with what? LIQUINOX, DI, HCL, DI, METHANOL
Waste Container ID RP-CT-004

Additional Comments BEGAN PURGING (PUMP START) @ 10:40. SHUT PUMP OFF @ 11:53 TO ALLOW RECHARGE. BEGAN SAMPLING @ 13:40. FINISHED SAMPLING @ 15:42.

DUPLICATE 1316061 & 1316061uf

Field Personnel Jason Purdy MW
Mark Winbourne

Signature

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
LOW FLOW WELL SAMPLE

LEA Comm. No.	**15RP601.001**	Page 9 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	Sample Time 16:15
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-LEA-03 Sample Number(s) 1316059 1316059 ul

Initial Field Data and Measurements

Depth of Well 12.56 Reference Used TOC
Depth to Water 8.04 PID/FID Reading 6.78
Height of Column 4.52 Interface Yes / (No) If yes, Depth NM Lighter / Heavier

Well Casing Diameter 2" Material PVC
Protector Road Box / (Stickup)
Ground to Reference
Comments

General Condition	OK	Bad
Casing Secure	X	
Collar Intact	X	
Cover Locked	X	
Other (describe)		

Development Information

Time \ Parameter	Depth to Water	Pump Setting	Purge Rate (mL/min)	Cum. Liters Purged (L)	Temp (C)	Spec. Cond. (uS/cm)	pH (SU)	ORP (Eh)	DO (mg/L)	Turbidity (NTU)	Comment
14:30	8.59	300	100	1.0	9.88	538	5.56	70.8	1.87	18.9	
14:40	9.00	300	100	2.0	9.11	457	5.49	71.2	1.79	8.49	
14:50	9.85	300	100	3.0	8.78	188	5.49	71.5	1.38	8.13	
15:00	10.36	300	100	4.0	8.36	302	5.56	68.2	1.81	7.21	
15:10	10.71	300	100	5.0	8.29	182	5.60	69.3	2.11	6.99	
15:20	11.00	300	100	6.0	8.71	191	5.60	73.1	2.25	6.13	
15:30	11.10	300	100	7.0	8.76	211	5.62	75.2	2.87	5.79	
15:40	11.29	300	100	8.0	8.59	205	5.63	79.3	3.01	4.81	
15:50	11.41	300	100	9.0	8.47	228	5.63	81.2	3.21	4.92	
15:52	SHUT OFF PUMP TO ALLOW RECHARGE										JP
16:15	8.89									JP	SAMPLES
16:30	9.97	— FINISHED SAMPLING								JP	

Developement Method (Peristaltic Pump) / Bailer / Inertial Pump / Other

Sample Field Treatment *If any ambiguity could exist, be sure to indicate the field treatment applied to each sample aliquot with the appropriate suffix in the sample ID on both the sample bottle label and on the Chain of Custody!*

Field Decontamination? (Yes) / No If Yes, with what? LIQUINOX, DI, HEXANE, DI, MEOH.
Waste Container ID RP-CT-004

Additional Comments BEGAN PURGING @ 14:20; STOPPED PURGING @ 15:52 TO ALLOW RECHARGE

Field Personnel (Jason Purdy) Signature
Mark Winbourne

Loureiro Engineering Associates, Inc.

FIELD SAMPLING RECORD
LOW FLOW WELL SAMPLE

LEA Comm. No.	**15RP601.001**	Page 10 of 10
Project	Additional Engineering Support Services	Date 2/25/08
Location	Centredale Manor, North Providence, RI	Sample Time 15:40
Client	Swidler Berlin Shereff Friedman-JMu	

Monitoring Well Number MW-05S Sample Number(s) 1316060 ~~1316060 uf~~ JP
1316060 uf

Initial Field Data and Measurements

Depth of Well 8.95 Reference Used Top of PVC Riser
Depth to Water 5.05 PID/FID Reading 5.0
Height of Column 3.90 Interface Yes (No) If yes, Depth _____ Lighter / Heavier

Well Casing Diameter 2" Material PVC
Protector (Road Box) / Stickup
Ground to Reference _____
Comments 1 well volume = 0.62 gal. / 2.4 L
Pump Start @ 1435, Dry @ 1527, *

General Condition	OK	Bad
Casing Secure	✓	
Collar Intact	✓	
Cover Locked	✓	
Other (describe)	✓	

Development Information

Parameter / Time	Depth to Water	Pump Setting	Purge Rate (mL/min)	Cum. Liters Purged (L)	Temp (C)	Spec. Cond. (uS/cm)	pH (SU)	ORP (Eh)	DO (mg/L)	Turbidity (NTU)	Comment
1445	5.48	350rpm	100	1	6.96	347	6.72	-96.9	0.18	7.11	
1455	5.70	↓	↓	2	6.67	354	6.79	-107.8	0.19	6.72	
1505	6.00	↓	↓	3	6.67	356	6.84	-106.7	0.17	5.83	
1515	6.40	↓	↓	4	6.45	350	6.84	-104.4	0.09	6.01	
1525	6.87	350rpm	100	5	6.38	348	6.84	-93.4	0.07	5.83	

Developement Method (Peristaltic Pump) / Bailer / Inertial Pump / Other _____

Sample Field Treatment *If any ambiguity could exist, be sure to indicate the field treatment applied to each sample aliquot with the appropriate suffix in the sample ID on both the sample bottle label and on the Chain of Custody!*

Field Decontamination? (Yes) No If Yes, with what? Liquinox, DI, hexane, methanol
Waste Container ID RP-CT-004

Additional Comments Tubing intake @ ~6.7 ft. bgs
* Allowed to recharge, then sampled @ 1540; Dry @ 1559. Pumping @ 1625
VOCs and uf Dioxin collected during 1st sampling; TSS, filtered dioxin, and TOC collected during 2nd sampling

Field Personnel Jason Purdy Mark Winbourne Signature

TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**Ron Mitchum**	FAX NUMBER:	**614.873.0810**
COMPANY:	**DAT, Inc.**	DATE:	**3/20/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**4**
RE:	**REQUEST for ADDITIONAL ANALYSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (COC) documentation (COC Nos. 27723, 27724, and 27725). Copies of the COC forms are attached for clarification of the analyses that we are requesting for the samples.

Please release from "HOLD" and analyze the following 7 samples for dioxins/furans by USEPA Method 8290:

1316057 1316062 1316058 1316061 1316074 1316060 1316059

Subsequent to analysis, please hold all parts of samples for potential, future re-analysis. Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

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SERIAL NE 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cornfield Manor	15R1601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	[illegible]	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible] Engineering Assoc.	[illegible] Smith

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] Dr., [illegible], CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: VOA (8260) / D [illegible] (8290)

PAGE 1 OF

☑ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/25/08	1305	[redacted]	1316057	✓				~~HOLD~~ (3) 1 L Ambers	(9) VoAs	* Release from Hold and ANALYZE for Dioxins/Furans			Matrix Spike/MSD
2/25/08	1305	[redacted]	1316057 uf	✓				(3) 1 L Ambers					TIER III
2/25/08	1120	[redacted]	1316063	✓				(1) VoA					LABORATORY
2/25/08	1340	[redacted]	1316058	✓				(3) VoA					DATA PACKAGE
2/25/08	1340	[redacted]	1316061	✓				(3) VoA					
2/25/08	1155	[redacted]	1316074	✓				(3) VoA					Hard Copy
2/25/08	1125	[redacted]	1316062	✓				(1) 1 L ~~HOLD~~	* Release from HOLD and Analyze for Dioxins/Furans				+ EDD PER
2/25/08	1125	[redacted]	1316062 uf	✓				(1) 1 L					SUB AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	2/25/08	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centredale Manor	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wanbaum / Tyler Purdy	800.747.6181	800.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lawrence Engineering Assoc.	David Jenkins

CLIENT ADDRESS (CITY, STATE, ZIP): 100 Northwest Dr., Plainville, CT 06062

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Dioxins/Furans (8290) / VOCs (8260B)

PRESERVATIVE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/-8	1340	[redacted]	1316058	✓				(1) 1 L Amber ~~Hold~~ * Release from Hold and ANALYZE for Dioxins/Furans	TIER III
	1340		1316058uf	✓				(1) 1 L Amber	LABORATORY
	1340		1316061	✓				(1) 1 L Amber ~~Hold~~ * Release from Hold and ANALYZE for Dioxins/Furans	DATA PACKAGE
	1040		1316061uf	✓				(1) 1 L Amber	
	1255		1316074	✓				(1) 1 L Amber ~~Hold~~ * Release from Hold and ANALYZE for Dioxins/Furans	HARD COPY
	1255		1316074uf	✓				(1) 1 L Amber	+ EDD PER
	1500		1316075	✓				(1) VOA	SUB AGREEMENT
	1540		1316060	✓				(3) VOAs, ~~(1) 1 L Amber Hold~~	
↓	~~1540~~		~~1316060uf~~	✓				~~(1) 1 L Amber~~	
2/25/-8	1615		1316059	✓				(3) VOAs	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature] (Custody Seal)	2/25/-8	1600						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

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RECEIVED BY: LABORATORY SIGNATURE | DATE | TIME | COOLER TEMP | LABORATORY REMARKS

☐ YES ☐ NO

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centerdale Manor	15RPG01	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wilkinson / Tom Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lawrence Brunoli	Dave Sutti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, solvent, etc.)

REQUIRED ANALYSIS: Dioxins/Furans (1613B)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, solvent, etc.)	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED	REMARKS
7/15/-8	1540		1316060	✓				(1) 1 L Amber ~~Hold~~ * Release from Hold and ANALYZE for Dioxins/Furans	TIER III LABORATORY DATA PACKAGE HARD COPY + EDD PER SUB AGREEMENT
	1540		1316060 uf	✓				(1) 1 L Amber	
	1615		1316059	✓				(1) 1 L Amber ~~Hold~~ * Release from Hold and ANALYZE for Dioxins/Furans	
7/15/-8	1615		1316059 uf	✓				(1) 1 L Amber	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature] (Cont. Lyon)	7/15/08	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

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TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**DEB JOHNSON**	FAX NUMBER:	**614.873.0810**
COMPANY:	**DAT, Inc.**	DATE:	**02/26/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**4**
RE:	**CLARIFICATION OF REQUESTED ANALSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (COC) documentation (COC Nos. 27723, 27724, and 27725). Copies of the COC forms are attached for clarification of the analyses that we are requesting for the samples received.

As "highlighted" on the attached copy of COC forms 27723, 27724, and 27725, pleas "HOLD" the following 7 samples for potential, future analysis for dioxins/furans by USEPA Method 8290:

1316057 1316062 1316058 1316061 1316074 1316060 1316059

With regard to Sample ID 1316057, please analyze the samples (field/MS/MSD) for VOCs by 8260B (see VOC list provided on 02/25/08); these samples have not been filtered.

Also, as discussed this morning and as noted on the attached copy of COC 27724, no amber liter containers were submitted for sample IDs 1316060 and 1316060uf in the cooler associated with this COC form. The amber liter containers for sample IDs 1316060 and 1316060uf were submitted in the cooler associated with COC 27725, as noted.

Subsequent to analysis, please hold all parts of samples for potential, future re-analysis. Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

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SERIAL NE 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	860-747-6181	860-747-8822

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] Drive, [illegible], CT [illegible]

PAGE 1 OF

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	REQUIRED ANALYSIS / PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED	REMARKS
8/25/-8	1305	[redacted]	1316-57	✓				HOLD (3) 1 L Ambers (9) VOAs	[illegible]
[illegible]	1305	[redacted]	1316-57 uf	✓				(3) 1 L Ambers	TIER III LABORATORY DATA PACKAGE
[illegible]	1140	[redacted]	1316-62	✓				(1) VOA	
[illegible]	[illegible]	[redacted]	1316-58	✓				(3) VOA	
[illegible]	1340	[redacted]	[illegible]	✓				(1) VOA	
[illegible]	[illegible]	[redacted]	[illegible]	✓				(3) VOA	Hard Copy + EDD per SUB AGREEMENT
[illegible]	1125	[redacted]	1316-62	✓				(1) 1 L HOLD	
[illegible]	[illegible]	[redacted]	1316-62 uf	✓				(1) 1 L	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED BY LABORATORY (SIGNATURE)	DATE	TIME	LAB NO.	PRESERVATIVE	CONDITION	LOCATION	LAB REMARKS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cinderbed Mear	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mary Wilkerson / Tom Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Environmental Assoc.	David Smith

CLIENT ADDRESS (CITY, STATE, ZIP): Northwoods Dr., Plainville, CT 06062

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: D-TPH (8290) / VOC (8260B)

PRESERVATIVE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/-8	1340		1316058	✓				(1) 1 L Amber Hold	TIER III
	1340		1316058uf	✓				(1) 1 L Amber	LABORATORY
	1340		1316061	✓				(1) 1 L Amber Hold	DATA PACKAGE
	1340		1316061uf	✓				(1) 1 L Amber	
	1255		1316074	✓				(1) 1 L Amber Hold	HARD COPY
	1255		1316074uf	✓				(1) 1 L Amber	+ EDD PER
	1500		1316075	✓				(1) VOA	SUB AGREEMENT
	1540		1316060	✓				(3) VOAs, ~~(1) 1 L Amber~~ ~~Hold~~	
	~~1540~~		~~1316060uf~~	✓				~~(1) 1 L Amber~~	
2/25/-8	1615		1316059	✓				(3) VOAs	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature] (Environmental Assoc.)	2/25/-8	1600						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE) | DATE | TIME | LAB NO. | COOLER TEMP. | REMARKS

☐ YES ☐ NO

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	860.747.6181	860.747.9822

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible], [illegible], CT 06062

MATRIX TYPE | REQUIRED ANALYSIS | PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED					REMARKS
[illegible]-8	1540		1316060	✓				(1) 1 L Amber Hold					TIER III LABORATORY DATA PACKAGE HARD COPY + RDD PER SUB AGREEMENT
	1540		1316060 uf	✓				(1) 1 L Amber					
✓	1615		1316059	✓				(1) 1 L Amber Hold					
[illegible]-8	1615		1316059 uf	✓				(1) 1 L Amber					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]-8	1630						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

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SERIAL NE 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centerdale Manor	15R9601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Lostumbo, Jason Perry	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lawler Engineering Assoc.	David Smith

CLIENT ADDRESS (CITY, STATE, ZIP): 100 New Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: VOCs (8260B) / [illegible] (8290)

PAGE 1 OF

☑ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/08	1305	[redacted]	1316057	✓				HOLD (3) 1 L Ambers (9) VOAs	Matrix Spike/MSD
2/25/08	1305	[redacted]	1316057 uf	✓				(3) 1 L Ambers	TIER III
2/25/08	1120	[redacted]	1316063	✓				(1) VOA	LABORATORY
2/25/08	1340	[redacted]	1316058	✓				(3) VOA	DATA PACKAGE
2/25/08	1340	[redacted]	1316061	✓				(3) VOA	
2/25/08	1255	[redacted]	1316074	✓				(3) VOA	Hard Copy
2/25/08	1125	[redacted]	1316062	✓				(1) 1 L Hold	+ EDD PER
2/25/08	1125	[redacted]	1316062 uf	✓				(1) 1 L	SUB AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Lostumbo	2/25/08	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	DAT LOG NO.	LABORATORY REMARKS
[redacted]			☐ YES ☐ NO		

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"Analytical Laboratories and Consultants"

SERIAL NO. 27724

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cinderdale Mar.	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mary Lindsay / Tom Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Loureiro Engineering Assoc.	David Trask

CLIENT ADDRESS (CITY, STATE, ZIP): 100 Nutmeg Dr., Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Dioxin (8290) / VOC (8260B)

PRESERVATIVE

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
9/15/-8	1340		1316058	✓				(1) 1 L Amber Hold DW	TIER III
	1340		1316058uf	✓				(1) 1 L Amber	LABORATORY
	1340		1316061	✓				(1) 1 L Amber Hold DW	DATA PACKAGE
	1340		1316061uf	✓				(1) 1 L Amber	
	1255		1316074	✓				(1) 1 L Amber Hold DW	HARD COPY
	1255		1316074uf	✓				(1) 1 L Amber	+ EDD PER
	[illegible]		1316075	✓				(1) VOA	SUB AGREEMENT
	1540		1316060	✓				(3) VOAs, ~~(1) 1 L Amber Hold~~ DW	
↓	~~1540~~		~~1316060uf~~	✓				~~(1) 1 L Amber~~ DW	
9/16/-8	1605		1316059	✓				(3) VOAs	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	9/16/-8	1600						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE) | DATE | TIME | CONDITION UPON RECEIPT | LABORATORY REMARKS

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"Analytical Laboratories and Consultants"

SERIAL № 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cockedole Manor	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Gustafson / Tom Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lonza Biologics	Dave Smith

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Diesel Range Organics (8290)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/25/-8	1540	[redacted]	1316060	✓				(1) 1 L Amber Hold					TIER III
	1540	[redacted]	1316060 uf	✓				(1) 1 L Amber					LABORATORY
↓	1615	[redacted]	1316059	✓				(1) 1 L Amber Hold					DATA PACKAGE
2/25/-8	1615	[redacted]	1316059 uf	✓				(1) 1 L Amber					HARD COPY +
		[redacted]											EDD PER
		[redacted]											SUB
		[redacted]											AGREEMENT
		[redacted]											
		[redacted]											
		[redacted]											
		[redacted]											
		[redacted]											
		[redacted]											

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature]	2/25/08	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

[redacted]

TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**MARGIE**	FAX NUMBER:	**860.747.9264**
COMPANY:	**Averill Environmental, Inc.**	DATE:	**02/26/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**2**
RE:	**CLARIFICATION OF REQUESTED ANALSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (No. 47367) documentation. A copy of the Chain-of-Custody is attached for clarification of the analyses that we are requesting for the samples received.

As "highlighted" on the attached copy of Chain-of-Custody No. 47367, please analyze the following samples for Total Dissolved Solids (TDS), in addition to Total Suspended Solids:

Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

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100 Northwest Drive, Plainville, CT 06062 860-747-6181 Fax 860-747-8822

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AVERILL
ENVIRONMENTAL LABORATORY INC.

100 Northwest Drive
Plainville, Connecticut 06062

Tel: 860-747-0676
CT: 1-800-870-7904

CHAIN-OF-CUSTODY RECORD

№ 47367

PROJECT NAME: [illegible] Hole [illegible]

PROJECT LOCATION: N P[illegible], RI

PROJECT NUMBER: SRP6[illegible]

REPORT TO: [illegible]

INVOICE TO:

Source Codes: W = Well, O = Outfall, RO = Run Off, R = River/Stream, B = Bottom Sediment, MW = Monitoring Well, S = Soil, SG = Sludge, LF = Landfill, L = Lake/Ocean, T = Treatment Facility, X = Other, Specify

ITEM NUMBER	SAMPLE NUMBER	SOURCE CODE	CONTAINER NO.	CONTAINER TYPE	CONTAINER SIZE	CONTAINER PRESERV.	ANALYSIS REQUIRED	COMMENTS	TRANSFER NUMBER & CHECK 1	2	3	4
1	13[illegible]57uf	mw	1	P	1L	I	Total Suspended Solids (TSS) / TDS		TIER III			
2	[illegible]		1	P	.2L	I	Total Dissolved Solids (TDS)	0.45 µM FILTER	LAB DATA			
3	1316058uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		PACKAGE			
4	1316058		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	(AS DISCUSSED)			
5	1316059uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS					
6	1316060uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		EDD +			
7	1316059		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	HARD COPY			
8	1316060		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	OF DATA			
9	1316061uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		PACKAGE			
10	1316061		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	(AS DISCUSSED)			
11	1316074uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS					
12	1316074		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER				

Container Code: P = Plastic, E = EPA VIAL, C = Cube, G = Glass, A = Amber Glass, B = Bacteria Bottle

Preservative Code: I = Iced, F = Filtered, N = Nitric Acid (HNO_3), H - Hydrochloric Acid (HCl), R = Sodium Hydroxide (NaOH), T = Sodium Thiosulfate, S = Sulfuric Acid (H_2SO_4)

O = Other, *Specify*

Sampler's Signature	Affiliation	Date	Time
[illegible]	LEA	8/25/[illegible]	17[illegible]

ADDITIONAL COMMENTS:

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	1-12	[illegible]	[illegible]	[illegible]	[illegible]
2					
3					
4					

AVERILL ENVIRONMENTAL LABORATORY INC.

100 Northwest Drive
Plainville, Connecticut 06062

Tel: 860-747-0676
CT: 1-800-670-7904

CHAIN-OF-CUSTODY RECORD

№ 47367

PROJECT NAME: Cranston Plants

PROJECT LOCATION: N. Providence, RI

PROJECT NUMBER: SRP6.1.051

REPORT TO: David Smith

INVOICE TO:

Source Codes: W = Well, O = Outfall, RO = Run Off, R = River/Stream, B = Bottom Sediment, MW = Monitoring Well, S = Soil, SG = Sludge, LF = Landfill, L = Lake/Ocean, T = Treatment Facility, X = Other, Specify

ITEM NUMBER	SAMPLE NUMBER	SOURCE CODE	CONTAINER NO.	CONTAINER TYPE	CONTAINER SIZE	CONTAINER PRESERV.	ANALYSIS REQUIRED	COMMENTS	TRANSFER NUMBER & CHECK 1	2	3	4
1	1316057uf	mw	1	P	1L	I	Total Suspended Solids (TSS) TDS		TIER III			
2	1316057		1	P	.2L	I	Total Dissolved Solids (TDS)	0.45 µM FILTER	LAB DATA			
3	1316058uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		PACKAGE			
4	1316058		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	(AS DISCUSSED)			
5	1316059uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS					
6	1316060uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		EDD +			
7	1316059		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	HARD COPY			
8	1316060		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	OF DATA			
9	1316061uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		PACKAGE			
10	1316061		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	(AS DISCUSSED)			
11	1316074uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS					
12	1316074		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER				

Container Code: P = Plastic, E = EPA VIAL, C = Cube, G = Glass, A = Amber Glass, B = Bacteria Bottle

Preservative Code: I = Iced, F = Filtered, N = Nitric Acid (HNO_3), H - Hydrochloric Acid (HCl), R = Sodium Hydroxide (NaOH), T = Sodium Thiosulfate, S = Sulfuric Acid (H_2SO_4), O = Other, *Specify*

Sampler's Signature	Affiliation	Date	Time
[signature]	LEA	8/25/08	1730

ADDITIONAL COMMENTS:

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	1-12	[illegible]	[illegible]	[illegible]	[illegible]
2					
3					
4					

APPENDIX E

APPENDIX E

Averill Environmental Laboratory, Inc. Laboratory Analytical Reports

AVERILL
ENVIRONMENTAL LABORATORY, INC.
WATER, WASTE & SOIL TESTING
PLAINVILLE, CT (860) 747-0676

Report No: AEL08R-1591.0

LABORATORY REPORT

Prepared for:

David Scotti

of

Loureiro Engineering Associates

100 Northwest Dr.

Plainville, CT 06062

Client Project#: 15RP601.001

Source: Centredale Manor, N. Providence, R.I.

Report Date: Monday, March 10, 2008

AVERILL
ENVIRONMENTAL
LABORATORY, INC.

Received Date: Tuesday, February 26, 2008

AEL Lab No.	Client Sample ID:	Sample ID:	Sample Matrix	Collect Date
AEL08001915	1316057uf	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001916	1316057	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001917	1316058uf	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001918	1316058	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001919	1316059uf	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001920	1316059	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001921	1316060uf	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001922	1316060	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001923	1316061uf	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001924	1316061	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001925	1316074uf	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008
AEL08001926	1316074	Centredale Manor, N. Providence, R.I.	Groundwater	2/25/2008

AVERILL
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LABORATORY, INC.

REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: AEL08001915 **Client Sample ID:** 1316057uf

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540D

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001915	Total Suspended Solids	ND	mg/L	1	1.0	CC	2/26/2008	44270

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001915	Total Dissolved Solids - 160.1	290	mg/L	1	20	CC	2/29/2008	44338

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001916** **Client Sample ID:** **1316057**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001916	Total Dissolved Solids - 160.1	300	mg/L	1	10	CC	2/26/2008	44271

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001917** **Client Sample ID:** **1316058uf**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540D

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001917	Total Suspended Solids	2.0	mg/L	1	1.7	CC	2/26/2008	44270

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001917	Total Dissolved Solids - 160.1	740	mg/L	1	20	CC	2/29/2008	44338

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001918** **Client Sample ID:** **1316058**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001918	Total Dissolved Solids - 160.1	730	mg/L	1	10	CC	2/26/2008	44271

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001919** **Client Sample ID:** **1316059uf**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540D

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001919	Total Suspended Solids	14.6	mg/L	1	1.0	CC	2/26/2008	44270

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001919	Total Dissolved Solids - 160.1	510	mg/L	1	20	CC	2/29/2008	44338

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001920** **Client Sample ID:** **1316059**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008

Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001920	Total Dissolved Solids - 160.1	460	mg/L	1	10	CC	2/26/2008	44271

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: AEL08001921 **Client Sample ID:** 1316060uf

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540D

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001921	Total Suspended Solids	ND	mg/L	1	1.0	CC	2/26/2008	44270

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001921	Total Dissolved Solids - 160.1	210	mg/L	1	20	CC	2/29/2008	44338

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001922** **Client Sample ID:** **1316060**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001922	Total Dissolved Solids - 160.1	180	mg/L	1	10	CC	2/26/2008	44271

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: AEL08001923 **Client Sample ID:** 1316061uf

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008

Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540D

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001923	Total Suspended Solids	11.2	mg/L	1	2.0	CC	3/3/2008	44349

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001923	Total Dissolved Solids - 160.1	720	mg/L	1	20	CC	2/29/2008	44338

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REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: **AEL08001924** **Client Sample ID:** **1316061**

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008

Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001924	Total Dissolved Solids - 160.1	760	mg/L	1	10	CC	2/26/2008	44271

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LABORATORY, INC.

REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: AEL08001925 **Client Sample ID:** 1316074uf

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540D

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001925	Total Suspended Solids	ND	mg/L	1	1.0	CC	3/3/2008	44349

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001925	Total Dissolved Solids - 160.1	ND	mg/L	1	20	CC	2/29/2008	44338

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phone (860) 747-0676

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LABORATORY, INC.

REPORT ON LABORATORY EXAMINATIONS

AEL Laboratory No.: AEL08001926 **Client Sample ID:** 1316074

Sample Matrix: Groundwater **Received Date:** Tuesday, February 26, 2008
Collected By: LEA **Collect Date:** Monday, February 25, 2008
Source: Centredale Manor, N. Providence, R.I.
Sample ID: Monitoring Well Sample

Analysis Method SM19 2540C

	Test	Result	Units:	Dil:	Detection Limit	Analyst	Analysis Date	Batch#
AEL08001926	Total Dissolved Solids - 160.1	ND	mg/L	1	10	CC	2/26/2008	44271

REPORT ON LABORATORY EXAMINATIONS

EXPLANATION OF QUALIFIERS

Qualifier	Definition
J	Estimated Value: %Difference of daily calibration standard outside control limits.
H	Estimated Value: Concentration above calibration range.
ND	Nothing Detected above detection Limit
B	Qualified due to the presence of compound in the blank.
I	Qualified: Internal standard response outside of acceptable limits.
XC	Qualified due to coelution.
R	Compounds rejected due to poor surrogate recoveries.

N:\2008\LEA_CENTRE\AEL08R-1591\AEL08R-1591_0RCP.snp

(MAP)

Averill Environmental Laboratory, Inc.

QC REPORT

REPORT #: AEL08R-1591.0

Report Date: 3/10/2008

AVERILL ENVIRONMENTAL LABORATORY, INC
WATER, WASTE & SOIL TESTING
PLAINVILLE, CT (860) 747-0679

QCNumber	Test Name	Analysis Batch #	Blank Result	% Rec	RPD	Low Limit	High Limit	Units	Analysis Date	Prep Batch #	Analysis Method
Duplicates											
AEL08001790D	Total Suspended Solids	44270			4.88	0 -	20	%	2/26/2008		SM19 2540D
AEL08001917D	Total Suspended Solids	44270			15.4	0 -	20	%	2/26/2008		SM19 2540D
AEL08001924D	Total Dissolved Solids	44271			3.2	0 -	20	%	2/26/2008		SM19 2540C
AEL08001923D	Total Dissolved Solids	44338			11.5	0 -	20	%	2/29/2008		SM19 2540C
AEL08001923D	Total Suspended Solids	44349			0	0 -	20	%	3/3/2008		SM19 2540D
Calibration Standards											
Calib Check	Total Suspended Solids	44270		100.96		90 -	110	%	2/26/2008		SM19 2540D
Calib Check	Total Dissolved Solids - 160.1	44271		101.05		90 -	110	%	2/26/2008		SM19 2540C
Calib Check	Total Dissolved Solids - 160.1	44338		106.61		90 -	110	%	2/29/2008		SM19 2540C
Calib Check	Total Suspended Solids	44349		102.88		90 -	110	%	3/3/2008		SM19 2540D

N:\2008\LEA_CENTRE\AEL08R-1591\AEL08R-1591_0T2QC.snp

AVERILL ENVIRONMENTAL LABORATORY, INC.

CT Laboratory ID No. PH-0513
MA Laboratory ID No. M-CT0513
NY Laboratory ID No. 11599

100 Northwest Drive, Plainville, Connecticut 06062
(860) 747-0676 Fax: (860) 747-9264 CT ONLY 1-(800) 870-7904
Lawton S. Averill - Director Alan G. Jacobs - Co-Director

NH Laboratory ID No. 2506
ME Laboratory ID No. CT029
EPA Laboratory ID No. CT00029

Report No: AEL08R-1591.0

Report Date: Monday, March 10, 2008

Case Narrative Report

Sample Receipt and Holding Time Deficiencies

AEL Lab No	Client ID #	Test Group	Narrative Explanation
			No Sample or Holding Time Deficiencies

AVERILL ENVIRONMENTAL LABORATORY, INC.

Quality Control Deficiencies

QC Number	Test	QC Type	Blank Result/ % Recovery	Narrative Explanation

There are no QC Deficiencies

N:\2008\LEA_CENTRE\AEL08R-1591\AEL08R-1591_0CN.snp

Averill Environmental Laboratory, Inc.

This report shall not be reproduced except in its entirety.

AVERILL ENVIRONMENTAL LABORATORY, INC
WATER, WASTE & SOIL TESTING
PLAINVILLE, CT (860) 747-0679

Report Date: 3/10/2008

REPORT #: AEL08R-1591.0

Sample Number, Analysis Batch and Prep Batch Association

Client: Loureiro Engineering Associates

Client Project#: 15RP601.001

Analysis Method: SM19 2540C

Lab#	Client ID#	Analysis Batch #	Prep Batch#
AEL08001915	1316057uf	44338	
AEL08001916	1316057	44271	
AEL08001917	1316058uf	44338	
AEL08001918	1316058	44271	
AEL08001919	1316059uf	44338	
AEL08001920	1316059	44271	
AEL08001921	1316060uf	44338	
AEL08001922	1316060	44271	
AEL08001923	1316061uf	44338	
AEL08001924	1316061	44271	
AEL08001925	1316074uf	44338	
AEL08001926	1316074	44271	

Analysis Method: SM19 2540D

Lab#	Client ID#	Analysis Batch #	Prep Batch#
AEL08001915	1316057uf	44270	
AEL08001917	1316058uf	44270	
AEL08001919	1316059uf	44270	
AEL08001921	1316060uf	44270	
AEL08001923	1316061uf	44349	
AEL08001925	1316074uf	44349	

N:\2008\LEA_CENTRE\AEL08R-1591\AEL08R-1591_0QCBatch.snp

Date: 2-26-08 Analyst: CA WS# 44270

Dish I.D.	Filter Wt. g.	Filter Wt. g.	Sample # AEL0800	Volume mL.	Filter + Solids g.	Filter + Solids g.	TSS** mg/L
C	00020	00028	BLANK	500	00020	00020	<1
B	00020	00028	Ultra# 77681	100	00834	00833	65=105
46	00043	00043	1752	100	00064	00063	20
20	00038	00038	1753	200	00046	00046	4
12	00026	00020	1785	250	00032	00032	2
16	00025	00026	1790	100	00046	00046	20
Q	00033	00034	1791	100	00051	00051	17
17	00031	00031	1803	2	00924	00923	9600
15	00025	00025	1805	300	00032	00032	2.3
49	00029	00030	1806	30	00060	00061	103
7	00031	00032	1810	50	00046	00045	26
4	00025	00026	1811	300	00065	00065	13
J	00024	00025	1836	500	00025	00026	<1
D	00033	00034	1837	500	00034	00035	<1
H	00029	00030	1838	500	00030	00029	<1
I	00033	00034	1842	500	00037	00036	<1
2	00036	00037	1843	500	00058	00057	4
X	00020	00020	1844	500	00099	00098	~~15~~ 14.2
10	00028	00028	1845	500	00029	00029	<1
41	00022	00022	1861	30	00063	00063	137
K	00026	00020	1868	40	00061	00061	85
11	00020	00020	1898	500	00049	00048	4.2
F1	00024	00024	1915	500	00025	00025	<1
	0.0500g=0.0501	0.0500g=0.0501			0.0500g=0.0500	0.0500g=0.0501
	0.0500g=0.0500	.05000g=0.0501	Wt.+/-0.0004g		0.0500g=0.0501	0.0500g=0.0501
	°C= 105	°C= 105	Temp.=105-103 °C		°C= 105	°C= 105
	°C= 105	°C= 105			°C= 105	°C= 105

Sample # 1790 1917
DUP Value 21 mg/L Value = 2.33
RPD 4.88 RPD = 15.38

Ultra Solids
Lot # 77681
Exp. Date: 5/08
True Value 104 %Rec 100.96%

**TSS mg/L=[(A-B)]1000/Sample volume mL
A=weight of paper+dried residue, mg
B=weight of filter paper, mg

Comments:

Date: 2-26-08 Analyst: CC WS#

Dish I.D.	Filter Wt. g.	Filter Wt. g.	Sample # AEL0800	Volume mL.	Filter + Solids g.	Filter + Solids g.	TSS** mg/L
~~9~~	~~00029~~	~~00030~~	~~BLANK~~	~~500~~			
~~6~~	~~00013~~	~~00012~~	~~Ultra#~~				
N	00015	00016	1917	300	00022	00022	2
3	00020	00020	1919	500	00093	00093	14.6
G	00029	00030	1921	500	00033	00032	<1
9	00029	00030	1990 Dup.	100	00051	00051	2.1
6	00013	00012	1917 Dup.	300	00019	00019	0.7

0.0500g=	0.0500g=		0.0500g=	0.0500g=
0.0500g=	.05000g=	Wt.+/-0.0004g	0.0500g=	0.0500g=
oC=	oC=	Temp.=105-103 oC	oC=	oC=
oC=	oC=		oC=	oC=

Sample # _____

DUP Value _____mg/L

RPD_____

Ultra Solids

Lot #_____

Exp. Date:_____

True Value %Rec

**TSS mg/L=[(A-B)]1000/Sample volume mL

A=weight of paper+dried residue, mg

B=weight of filter paper, mg

Comments:

Date: 3-3-08 Analyst: CA WS# 44349

Dish I.D.	Filter Wt. g.	Filter Wt. g.	Sample # AEL0800	Volume mL.	Filter + Solids g.	Filter + Solids g.	TSS mg/L
I	00028	00029	BLANK	500	00020	00020	<1
2	00021	00022	Ultra# M681	100	00829	00829	10.0=100
6	00035	00036	1923	250	00063	00064	11.2
N	00025	00026	1925	500	00020	00020	<1
10	00043	00044	1939	200	00053	00053	45
4	00026	00020	1970	250	00040	00040	5.2
7	00032	00033	1982	100	00064	00065	32
12	00028	00029	1996	100	00068	00069	40
K	00026	00020	1997	50	00062	00063	72
20	00034	00035	1998	300	00069	00070	11.7
11	00034	00034	2002	2	00930	00931	9850
17	00022	00023	2007	300	00032	00033	3.3
46	00026	00020	2008	9	00799	00800	811
F1	00026	00020	2018	100	00059	00060	33
G	00020	00026	2025	300	00031	00032	2
B	00033	00034	1923 Dup	250	00061	00062	2.8
D	00117	00118					
Q	00023	00024					
15	00034	00035					
49	00025	00026					
41	00021	00021					

0.0500g=0.0500	0.0500g=0.0499	Wt.+/-0.0004g	0.0500g=0.0500	0.0500g=0.0501
0.0500g=0.0501	.05000g=0.0500		0.0500g=0.0500	0.0500g=0.0500
°C= 105	°C= 105	Temp.=105-103 °C	°C= 105	°C= 105
°C= 105	°C= 105		°C= 105	°C= 105

Sample # 1923
DUP Value 11.2 mg/L
RPD 0

Ultra Solids
Lot # M681
Exp. Date: 5/08
True Value 104 %Rec 102.88%

**TSS mg/L=[(A-B)]1000/Sample volume mL
A=weight of paper+dried residue, mg
B=weight of filter paper, mg

Comments:

Averill Environmental Laboratory, Inc.

*Samples were filtered through 0.45 µm before arriving.

Total Dissolved Solids

EPA 160.1

Date: 2-26-08 Analyst: [illegible] WS: 44301

Dish I.D.	Sample No.	Volume (mL)	Empty Dish (g)		Dish + Sample (g)		Calculated Result (mg/L)
D	Blank	100	Wgt. 1	87.2102	Wgt. 1	87.2152	<10
			Wgt. 2	87.2106	Wgt. 2	87.2149	
			Wgt. 3		Wgt. 3		
B	~~ERA~~ Check Std. Ultra Lot#: M681	25	Wgt. 1	87.9426	Wgt. 1	88.0010	2304 101.05% Rec
			Wgt. 2	87.9430	Wgt. 2	88.0006	
			Wgt. 3		Wgt. 3		
A	1916	100	Wgt. 1	87.7350	Wgt. 1	87.7660	303 = 300
			Wgt. 2	87.7354	Wgt. 2	87.7657	
			Wgt. 3		Wgt. 3		
Y1	1918	100	Wgt. 1	87.9817	Wgt. 1	88.0556	735 = 740
			Wgt. 2	87.9822	Wgt. 2	88.0557	
			Wgt. 3		Wgt. 3		
5	1920	100	Wgt. 1	82.8401	Wgt. 1	82.8865	464 = 460
			Wgt. 2	82.8404	Wgt. 2	~~82.8918~~	
			Wgt. 3		Wgt. 3	82.8868	
C	1922	100	Wgt. 1	86.8338	Wgt. 1	86.8510	177 = 180
			Wgt. 2	86.8337	Wgt. 2	~~86.8545~~	
			Wgt. 3		Wgt. 3	86.8514	
Rat	1924	100	Wgt. 1	55.9841	Wgt. 1	~~56.0672~~	761 = 760
			Wgt. 2	55.9840	Wgt. 2	56.0601	
			Wgt. 3		Wgt. 3	56.0601	
H	1926	100	Wgt. 1	88.0480	Wgt. 1	88.0450	<10
			Wgt. 2	88.0475	Wgt. 2	~~88.0524~~	
			Wgt. 3		Wgt. 3	88.0452	
D1	1924 Dup.	100	Wgt. 1	87.1844	Wgt. 1	~~87.2618~~	737 RPD = 3.2
			Wgt. 2	87.1840	Wgt. 2	87.2579	
			Wgt. 3		Wgt. 3	87.2577	
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		

QC Requirements:

Blank

Control

Duplicate

TDS (mg/L) = (A - B)(1000) / Sample Vol. (mL)

Where:

A = Wgt. Of Dish + Sample (mg)

B = Wgt. Of Empty Dish (mg)

180°C Oven temp. (+/- 2C):		181°C	181°C	180°C
Scale	50 g	49.9979	49.9981	
Calibration	100 g	99.9968	99.9968	

Ultra M681 exp. 5/08

49.9979
99.9966

Total Dissolved Solids
EPA 160.1

Date: 2-29-08 Analyst: CL WS: 443338

Dish I.D.	Sample No.	Volume (mL)	Empty Dish (g)		Dish + Sample (g)		Calculated Result (mg/L)
D	Blank	100	Wgt. 1	87.2152	Wgt. 1	87.2146	<10
			Wgt. 2	87.2149	Wgt. 2	87.2148	
			Wgt. 3		Wgt. 3		
B	~~ERA~~ Ultra Check Std. Lot#: M1681	25	Wgt. 1	88.0010	Wgt. 1	~~88.0549~~	88.0587
			Wgt. 2	88.0006	Wgt. 2	88.0589	2324 106.6% Rec.
			Wgt. 3		Wgt. 3	~~88.0628~~	
A	1915	50	Wgt. 1	87.7660	Wgt. 1	87.7802	87.7804
			Wgt. 2	87.7657	Wgt. 2	87.7838	294=290
			Wgt. 3		Wgt. 3	~~87.7852~~	
Y1	1917	50	Wgt. 1	88.0556	Wgt. 1	~~88.0885~~	88.0926
			Wgt. 2	88.0557	Wgt. 2	88.0930	738=740
			Wgt. 3		Wgt. 3	~~88.0972~~	
5	1919	50	Wgt. 1	82.8865	Wgt. 1	~~82.9097~~	82.9121
			Wgt. 2	82.8868	Wgt. 2	82.9118	506=510
			Wgt. 3		Wgt. 3	~~82.9182~~	
C	1921	50	Wgt. 1	86.8510	Wgt. 1	~~86.8583~~	86.8617
			Wgt. 2	86.8514	Wgt. 2	86.8612	206=210
			Wgt. 3		Wgt. 3	~~86.8655~~	
.at	1923	50	Wgt. 1	56.0601	Wgt. 1	~~56.0922~~	
			Wgt. 2	56.0601	Wgt. 2	56.0959	722=720
			Wgt. 3		Wgt. 3	56.0962	
H	1925	50	Wgt. 1	88.0450	Wgt. 1	~~88.0415~~	88.0448
			Wgt. 2	88.0452	Wgt. 2	88.0447	<20
			Wgt. 3		Wgt. 3	~~88.0510~~	
D1	1923 Dup.	50	Wgt. 1	87.2509	Wgt. 1	~~87.2941~~	
			Wgt. 2	87.2507	Wgt. 2	87.2978	810 RPD=11.49
			Wgt. 3		Wgt. 3	87.2982	
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		
			Wgt. 1		Wgt. 1		
			Wgt. 2		Wgt. 2		
			Wgt. 3		Wgt. 3		

QC Requirements:
Blank
Control
Duplicate

TDS (mg/L) = $\frac{(A - B)(1000)}{\text{Sample Vol. (mL)}}$

Where:
A = Wgt. Of Dish + Sample (mg)
B = Wgt. Of Empty Dish (mg)

Oven temp. (+/- 2C):		181°C	181°C
Scale Calibration	50 g	49.9982	49.9999
	100 g	99.9976	100.0004

181°C
49.9996
99.9998

Ultra Lot# M1681
Exp 5/08

181°C
49.9997

TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**MARGIE**	FAX NUMBER:	**860.747.9264**
COMPANY:	**Averill Environmental, Inc.**	DATE:	**02/26/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**2**
RE:	**CLARIFICATION OF REQUESTED ANALSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (No. 47367) documentation. A copy of the Chain-of-Custody is attached for clarification of the analyses that we are requesting for the samples received.

As "highlighted" on the attached copy of Chain-of-Custody No. 47367, please analyze the following samples for Total Dissolved Solids (TDS), in addition to Total Suspended Solids:

Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

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An Employee Owned Company

AVERILL
ENVIRONMENTAL LABORATORY INC.

100 Northwest Drive
Plainville, Connecticut 06062

Tel: 860-747-0676
CT: 1-800-870-7904

CHAIN-OF-CUSTODY RECORD

№ 47367

PROJECT NAME: [illegible]

PROJECT LOCATION: N. Providence, RI

PROJECT NUMBER: SRPG-1.001

REPORT TO: [illegible]

INVOICE TO:

Source Codes: W = Well, O = Outfall, RO = Run Off, R = River/Stream, B = Bottom Sediment, MW = Monitoring Well, S = Soil, SG = Sludge, LF = Landfill, L = Lake/Ocean, T = Treatment Facility, X = Other, Specify

ITEM NUMBER	SAMPLE NUMBER	SOURCE CODE	CONTAINER NO.	CONTAINER TYPE	CONTAINER SIZE	CONTAINER PRESERV.	ANALYSIS REQUIRED	COMMENTS	TRANSFER NUMBER & CHECK 1	2	3	4
1	1316057uf	mw	1	P	1L	I	Total Suspended Solids (TSS) / TDS		TIER III			
2	[illegible]		1	P	2L	I	Total Dissolved Solids (TDS)	0.45 µM FILTER	LAB DATA			
3	1316058uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		PACKAGE			
4	1316058		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	(AS DISCUSSED)			
5	1316059uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS					
6	1316060uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		EDD +			
7	1316059		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	HARD COPY			
8	1316060		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	OF DATA			
9	1316061uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS		PACKAGE			
10	1316061		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER	(AS DISCUSSED)			
11	1316074uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS) / TDS					
12	1316074		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER				

Container Code: P = Plastic, E = EPA VIAL, C = Cube, G = Glass, A = Amber Glass, B = Bacteria Bottle

Preservative Code: I = Iced, F = Filtered, N = Nitric Acid (HNO_3), H - Hydrochloric Acid (HCl), R = Sodium Hydroxide (NaOH), T = Sodium Thiosulfate, S = Sulfuric Acid (H_2SO_4)

O = Other, *Specify*

Sampler's Signature	Affiliation	Date	Time
[illegible]	LEA	9/25/08	1730

ADDITIONAL COMMENTS:

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	1-12	[illegible]	[illegible]	[illegible]	[illegible]
2					
3					
4					

AVERILL ENVIRONMENTAL LABORATORY INC.

100 Northwest Drive
Plainville, Connecticut 06062

Tel: 860-747-0676
CT: 1-800-870-7904

CHAIN-OF-CUSTODY RECORD

№ 47367

PROJECT NAME: Centredale Manor

PROJECT LOCATION: N. Providence, RI

PROJECT NUMBER: 15RP601.001

REPORT TO: David Scotti

INVOICE TO:

Source Codes: W = Well, O = Outfall, RO = Run Off, R = River/Stream, B = Bottom Sediment, MW = Monitoring Well, S = Soil, SG = Sludge, LF = Landfill, L = Lake/Ocean, T = Treatment Facility, X = Other, Specify

ITEM NUMBER	SAMPLE NUMBER	SOURCE CODE	CONTAINER NO.	CONTAINER TYPE	CONTAINER SIZE	CONTAINER PRESERV.	ANALYSIS REQUIRED	COMMENTS	TRANSFER NUMBER & CHECK 1	2	3	4
1	1316057uf	mw	1	P	1L	I	Total Suspended Solids (TSS)	1915				
2	1316057		1	P	.2L	I	Total Dissolved Solids (TDS)	0.45 µM FILTER 1916				
3	1316058uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS)	1917				
4	1316058		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER 1918				
5	1316059uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS)	1919				
6	1316060uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS)	1928				
7	1316059		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER 1920				
8	1316060		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER 1922				
9	1316061uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS)	1923				
10	1316061		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER 1924				
11	1316074uf		1	P	1L	I	TOTAL SUSPENDED SOLIDS (TSS)	1925				
12	1316074		1	P	.2L	I	TOTAL DISSOLVED SOLIDS (TDS)	0.45 µM FILTER 1926				

Container Code: P = Plastic, E = EPA VIAL, C = Cube, G = Glass, A = Amber Glass, B = Bacteria Bottle

Preservative Code: I = Iced, F = Filtered, N = Nitric Acid (HNO_3), H - Hydrochloric Acid (HCl), R = Sodium Hydroxide (NaOH), T = Sodium Thiosulfate, S = Sulfuric Acid (H_2SO_4), O = Other, *Specify*

Sampler's Signature	Affiliation	Date	Time
	LEA	2/25/08	1730

ADDITIONAL COMMENTS: Rec'd on ice 5°C

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	ACCEPTED BY	DATE	TIME
1	1-12			2/26/08	0805
2	1-12		Fridge	2/26/08	08:08
3					
4					

APPENDIX F

APPENDIX F

Data/Analysis Technologies, Inc. Laboratory Analytical Reports

Data/Analysis Technologies, Inc.

Soil Laboratory Analytical Reports

Method 8290

PCDD/PCDF Analysis for

Samples
Sample "1314216"

March 5, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208008

NELAP/LELAP Certification 03027
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Narrative

Laboratory name:	Data/Analysis Technologies, Inc.
Case Number:	Centredale Manor
Sample Numbers:	Sample "1314216"
SDG #	NA
Contract Number	Loureiro Engineering
Task Order Number	NA
Cooler Temperature:	4.1°C

Quality Control:

CRQL: The EDL was reported

Laboratory Control spikes: LCS was within limits.
Matrix Spike and Duplicate: A matrix spike and duplicate spike was ran with the set. The recoveries are reported and were within the control limits of the method. The analyte 2,3,7,8-TCDD appeared to not be homogenous in the sample and led to sample, MS and MSD results which were not comparable.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8290.

Internal Standard Ion Ratios: The internal standard ion ratios met the QC guidelines in EPA 8290.

Confirmations: 2,3,7,8-TCDF was not present in the sample, therefore no confirmation analysis was made.

Report reviewed and prepared by

R.K. Mitchum, PhD. President

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans

Client:	Loureio Engineering	**Client Sample:**	1314216
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-6	**Date Anal:**	2/26/2008
Sample Size	11.8 Soil	**Moisture**	17.7%
GC-Column	DB-5	**Solids**	82.3%
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg/g	EMPC	EDL	Tox Eq	Ratio	RT	Flag
2,3,7,8-TCDF		6.7	0.159		0.96	27:50:00	
1,2,3,7,8-PeCDF	ND		0.498				
2,3,4,7,8-PeCDF	10.0		0.488	5.00	1.45	32:59:00	
1,2,3,4,7,8-HxCDF	ND		1.070				
1,2,3,6,7,8-HxCDF	ND		0.979				
2,3,4,6,7,8-HxCDF	ND		1.139				
1,2,3,7,8,9-HxCDF	ND		1.269				
1,2,3,4,6,7,8-HpCDF		5.1	0.180		1.28	40:57:00	
1,2,3,4,7,8,9-HpCDF	2.2		0.219	0.02	0.89	42:17:00	
OCDF	11.3		0.124	0.01	0.95	44:46:00	
2,3,7,8-TCDD	39910.73		0.050	39910.73	0.80	28:37:00	
1,2,3,7,8-PeCDD		25.7	0.341		1.93	33:27:00	
1,2,3,4,7,8-HxCDD	ND		0.568				
1,2,3,6,7,8-HxCDD	15.75		0.559	1.58	1.06	38:22:00	
1,2,3,7,8,9-HxCDD		8.5	0.538		0.92	38:45:00	
1,2,3,4,6,7,8-HpCDD		17.2	0.878		1.37	41:54:00	
OCDD	201.13		1.797	0.20	0.86	44:38:00	
			Total TEQ	**39917.54**			

Totals	pg/g	EDL		Number	Flag
Tetra-Furans	102.66	0.159	Tetra-Furans	7	
Tetra-Dioxins	40270.68	0.050	Tetra-Dioxins	3	
Penta-Furans	700.00	0.493	Penta-Furans	5	
Penta-Dioxins	63.17	0.341	Penta-Dioxins	2	
Hexa-Furans	756.37	1.104	Hexa-Furans	4	
Hexa-Dioxins	90.35	0.370	Hexa-Dioxins	3	
Hepta-Furans	2.16	0.197	Hepta-Furans	1	
Hepta-Dioxins	17.73	0.878	Hepta-Dioxins	1	

ND = not detected at the detection limit shown

C= Results from a confirmation column

* = QC exceeded

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Loureio Engineering **Client Sample:** 1314216

Lab Project #: 0208008
Lab Sample ID: 0208008-6

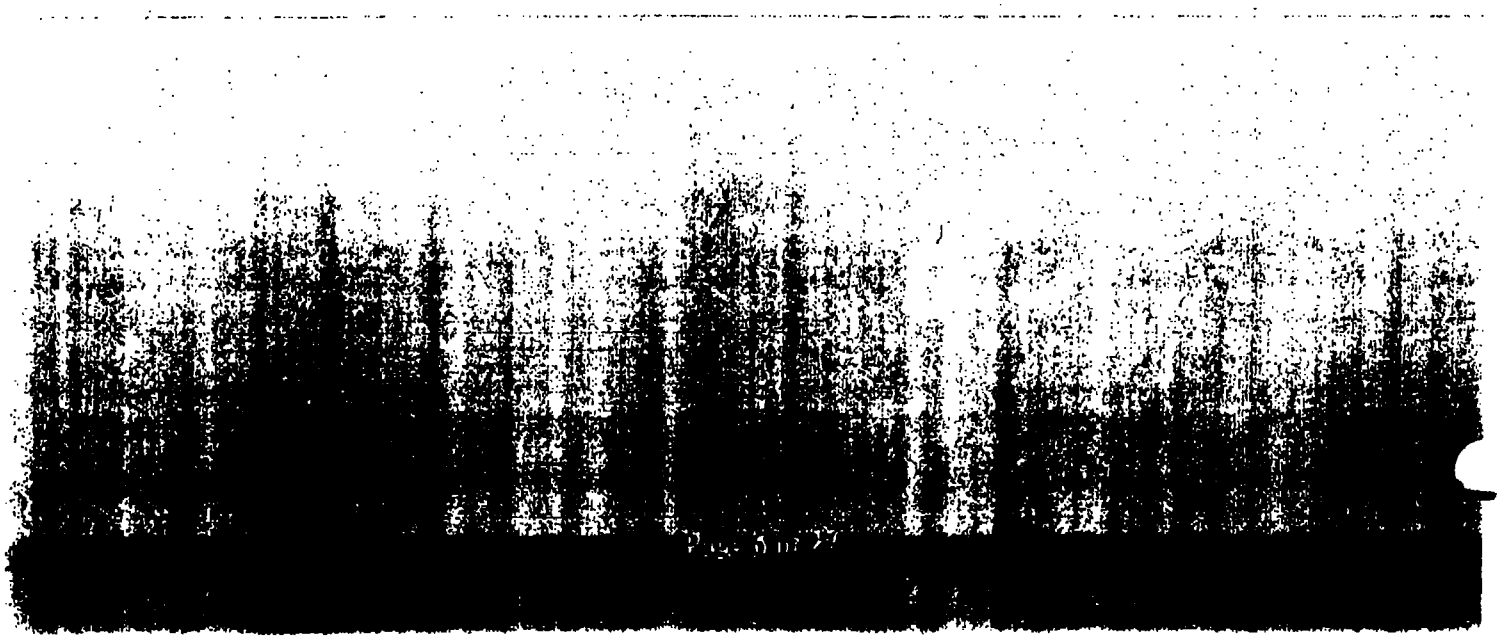
Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	3543	89	40-130	0.79	27:49	
13C-1,2,3,7,8-PeCDF	3350	84	40-130	1.61	32:09	
13C-1,2,3,6,7,8-HxCDF	2464	62	40-130	0.50	37:13	
13C-1,2,3,4,6,7,8-HpCDF	2699	67	40-130	0.41	40:56	
13C-2,3,7,8-TCDD	3657	91	40-130	0.80	34:36	
13C-1,2,3,7,8-PeCDD	3224	81	40-130	1.58	33:25	
13C-1,2,3,6,7,8-HxCDD	2563	64	25-130	1.27	38:21	
13C-1,2,3,4,6,7,8-HpCDD	2774	69	25-130	1.09	41:54	
13C-OCDD	4651	58	25-130	0.87	44:38	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37C12-2,3,7,8-TCDD	5857	146	70-130	1.00	28:37	*
13C-2,3,4,7,8-PeCDF	4000	100	70-130	1.56	32:59	
13C-1,2,3,4,7,8-HxCDF	3938	98	70-130	0.50	37:04	
13C-1,2,3,4,7,8-HxCDD	4000	100	70-130	1.27	38:14	
13C-1,2,3,4,7,8,9-HpCDF	3942	99	70-130	0.44	42:17	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13C12-1,2,3,7,8,9-HxCDF	1499	37		39:02	

Recovery Standards			Flag
13C-1,2,3,4-TCDD	32.7	28:25	
13C-1,2,3,7,8,9-HxCDD	46.1	38:44	

TRAFFIC



DAT, Inc., 7715 Corporate Blvd., Plain City, OH 43064

SPECTRUM ANALYTICAL, INC.
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HANIBAL TECHNOLOGY

D.A.T., Inc.
CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: David Scotti
100 Northwest Drive
Plainville, CT 06062

Project Mgr.: _____

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 15RPG01
Site Name: Centredale Manor
Location: N. Providence State: RI
Sampler(s): M. Winbourne

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8=$NaHSO_4$ 9=Iced 10=_____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1=_____ X2=_____ X3=_____

G=Grab C=Composite

Containers: # of VOA Vials; # of Amber Glass; # of Clear Glass; # of Plastic

Analyses: Dioxin (1613B)

QA Reporting Notes: (check if needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Dioxin (1613B)	QA Notes
	1314211	2/5/08	0830	G	SO	9			1			HOLD until further notice
	1314212		0840						1			
	1314213		0915						1			
	1314214		0925						1			
	1314215		1006	G					1			
	1314216	2/5/08	1155	C	SO	9			1		X	

☐ Fax results when available to (____) _____
☑ E-mail to dnscotti@laureiro.com
EDD Format _____

Condition upon receipt: ☒ Iced ☐ Ambient ☐ °C 4.1°C

Relinquished by:	Received by:	Date:	Time:
Mark Vlad	Cooler for Shipment (under custody seal)	2/5/08	1300
	J. Owens 2-6-08 PA# 0208008 4.1°C	2/6/08	1030 AM

~~11 Almgren Drive • Agawam, Massachusetts 01001 • 413-789-9018 • Fax 413-789-4076 • www.spectrum-analytical.com~~

FedEx Express — *US Airbill*

FedEx Tracking Number 8580 3269 9645

Recipient's Copy

1 From [redacted]

Date

Sender's Name: Mark Winbourne Phone: 860 410-2935

Company: Lourdis Engineering Associates Inc.

Address: 100 Northwest Drive Dept./Floor/Suite/Room

City: Plainville State: CT ZIP: 06062

2 Your Internal Billing Reference

3 To

Recipient's Name Phone

Company: BAE Inc.

Recipient's Address: 7715 Corporate Blvd Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City: Plain City State: OH ZIP: 43064

8580 3269 9645

4a Express Package Service — *Packages up to 150 lbs.*

- [ ] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
- [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service — *Packages over 150 lbs.*

- [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation:

** To most locations.

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.
- [ ] FedEx Box
- [ ] FedEx Tube
- [x] Other

* Declared value limit $500.

6 Special Handling — Include FedEx address in Section 3.

- [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.
- [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight.
- [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? (One box must be checked.)

- [x] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

- [ ] Cargo Aircraft Only

7 Payment *Bill to:* — Enter FedEx Acct. No. or Credit Card No. below.

- [x] Sender (Acct. No. in Section 1 will be billed.)
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Obtain Recip. Acct. No.
- [ ] Cash/Check

[redacted]

Total Packages	Total Weight	Total Declared Value†	Total Charges
1	27 LB	$ ____.00	Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See back for details.

8 NEW Residential Delivery Signature Options If you require a signature, check Direct or Indirect.

- [ ] No Signature Required — Package may be left without obtaining a signature for delivery.
- [ ] Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. Fee applies.

520

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NS-CMHA

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OH-US
43064

Emp# 621898 05FEB08 PVDA

CUSTODY SEAL

Person Collecting Sample _____ (signature) Sample No. _____

Date Collected 2/5/08 Time Collected _____

DAT Labs Inc.
Sample Receipt Report

Client: LOUREIRO ENGINEERING ASOC.

Custodian Initial: [illegible] Date: 2

The client has been contacted.

_____ Yes _____ No

Upon receipt of samples, check if any of the following discrepancies have been noted.

	Discrepancy Type	Specify applicable client ID or "all"
	COC and samples do not match	
	No unique sample identifications	
	Samples received outside of the required temp criteria. Receipt Temp: 2.4 C	
	No preservation type was noted Correction Factor: 1.7 C	
	No date of collection stated Corrected Temp: 4.1 C	
	No time of collection stated	
	The sample collector was not named	
	Sample containers were not appropriate	
	Sample labels were destroyed or unreadable	
	Samples were received outside of holding time	
	There was not enough sample to perform the requested analysis.	
	Samples showed sign of damage or contamination.	
	Aqueous samples for volatile analysis: Headspace? Y N If Yes, list sample ID(s) in details:	
	Sample pH acidic basic neutral Check pH of aqueous samples if no preservation is noted on COC.	

Details: _____

Sample pH for nonvolatile aqueous samples and presence or absence of headspace (Y or N) for VOA aqueous samples shall be recorded at time of sample log-in.
Under no circumstances shall VOA vials be opened at time of sample receipt.

Other Discrepancies:

Sample ID	Discrepancy

☑ *Upon receipt, the samples met all of DAT's acceptance criteria.* **DAT Project #** 0208008

DAT SAMPLE RECEIVING

7715 Corporate Blvd Plain City,OH 43064

Project Number: 0208008

Date Received:	2/6/2008	**Carrier:**	FedEX
Client Name:	Loureiro Eng. Assocs.	**Analysis:**	dioxins/furans(8290)
Tracking number:	858032699645	**Package Temp:**	4.1C
Custody Seals ?:	Yes	**COC:** ✔	check if COC from client

Sample Information

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1314211	0208008-1	2/5/2008	soil	glass jar	hold until further notice
1314212	0208008-2	2/5/2008	soil	glass jar	hold until further notice
1314213	0208008-3	2/5/2008	soil	glass jar	hold until further notice
1314214	0208008-4	2/5/2008	soil	glass jar	hold until further notice
1314215	0208008-5	2/5/2008	soil	glass jar	hold until further notice
1314216	0208008-6	2/5/2008	soil	glass jar	ok to analyze

Laboratory Receiving Initials

0208008

2/6/2008 1:40:39 PM

QC SUMMARY

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans

Client:	Loureio Engineering	**Client Sample:**	Method_Blank
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-MB	**Date Anal:**	2/26/2008
Sample Size	10.00 Soil	**Moisture**	0.0%
GC-Column	DB-5	**Solids**	100.0%
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg/g	EMPC	EDL	Tox Eq.	Ratio	RT	Flag
2,3,7,8-TCDF	ND		0.046				
1,2,3,7,8-PeCDF	ND		0.053				
2,3,4,7,8-PeCDF	ND		0.052				
1,2,3,4,7,8-HxCDF	ND		0.080				
1,2,3,6,7,8-HxCDF	ND		0.073				
2,3,4,6,7,8-HxCDF	ND		0.085				
1,2,3,7,8,9-HxCDF	ND		0.095				
1,2,3,4,6,7,8-HpCDF	ND		0.061				
1,2,3,4,7,8,9-HpCDF	ND		0.075				
OCDF	ND		0.115				
2,3,7,8-TCDD	ND		0.053				
1,2,3,7,8-PeCDD	ND		0.073				
1,2,3,4,7,8-HxCDD	ND		0.100				
1,2,3,6,7,8-HxCDD	ND		0.098				
1,2,3,7,8,9-HxCDD	ND		0.095				
1,2,3,4,6,7,8-HpCDD	ND		0.069				
OCDD	ND		0.117				
			Total TEQ	**0.00**			

Totals	pg/g	EDL		Number	Flag
Tetra-Furans	ND	0.046	Tetra-Furans	0	
Tetra-Dioxins	ND	0.053	Tetra-Dioxins	0	
Penta-Furans	ND	0.053	Penta-Furans	0	
Penta-Dioxins	ND	0.073	Penta-Dioxins	0	
Hexa-Furans	ND	0.082	Hexa-Furans	0	
Hexa-Dioxins	ND	0.065	Hexa-Dioxins	0	
Hepta-Furans	ND	0.068	Hepta-Furans	0	
Hepta-Dioxins	ND	0.069	Hepta-Dioxins	0	

ND = not detected at the detection limit shown

* = QC exceeded

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Loureio Engineering **Client Sample:** Method_Blank

Lab Project #: 0208008
Lab Sample ID: 0208008-MB

Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	2907	73	40-130	0.79	27:49	
13C-1,2,3,7,8-PeCDF	2784	70	40-130	1.60	32:08	
13C-1,2,3,6,7,8-HxCDF	3293	82	40-130	0.51	37:12	
13C-1,2,3,4,6,7,8-HpCDF	3187	80	40-130	0.42	40:55	
13C-2,3,7,8-TCDD	2766	69	40-130	0.81	34:36	
13C-1,2,3,7,8-PeCDD	2678	67	40-130	1.60	33:25	
13C-1,2,3,6,7,8-HxCDD	3126	78	25-130	1.30	38:19	
13C-1,2,3,4,6,7,8-HpCDD	2938	73	25-130	1.10	41:53	
13C-OCDD	4982	62	25-130	0.89	44:37	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37Cl2-2,3,7,8-TCDD	4124	103	70-130	1.00	28:36	
13C-2,3,4,7,8-PeCDF	3980	100	70-130	1.64	32:59	
13C-1,2,3,4,7,8-HxCDF	3398	85	70-130	0.50	37:03	
13C-1,2,3,4,7,8-HxCDD	3648	91	70-130	1.26	38:11	
13C-1,2,3,4,7,8,9-HpCDF	3836	96	70-130	0.42	42:17	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13Cl2-1,2,3,7,8,9-HxCDF	1546	39		39:01	

Recovery Standards		Flag
13C-1,2,3,4-TCDD	52.2	28:24
13C-1,2,3,7,8,9-HxCDD	44.0	38:44

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans

Client:	Loureio Engineering	**Client Sample:**	LAB_SPIKE
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-LS	**Date Anal:**	2/27/2008
Sample Size	10.00 Soil	**Moisture**	0.0%
GC-Column	DB-5	**Solids**	100.0%
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg/g	EMPC	EDL	Tox Eq.	Ratio	RT	Flag
2,3,7,8-TCDF	424.2		0.886	42.42	0.77	27:50:00	
1,2,3,7,8-PeCDF	1051.8		0.725	52.59	1.54	32:10:00	
2,3,4,7,8-PeCDF	1009.0		0.712	504.50	1.55	32:60	
1,2,3,4,7,8-HxCDF	1113.4		0.321	111.34	1.21	37:05:00	
1,2,3,6,7,8-HxCDF	1024.7		0.294	102.47	1.21	37:14:00	
2,3,4,6,7,8-HxCDF	1118.0		0.342	111.80	1.19	38:01:00	
1,2,3,7,8,9-HxCDF	1221.7		0.381	122.17	1.22	39:03:00	
1,2,3,4,6,7,8-HpCDF	1048.0		0.298	10.48	1.04	40:56:00	
1,2,3,4,7,8,9-HpCDF	1146.1		0.364	11.46	1.04	42:17:00	
OCDF	2122.0		0.237	2.12	0.88	44:46:00	
2,3,7,8-TCDD	611.53		0.934	611.53	0.80	28:37:00	
1,2,3,7,8-PeCDD	1048.48		1.556	524.24	1.61	33:26:00	
1,2,3,4,7,8-HxCDD	1017.65		0.653	101.77	1.23	38:13:00	
1,2,3,6,7,8-HxCDD	1011.59		0.642	101.16	1.25	38:20:00	
1,2,3,7,8,9-HxCDD	1075.41		0.619	107.54	1.24	38:45:00	
1,2,3,4,6,7,8-HpCDD	961.43		0.530	9.61	1.02	41:54:00	
OCDD	2087.37		0.583	2.09	0.86	44:38:00	
			Total TEQ	**2529.29**			

Totals	pg/g	EDL		Number	Flag
Tetra-Furans	433.91	0.886	Tetra-Furans	2	
Tetra-Dioxins	611.53	0.934	Tetra-Dioxins	1	
Penta-Furans	2073.55	0.719	Penta-Furans	4	
Penta-Dioxins	1048.48	1.556	Penta-Dioxins	1	
Hexa-Furans	4496.12	0.332	Hexa-Furans	6	
Hexa-Dioxins	3114.46	0.425	Hexa-Dioxins	6	
Hepta-Furans	2197.21	0.327	Hepta-Furans	3	
Hepta-Dioxins	961.43	0.530	Hepta-Dioxins	1	

ND = not detected at the detection limit shown

* = QC exceeded

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Lourcio Engineering **Client Sample:** LAB_SPIKE

Lab Project #: 0208008
Lab Sample ID: 0208008-LS

Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	3500	88	40-130	0.81	27:49	
13C-1,2,3,7,8-PeCDF	3648	91	40-130	1.64	32:09	
13C-1,2,3,6,7,8-HxCDF	2963	74	40-130	0.50	37:13	
13C-1,2,3,4,6,7,8-HpCDF	3648	91	40-130	0.43	40:55	
13C-2,3,7,8-TCDD	3204	80	40-130	0.82	34:36	
13C-1,2,3,7,8-PeCDD	3153	79	40-130	1.52	33:25	
13C-1,2,3,6,7,8-HxCDD	2939	73	25-130	1.33	38:20	
13C-1,2,3,4,6,7,8-HpCDD	3706	93	25-130	1.10	41:54	
13C-OCDD	7112	89	25-130	0.89	44:38	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37C12-2,3,7,8-TCDD	4188	105	70-130	1.00	28:37	
13C-2,3,4,7,8-PeCDF	3780	95	70-130	1.59	32:59	
13C-1,2,3,4,7,8-HxCDF	3970	99	70-130	0.51	37:04	
13C-1,2,3,4,7,8-HxCDD	4125	103	70-130	1.29	38:12	
13C-1,2,3,4,7,8,9-HpCDF	4186	105	70-130	0.43	42:17	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13C12-1,2,3,7,8,9-HxCDF	1865	47		39:01	

Recovery Standards			Flag
13C-1,2,3,4-TCDD	50.5	28:24	
13C-1,2,3,7,8,9-HxCDD	63.1	38:44	

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans-Spike Recovery

Client:	Loureio Engineering	**Client Sample:**	1314216_MS
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-6_MS	**Date Anal:**	2/27/2008
Sample Size	NA Soil	**Moisture**	0.0%
GC-Column	DB-5	**Solids**	100.0%
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg total	%R	EMPC	EDL	Tox Eq	Ratio	RT	Flag
2,3,7,8-TCDF	4160.8	104		4.184	416.08	0.78	27:50:00	
1,2,3,7,8-PeCDF	10127.8	101		5.299	506.39	1.52	32:10:00	
2,3,4,7,8-PeCDF	10505.9	105		5.201	5252.94	1.52	33:00:00	
1,2,3,4,7,8-HxCDF	10733.5	107		8.950	1073.35	1.19	37:06:00	
1,2,3,6,7,8-HxCDF	9877.0	98.8		8.185	987.70	1.20	37:15:00	
2,3,4,6,7,8-HxCDF	11203.0	112		9.527	1120.30	1.19	38:05:00	
1,2,3,7,8,9-HxCDF	11518.5	115		10.610	1151.85	1.20	39:03:00	
1,2,3,4,6,7,8-HpCDF	9754.9	97.5		5.153	97.55	1.03	40:57:00	
1,2,3,4,7,8,9-HpCDF	10081.9	101		6.294	100.82	1.02	42:17:00	
OCDF	20141.8	101		3.969	20.14	0.88	44:47:00	
2,3,7,8-TCDD	239327.94	5983		3.034	239327.94	0.80	28:37:00	
1,2,3,7,8-PeCDD	9928.80	99.3		10.320	4964.40	1.62	33:26:00	
1,2,3,4,7,8-HxCDD	9030.42	90.3		7.497	903.04	1.24	38:16:00	
1,2,3,6,7,8-HxCDD	9866.82	98.7		7.372	986.68	1.21	38:22:00	
1,2,3,7,8,9-HxCDD	11161.42	112		7.103	1116.14	1.19	38:46:00	
1,2,3,4,6,7,8-HpCDD	9771.82	97.7		8.211	97.72	1.03	41:54:00	
OCDD	22441.16	112		13.660	22.44	0.86	44:39:00	
				Total TEQ	**258145.49**			

Totals	pg total	EDL		Number	Flag
Tetra-Furans	4339.11	8.861	Tetra-Furans	2	
Tetra-Dioxins	6115.34	9.337	Tetra-Dioxins	1	
Penta-Furans	20735.54	7.186	Penta-Furans	4	
Penta-Dioxins	10484.85	15.560	Penta-Dioxins	1	
Hexa-Furans	44961.21	3.315	Hexa-Furans	6	
Hexa-Dioxins	31144.59	4.253	Hexa-Dioxins	6	
Hepta-Furans	21972.15	3.273	Hepta-Furans	3	
Hepta-Dioxins	9614.29	5.295	Hepta-Dioxins	1	

ND = not detected at the detection limit shown

* = QC exceeded

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Loureio Engineering **Client Sample:** 1314216_MS

Lab Project #: 0208008
Lab Sample ID: 0208008-6_MS

Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	3744	94	40-130	0.79	27:49	
13C-1,2,3,7,8-PeCDF	3412	85	40-130	1.62	32:09	
13C-1,2,3,6,7,8-HxCDF	2358	59	40-130	0.51	37:14	
13C-1,2,3,4,6,7,8-HpCDF	2853	71	40-130	0.40	40:57	
13C-2,3,7,8-TCDD	3664	92	40-130	0.82	34:36	
13C-1,2,3,7,8-PeCDD	3469	87	40-130	1.54	33:25	
13C-1,2,3,6,7,8-HxCDD	2633	66	25-130	1.33	38:22	
13C-1,2,3,4,6,7,8-HpCDD	2861	72	25-130	1.13	41:54	
13C-OCDD	5016	63	25-130	0.88	44:38	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37C12-2,3,7,8-TCDD	5323	133	70-130	1.00	28:37	*
13C-2,3,4,7,8-PeCDF	4170	104	70-130	1.62	32:59	
13C-1,2,3,4,7,8-HxCDF	4108	103	70-130	0.50	37:04	
13C-1,2,3,4,7,8-HxCDD	3829	96	70-130	1.25	38:15	
13C-1,2,3,4,7,8,9-HpCDF	4008	100	70-130	0.40	42:17	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13C12-1,2,3,7,8,9-HxCDF	1618	40		39:02	

Recovery Standards			Flag
13C-1,2,3,4-TCDD	50.5	28:24	
13C-1,2,3,7,8,9-HxCDD	63.1	38:44	

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans-Spike Recovery

Client:	Loureio Engineering	**Client Sample:**	1314216_MSD
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-6_MSD	**Date Anal:**	2/27/2008
Sample Size	NA Soil	**Moisture**	0.0%
GC-Column	DB-5	**Solids**	100.0%
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg total	%R	EMPC	EDL	Tox Eq	Ratio	RT	Flag
2,3,7,8-TCDF	4066.9	102		10.810	406.69	0.77	27:51:00	
1,2,3,7,8-PeCDF	9942.2	99.4		13.950	497.11	1.54	32:10:00	
2,3,4,7,8-PeCDF	10132.3	101		13.690	5066.15	1.53	33:00:00	
1,2,3,4,7,8-HxCDF	10750.7	108		16.640	1075.07	1.21	37:06:00	
1,2,3,6,7,8-HxCDF	9698.2	97		15.220	969.82	1.21	37:16:00	
2,3,4,6,7,8-HxCDF	11308.2	113		17.720	1130.82	1.19	38:04:00	
1,2,3,7,8,9-HxCDF	11734.6	117		19.740	1173.46	1.20	39:04:00	
1,2,3,4,6,7,8-HpCDF	10109.3	101		6.027	101.09	1.02	40:58:00	
1,2,3,4,7,8,9-HpCDF	10873.7	109		7.362	108.74	1.04	42:19:00	
OCDF	20496.1	102		4.415	20.50	0.88	44:47:00	
2,3,7,8-TCDD	291450.95	7286		5.832	291450.95	0.80	28:38:00	
1,2,3,7,8-PeCDD	10214.12	102		22.860	5107.06	1.61	33:27:00	
1,2,3,4,7,8-HxCDD	9861.44	98.6		14.670	986.14	1.24	38:15:00	
1,2,3,6,7,8-HxCDD	10013.19	100		14.430	1001.32	1.22	38:22:00	
1,2,3,7,8,9-HxCDD	11170.88	112		13.900	1117.09	1.22	38:46:00	
1,2,3,4,6,7,8-HpCDD	9982.02	99.8		14.740	99.82	1.04	41:56:00	
OCDD	26713.13	134		37.260	26.71	0.98	44:39:00	
				Total TEQ	**310338.53**			

Totals	pg total	EDL		Number	Flag
Tetra-Furans	4339.11	8.861	Tetra-Furans	2	
Tetra-Dioxins	6115.34	9.337	Tetra-Dioxins	1	
Penta-Furans	20735.54	7.186	Penta-Furans	4	
Penta-Dioxins	10484.85	15.560	Penta-Dioxins	1	
Hexa-Furans	44961.21	3.315	Hexa-Furans	6	
Hexa-Dioxins	31144.59	4.253	Hexa-Dioxins	6	
Hepta-Furans	21972.15	3.273	Hepta-Furans	3	
Hepta-Dioxins	9614.29	5.295	Hepta-Dioxins	1	

ND = not detected at the detection limit shown

* = QC exceeded

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Loureio Engineering **Client Sample:** 1314216_MSD

Lab Project #: 0208008
Lab Sample ID: 0208008-6_MSD

Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	3310	83	40-130	0.78	27:49	
13C-1,2,3,7,8-PeCDF	3167	79	40-130	1.60	32:09	
13C-1,2,3,6,7,8-HxCDF	2231	56	40-130	0.51	37:15	
13C-1,2,3,4,6,7,8-HpCDF	2522	63	40-130	0.44	40:57	
13C-2,3,7,8-TCDD	3288	82	40-130	0.82	34:36	
13C-1,2,3,7,8-PeCDD	3076	77	40-130	1.54	33:25	
13C-1,2,3,6,7,8-HxCDD	2348	59	25-130	1.33	38:21	
13C-1,2,3,4,6,7,8-HpCDD	2610	65	25-130	1.06	41:55	
13C-OCDD	4549	57	25-130	0.90	44:39	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37C12-2,3,7,8-TCDD	5484	137	70-130	1.00	28:38	*
13C-2,3,4,7,8-PeCDF	4053	101	70-130	1.41	32:59	
13C-1,2,3,4,7,8-HxCDF	4044	101	70-130	0.50	37:05	
13C-1,2,3,4,7,8-HxCDD	4229	106	70-130	1.28	38:14	
13C-1,2,3,4,7,8,9-HpCDF	4039	101	70-130	0.43	42:18	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13C12-1,2,3,7,8,9-HxCDF	1649	41		39:03	

Recovery Standards			Flag
13C-1,2,3,4-TCDD	50.5	28:24	
13C-1,2,3,7,8,9-HxCDD	63.1	38:44	

DOCUMENTATION

DAT Labs, Inc. Extraction Form

Project # CA08008

Sample: (SOLIDS) LIQUID AIR

Analysis: 8290

Prepared By: CSN

Date: 2/12/08

Spike Witness: JK

Solvent Manufac: EMD

Solvent Lot # 47064

Extraction	Solvent	Volume mls	Reps
✓ Soxhlet	Hexane		1
Sep Funnel	Methanol		
Sonication	Methylene Chloride		
Cont. Ext	ACN		
Vial	Ethyl Acetate		
SPE Distill	IPA		
Other	✓ Toluene	300mL	19hr
No Extract	Water		
Other (Describe)			

Start Time: 5:00pm 2/12/08
End Time: 12:00pm 2/13/08

SURROGATE ID	VOL mls / (ul)	CONC	
Sur SL-36-18	40.0	100ng/uL	4.0ng/total
ADT SL-36-19	40.0	100ng/uL	4.0ng/total
SL-			

LS/MS ID	VOL mls / (ul)	CONC
SL-EDF-5008	40µL	100-500ng/uL 4/10/20ng/total
SL-		
SL-		

INT STD ID	VOL mls / (ul)	CONC	
IS SL-35-70	40.0	100ng/mL	4.0ng/total
RS SL-EPA-W3155	25.0	200ng/mL	5.0ng/total
SL-			

COMMENTS

SAMPLE ID	TOTAL SAMPLE AMNT	SAMPLE AMNT EXTRACTED	TOTAL EXTRACT VOL (ADD ALL REPS)	FINAL EXTRACT VOL mls / (ul)	SURR INIT	SPK INIT	IS INIT
MB			300mL Tolu	20µL Normal	JK		
1	11.81(g)						
1ms	11.85(g)						
1msD	11.84(g)						
LS					JK	JK	

If extract was split for additional analyses, please note the aliquot volume for this analysis and at what point the extract was spiked.

ALIQUOT VOLUME: _____ mls ul (Circle one)

Extract was spiked: Before After the split. (Circle one)

Additional samples may be listed on the back of this page.

000033

DATFRM1013

DAT Labs Inc

Percent Solids Summary Table

Project #: **0208008** %solid=((c-a)/b)*100

Analyst: CSM

		a	b		c			
Sample ID	Start Date	Tare Weight (g)	Wet Wt(g) Sample-Tare	End Date	Dry Weight Sample+Tare	%Solids	%Moisture 100-%solids	Comments
0208008-1	2/11/08	1.1351	5.6665	2/12/08	5.7983	82.2942	17.7058	

Page #:_____

AUTO SPEC APPLICATION SHEET

Client: Laureiro Eng.

Project: 0208008

Analysis: 8290

Archived:_____ Deletion Date:_____

Experiment: 8290 GC Method: 8290C

Analyte Table: 829001, 0208008A Calibration: A829001

Quant Results: 0208008A

Run Conditions

Carrier gas He Injection Temp °C: 275 Inj. Vol. 1.0

Flow cm/sec 30 Injection Speed: Fast / Slow

Column Type HP-5 Serial #: US 72174854

Temp Ramp: 160°C/1.13 min - 1.5°C/min - 215°C/min - 10°C/min - 310°C/5

TXT Files:

Run Log: 0208008A.Run.TXT;1 Continuing Calibration:

Calibration: % Dev sheets: 0208008ADD.TXT

% RSD: A829001RSD.TXT;1 Sample Raw Data:

RRF 5 points: A829001RRF.TXT;1 Raw Data: 0208008A.TXT;1

Cal Stats: A829001ST.TXT;1 Analyte Responses: 0208008AN.TXT

Analytical Seq: 0208008AWDN.TXT;1 Analyst: [illegible]

0208008ASEQ.TXT;1 Date: 2/29/08

DATA/ANALYSIS TECHNOLOGIES
ANALYSIS CORRECTIVE ACTION FORM

Project Number: 0208008 Analysis Date: 2/27/08

Client: Loureiro Eng Method: 8290

Samples Affected: End Point Cal

Please check the faild QC parameter.

Initial Calibration		Method Blank Contamination	
Continuing Calibration		Surrogate Recoveries	
End Calibration	✓	Laboratory Spike Recoveries	
Tune Failure		Matrix Spike Recoveries	
Verifications		Duplicate Analysis RPDs	
Instrument Contamination		Holding Time	
Run Time Failure		Other	
Internal Standard Recovery			
Retention Time Discrepance			

Please describe the corrective measures taken.

2,3,7,8-TCDD was over recovered by a Dev. of 59% due to a high level sample run previously. Another end point Calibration was run which passed Q.C. requirments

Analyst Initials

Release Data? Yes No

Basis:

Signature

PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY HIGH RESOLUTION

LAB Sample ID	CLIENT SAMPLE ID	LAB FILE ID		DATE ANALYZED	TIME AN
CS1_A829001	CAL._A829001	0208005B	S:8	26-FEB-08	01:24:4
CS2_A829001	CAL._A829001	0208005B	S:9	26-FEB-08	02:14:4
CS3_A829001	CAL._A829001	0208005B	S:10	26-FEB-08	03:04:4
CS4_A829001	CAL._A829001	0208005B	S:11	26-FEB-08	03:54:4
CS5_A829001	CAL._A829001	0208005B	S:12	26-FEB-08	04:44:4
CCAL._A829001C01	CCAL._A829001C01	0208008A	S:2	26-FEB-08	21:07:2
CCAL._A829001C02	CCAL._A829001C03	0208008A	S:9	27-FEB-08	02:57:0
CCAL._A829001C03	CCAL._A829001C03	A829001	S:4	27-FEB-08	12:32:1
INS._BLANK	Ins._Blank	0208008A	S:3	26-FEB-08	21:57:2
0208008-MB	Method_Blank	0208008A	S:4	26-FEB-08	22:47:2
0208008-1	1314216	0208008A	S:5	26-FEB-08	23:37:2
0208008-1_MS	1314216_MS	0208008A	S:6	27-FEB-08	00:27:1
0208008-1_MSD	1314216_MSD	0208008A	S:7	27-FEB-08	01:17:1
0208008-LS	LAB_SPIKE	0208008A	S:8	27-FEB-08	02:07:0

Sequence Acquisition Parameters
Run: A829001

	c/q	Data file	S	I	File text	Sample Text	Expt file	Bot	O/w	Inlet meth	Inlet file	Done?
1	c	0208005B	8	1	ANALYST:CSM	CS1_A829001	default	1	n	GC	default	y
2	c	0208005B	9	1	ANALYST:CSM	CS2_A829001	default	1	n	GC	default	y
3	c	0208005B	10	1	ANALYST:CSM	CS3_A829001	default	1	n	GC	default	y
4	c	0208005B	11	1	ANALYST:CSM	CS4_A829001	default	1	n	GC	default	y
5	c	0208005B	12	1	ANALYST:CSM	CS5_A829001	default	1	n	GC	default	y
6	q	0208008A	2	1	ANALYST:CSM	CCAL._A829001C01	default	1	n	GC	default	y
7	q	0208008A	9	1	ANALYST:CSM	CCAL._A829001C02	default	1	n	GC	default	y
8	q	A829001	4	1	ANALYST:CSM	CCAL._A829001C03	default	1	n	GC	default	y
9	q	0208008A	3	1	ANALYST:CSM	INS._BLANK	default	1	n	GC	default	y
10	q	0208008A	4	1	ANALYST:CSM	0208008-MB	default	1	n	GC	default	y
11	q	0208008A	5	1	ANALYST:CSM	0208008-1	default	1	n	GC	default	y
12	q	0208008A	6	1	ANALYST:CSM	0208008-1_MS	default	1	n	GC	default	y
13	q	0208008A	7	1	ANALYST:CSM	0208008-1_MSD	default	1	n	GC	default	y
14	q	0208008A	8	1	ANALYST:CSM	0208008-LS	default	1	n	GC	default	y

Sequence Summary Table
Run: A829001

c/q	Data Area	Data File	S	I	AnalyteTable	Factr #1	Factr #2	Size	MP	DLFac	HC	Sample Text	Done
1 c	0208005	0208005B	8	1	A829001	1.000	1.000	1.00	n	1.00	y	CS1_A829001	y
2 c	0208005	0208005B	9	1	A829001	2.000	1.000	1.00	n	1.00	y	CS2_A829001	y
3 c	0208005	0208005B	10	1	A829001	10.000	1.000	1.00	n	1.00	y	CS3_A829001	y
4 c	0208005	0208005B	11	1	A829001	100.000	1.000	1.00	n	1.00	y	CS4_A829001	y
5 c	0208005	0208005B	12	1	A829001	200.000	1.000	1.00	n	1.00	y	CS5_A829001	y
6 q	0208008	0208008A	2	1	A829001	10.000	1.000	1.00	n	1.00	y	CCAL._A829001C01	y
7 q	0208008	0208008A	9	1	A829001	10.000	1.000	1.00	n	1.00	y	CCAL._A829001C02	y
8 q	0208008	A829001	4	1	A829001	10.000	1.000	1.00	n	1.00	y	CCAL._A829001C03	y
9 q	0208008	0208008A	3	1	A829001	1.000	1.000	1.00	n	1.00	y	INS._BLANK	y
10 q	0208008	0208008A	4	1	0208008A	1.000	1.000	1.00	n	1.00	y	0208008-MB	y
11 q	0208008	0208008A	5	1	0208008A	1.000	1.000	1.00	n	1.00	y	0208008-1	y
12 q	0208008	0208008A	6	1	0208008A	1.000	1.000	1.00	n	1.00	y	0208008-1_MS	y
13 q	0208008	0208008A	7	1	0208008A	1.000	1.000	1.00	n	1.00	y	0208008-1_MSD	y
14 q	0208008	0208008A	8	1	0208008A	1.000	1.000	1.00	n	1.00	y	0208008-LS	y

Data/Analysis Technologies, Inc.

Groundwater Laboratory Analytical Reports

EPA - 8290A

NARRATIVE

PCDD/PCDF Analysis for
Samples
Sample #
1316057 1316062 1316058 1316061 1316074 1316060 1316059 1316057_MS 1316057_MSD

April 17, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

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SDG Narrative

Laboratory name: Data/Analysis Technologies, Inc.

Case Number: Centredale Manor

Sample Numbers:
1316057 1316062 1316058 1316061 1316074 1316060 1316059 1316057_MS 1316057_MSD
All samples were designated as filtered.

SDG # 1316057

Contract Number Loureio Engineering

Task Order Number NA
Cooler Temperature: 6.9°C

The following GC columns were used for this analysis:

Name:	Agilent	Column:	DB-5
ID (mm):	0.25	Length (m):	60
Coating material:	95% Methyl/5% Phenyl	Film thickness:	0.25 μm

Quality Control:

CRQL: The EDL was reported

Laboratory Control spikes: The control limits were exceeded for one analyte. See Form 3dfa.
Matrix spikes: A matrix spike and matrix spike duplicate were performed on 1316057 and the results are reported on Form 3dfa.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8290A.

Internal Standard Ion Ratios: The internal standard ion ratios met the QC guidelines in EPA 8290A.

Confirmations: 2,3,7,8-TCDF was not detected in the primary column analysis.

Report reviewed and prepared by

R.K. Mitchum, PhD.

US EPA - Method 8290A

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316057_ul

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-3

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF	20.84	x 0.0003 =	0.01
2,3,7,8-TCDD	68.04	x 1.00 =	68.04
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	68.05

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316062_ul

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-9

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 8-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	5101.11	x 1.00 =	5101.11
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD	16.10	x 0.0003 =	0.00
		Total =	5101.12

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316058_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-11

Sample wt/vol: 1.00 g / L L Lab File ID: A8290048S:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	2742.72	x 1.00 =	2742.72
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	2742.72

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316061_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-13

Sample wt/vol: 1.00 g / L L Lab File ID: A8290048S:13

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	6154.18	x 1.00 =	6154.18
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD	9.51	x 0.0003 =	0.00
		Total =	6154.18

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316074_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-15

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:14

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	9.99	x 1.00 =	9.99
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	9.99

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316060_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-19

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	338.87	x 1.00 =	338.87
1,2,3,7,8-PeCDD	424.42	x 1.00 =	424.42
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	763.29

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316059_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-22

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	233.87	x 1.00 =	233.87
1,2,3,7,8-PeCDD	102.31	x 1.00 =	102.31
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	336.18

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-MB

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF	6.39	x 0.01 =	0.06
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF	13.09	x 0.0003 =	0.00
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.07

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316057

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-1

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 8-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316062

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0206030-8

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	2850.55	x 1.00 =	2850.55
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	2850.55

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

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CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316058

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-10

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:12

Water Sample Prep: SEPF (BEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	726.82	x 1.00 =	726.82
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	726.82

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316061

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-12

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD	288.78	x 1.00 =	288.78
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	288.78

TEF* - Toxicity Equivalent Factors from Hawe et al.,ToxSci 89,4-30, 2006.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316074

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-14

Sample wt/vol: 1.00 g / L L Lab File ID: 8290006ES:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316060

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-17

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316059

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-21

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Water Lab Sample ID: 0208030-MB

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

ORGANIC DATA QUALIFIERS

ND	The compound was not detected at or above the associated numerical value.
U	This compound was "not-detected" or it was detected in a blank at a similar level.
R	Unusable result; compound may or may not be present in the sample.
J	Quantitation is estimated due to limitations identified during the quality assurance review (data validation).
E	Quantitation is estimated due to limitations identified during the quality assurance review (data validation).
UJ	This compound was analyzed for but was not detected. The associated detection limit is probably higher due to a low bias identified during the quality assurance review.

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
~~057~~ B1605

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q	
75-71-8	Dichlorodifluoromethane	2000	U	
74-87-3	Chloromethane	2000	U	
75-01-4	Vinyl chloride	480	~~JD~~	
74-83-9	Bromomethane	2000	U	
75-00-3	Chloroethane	2000	U	
75-69-4	Trichlorofluoromethane	2000	U	
75-35-4	1,1-Dichloroethene	2000	U	
67-64-1	Acetone	2000	U	
79-20-9	Methyl Acetate	2000	U	
75-15-0	Carbon disulfide	2000	U	
1634-04-4	Methyl Tert-butyl ether	2000	U	
75-09-2	Methylene Chloride	2000	U	
156-60-5	Trans-1,2-dichloroethene	2000	U	
75-34-3	1,1-Dichloroethane	2000	U	
78-93-3	2-Butanone	2000	U	
594-20-7	Propane, 2,2-dichloro-	2000	U	
540-59-0	cis-1,2-Dichloroethene	21000	~~D~~	J
67-66-3	Chloroform	2000	U	
74-97-5	Bromochloromethane	2000	U	
110-82-7	Cyclohexane	2000	U	
71-55-6	1,1,1,-Trichloroethane	2000	U	
56-23-5	Carbon tetrachloride	2000	U	
563-58-6	1,1-Dichloropropene	2000	U	
71-43-2	Benzene	2000	U	
75-34-3	1,2-Dichloroethane	2000	U	
108-87-2	Methylcyclohexane	2000	U	
127-18-4	Trichloroethene	10000	~~D~~	J
78-87-5	1,2-Dichloropropane	2000	U	
108-10-1	4-Methyl-2-pentanone	2000	U	
74-95-3	Dibromomethane	2000	U	
75-27-4	Bromodichloromethane	2000	U	
591-78-6	2-Hexanone	2000	U	
108-88-3	Toluene	2000	U	
71-55-6	1,1,2-Trichloroethane	2000	U	
127-18-4	Tetrachloroethylene	220000	~~ED~~	J
142-28-9	1,3-Dichloropropane	2000	U	
124-48-1	Dibromochloromethane	2000	U	
106-93-4	1,2-Dibromoethane	2000	U	
108-90-7	Chlorobenzene	2000	U	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	UR
95-49-8	2-Chlorotoluene	2000	UR
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	UR
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

~~057~~ — B16057d1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110804.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20000	U
74-87-3	Chloromethane	20000	U
75-01-4	Vinyl chloride	20000	U
74-83-9	Bromomethane	20000	U
75-00-3	Chloroethane	20000	U
75-69-4	Trichlorofluoromethane	20000	U
75-35-4	1,1-Dichloroethene	20000	U
67-64-1	Acetone	20000	U
79-20-9	Methyl Acetate	20000	U
75-15-0	Carbon disulfide	20000	U
75-09-2	Methylene Chloride	20000 ~~3600~~	~~JD~~ u
156-60-5	Trans-1,2-dichloroethene	20000	U
75-34-3	1,1-Dichloroethane	20000	U
78-93-3	2-Butanone	20000	U
594-20-7	Propane, 2,2-dichloro-	20000	U
540-59-0	cis-1,2-Dichloroethene	19000	J~~D~~
67-66-3	Chloroform	20000	U
74-97-5	Bromochloromethane	20000	U
110-82-7	Cyclohexane	20000	U
71-55-6	1,1,1,-Trichloroethane	20000	U
56-23-5	Carbon tetrachloride	20000	U
563-58-6	1,1-Dichloropropene	20000	U
71-43-2	Benzene	20000	U
75-34-3	1,2-Dichloroethane	20000	U
108-87-2	Methylcyclohexane	20000	U
127-18-4	Trichloroethene	28000	~~D~~ u
78-87-5	1,2-Dichloropropane	20000	U
108-10-1	4-Methyl-2-pentanone	20000	U
74-95-3	Dibromomethane	20000	U
75-27-4	Bromodichloromethane	20000	U
591-78-6	2-Hexanone	20000	U
108-88-3	Toluene	20000	U
71-55-6	1,1,2-Trichloroethane	20000	U
127-18-4	Tetrachloroethylene	160000	~~D~~ J
142-28-9	1,3-Dichloropropane	20000	U
124-48-1	Dibromochloromethane	120000	~~D~~ J
106-93-4	1,2-Dibromoethane	20000	U
108-90-7	Chlorobenzene	20000	U
100-41-4	Ethylbenzene	20000	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110804.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
630-20-6	1,1,1,2-Tetrachloroethane	20000	U
106-42-3	m/p-Xylene	20000	U
95-47-6	o-Xylene	20000	U
100-42-5	Styrene	20000	U
75-25-2	Bromoform	20000	U
98-82-8	Isopropylbenzene	20000	U
108-86-1	Bromobenzene	20000	U
79-34-5	1,1,2,2-Tetrachloroethane	20000	U
103-65-1	n-Propylbenzene	20000	U
96-18-4	1,2,3-Trichloropropane	20000	U
95-49-8	2-Chlorotoluene	20000	U
108-67-8	1,3,5-Trimethylbenzene	20000	U
106-43-4	4-Chlorotoluene	20000	U
135-98-8	sec-Butylbenzene	20000	U
95-63-6	1,2,4-Trimethylbenzene	20000	U
98-06-6	tert-Butylbenzene	20000	U
541-73-1	1,3-Dichlorobenzene	20000	U
49-87-6	p-Isopropyltoluene	20000	U
105-51-8	n-Butylbenzene	20000	U
106-46-7	1,4-Dichlorobenzene	20000	U
95-50-1	1,2-Dichlorobenzene	20000	U
96-12-8	1,2-Dibromo-3-chloropropane	20000	U
120-82-1	1,2,4-Trichlorobenzene	20000	U
87-68-3	Hexachlorobutadiene	20000	U
91-20-3	Naphthalene	20000	U
87-61-6	1,2,3-Trichlorobenzene	20000	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 100uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100812.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl chloride	30	J~~D~~
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
79-20-9	Methyl Acetate	200	U
75-15-0	Carbon disulfide	200	U
1634-04-4	Methyl Tert-butyl ether	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	Trans-1,2-dichloroethene	96	J~~D~~
75-34-3	1,1-Dichloroethane	200	U
78-93-3	2-Butanone	200	U
594-20-7	Propane, 2,2-dichloro-	200	U
540-59-0	cis-1,2-Dichloroethene	1100	~~D~~ J
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
110-82-7	Cyclohexane	200	U
71-55-6	1,1,1,-Trichloroethane	200	U
56-23-5	Carbon tetrachloride	200	U
563-58-6	1,1-Dichloropropene	200	U
71-43-2	Benzene	200	U
75-34-3	1,2-Dichloroethane	200	U
108-87-2	Methylcyclohexane	100	J~~D~~
127-18-4	Trichloroethene	23000	~~ED~~ J
78-87-5	1,2-Dichloropropane	200	U
108-10-1	4-Methyl-2-pentanone	200	U
74-95-3	Dibromomethane	200	U
75-27-4	Bromodichloromethane	200	U
591-78-6	2-Hexanone	200	U
108-88-3	Toluene	200	U
71-55-6	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethylene	4400	~~D J~~ U
142-28-9	1,3-Dichloropropane	200	U
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 100uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100812.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	28	J~~D~~
630-20-6	1,1,1,2-Tetrachloroethane	200	U
106-42-3	m/p-Xylene	96	J~~D~~
95-47-6	o-Xylene	56	J~~D~~
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
98-82-8	Isopropylbenzene	200	U
108-86-1	Bromobenzene	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
103-65-1	n-Propylbenzene	200	U
96-18-4	1,2,3-Trichloropropane	200	U
95-49-8	2-Chlorotoluene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
106-43-4	4-Chlorotoluene	200	U
135-98-8	sec-Butylbenzene	200	U
95-63-6	1,2,4-Trimethylbenzene	200	U
98-06-6	tert-Butylbenzene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
49-87-6	p-Isopropyltoluene	200	U
105-51-8	n-Butylbenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200 ~~23~~	~~JD~~ U
87-61-6	1,2,3-Trichlorobenzene	200	U

Resubm. Hat

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058 dL

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100820.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1500	J~~D~~
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	22000	~~D~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	15000	~~D~~ u
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100820.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	UR
95-49-8	2-Chlorotoluene	2000	UR
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	UR
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100811.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	4 ~~0~~	U
74-87-3	Chloromethane	4 ~~1~~	~~BU~~
75-01-4	Vinyl chloride	2	J
74-83-9	Bromomethane	4 ~~0~~	U
75-00-3	Chloroethane	~~0~~	U
75-69-4	Trichlorofluoromethane	~~0~~	U
75-35-4	1,1-Dichloroethene	~~0~~	U
67-64-1	Acetone	6	J
79-20-9	Methyl Acetate	4 ~~0~~	U
75-15-0	Carbon disulfide	4 ~~0~~	U
1634-04-4	Methyl Tert-butyl ether	12	J
75-09-2	Methylene Chloride	4	U
156-60-5	Trans-1,2-dichloroethene	4 ~~0~~	U
75-34-3	1,1-Dichloroethane	4 ~~0~~	U
78-93-3	2-Butanone	~~1~~	U
594-20-7	Propane, 2,2-dichloro-	~~0~~	U
540-59-0	cis-1,2-Dichloroethene	26	J
67-66-3	Chloroform	2	J
74-97-5	Bromochloromethane	4 ~~0~~	U
110-82-7	Cyclohexane	~~0~~	U
71-55-6	1,1,1,-Trichloroethane	~~0~~	U
56-23-5	Carbon tetrachloride	~~0~~	U
563-58-6	1,1-Dichloropropene	~~0~~	U
71-43-2	Benzene	~~0~~	U
75-34-3	1,2-Dichloroethane	~~0~~	U
108-87-2	Methylcyclohexane	~~0~~	U
127-18-4	Trichloroethene	21	J
78-87-5	1,2-Dichloropropane	4 ~~0~~	U
108-10-1	4-Methyl-2-pentanone	~~0~~	U
74-95-3	Dibromomethane	~~0~~	U
75-27-4	Bromodichloromethane	~~0~~	U
591-78-6	2-Hexanone	~~0~~	U
108-88-3	Toluene	4 ~~0~~	U
71-55-6	1,1,2-Trichloroethane	4 ~~0~~	U
127-18-4	Tetrachloroethylene	730	~~E~~J
142-28-9	1,3-Dichloropropane	4 ~~0~~	U
124-48-1	Dibromochloromethane	560	~~E~~J
106-93-4	1,2-Dibromoethane	4 ~~0~~	U
108-90-7	Chlorobenzene	4 ~~0~~	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100811.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4 ~~0~~	U
630-20-6	1,1,1,2-Tetrachloroethane	~~0~~	U
106-42-3	m/p-Xylene	~~0~~	U
95-47-6	o-Xylene	~~0~~	U
100-42-5	Styrene	~~0~~	U
75-25-2	Bromoform	~~0~~	U
98-82-8	Isopropylbenzene	~~0~~	U
108-86-1	Bromobenzene	~~0~~	U
79-34-5	1,1,2,2-Tetrachloroethane	~~0~~	U
103-65-1	n-Propylbenzene	~~0~~	U
96-18-4	1,2,3-Trichloropropane	~~0~~	U
95-49-8	2-Chlorotoluene	~~0~~	U
108-67-8	1,3,5-Trimethylbenzene	~~0~~	U
106-43-4	4-Chlorotoluene	~~0~~	U
135-98-8	sec-Butylbenzene	~~0~~	U
95-63-6	1,2,4-Trimethylbenzene	~~0~~	U
98-06-6	tert-Butylbenzene	~~0~~	U
541-73-1	1,3-Dichlorobenzene	~~0~~	U
49-87-6	p-Isopropyltoluene	~~0~~	U
105-51-8	n-Butylbenzene	~~0~~	U
106-46-7	1,4-Dichlorobenzene	~~0~~	U
95-50-1	1,2-Dichlorobenzene	~~0~~	U
96-12-8	1,2-Dibromo-3-chloropropane	~~0~~	U
120-82-1	1,2,4-Trichlorobenzene	~~0~~	U
87-68-3	Hexachlorobutadiene	~~0~~	U
91-20-3	Naphthalene	~~0~~	U
87-61-6	1,2,3-Trichlorobenzene	~~0~~	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059 d1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 100uL

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 03110803.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: ~~1.0~~ 50

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

RL should be 200

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	200 ~~27~~	U
74-87-3	Chloromethane	~~43~~	U
75-01-4	Vinyl chloride	~~10~~	U
74-83-9	Bromomethane	~~87~~	U
75-00-3	Chloroethane	~~12~~	U
75-69-4	Trichlorofluoromethane	~~21~~	U
75-35-4	1,1-Dichloroethene	~~22~~	U
67-64-1	Acetone	~~140~~	U
79-20-9	Methyl Acetate	~~47~~	U J
75-15-0	Carbon disulfide	~~8~~	U
1634-04-4	Methyl Tert-butyl ether	~~14~~	U
75-09-2	Methylene Chloride	200 ~~50~~	U
156-60-5	Trans-1,2-dichloroethene	200 8	U
75-34-3	1,1-Dichloroethane	7	U
78-93-3	2-Butanone	~~51~~	U
594-20-7	Propane, 2,2-dichloro-	~~18~~	U
540-59-0	cis-1,2-Dichloroethene	~~10~~	U
67-66-3	Chloroform	~~11~~	U
74-97-5	Bromochloromethane	~~18~~	U
110-82-7	Cyclohexane	~~13~~	U
71-55-6	1,1,1,-Trichloroethane	~~12~~	U
56-23-5	Carbon tetrachloride	~~9~~	U
563-58-6	1,1-Dichloropropene	~~13~~	U
71-43-2	Benzene	~~9~~	U
75-34-3	1,2-Dichloroethane	~~9~~	U
108-87-2	Methylcyclohexane	~~20~~	U
127-18-4	Trichloroethene	~~32~~	U
78-87-5	1,2-Dichloropropane	~~7~~	U
108-10-1	4-Methyl-2-pentanone	~~44~~	U
74-95-3	Dibromomethane	~~24~~	U
75-27-4	Bromodichloromethane	~~10~~	U
591-78-6	2-Hexanone	~~37~~	U
108-88-3	Toluene	~~25~~	U
71-55-6	1,1,2-Trichloroethane	~~18~~	U
127-18-4	Tetrachloroethylene	590	J
142-28-9	1,3-Dichloropropane	200 ~~23~~	U
124-48-1	Dibromochloromethane	~~11~~	U
106-93-4	1,2-Dibromoethane	~~28~~	U
108-90-7	Chlorobenzene	~~12~~	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 100uL

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 03110803.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: ~~10~~ 50

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	200 ~~14~~	U
630-20-6	1,1,1,2-Tetrachloroethane	~~8~~	U
106-42-3	m/p-Xylene	~~11~~	U
95-47-6	o-Xylene	~~20~~	U
100-42-5	Styrene	~~14~~	U
75-25-2	Bromoform	~~14~~	U
98-82-8	Isopropylbenzene	~~18~~	U
108-86-1	Bromobenzene	~~8~~	U
79-34-5	1,1,2,2-Tetrachloroethane	~~23~~	U
103-65-1	n-Propylbenzene	~~19~~	U
96-18-4	1,2,3-Trichloropropane	~~29~~	U
95-49-8	2-Chlorotoluene	~~44~~	U
108-67-8	1,3,5-Trimethylbenzene	~~14~~	U
106-43-4	4-Chlorotoluene	~~12~~	U
135-98-8	sec-Butylbenzene	~~58~~	U
95-63-6	1,2,4-Trimethylbenzene	~~21~~	U
98-06-6	tert-Butylbenzene	~~29~~	U
541-73-1	1,3-Dichlorobenzene	~~20~~	U
49-87-6	p-Isopropyltoluene	~~52~~	U
105-51-8	n-Butylbenzene	~~66~~	U
106-46-7	1,4-Dichlorobenzene	~~26~~	U
95-50-1	1,2-Dichlorobenzene	~~17~~	U
96-12-8	1,2-Dibromo-3-chloropropane	~~53~~	U
120-82-1	1,2,4-Trichlorobenzene	~~40~~	U
87-68-3	Hexachlorobutadiene	~~71~~	U
91-20-3	Naphthalene	~~33~~	U
87-61-6	1,2,3-Trichlorobenzene	~~28~~	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316060

Lab Name: DAT Laboratory Contract: Loureiro En
Lab Code: Case No.: Centredal SAS No.: SDG No.:
Matrix: (soil/water) WATER Lab Sample ID: 0208030-18 10uL
Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100817.D
Level: (low/med) LOW Date Received: 02/28/08
% Moisture: not dec. Date Analyzed: 03/10/08
GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0
Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1800	J~~D~~
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	2400	~~D~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	40000	~~D J~~ U
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316060

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-18 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100817.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	UR
95-49-8	2-Chlorotoluene	2000	UR
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	UR
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316061

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-6 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100813.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000 ~~520~~	~~JB~~ U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1900	J
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	42000	~~D~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	11000	~~D~~ J
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316061

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-6 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100813.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	240	~~JB~~ J
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

Re Submitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316063

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-4a 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100809.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	4 ~~0~~	~~JB~~ u
75-01-4	Vinyl chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
67-64-1	Acetone	16	J
79-20-9	Methyl Acetate	1	J
75-15-0	Carbon disulfide	4	U
1634-04-4	Methyl Tert-butyl ether	4	U
75-09-2	Methylene Chloride	4 ~~1~~	~~J~~ u
156-60-5	Trans-1,2-dichloroethene	4	U
75-34-3	1,1-Dichloroethane	4	U
78-93-3	2-Butanone	4	U
594-20-7	Propane, 2,2-dichloro-	4	U
540-59-0	cis-1,2-Dichloroethene	4	U
67-66-3	Chloroform	4	U
74-97-5	Bromochloromethane	4	U
110-82-7	Cyclohexane	4	U
71-55-6	1,1,1,-Trichloroethane	4	U
56-23-5	Carbon tetrachloride	4	U
563-58-6	1,1-Dichloropropene	4	U
71-43-2	Benzene	4	U
75-34-3	1,2-Dichloroethane	4	U
108-87-2	Methylcyclohexane	4	U
127-18-4	Trichloroethene	4	U
78-87-5	1,2-Dichloropropane	4	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	4	U
75-27-4	Bromodichloromethane	4	U
591-78-6	2-Hexanone	4	U
108-88-3	Toluene	4	U
71-55-6	1,1,2-Trichloroethane	4	U
127-18-4	Tetrachloroethylene	4 ~~2~~	~~J~~ u
142-28-9	1,3-Dichloropropane	4	U
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316063

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-4a 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100809.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
106-42-3	m/p-Xylene	4	U
95-47-6	o-Xylene	4	U
100-42-5	Styrene	4	U
75-25-2	Bromoform	4	U
98-82-8	Isopropylbenzene	4	U
108-86-1	Bromobenzene	4	U
79-34-5	1,1,2,2-Tetrachloroethane	4	U
103-65-1	n-Propylbenzene	4	U
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	4	U
95-63-6	1,2,4-Trimethylbenzene	4	U
98-06-6	tert-Butylbenzene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
49-87-6	p-Isopropyltoluene	4	U
105-51-8	n-Butylbenzene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	4 ~~0~~	~~J~~ U
87-61-6	1,2,3-Trichlorobenzene	4	U

Re Submitted

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316074 — Equipment Blank

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-7 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100816.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	45000	~~B~~ J
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	2000	U
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	960	~~JB~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2600	~~B~~ J
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	20000	~~B~~ J
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316074

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-7 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100816.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	~~U~~ R
95-49-8	2-Chlorotoluene	2000	~~U~~ R
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	~~U~~ R
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	430	~~JBD~~ J
87-61-6	1,2,3-Trichlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316075

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-16a 5.0m

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100810.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0	U
74-87-3	Chloromethane	0	U
75-01-4	Vinyl chloride	0	U
74-83-9	Bromomethane	0	U
75-00-3	Chloroethane	0	U
75-69-4	Trichlorofluoromethane	0	U
75-35-4	1,1-Dichloroethene	0	U
67-64-1	Acetone	3	U
79-20-9	Methyl Acetate	0	U
75-15-0	Carbon disulfide	0	U
1634-04-4	Methyl Tert-butyl ether	0	U
75-09-2	Methylene Chloride	1	U
156-60-5	Trans-1,2-dichloroethene	0	U
75-34-3	1,1-Dichloroethane	0	U
78-93-3	2-Butanone		U
594-20-7	Propane, 2,2-dichloro-	0	U
540-59-0	cis-1,2-Dichloroethene	0	U
67-66-3	Chloroform	0	U
74-97-5	Bromochloromethane	0	U
110-82-7	Cyclohexane	0	U
71-55-6	1,1,1,-Trichloroethane	0	U
56-23-5	Carbon tetrachloride	0	U
563-58-6	1,1-Dichloropropene	0	U
71-43-2	Benzene	0	U
75-34-3	1,2-Dichloroethane	0	U
108-87-2	Methylcyclohexane	0	U
127-18-4	Trichloroethene	0	U
78-87-5	1,2-Dichloropropane	0	U
108-10-1	4-Methyl-2-pentanone	0	U
74-95-3	Dibromomethane	0	U
75-27-4	Bromodichloromethane	0	U
591-78-6	2-Hexanone	0	U
108-88-3	Toluene	0	U
71-55-6	1,1,2-Trichloroethane	0	U
127-18-4	Tetrachloroethylene	0	U
142-28-9	1,3-Dichloropropane	0	U
124-48-1	Dibromochloromethane	0	U
106-93-4	1,2-Dibromoethane	0	U
108-90-7	Chlorobenzene	0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316075

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-16a 5.0m

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100810.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4 0	U
630-20-6	1,1,1,2-Tetrachloroethane	0	U
106-42-3	m/p-Xylene	0	U
95-47-6	o-Xylene	0	U
100-42-5	Styrene	0	U
75-25-2	Bromoform	0	U
98-82-8	Isopropylbenzene	0	U
108-86-1	Bromobenzene	0	U
79-34-5	1,1,2,2-Tetrachloroethane	0	U
103-65-1	n-Propylbenzene	0	U
96-18-4	1,2,3-Trichloropropane	0	U
95-49-8	2-Chlorotoluene	0	U
108-67-8	1,3,5-Trimethylbenzene	0	U
106-43-4	4-Chlorotoluene	0	U
135-98-8	sec-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	0	U
98-06-6	tert-Butylbenzene	0	U
541-73-1	1,3-Dichlorobenzene	0	U
49-87-6	p-Isopropyltoluene	1	U
105-51-8	n-Butylbenzene	1	U
106-46-7	1,4-Dichlorobenzene	0	U
95-50-1	1,2-Dichlorobenzene	0	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	4 0	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	4 0	~~J~~ 5.5 U
87-61-6	1,2,3-Trichlorobenzene	4 0	U

APPENDIX G

APPENDIX G

Environmental Standards, Inc. Quality Assurance Review Reports

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

Inc. 5000

July 10, 2008

Mr. David N. Scotti, P.G.
Loureiro Engineering Associates, Inc.
100 Northwest Drive
Plainville, CT 06062

Dear Mr. Scotti:

Enclosed is the quality assurance review for the soil samples collected on February 5, 2008, for the Centredale Manor Restoration Project Site in North Providence, Rhode Island. The samples were analyzed for polychlorinated dibenzodioxin/polychlorinated dibenzofuran (PCDD/PCDF) compounds.

The data quality for PCDD/PCDF compounds in the samples was generally acceptable; however, the following qualifications were made.

- The result for 2,3,7,8-TCDD in sample 1314216 was qualified as estimated due to a high surrogate recovery and a high continuing calibration percent difference coupled with increasing instrument sensitivity.

- The results for several PCDD/PCDF compounds in sample 1314216 were qualified as estimated maximum possible concentrations due to out-of-criteria ion abundance ratios.

- All positive results reported with concentrations less than the concentration of the lowest calibration standard were qualified as estimated.

1140 Valley Forge Road P.O. Box 810 Valley Forge, PA 19482 Tel: 610.935.5577 Fax: 610.935.5583 Web: www.envstd.com

If you have any questions or comments, please do not hesitate to call.

Sincerely,

Thomas H. Weinmann
Senior Quality Assurance Chemist

Sincerely,

David R. Blye, CEAC
Quality Assurance Specialist/
Principal

THW/DRB:hm
Enc.

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

Inc. 5000

QUALITY ASSURANCE REVIEW

OF THE SOIL SAMPLES

COLLECTED ON FEBRUARY 5, 2008

FOR CENTREDALE MANOR RESTORATION PROJECT

NORTH PROVIDENCE, RHODE ISLAND

July 10, 2008

Prepared for:

LOUREIRO ENGINEERING ASSOCIATES, INC.
100 Northwest Drive
Plainville, CT 06062

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1140 Valley Forge Road
P.O. Box 810
Valley Forge, PA 19482-0810

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Executive Summary

An analytical quality assurance (QA) review was performed on data generated from the analyses of one soil sample and two associated quality control (QC) samples collected in association with the Centredale Manor Restoration Project Site on February 5, 2008, by Loureiro Engineering Associates Inc. All organic analyses were performed by US EPA Method 8290A. One comprehensive Contract Laboratory Program (CLP)-like raw data package was prepared by the laboratory and was reviewed by Environmental Standards, Inc.

The data quality for polychlorinated dibenzodioxin/polychlorinated dibenzofuran (PCDD/PCDF) compounds in the samples was generally acceptable; however, the following qualifications were made.

- The result for 2,3,7,8-TCDD in sample 1314216 was qualified as estimated due to a high surrogate recovery and a high continuing calibration percent difference coupled with increasing instrument sensitivity.

- The results for several PCDD/PCDF compounds in sample 1314216 were qualified as estimated maximum possible concentrations due to out-of-criteria ion abundance ratios.

- All positive results reported with concentrations less than the concentration of the lowest calibration standard were qualified as estimated.

Introduction

This quality assurance (QA) review is based upon a rigorous examination of data generated from the analyses of one soil sample and its associated quality control (QC) samples collected in association with the Centredale Manor Restoration Project Site in North Providence, Rhode Island, on February 5, 2008, by Loureiro Engineering Associates, Inc. Table 1 presents the field sample number, laboratory sample number, sample delivery group (SDG), matrix, collection date, and parameter analyzed for the samples included in this QA review.

This review has been performed with guidance from the "National Functional Guidelines for Chlorinated Dioxin and Furan Data Review" (US EPA, September 2005).

The reported analytical results are presented on the data tables included in Section 2, "Target Analyte Summary." These data tables were generated from the electronic data deliverables (EDDs) provided by the laboratory and include all final data validation qualifiers and results. Data were examined to determine the usability of the analytical results and compliance relative to requirements specified in SW-846 Method 8290A. In addition, the deliverables prepared according to a Contract Laboratory Program (CLP)-like data package were evaluated. Qualifier codes have been placed in the "Validation Qualifier" field on the data tables where necessary to enable the data user to quickly assess the qualitative and/or quantitative reliability of any result based on the criteria evaluated. Details of this QA review are presented in Section 1 of this report.

This critical QA review identifies data quality issues for specific samples and specific evaluation criteria. The data qualifications allow the data end-user to best understand the usability of the analysis results. Data not qualified in this report should be considered valid based on the QC criteria that have been reviewed.

TABLE 1

SUMMARY OF SAMPLE DATA REVIEWED

CENTERDALE MANOR SITE RESTORATION PROJECT SITE

Loureiro Engineering Associates, Inc. Sample Identification	Laboratory Sample Number	Sample Delivery Group	Matrix	Date of Sample Collection	Parameter Analyzed and Reviewed
1314216	0208008-1	1314216	Soil	2/5/08	D/F
1314216_MS (Matrix Spike)	0208008-1_MS	1314216	Soil	2/5/08	D/F
1314216_MSD (Matrix Spike Duplicate)	0208008-1_MSD	1314216	Soil	2/5/08	D/F

NOTE:

D/F - Polychlorinated Dibenzo-*p*-dioxins and Polychlorinated Dibenzofurans by US EPA Method 8290A. (3 analyses)

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of three soil samples (including QC samples) collected as part of the Centredale Manor Restoration Project Site in North Providence, Rhode Island, were performed by Data/Analytical Technologies Inc. (DAT) of Plain City, Ohio. The samples were analyzed for polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) according to SW-846 Method 8290A. The samples and analyses reviewed are identified on Table 1. The data were presented in one Contract Laboratory Program (CLP)-like data package.

The findings offered in this report are based upon a rigorous review of the following:

- sample holding times
- blank analysis results
- analytical sequence
- laboratory control sample (LCS) recoveries
- matrix spike (MS) and matrix spike duplicate (MSD) accuracy and precision
- qualitative identification
- ion abundance ratios
- sample condition upon laboratory receipt
- initial calibration and continuing calibration verifications (CCVs)
- quantitation of results
- gas chromatogram/mass spectral (GC/MS) tuning and system performance
- retention times (RTs)
- labeled standard recoveries
- signal-to-noise (S/N) ratios

The qualified analytical results for the organic compounds are provided as a summary of the data in Section 2 of this report.

A few issues were identified as detailed below. Issues are presented in two categories – reporting issues and procedural issues. Reporting issues are data deliverable issues that can easily be corrected and that may or may not impact the usability of the reported results. Procedural issues are issues that cannot be corrected and address method compliance issues; these issues may or may not impact the usability of the reported results. One comment is presented. Comments address issues for which the data reviewer has provided information in order to clarify issues relating to the data. The data reviewer has included copies of relevant raw data, QC forms, and other documentation needed to support any changes made to the data package in the Organic Data Support Documentation (Section 3) of this review. The following issues and comment do not necessarily affect data usability (*viz.,* items necessitating data qualification).

Reporting Issues

1. The result and estimated detection limit (EDL)/estimated maximum potential concentration (EMPC) values reported in the laboratory electronic data deliverable (EDD), which was utilized to produce the data tables in Section 2, on the CDD/CDF Sample Data Summary High Resolution forms (Forms 1 DFA-Form I-HR CDD-1), and on the CDD/CDF Total

Homologue Concentration Summary High Resolution forms (Forms 2DF-Form II HRCDD) were reported to a greater precision than is customary (*i.e*., to more significant figures than typically observed). Environmental Standards adjusted the results to three significant figures in the results reported in the "validation result" field of the EDD.

2. The laboratory incorrectly reported the total HpCDD concentration as a sum of four peaks (congeners) on the Form 2HR CDD for the MSD analysis of sample 1314216 (1314216_MSD); there are only two possible HpCDD congeners. The concentration and recovery reported for the individual HpCDD congener (1,2,3,4,7,8,9-HpCDD) in sample 1314216_MSD was not impacted.

3. The laboratory reported Lab Sample IDs of "0208008-**6**_MS" and "0208008-**6**_MSD" on the Method 8290 Dioxins and Furans – Spike Recovery summaries for the MS/MSD analyses performed on sample 1314216. The correct Lab Sample ID for this sample is 0208008-**1**. In addition, the laboratory did not subtract the parent sample background results from the MS/MSD results before calculating the recoveries. The data reviewer edited the MS/MSD summary forms to account for the background concentrations.

<u>Procedural Issue</u>

- The laboratory analyzed a closing continuing calibration verification (CCV) standard on 2/27/08 at 02:57 and observed a high percent difference (%D > 20%) for 2,3,7,8-TCDD. The laboratory reanalyzed the CCV standard (as allowed by SW-846 Method 8290A [Section 7.7.4.4]) and achieved acceptable results for all compounds. The reanalysis of the CCV standard was performed outside of the 12-hour window required by Section 7.7.3 of the method. The laboratory thinks that the high %D observed for 2,3,7,8-TCDD was a result of carryover from the LCS analyzed prior to the CCV standard. The result for 2,3,7,8-TCDD in sample 1314216 has been qualified as estimated in the subsequent Organic Data Qualifiers section due to the high %D and the exceedance of the 12-hour window for the CCV standard reanalysis.

<u>Comment</u>

- In order to be reported as a positive PCDD/PCDF concentration, the two quantitation ions must be present with signal-to-noise (S/N) ratios of at least 2.5 to 1 at the correct retention time; these ions must maximize simultaneously (within ± 2 seconds); the ion abundance ratio for the two quantitation ions must fall within the SW-846 Method 8290A acceptance limits (Table 8 of Method 8290A); and the GC peaks must appear within the retention time window for a given homologous series (class of isomers; *e.g., penta d*ioxins) established prior to the analysis. If a peak meets all of these criteria, the result is reported as positive; if a peak meets none of the criteria, the result is reported "ND" at the calculated EDL (Method 8290A, Section 7.9.5). According to SW-846 Method 8290A (Method 8290A, Section 7.9.5.2), when all qualitative criteria are met except the ion abundance ratio criteria or when a peak representing a polychlorinated diphenyl ether (PCDPE) has been detected, an estimated maximum possible concentration (EMPC) is reported. The laboratory reported

several results as EMPC results. For the 2,3,7,8-PCDD/PCDFs, the laboratory reported the EMPC values (calculated in the same manner as positive results) in the detection limit field in the EDD without the "U" qualifier in the qualifier field associated with the "ND" result. The laboratory did not include EMPC results in the reported total CDD/CDF homologue results. Qualification of data due to ion abundance ratios outside of acceptance criteria is addressed in the subsequent Organic Data Qualifiers section.

With respect to data usability, the principal areas of concern are a high surrogate recovery, a calibration issue, out-of-criteria ion abundance ratios, and quantitation below the concentration of the lowest calibration standard. Based on a rigorous review of the data provided, the following organic data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Organic Data Qualifiers

- The reported positive result for 2,3,7,8-TCDD in sample 1314216 should be considered estimated and has been flagged "J" on the data tables. A high recovery (> 135%) was observed for the labeled surrogate compound $37C_{12}$-2,3,7,8-TCDD in the analysis of this sample; the high recovery was confirmed in the MS/MSD analyses.

- The reported positive result for 2,3,7,8-TCDD in sample 1314216 should be considered estimated and has been flagged "J" on the data tables. A high %D (> 20%), coupled with increasing instrument sensitivity, was observed for 2,3,7,8-TCDD in the associated CCV standard.

- Results reported as "EMPC" by the laboratory due to out-of-criteria ion abundance ratios (see Comment) have been flagged "EMPC" on the data tables.

- Reported positive total homologue results summed from qualified PCDD/PCDF isomer concentrations qualified as estimated ("J") should be considered estimated and have been flagged "J" on the data tables.

- Reported positive results less than the concentration of the lowest calibration standard should be considered estimated and have been flagged "J" on the data tables.

A complete support documentation of this organic QA review is provided in Section 3 of this report.

B. Conclusions

This QA review has identified several aspects of the data that required qualification. Overall, the majority of the analytical data is acceptable for use as reported by the laboratory. A portion of the results was qualified due to a high surrogate recovery, a calibration issue, out-of-criteria ion abundance ratios, and quantitation below the concentration of the lowest calibration standard. In order to use any of the data, the data user should understand the qualifications and limitations as specified in this QA review. The Laboratory Case Narrative and Project Chain-of-Custody Record are presented in Section 4 of this report.

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Date: 7/10/08

SECTION 2

TARGET ANALYTE SUMMARY

ORGANIC DATA QUALIFIERS

ND The compound was not detected at or above the associated numerical value.

U This compound should be considered “not-detected” because it was detected in a blank at a similar level.

R Unusable result; compound may or may not be present in the sample.

J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).

UJ This compound was analyzed for but was not detected. The associated detection limit is probably higher due to a low bias identified during the quality assurance review.

EMPC Chromatographic peaks are present in the expected retention time window; however, the peaks do not meet all of the conditions required for a positive identification. The reported result represents the estimated maximum possible concentration if the PCDD/PCDF was present.

Sample Idenitfication	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Lab Identification	EDL/EMPC	%Moisture	Validation Result	Validation Qualifier
1314216	2,3,7,8-TCDF	51207-31-9			ng/Kg	0208008-1	6.74	17.7	6.74	EMPC
1314216	1,2,3,7,8-PeCDF	57117-41-6		U	ng/Kg	0208008-1	0.50	17.7		U
1314216	2,3,4,7,8-PeCDF	57117-31-4	10.00		ng/Kg	0208008-1	0.49	17.7	10.0	
1314216	1,2,3,4,7,8-HxCDF	70648-26-9		U	ng/Kg	0208008-1	1.07	17.7		U
1314216	1,2,3,6,7,8-HxCDF	57117-44-9		U	ng/Kg	0208008-1	0.98	17.7		U
1314216	2,3,4,6,7,8-HxCDF	60851-34-5		U	ng/Kg	0208008-1	1.14	17.7		U
1314216	1,2,3,7,8,9-HxCDF	72918-21-9		U	ng/Kg	0208008-1	1.27	17.7		U
1314216	1,2,3,4,6,7,8-HpCDF	67562-39-4			ng/Kg	0208008-1	5.14	17.7	5.14	EMPC
1314216	1,2,3,4,7,8,9-HpCDF	55673-89-7	2.16	J	ng/Kg	0208008-1	0.22	17.7	2.16	J
1314216	OCDF	39001-02-0	11.28		ng/Kg	0208008-1	0.12	17.7	11.3	
1314216	2,3,7,8-TCDD	1746-01-6	39881.78		ng/Kg	0208008-1	0.05	17.7	39900	J
1314216	1,2,3,7,8-PeCDD	40321-76-4			ng/Kg	0208008-1	25.64	17.7	25.6	EMPC
1314216	1,2,3,4,7,8-HxCDD	39227-28-6		U	ng/Kg	0208008-1	0.57	17.7		U
1314216	1,2,3,6,7,8-HxCDD	57653-85-7	15.74		ng/Kg	0208008-1	0.56	17.7	15.7	
1314216	1,2,3,7,8,9-HxCDD	19408-74-3			ng/Kg	0208008-1	8.52	17.7	8.52	EMPC
1314216	1,2,3,4,6,7,8-HpCDD	35822-46-9			ng/Kg	0208008-1	17.23	17.7	17.2	EMPC
1314216	OCDD	3268-87-9	200.99		ng/Kg	0208008-1	1.80	17.7	201	
1314216	Total TCDD	41903-57-5	40241.47		ng/Kg	0208008-1	0.49	17.7	40200	J
1314216	Total PeCDD	36088-22-9	63.13		ng/Kg	0208008-1	25.64	17.7	63.1	
1314216	Total HxCDD	34465-46-8	90.28		ng/Kg	0208008-1	8.52	17.7	90.3	
1314216	Total HpCDD	37871-00-4	17.72		ng/Kg	0208008-1	17.23	17.7	17.7	
1314216	Total TCDF	55722-27-5	102.59		ng/Kg	0208008-1	6.74	17.7	102	
1314216	Total PeCDF	30402-15-4	699.49		ng/Kg	0208008-1	4.79	17.7	699	
1314216	Total HxCDF	55684-94-1	755.82		ng/Kg	0208008-1	10.72	17.7	756	
1314216	Total HpCDF	38998-75-3	2.16		ng/Kg	0208008-1	5.14	17.7	2.16	J

SECTION 3

ORGANIC DATA SUPPORT DOCUMENTATION

Organic Analyses Support Documentation

Environmental Standards Project Name: Centerdale
Sample Collection Dates: 2/5/08
Job Number: 2008 5078
Project Manager: Kyle Elay
Laboratory: DAT

Reviewed By: THW
Approved By: KCE
Completion Date: 7/8/08

Applicable Sample No's.: ☑ Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab. Control No.
1314216	

Deliverables: CLP ☐ Tier I ☑ Tier II ☐ Limited ☐ Other

The following table indicates criteria which were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail (Check (✓) If Yes or Footnote Letter for Comments Below)				Problems Identified (Check (✓) If Yes or Footnote Number for Comments Below)				Support Documentation Attachments (Check (✓) If Yes — or Identify Attachment No.)			
	VOA Method	BNA Method	PEST / PCB Method	Other Method(s) 8260A	VOA Method	BNA Method	PEST / PCB Method	Other Method(s) 8290A	VOA Method	BNA Method	PEST / PCB Method	Other Method(s) 8260A
Holding Times				✓								✓
Blank Analysis Results: Target Compounds				✓								✓
Blank Analysis Results: TICs												
System Mntr. Cmpds. &/or Surrogate Spike Rslts.				✓				✓				✓
Matrix Spike / Matrix Spike Duplicate Results				✓								✓
Blank Spike Results				✓								✓
Duplicate Analysis Results ☐ Field ☐ Lab												
Qualitative Identificotion: Target Compounds				✓								✓
Qualitative Identification: TICs												
DFTPP & BFB Mass Tuning												
GC Instrument Performance				✓								✓
Initial Calibrations				✓								✓
Continuing Calibrations				✓								✓
Quantitation of Results				✓				✓				✓
DDT / Endrin Breakdown												
Surrogate Retention Time Shifts												
Internal Standards Performance												
Resolution Check Standards												
Analytical Sequence				✓								✓
Florisil Cartridge Check & GPC Calibration												
GC Column Agreement												
Others: condition on receipt				✓								✓

Comments:

BLANK ANALYSIS RESULTS FOR TARGET ORGANIC COMPOUNDS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (units)	Qualification Limit 5x	Qualification Limit 10x
D/F	S	MB	0208008-MB	none			

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

Aq. = Aqueous; S = Solid

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Rinse Blank; FB = Field Blank
IB = Instrument Blank; SB = Storage Blank

* = Inferred from instrument printouts and/or supporting data; mass spectra not provided.

+ = Contaminant observed on one column only.

Notes: _____

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1314216

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1

QC Code: N

Sample wt/vol: 11.8 g / L g Lab File ID: 0208008AS:5

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (uL) % Solids/Lipids 82.3% Date Analyzed: 2/26/2008 23:37

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) ng/Kg

TARGET ANALYTE		PEAK RT	ION RATIO	#	CONCENTRATION	Q	EMPC/EDL	
2,3,7,8-TCDF		27:50	0.96	*			6.74	EMPC
1,2,3,7,8-PeCDF						U	0.50	
2,3,4,7,8-PeCDF		32:59	1.45		10.00		0.49	
1,2,3,4,7,8-HxCDF						U	1.07	
1,2,3,6,7,8-HxCDF						U	0.98	
2,3,4,6,7,8-HxCDF						U	1.14	
1,2,3,7,8,9-HxCDF						U	1.27	
1,2,3,4,6,7,8-HpCDF		40:57	1.28	*			5.14	EMPC
1,2,3,4,7,8,9-HpCDF		42:17	0.89		2.16	J	0.22	
OCDF		44:46	0.95		11.28		0.12	
2,3,7,8-TCDD		28:37	0.80		39881.78	J	0.05	
1,2,3,7,8-PeCDD		33:27	1.93	*			25.64	EMPC
1,2,3,4,7,8-HxCDD						U	0.57	
1,2,3,6,7,8-HxCDD		38:22	1.06		15.74		0.56	
1,2,3,7,8,9-HxCDD		38:45	0.92	*			8.52	EMPC
1,2,3,4,6,7,8-HpCDD		41:54	1.37	*			17.23	EMPC
OCDD		44:38	0.86		200.99		1.80	

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO	#	ION RATIO LIMITS LOW	HIGH	% REC	#	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:49	0.79		0.65	0.89	89		40	135
13C-1,2,3,7,8-PeCDF	IS	32:09	1.61		1.32	1.78	84		40	135
13C-1,2,3,6,7,8-HxCDF	IS	37:13	0.50		0.43	0.59	62		40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:56	0.41		0.37	0.51	68		40	135
13C-2,3,7,8-TCDD	IS	28:36	0.80		0.65	0.89	91		40	135
13C-1,2,3,7,8-PeCDD	IS	33:25	1.58		1.32	1.78	81		40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:21	1.27		1.05	1.43	64		40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:54	1.09		0.88	1.2	69		40	135
13C-OCDD	IS	44:38	0.87		0.76	1.02	58		40	135
37C12-2,3,7,8-TCDD	Surr	28:37	1.00		1	1	146	*	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:59	1.56		1.32	1.78	100		40	135
13C-1,2,3,4,7,8-HxCDF	Surr	37:04	0.50		0.43	0.59	98		40	135
13C-1,2,3,4,7,8-HxCDD	Surr	38:14	1.27		1.05	1.43	100		40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:17	0.44		0.37	0.51	99		40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	39:02	0.57		0.43	0.59	75		40	135
13C-1,2,3,4-TCDD	RS	28:25	0.80		0.65	0.89	NA		NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:44	1.26		1.05	1.43	NA		NA	NA

Column to be used to flag values outside QC limits.

fm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1314216

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1

Sample wt/vol: 11.81 g / L g Lab File ID: 0208008AS:5

Water Sample Prep: _____ (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 82.3% Date Analyzed: 26-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF	10.00	x 0.30 =	3.00
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF	2.16	x 0.01 =	0.02
OCDF	11.28	x 0.0003 =	0.00
2,3,7,8-TCDD	39881.78	x 1.00 =	39881.78
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD	15.74	x 0.10 =	1.57
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD	200.99	x 0.0003 =	0.06
		Total =	39886.44

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

frm18290Arev2

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1314216

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1

Sample wt/vol: 11.81 g / L g Lab File ID: 0208008AS:5

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 82% Date Analyzed: 26-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	3	40241.47	J	0.49
Total PeCDD	2	63.13		25.64
Total HxCDD	3	90.28		8.52
Total HpCDD	1	17.72		17.23
FURANS				
Total TCDF	7	102.59		6.74
Total PeCDF	5	699.49		4.79
Total HxCDF	4	755.82		10.72
Total HpCDF	1	2.16	J	5.14

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

Run #11 Filename 0208008A S: 5 I: 1 Acquired: 26-FEB-08 23:37:22 Processed: 29-FEB-08 10:27:38
Run: A829001 Analyte: 0208008A Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: 0208008-1 Analyst: ANALYST:CSM Instrument : Autospec
Comments: 1314216 387796.786

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	2,3,7,8-TCDF	1	7.790e+04	0.96	n	27:50	65.525	6.552	1.542	-	n
2	Unk	1,2,3,7,8-PeCDF	0	*	*	n	NotFnd	*	*	4.833	-	n
3	Unk	2,3,4,7,8-PeCDF	1	9.009e+04	1.45	y	32:59	97.171	48.585	4.744	-	n
4	Unk	1,2,3,4,7,8-HxCDF	0	*	*	n	NotFnd	*	*	10.39	-	y
5	Unk	1,2,3,6,7,8-HxCDF	0	*	*	n	NotFnd	*	*	9.504	-	y
6	Unk	2,3,4,6,7,8-HxCDF	0	*	*	n	NotFnd	*	*	11.06	-	y
7	Unk	1,2,3,7,8,9-HxCDF	0	*	*	n	NotFnd	*	*	12.32	-	y
8	Unk	1,2,3,4,6,7,8-HpCDF	1	3.938e+04	1.28	n	40:57	49.951	0.500	1.744	-	y
9	Unk	1,2,3,4,7,8,9-HpCDF	1	1.354e+04	0.89	y	42:17	20.974	0.210	2.131	-	y
10	Unk	OCDF	1	6.028e+04	0.95	y	44:46	109.609	0.110	1.202	-	n
11	Unk	2,3,7,8-TCDD	1	4.511e+08	0.80	y	28:37	387589.037	387589.	0.487	-	y
12	Unk	1,2,3,7,8-PeCDD	1	1.873e+05	1.93	n	33:27	249.172	124.586	3.308	-	n
13	Unk	1,2,3,4,7,8-HxCDD	0	*	*	n	NotFnd	*	*	5.518	-	n
14	Unk	1,2,3,6,7,8-HxCDD	1	1.124e+05	1.06	y	38:22	152.984	15.298	5.426	-	n
15	Unk	1,2,3,7,8,9-HxCDD	1	6.314e+04	0.92	n	38:45	82.798	8.280	5.228	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	1.122e+05	1.37	n	41:54	167.496	1.675	8.527	-	y
17	Unk	OCDD	1	1.050e+06	0.86	y	44:38	1953.300	1.953	17.45	-	n
18	IS/RT	13C-2,3,7,8-TCDF	1	5.586e+06	0.79	y	27:49	3543.036	-	2.850	88.6	n
19	IS	13C-1,2,3,7,8-PeCDF	1	4.487e+06	1.61	y	32:09	3350.151	-	1.731	83.8	n
20	IS	13C-1,2,3,6,7,8-HxCDF	1	3.336e+06	0.50	y	37:13	2464.306	-	1.146	61.6	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	1	2.480e+06	0.41	y	40:56	2698.943	-	30.32	67.5	n
22	IS	13C-2,3,7,8-TCDD	1	4.320e+06	0.80	y	28:36	3657.461	-	6.511	91.4	n
23	IS	13C-1,2,3,7,8-PeCDD	1	3.022e+06	1.58	y	33:25	3224.383	-	0.821	80.6	n
24	IS	13C-1,2,3,6,7,8-HxCDD	1	2.993e+06	1.27	y	38:21	2563.002	-	0.529	64.1	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	1	3.095e+06	1.09	y	41:54	2774.499	-	6.311	69.4	n
26	IS	13C-OCDD	1	4.692e+06	0.87	y	44:38	4650.960	-	0.645	58.1	n
27	Surr	37C12-2,3,7,8-TCDD	1	1.310e+07	1.00	y	28:37	5857.410	-	0.313	146.4	n
28	Surr	13C-2,3,4,7,8-PeCDF	1	4.241e+06	1.56	y	32:59	4000.232	-	1.985	100.0	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	1	3.112e+06	0.50	y	37:04	3937.659	-	2.317	98.4	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	1	2.718e+06	1.27	y	38:14	4000.140	-	0.909	100.0	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	1	2.103e+06	0.44	y	42:17	3941.684	-	43.37	98.5	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	1	3.182e+06	0.57	y	39:02	2997.729	-	1.461	74.9	n
33	RS	13C-1,2,3,4-TCDD	1	5.662e+06	0.80	y	28:25	32.656	-	-	-	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	1	5.927e+06	1.26	y	38:44	46.096	-	-	-	n
35	Tot	Total Tetra-Furans	7	1.185e+06	0.79	y	24:29	997.006	-	1.542	-	y
36	Tot	Total Tetra-Dioxins	3	4.552e+08	0.77	y	26:50	391084.637	-	0.487	-	y
37	Tot	Total Penta-Furans	5	6.245e+06	1.49	y	29:59	6798.005	-	4.788	-	n
38	Tot	Total Penta-Dioxins	2	4.612e+05	1.60	y	31:53	613.486	-	3.308	-	n
39	Tot	Total Hexa-Furans	4	5.790e+06	1.27	y	35:43	7345.366	-	10.72	-	y
40	Tot	Total Hexa-Dioxins	3	9.164e+05	1.21	y	36:18	877.392	-	3.592	-	n
41	Tot	Total Hepta-Furans	1	1.354e+04	0.89	y	42:17	20.974	-	1.918	-	y
42	Tot	Total Hepta-Dioxins	1	1.153e+05	1.01	y	41:14	172.229	-	8.527	-	y
43	DPE	HxCDPE	-	-			-	-	-	-	-	n
44	DPE	HpCDPE	-	-			-	-	-	-	-	n
45	DPE	OCDPE	-	-			-	-	-	-	-	n
46	DPE	NCDPE	-	-			-	-	-	-	-	n
47	DPE	DCDPE	-	-			-	-	-	-	-	n

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans-Spike Recovery

Client:	Loureio Engineering	**Client Sample:**	1314216_MS
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-~~8~~ MS	**Date Anal:**	2/27/2008
Sample Size	NA Soil	**Moisture**	0.0%
GC-Column	DB-5	**Solids**	100.0% 82.3
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg total	%R	EMPC	EDL	Tox Eq.	Ratio	RT	Flag	
2,3,7,8-TCDF	4160.8	104	102	4.184	416.08	0.78	27:50:00		
1,2,3,7,8-PeCDF	10127.8	101		5.299	506.39	1.52	32:10:00		
2,3,4,7,8-PeCDF	10505.9	105	104	5.201	5252.94	1.52	33:00:00		
1,2,3,4,7,8-HxCDF	10733.5	107		8.950	1073.35	1.19	37:06:00		
1,2,3,6,7,8-HxCDF	9877.0	98.8		8.185	987.70	1.20	37:15:00		
2,3,4,6,7,8-HxCDF	11203.0	112		9.527	1120.30	1.19	38:05:00		
1,2,3,7,8,9-HxCDF	11518.5	115		10.610	1151.85	1.20	39:03:00		
1,2,3,4,6,7,8-HpCDF	9754.9	97.5	97	5.153	97.55	1.03	40:57:00		
1,2,3,4,7,8,9-HpCDF	10081.9	101		6.294	100.82	1.02	42:17:00		
OCDF	20141.8	101	100	3.969	20.14	0.88	44:47:00		
								RPD	
2,3,7,8-TCDD *	239327.94	5983	-3706	3.034	239327.94	0.80	28:37:00		20%
1,2,3,7,8-PeCDD	9928.80	99.3	96.8	10.320	4964.40	1.62	33:26:00		
1,2,3,4,7,8-HxCDD	9030.42	90.3		7.497	903.04	1.24	38:16:00		
1,2,3,6,7,8-HxCDD	9866.82	98.7	97.1	7.372	986.68	1.21	38:22:00		
1,2,3,7,8,9-HxCDD	11161.42	112	111	7.103	1116.14	1.19	38:46:00		
1,2,3,4,6,7,8-HpCDD	9771.82	97.7	96	8.211	97.72	1.03	41:54:00		
OCDD	22441.16	112	102	13.660	22.44	0.86	44:39:00		17%
				Total TEQ	**258145.49**				

Totals	pg total	EDL		Number	Flag
Tetra-Furans	4339.11	8.861	Tetra-Furans	2	
Tetra-Dioxins	6115.34	9.337	Tetra-Dioxins	1	
Penta-Furans	20735.54	7.186	Penta-Furans	4	
Penta-Dioxins	10484.85	15.560	Penta-Dioxins	1	
Hexa-Furans	44961.21	3.315	Hexa-Furans	6	
Hexa-Dioxins	31144.59	4.253	Hexa-Dioxins	6	
Hepta-Furans	21972.15	3.273	Hepta-Furans	3	
Hepta-Dioxins	9614.29	5.295	Hepta-Dioxins	1	

ND = not detected at the detection limit shown

* = QC exceeded

* background conc. >> spike

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Loureio Engineering **Client Sample:** 1314216_MS

Lab Project #: 0208008 1
Lab Sample ID: 0208008-~~0~~_MS

Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	3744	94	40-130	0.79	27:49	
13C-1,2,3,7,8-PeCDF	3412	85	40-130	1.62	32:09	
13C-1,2,3,6,7,8-HxCDF	2358	59	40-130	0.51	37:14	
13C-1,2,3,4,6,7,8-HpCDF	2853	71	40-130	0.40	40:57	
13C-2,3,7,8-TCDD	3664	92	40-130	0.82	34:36	
13C-1,2,3,7,8-PeCDD	3469	87	40-130	1.54	33:25	
13C-1,2,3,6,7,8-HxCDD	2633	66	25-130	1.33	38:22	
13C-1,2,3,4,6,7,8-HpCDD	2861	72	25-130	1.13	41:54	
13C-OCDD	5016	63	25-130	0.88	44:38	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37C12-2,3,7,8-TCDD	5323	133	70-130	1.00	28:37	* no impact
13C-2,3,4,7,8-PeCDF	4170	104	70-130	1.62	32:59	
13C-1,2,3,4,7,8-HxCDF	4108	103	70-130	0.50	37:04	
13C-1,2,3,4,7,8-HxCDD	3829	96	70-130	1.25	38:15	
13C-1,2,3,4,7,8,9-HpCDF	4008	100	70-130	0.40	42:17	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13C12-1,2,3,7,8,9-HxCDF	1618 3236	40 81		39:02	

Recovery Standards			Flag
13C-1,2,3,4-TCDD	50.5	28:24	
13C-1,2,3,7,8,9-HxCDD	63.1	38:44	

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 Dioxins and Furans-Spike Recovery

Client:	Loureio Engineering	**Client Sample:**	1314216_MSD
Client Project:	Centredale Manor	**Date Sampled:**	2/5/2008
		Date Received:	2/6/2008
Lab Project #:	0208008	**Date Ext:**	2/12/2008
Lab Sample ID:	0208008-~~8~~_MSD	**Date Anal:**	2/27/2008
Sample Size	NA Soil	**Moisture**	0.0%
GC-Column	DB-5	**Solids**	100.0% 82.3
Dilution Factor	1	**Analyst:**	CSM

Analytes	pg total	%R	EMPC	EDL	Tox Eq.	Ratio	RT	Flag
2,3,7,8-TCDF	4066.9	102	100	10.810	406.69	0.77	27:51:00	
1,2,3,7,8-PeCDF	9942.2	99.4		13.950	497.11	1.54	32:10:00	
2,3,4,7,8-PeCDF	10132.3	101	100	13.690	5066.15	1.53	33:00:00	
1,2,3,4,7,8-HxCDF	10750.7	108		16.640	1075.07	1.21	37:06:00	
1,2,3,6,7,8-HxCDF	9698.2	97		15.220	969.82	1.21	37:16:00	
2,3,4,6,7,8-HxCDF	11308.2	113		17.720	1130.82	1.19	38:04:00	
1,2,3,7,8,9-HxCDF	11734.6	117		19.740	1173.46	1.20	39:04:00	
1,2,3,4,6,7,8-HpCDF	10109.3	101	100	6.027	101.09	1.02	40:58:00	
1,2,3,4,7,8,9-HpCDF	10873.7	109	108	7.362	108.74	1.04	42:19:00	
OCDF	20496.1	102		4.415	20.50	0.88	44:47:00	
2,3,7,8-TCDD *	291450.95	7286	-2403	5.832	291450.95	0.80	28:38:00	
1,2,3,7,8-PeCDD	10214.12	102	99.6	22.860	5107.06	1.61	33:27:00	
1,2,3,4,7,8-HxCDD	9861.44	98.6		14.670	986.14	1.24	38:15:00	
1,2,3,6,7,8-HxCDD	10013.19	100	98.6	14.430	1001.32	1.22	38:22:00	
1,2,3,7,8,9-HxCDD	11170.88	112	111	13.900	1117.09	1.22	38:46:00	
1,2,3,4,6,7,8-HpCDD	9982.02	99.8	98.1	14.740	99.82	1.04	41:56:00	
OCDD	26713.13	134	124	37.260	26.71	0.98	44:39:00	
				Total TEQ	**310338.53**			

Totals	pg total	EDL		Number	Flag
Tetra-Furans	4339.11	8.861	Tetra-Furans	2	
Tetra-Dioxins	6115.34	9.337	Tetra-Dioxins	1	
Penta-Furans	20735.54	7.186	Penta-Furans	4	
Penta-Dioxins	10484.85	15.560	Penta-Dioxins	1	
Hexa-Furans	44961.21	3.315	Hexa-Furans	6	
Hexa-Dioxins	31144.59	4.253	Hexa-Dioxins	6	
Hepta-Furans	21972.15	3.273	Hepta-Furans	3	
Hepta-Dioxins	9614.29	5.295	Hepta-Dioxins	1	

ND = not detected at the detection limit shown

* = QC exceeded

* background conc. >> spike

Data Analysis Technologies, Inc. 7715 Corporate Blvd. Plain City OH 43064

Method 8290 PCDD/PCDF Analysis

Client: Loureio Engineering **Client Sample:** 1314216_MSD

Lab Project #: 0208008
Lab Sample ID: 0208008-~~0~~1_MSD

Internal Standards	pg	% Recovery	QC Limits	Ratio	RT	Flag
13C-2,3,7,8-TCDF	3310	83	40-130	0.78	27:49	
13C-1,2,3,7,8-PeCDF	3167	79	40-130	1.60	32:09	
13C-1,2,3,6,7,8-HxCDF	2231	56	40-130	0.51	37:15	
13C-1,2,3,4,6,7,8-HpCDF	2522	63	40-130	0.44	40:57	
13C-2,3,7,8-TCDD	3288	82	40-130	0.82	34:36	
13C-1,2,3,7,8-PeCDD	3076	77	40-130	1.54	33:25	
13C-1,2,3,6,7,8-HxCDD	2348	59	25-130	1.33	38:21	
13C-1,2,3,4,6,7,8-HpCDD	2610	65	25-130	1.06	41:55	
13C-OCDD	4549	57	25-130	0.90	44:39	

Surrogate Standards (Type B)	pg	% Recovery	QC Limits		RT	Flag
37C12-2,3,7,8-TCDD	5484	137	70-130	1.00	28:38	* no impact
13C-2,3,4,7,8-PeCDF	4053	101	70-130	1.41	32:59	
13C-1,2,3,4,7,8-HxCDF	4044	101	70-130	0.50	37:05	
13C-1,2,3,4,7,8-HxCDD	4229	106	70-130	1.28	38:14	
13C-1,2,3,4,7,8,9-HpCDF	4039	101	70-130	0.43	42:18	

Alternate Standards (Type B)	pg	% Recovery	QC Limits	RT	Flag
13C12-1,2,3,7,8,9-HxCDF	1649 3299	41 82		39:03	

Recovery Standards			Flag
13C-1,2,3,4-TCDD	50.5	28:24	
13C-1,2,3,7,8,9-HxCDD	63.1	38:44	

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
LAB_SPIKE

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: NA SDG No.: NA

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Soil Lab Sample ID: 0208008-LS

Sample wt/vol: 1 g / L L Lab File ID: 0208008AS:8

Water Sample Prep: _____ (SEPF/SPE) Date Received: _____

Concentrated Extract Volume: 20 (ul) Date Extracted: 2/12/2008

Injection Volume: 2 (uL) % Solids/Lipids 0 Date Analyzed: 02/27/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/g

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	QC LIMITS HIGH
2,3,7,8-TCDF	4000	4242		106		75	158
1,2,3,7,8-PeCDF	10000	10518		105		80	134
2,3,4,7,8-PeCDF	10000	10090		101		68	160
1,2,3,4,7,8-HxCDF	10000	11134		111		72	134
1,2,3,6,7,8-HxCDF	10000	10247		102		84	130
2,3,4,6,7,8-HxCDF	10000	11180		112		70	156
1,2,3,7,8,9-HxCDF	10000	12217		122		78	130
1,2,3,4,6,7,8-HpCDF	10000	10480		105		82	132
1,2,3,4,7,8,9-HpCDF	10000	11461		115		78	138
OCDF	20000	21220		106		63	170
2,3,7,8-TCDD	4000	6115		153		67	158
1,2,3,7,8-PeCDD	10000	10485		105		70	142
1,2,3,4,7,8-HxCDD	10000	10177		102		70	164
1,2,3,6,7,8-HxCDD	10000	10116		101		76	134
1,2,3,7,8,9-HxCDD	10000	10754		108		64	162
1,2,3,4,6,7,8-HpCDD	10000	9614		96		70	140
OCDD	20000	20874		104		78	144

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 0 Outside limits out of 17 total.

frm3diox040505

USEPA

4DF - Form IV - HR CDD
CDD/CDF METHOD BLANK SUMMARY
HIGH RESOLUTION

Sample No.
Method_Blank

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: NA SDG No.: NA

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Soil Lab Sample ID: 0208008-MB

Water Sample Prep: _____ (SEPF/SPE) Lab File ID: 0208008AS:4

Date Extracted: 2/12/2008

Date Analyzed: 2/26/2008

GC Column: JWS-DB-5 ID: 0.25 (mm)

Instrument ID: :Autospec

THIS METHOD BLANK APPLIES TO LABORATORY CONTROL SAMPLES (LCSs)

EPA Sample ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
Method_Blank	0208008-MB	0208008A S:4	2/26/2008
1314216	0208008-1	0208008A S:5	2/26/2008
1314216_MS	0208008-1_MS	0208008A S:6	2/27/2008
1314216_MSD	0208008-1_MSD	0208008A S:7	2/27/2008
LAB_SPIKE	0208008-LS	0208008A S:8	2/27/2008

frm4diox040505

USEPA - 8290

6DFA - Form VI_HR CDD-1
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: NA SDG No.: NA

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: Autospec

Initial Calib. Date(s): 02/26/2008 02/26/2008 File_RRF CAL._A829001

Initial Calib. Times: 1:24 4:44 File_RSD 0208008A

TARGET ANALYTES	RR/RRF CS1_A829001	CS2_A829001	CS3_A829001	CS4_A829001	CS5_A829001	MEAN RR/RRF	≤20 %RSD	QC LIMITS
2,3,7,8-TCDF	0.865	0.846	0.803	0.861	0.881	0.851	3.485	± 20%
1,2,3,7,8-PeCDF	0.788	0.779	0.817	0.830	0.841	0.811	3.266	± 20%
2,3,4,7,8-PeCDF	0.755	0.747	0.833	0.877	0.921	0.826	9.144	± 20%
1,2,3,4,7,8-HxCDF	0.911	0.915	1.046	0.999	1.005	0.975	6.103	± 20%
1,2,3,6,7,8-HxCDF	1.05	1.079	1.130	1.056	1.016	1.066	3.956	± 20%
2,3,4,6,7,8-HxCDF	0.886	0.886	0.989	0.925	0.895	0.916	4.76	± 20%
1,2,3,7,8,9-HxCDF	0.745	0.784	0.848	0.864	0.872	0.822	6.735	± 20%
1,2,3,4,6,7,8-HpCDF	1.184	1.238	1.254	1.339	1.343	1.271	5.39	± 20%
1,2,3,4,7,8,9-HpCDF	0.914	0.932	1.012	1.145	1.202	1.041	12.309	± 20%
OCDF	0.834	0.806	0.972	1.024	1.053	0.938	11.917	± 20%
2,3,7,8-TCDD	1.051	1.056	1.110	1.108	1.064	1.078	2.651	± 20%
1,2,3,7,8-PeCDD	0.948	0.937	1.046	0.998	1.047	0.995	5.215	± 20%
1,2,3,4,7,8-HxCDD	0.938	0.909	0.944	1.002	1.034	0.965	5.291	± 20%
1,2,3,6,7,8-HxCDD	0.996	0.960	1.027	0.978	0.947	0.982	3.22	± 20%
1,2,3,7,8,9-HxCDD	1.048	1.018	1.057	0.996	0.976	1.019	3.375	± 20%
1,2,3,4,6,7,8-HpCDD	0.838	0.840	0.869	0.888	0.892	0.865	2.955	± 20%
OCDD	0.903	0.872	0.903	0.954	0.952	0.917	3.88	± 20%
LABELED COMPOUNDS							≤35	
13C-2,3,7,8-TCDF	1.378	1.376	1.397	1.369	1.442	1.392	2.134	± 35%
13C-1,2,3,7,8-PeCDF	1.109	1.152	1.141	1.179	1.333	1.183	7.421	± 35%
13C-1,2,3,6,7,8-HxCDF	1.098	1.074	1.070	1.180	1.289	1.142	8.148	± 35%
13C-1,2,3,4,6,7,8-HpCDF	0.789	0.771	0.730	0.767	0.818	0.775	4.185	± 35%
13C-2,3,7,8-TCDD	1.007	1.046	1.047	1.037	1.078	1.043	2.42	± 35%
13C-1,2,3,7,8-PeCDD	0.797	0.812	0.790	0.831	0.909	0.828	5.801	± 35%
13C-1,2,3,6,7,8-HxCDD	0.942	0.948	0.937	1.033	1.066	0.985	6.081	± 35%
13C-1,2,3,4,6,7,8-HpCDD	0.941	0.959	0.890	0.948	0.968	0.941	3.22	± 35%
13C-OCDD	0.876	0.902	0.741	0.831	0.904	0.851	8.005	± 35%
37C12-2,3,7,8-TCDD	2.085	2.000	2.118	2.109	2.042	2.071	2.39	± 35%
13C-2,3,4,7,8-PeCDF	0.894	0.873	1.008	0.954	0.996	0.945	6.354	± 35%
13C-1,2,3,4,7,8-HxCDF	1.059	0.945	0.952	0.895	0.887	0.948	7.237	± 35%
13C-1,2,3,4,7,8-HxCDD	0.891	0.835	0.979	0.904	0.932	0.908	5.823	± 35%
13C-1,2,3,4,7,8,9-HpCDF	0.633	0.610	0.696	0.712	0.796	0.689	10.575	± 35%
13C12-1,2,3,7,8,9-HxCDF	0.8	0.804	0.910	0.940	1.023	0.896	10.598	± 35%

frm6diox8290Rev1

USEPA

6DFA - Form VI_HR CDD-2
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: NA SDG No.: NA

TARGET ANALYTES	IONS	CS1_A829001	CS2_A829001	CS3_A829001	CS4_A829001	CS5_A829001	FLAG	QC LIMITS Low	High
2,3,7,8-TCDF	320/322	0.81	0.78	0.87	0.77	0.76		0.65	0.89
1,2,3,7,8-PeCDF	304/306	1.45	1.51	1.52	1.56	1.56		1.32	1.78
2,3,4,7,8-PeCDF	340/342	1.58	1.53	1.45	1.54	1.55		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	1.13	1.14	1.16	1.16	1.16		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.11	1.18	1.16	1.17	1.15		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	1.17	1.14	1.11	1.18	1.17		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	1.09	1.1	1.09	1.18	1.18		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.06	1.01	1.16	1.02	1.02		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	1.07	1.02	1.15	1.02	1.02		0.88	1.20
OCDF	390/392	0.87	0.88	0.92	0.87	0.86		0.76	1.02
2,3,7,8-TCDD	374/376	0.78	0.79	0.71	0.79	0.77		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.52	1.64	1.52	1.57	1.58		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	1.22	1.25	1.16	1.24	1.25		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.25	1.25	1.2	1.25	1.25		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.14	1.22	1.24	1.24	1.23		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	1	1.03	0.99	1.04	1.01		0.88	1.20
OCDD	442/444	0.89	0.86	0.89	0.85	0.85		0.76	1.02
LABELED COMPOUNDS									
13C-2,3,7,8-TCDF	316/318	0.78	0.79	0.79	0.78	0.8		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.61	1.59	1.7	1.56	1.59		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	0.52	0.51	0.49	0.51	0.51		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.43	0.43	0.42	0.42	0.44		0.37	0.51
13C-2,3,7,8-TCDD	332/334	0.78	0.77	0.75	0.77	0.76		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	1.59	1.55	1.61	1.61	1.55		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	1.34	1.32	1.29	1.3	1.34		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.1	1.12	1.12	1.12	1.07		0.88	1.20
13C-OCDD	470/472	0.88	0.88	0.93	0.89	0.88		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA					NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	1.71	1.62	1.61	1.58	1.59		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.51	0.52	0.52	0.51	0.51		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	1.38	1.35	1.42	1.35	1.33		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.43	0.44	0.46	0.43	0.43		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.49	0.48	0.47	0.49	0.51		0.43	0.59
13C-1,2,3,4-TCDD	332/334	0.77	0.78	0.78	0.81	0.78		0.65	0.89
13C-1,2,3,7,8,9-HxCDD	402/404	1.33	1.34	1.41	1.36	1.35		1.05	1.43

Quality Control (QC) limits represent ± 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration soution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

frm6diox8290Rev1

Run #1 Filename 0208005B S: 8 I: 1 Acquired: 26-FEB-08 01:24:49 Processed: 27-FEB-08 08:33:13
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: CS1_A829001 Analyst: ANALYST:CSM Instrument: Autospec
Comments: CAL._A829001

	Typ	Name	Amount	Resp	RA		RT	RF	RRF		Modified?
0	Unk	2,3,7,8-TCDF	0.50	1.756e+05	0.81	y	27:49	-	0.86	y	n
2	Unk	1,2,3,7,8-PeCDF	2.50	6.441e+05	1.45	y	32:09	-	0.79	y	n
3	Unk	2,3,4,7,8-PeCDF	2.50	6.167e+05	1.58	y	32:59	-	0.75	y	n
4	Unk	1,2,3,4,7,8-HxCDF	2.50	5.247e+05	1.13	y	37:04	-	0.91	y	n
5	Unk	1,2,3,6,7,8-HxCDF	2.50	6.049e+05	1.11	y	37:14	-	1.05	y	n
6	Unk	2,3,4,6,7,8-HxCDF	2.50	5.104e+05	1.17	y	38:01	-	0.89	y	n
7	Unk	1,2,3,7,8,9-HxCDF	2.50	4.287e+05	1.09	y	39:03	-	0.74	y	n
8	Unk	1,2,3,4,6,7,8-HpCDF	2.50	4.898e+05	1.06	y	40:55	-	1.18	y	n
9	Unk	1,2,3,4,7,8,9-HpCDF	2.50	3.782e+05	1.07	y	42:17	-	0.91	y	n
10	Unk	OCDF	5.00	7.664e+05	0.87	y	44:45	-	0.83	y	n
11	Unk	2,3,7,8-TCDD	0.50	1.561e+05	0.78	y	28:38	-	1.05	y	n
12	Unk	1,2,3,7,8-PeCDD	2.50	5.570e+05	1.52	y	33:25	-	0.95	y	n
13	Unk	1,2,3,4,7,8-HxCDD	2.50	4.634e+05	1.22	y	38:12	-	0.94	y	n
14	Unk	1,2,3,6,7,8-HxCDD	2.50	4.920e+05	1.25	y	38:20	-	1.00	y	n
15	Unk	1,2,3,7,8,9-HxCDD	2.50	5.177e+05	1.14	y	38:44	-	1.05	y	n
16	Unk	1,2,3,4,6,7,8-HpCDD	2.50	4.132e+05	1.00	y	41:54	-	0.84	y	n
17	Unk	OCDD	5.00	8.296e+05	0.89	y	44:38	-	0.90	y	n
1	IS/RT	13C-2,3,7,8-TCDF	100.00	4.060e+07	0.78	y	27:48	-	1.38	y	n
19	IS	13C-1,2,3,7,8-PeCDF	100.00	3.268e+07	1.61	y	32:08	-	1.11	y	n
20	IS	13C-1,2,3,6,7,8-HxCDF	100.00	2.303e+07	0.52	y	37:13	-	1.10	y	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	1.655e+07	0.43	y	40:55	-	0.79	y	n
22	IS	13C-2,3,7,8-TCDD	100.00	2.969e+07	0.78	y	28:36	-	1.01	y	n
23	IS	13C-1,2,3,7,8-PeCDD	100.00	2.349e+07	1.59	y	33:24	-	0.80	y	n
24	IS	13C-1,2,3,6,7,8-HxCDD	100.00	1.976e+07	1.34	y	38:18	-	0.94	y	y
25	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	1.973e+07	1.10	y	41:54	-	0.94	y	n
26	IS	13C-OCDD	200.00	3.675e+07	0.88	y	44:37	-	0.88	y	n
27	Surr	37C12-2,3,7,8-TCDD	0.50	3.096e+05	1.00	y	28:37	-	2.09	y	n
28	Surr	13C-2,3,4,7,8-PeCDF	2.50	7.305e+05	1.71	y	32:58	-	0.89	y	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	2.50	6.098e+05	0.51	y	37:03	-	1.06	y	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	2.50	4.399e+05	1.38	y	38:11	-	0.89	y	y
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	2.50	3.124e+05	0.43	y	42:17	-	0.63	y	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	2.50	4.195e+05	0.49	y	39:02	-	0.80	y	n
33	RS	13C-1,2,3,4-TCDD	100.00	2.947e+07	0.77	y	28:24	2.947e+05	-	n	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	2.097e+07	1.33	y	38:43	2.097e+05	-	n	y
35	Tot	Total Tetra-Furans	0.50	1.756e+05	0.81	y	27:49	-	0.86	y	n
36	Tot	Total Tetra-Dioxins	0.50	1.561e+05	0.78	y	28:38	-	1.05	y	n
37	Tot	Total Penta-Furans	5.00	1.261e+06	1.45	y	32:09	-	0.77	y	y
38	Tot	Total Penta-Dioxins	2.50	5.570e+05	1.52	y	33:25	-	0.95	y	n
39	Tot	Total Hexa-Furans	10.00	2.069e+06	1.13	y	37:04	-	0.90	y	y
40	Tot	Total Hexa-Dioxins	5.00	1.473e+06	1.22	y	38:12	-	1.49	y	n
41	Tot	Total Hepta-Furans	5.00	8.681e+05	1.06	y	40:55	-	1.05	y	n
42	Tot	Total Hepta-Dioxins	2.50	4.132e+05	1.00	y	41:54	-	0.84	y	n
43	DPE	HxCDPE	0.50	-			-	-	-	n	n
44	DPE	HpCDPE	0.50	-			-	-	-	n	n
45	DPE	OCDPE	0.50	-			-	-	-	n	n
46	DPE	NCDPE	0.50	-			-	-	-	n	n
47	DPE	DCDPE	0.50	-			-	-	-	n	n

Run #2 Filename 0208005B S: 9 I: 1 Acquired: 26-FEB-08 02:14:49 Processed: 27-FEB-08 08:33:14
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: CS2_A829001 Analyst: ANALYST:CSM Instrument: Autospec
Comments: CAL._A829001

	Typ	Name	Amount	Resp	RA		RT	RF	RRF		Modified?
0	Unk	2,3,7,8-TCDF	1.00	4.898e+05	0.78	y	27:51	-	0.85	y	n
2	Unk	1,2,3,7,8-PeCDF	5.00	1.889e+06	1.51	y	32:10	-	0.78	y	n
3	Unk	2,3,4,7,8-PeCDF	5.00	1.811e+06	1.53	y	33:01	-	0.75	y	n
4	Unk	1,2,3,4,7,8-HxCDF	5.00	1.537e+06	1.14	y	37:05	-	0.91	y	n
5	Unk	1,2,3,6,7,8-HxCDF	5.00	1.812e+06	1.18	y	37:15	-	1.08	y	n
6	Unk	2,3,4,6,7,8-HxCDF	5.00	1.487e+06	1.14	y	38:02	-	0.89	y	n
7	Unk	1,2,3,7,8,9-HxCDF	5.00	1.317e+06	1.10	y	39:03	-	0.78	y	n
8	Unk	1,2,3,4,6,7,8-HpCDF	5.00	1.493e+06	1.01	y	40:56	-	1.24	y	n
9	Unk	1,2,3,4,7,8,9-HpCDF	5.00	1.124e+06	1.02	y	42:18	-	0.93	y	n
10	Unk	OCDF	10.00	2.274e+06	0.88	y	44:46	-	0.81	y	n
11	Unk	2,3,7,8-TCDD	1.00	4.645e+05	0.79	y	28:38	-	1.06	y	n
12	Unk	1,2,3,7,8-PeCDD	5.00	1.602e+06	1.64	y	33:27	-	0.94	y	n
13	Unk	1,2,3,4,7,8-HxCDD	5.00	1.348e+06	1.25	y	38:14	-	0.91	y	n
14	Unk	1,2,3,6,7,8-HxCDD	5.00	1.424e+06	1.25	y	38:20	-	0.96	y	n
15	Unk	1,2,3,7,8,9-HxCDD	5.00	1.509e+06	1.22	y	38:45	-	1.02	y	n
16	Unk	1,2,3,4,6,7,8-HpCDD	5.00	1.259e+06	1.03	y	41:55	-	0.84	y	n
17	Unk	OCDD	10.00	2.460e+06	0.86	y	44:39	-	0.87	y	n
18	IS/RT	13C-2,3,7,8-TCDF	100.00	5.790e+07	0.79	y	27:50	-	1.38	y	n
19	IS	13C-1,2,3,7,8-PeCDF	100.00	4.848e+07	1.59	y	32:10	-	1.15	y	n
20	IS	13C-1,2,3,6,7,8-HxCDF	100.00	3.359e+07	0.51	y	37:14	-	1.07	y	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	2.412e+07	0.43	y	40:55	-	0.77	y	n
22	IS	13C-2,3,7,8-TCDD	100.00	4.399e+07	0.77	y	28:37	-	1.05	y	n
23	IS	13C-1,2,3,7,8-PeCDD	100.00	3.418e+07	1.55	y	33:26	-	0.81	y	n
24	IS	13C-1,2,3,6,7,8-HxCDD	100.00	2.966e+07	1.32	y	38:19	-	0.95	y	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.999e+07	1.12	y	41:54	-	0.96	y	n
26	IS	13C-OCDD	200.00	5.645e+07	0.88	y	44:38	-	0.90	y	n
27	Surr	37C12-2,3,7,8-TCDD	1.00	8.797e+05	1.00	y	28:38	-	2.00	y	n
28	Surr	13C-2,3,4,7,8-PeCDF	5.00	2.116e+06	1.62	y	33:00	-	0.87	y	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	5.00	1.586e+06	0.52	y	37:04	-	0.94	y	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	5.00	1.239e+06	1.35	y	38:12	-	0.84	y	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	5.00	9.147e+05	0.44	y	42:17	-	0.61	y	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	5.00	1.257e+06	0.48	y	39:02	-	0.80	y	n
33	RS	13C-1,2,3,4-TCDD	100.00	4.208e+07	0.78	y	28:25	4.208e+05	-	n	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	3.128e+07	1.34	y	38:44	3.128e+05	-	n	n
35	Tot	Total Tetra-Furans	1.00	4.898e+05	0.78	y	27:51	-	0.85	y	n
36	Tot	Total Tetra-Dioxins	1.00	4.645e+05	0.79	y	28:38	-	1.06	y	n
37	Tot	Total Penta-Furans	10.00	3.701e+06	1.51	y	32:10	-	0.76	y	y
38	Tot	Total Penta-Dioxins	5.00	1.602e+06	1.64	y	33:27	-	0.94	y	n
39	Tot	Total Hexa-Furans	20.00	6.153e+06	1.14	y	37:05	-	0.92	y	y
40	Tot	Total Hexa-Dioxins	10.00	4.281e+06	1.25	y	38:14	-	1.44	y	n
41	Tot	Total Hepta-Furans	10.00	2.616e+06	1.01	y	40:56	-	1.08	y	n
42	Tot	Total Hepta-Dioxins	5.00	1.259e+06	1.03	y	41:55	-	0.84	y	n
43	DPE	HxCDPE	1.00	-			-	-	-	n	n
44	DPE	HpCDPE	1.00	-			-	-	-	n	n
45	DPE	OCDPE	1.00	-			-	-	-	n	n
46	DPE	NCDPE	1.00	-			-	-	-	n	n
47	DPE	DCDPE	1.00	-			-	-	-	n	n

Run #3 Filename 0208005B S: 10 I: 1 Acquired: 26-FEB-08 03:04:46 Processed: 27-FEB-08 08:33:15
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: CS3_A829001 Analyst: ANALYST:CSM Instrument: Autospec
Comments: CAL._A829001

	Typ	Name	Amount	Resp	RA		RT	RF	RRF		Modified?
0	Unk	2,3,7,8-TCDF	5.00	9.405e+04	0.87	y	27:49	-	0.80	y	y
2	Unk	1,2,3,7,8-PeCDF	25.00	3.909e+05	1.52	y	32:09	-	0.82	y	n
3	Unk	2,3,4,7,8-PeCDF	25.00	3.985e+05	1.45	y	33:00	-	0.83	y	n
4	Unk	1,2,3,4,7,8-HxCDF	25.00	3.413e+05	1.16	y	37:05	-	1.05	y	n
5	Unk	1,2,3,6,7,8-HxCDF	25.00	3.688e+05	1.16	y	37:15	-	1.13	y	n
6	Unk	2,3,4,6,7,8-HxCDF	25.00	3.227e+05	1.11	y	38:02	-	0.99	y	n
7	Unk	1,2,3,7,8,9-HxCDF	25.00	2.766e+05	1.09	y	39:03	-	0.85	y	n
8	Unk	1,2,3,4,6,7,8-HpCDF	25.00	2.790e+05	1.16	y	40:56	-	1.25	y	n
9	Unk	1,2,3,4,7,8,9-HpCDF	25.00	2.251e+05	1.15	y	42:18	-	1.01	y	n
10	Unk	OCDF	50.00	4.396e+05	0.92	y	44:45	-	0.97	y	n
11	Unk	2,3,7,8-TCDD	5.00	9.739e+04	0.71	y	28:37	-	1.11	y	n
12	Unk	1,2,3,7,8-PeCDD	25.00	3.461e+05	1.52	y	33:26	-	1.05	y	n
13	Unk	1,2,3,4,7,8-HxCDD	25.00	2.698e+05	1.16	y	38:13	-	0.94	y	n
14	Unk	1,2,3,6,7,8-HxCDD	25.00	2.937e+05	1.20	y	38:20	-	1.03	y	n
15	Unk	1,2,3,7,8,9-HxCDD	25.00	3.022e+05	1.24	y	38:45	-	1.06	y	n
16	Unk	1,2,3,4,6,7,8-HpCDD	25.00	2.361e+05	0.99	y	41:55	-	0.87	y	n
17	Unk	OCDD	50.00	4.082e+05	0.89	y	44:38	-	0.90	y	n
18	IS/RT	13C-2,3,7,8-TCDF	100.00	2.342e+06	0.79	y	27:49	-	1.40	y	n
19	IS	13C-1,2,3,7,8-PeCDF	100.00	1.914e+06	1.70	y	32:09	-	1.14	y	n
20	IS	13C-1,2,3,6,7,8-HxCDF	100.00	1.305e+06	0.49	y	37:14	-	1.07	y	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	8.903e+05	0.42	y	40:55	-	0.73	y	n
22	IS	13C-2,3,7,8-TCDD	100.00	1.755e+06	0.75	y	28:37	-	1.05	y	n
23	IS	13C-1,2,3,7,8-PeCDD	100.00	1.324e+06	1.61	y	33:25	-	0.79	y	n
24	IS	13C-1,2,3,6,7,8-HxCDD	100.00	1.143e+06	1.29	y	38:19	-	0.94	y	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	1.086e+06	1.12	y	41:54	-	0.89	y	n
26	IS	13C-OCDD	200.00	1.809e+06	0.93	y	44:38	-	0.74	y	n
27	Surr	37C12-2,3,7,8-TCDD	5.00	1.859e+05	1.00	y	28:38	-	2.12	y	n
28	Surr	13C-2,3,4,7,8-PeCDF	25.00	4.824e+05	1.61	y	32:59	-	1.01	y	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	25.00	3.106e+05	0.52	y	37:04	-	0.95	y	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	25.00	2.797e+05	1.42	y	38:12	-	0.98	y	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	25.00	1.889e+05	0.46	y	42:17	-	0.70	y	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	25.00	2.777e+05	0.47	y	39:02	-	0.91	y	n
33	RS	13C-1,2,3,4-TCDD	100.00	1.677e+06	0.78	y	28:25	1.677e+04	-	n	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	1.220e+06	1.41	y	38:44	1.220e+04	-	n	n
35	Tot	Total Tetra-Furans	5.00	9.405e+04	0.87	y	27:49	-	0.80	y	y
36	Tot	Total Tetra-Dioxins	5.00	9.739e+04	0.71	y	28:37	-	1.11	y	n
37	Tot	Total Penta-Furans	50.00	7.894e+05	1.52	y	32:09	-	0.83	y	n
38	Tot	Total Penta-Dioxins	25.00	3.461e+05	1.52	y	33:26	-	1.05	y	n
39	Tot	Total Hexa-Furans	100.00	1.309e+06	1.16	y	37:05	-	1.00	y	n
40	Tot	Total Hexa-Dioxins	50.00	8.657e+05	1.16	y	38:13	-	1.51	y	n
41	Tot	Total Hepta-Furans	50.00	5.042e+05	1.16	y	40:56	-	1.13	y	n
42	Tot	Total Hepta-Dioxins	25.00	2.361e+05	0.99	y	41:55	-	0.87	y	n
43	DPE	HxCDPE	5.00	-			-	-	-	n	n
44	DPE	HpCDPE	5.00	-			-	-	-	n	n
45	DPE	OCDPE	5.00	-			-	-	-	n	n
46	DPE	NCDPE	5.00	-			-	-	-	n	n
47	DPE	DCDPE	5.00	-			-	-	-	n	n

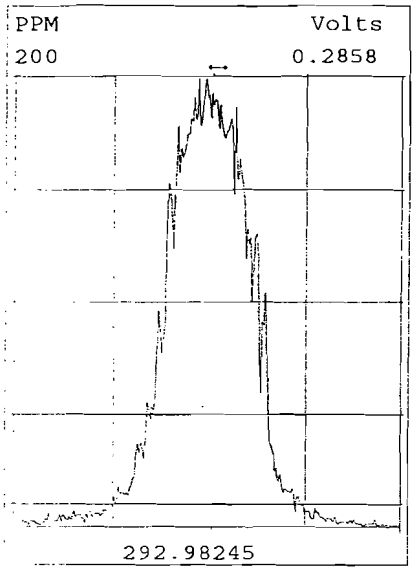
Run #4 Filename 0208005B S: 11 I: 1 Acquired: 26-FEB-08 03:54:46 Processed: 27-FEB-08 08:33:17
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: CS4_A829001 Analyst: ANALYST:CSM Instrument: Autospec
Comments: CAL._A829001

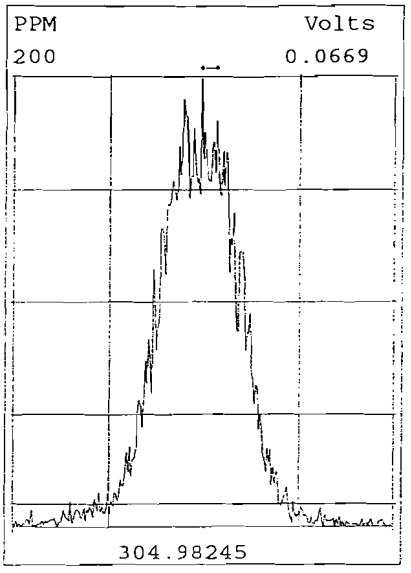
	Typ	Name	Amount	Resp	RA		RT	RF	RRF		Modified?
0	Unk	2,3,7,8-TCDF	50.00	2.329e+06	0.77	y	27:52	-	0.86	y	n
2	Unk	1,2,3,7,8-PeCDF	250.00	9.659e+06	1.56	y	32:11	-	0.83	y	n
3	Unk	2,3,4,7,8-PeCDF	250.00	1.020e+07	1.54	y	33:02	-	0.88	y	n
4	Unk	1,2,3,4,7,8-HxCDF	250.00	8.676e+06	1.16	y	37:05	-	1.00	y	n
5	Unk	1,2,3,6,7,8-HxCDF	250.00	9.171e+06	1.17	y	37:16	-	1.06	y	n
6	Unk	2,3,4,6,7,8-HxCDF	250.00	8.035e+06	1.18	y	38:02	-	0.93	y	n
7	Unk	1,2,3,7,8,9-HxCDF	250.00	7.503e+06	1.18	y	39:04	-	0.86	y	n
8	Unk	1,2,3,4,6,7,8-HpCDF	250.00	7.566e+06	1.02	y	40:57	-	1.34	y	n
9	Unk	1,2,3,4,7,8,9-HpCDF	250.00	6.466e+06	1.02	y	42:18	-	1.14	y	n
10	Unk	OCDF	500.00	1.253e+07	0.87	y	44:46	-	1.02	y	n
11	Unk	2,3,7,8-TCDD	50.00	2.269e+06	0.79	y	28:39	-	1.11	y	n
12	Unk	1,2,3,7,8-PeCDD	250.00	8.183e+06	1.57	y	33:28	-	1.00	y	n
13	Unk	1,2,3,4,7,8-HxCDD	250.00	7.614e+06	1.24	y	38:14	-	1.00	y	n
14	Unk	1,2,3,6,7,8-HxCDD	250.00	7.438e+06	1.25	y	38:22	-	0.98	y	n
15	Unk	1,2,3,7,8,9-HxCDD	250.00	7.574e+06	1.24	y	38:46	-	1.00	y	n
16	Unk	1,2,3,4,6,7,8-HpCDD	250.00	6.194e+06	1.04	y	41:55	-	0.89	y	n
17	Unk	OCDD	500.00	1.167e+07	0.85	y	44:39	-	0.95	y	n
18	IS/RT	13C-2,3,7,8-TCDF	100.00	5.409e+06	0.78	y	27:51	-	1.37	y	n
19	IS	13C-1,2,3,7,8-PeCDF	100.00	4.656e+06	1.56	y	32:11	-	1.18	y	n
20	IS	13C-1,2,3,6,7,8-HxCDF	100.00	3.474e+06	0.51	y	37:15	-	1.18	y	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	2.260e+06	0.42	y	40:56	-	0.77	y	n
22	IS	13C-2,3,7,8-TCDD	100.00	4.096e+06	0.77	y	28:37	-	1.04	y	n
23	IS	13C-1,2,3,7,8-PeCDD	100.00	3.281e+06	1.61	y	33:27	-	0.83	y	n
24	IS	13C-1,2,3,6,7,8-HxCDD	100.00	3.041e+06	1.30	y	38:21	-	1.03	y	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	2.791e+06	1.12	y	41:55	-	0.95	y	n
26	IS	13C-OCDD	200.00	4.894e+06	0.89	y	44:39	-	0.83	y	n
27	Surr	37C12-2,3,7,8-TCDD	50.00	4.319e+06	1.00	y	28:38	-	2.11	y	n
28	Surr	13C-2,3,4,7,8-PeCDF	250.00	1.110e+07	1.58	y	33:01	-	0.95	y	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	250.00	7.776e+06	0.51	y	37:04	-	0.90	y	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	250.00	6.869e+06	1.35	y	38:13	-	0.90	y	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	250.00	4.970e+06	0.43	y	42:18	-	0.71	y	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	250.00	6.919e+06	0.49	y	39:03	-	0.94	y	n
33	RS	13C-1,2,3,4-TCDD	100.00	3.950e+06	0.81	y	28:26	3.950e+04	-	n	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	2.945e+06	1.36	y	38:45	2.945e+04	-	n	n
35	Tot	Total Tetra-Furans	50.00	2.329e+06	0.77	y	27:52	-	0.86	y	n
36	Tot	Total Tetra-Dioxins	50.00	2.269e+06	0.79	y	28:39	-	1.11	y	n
37	Tot	Total Penta-Furans	500.00	1.986e+07	1.56	y	32:11	-	0.85	y	y
38	Tot	Total Penta-Dioxins	250.00	8.183e+06	1.57	y	33:28	-	1.00	y	n
39	Tot	Total Hexa-Furans	1000.00	3.338e+07	1.16	y	37:05	-	0.96	y	n
40	Tot	Total Hexa-Dioxins	500.00	2.263e+07	1.24	y	38:14	-	1.49	y	n
41	Tot	Total Hepta-Furans	500.00	1.403e+07	1.02	y	40:57	-	1.24	y	n
42	Tot	Total Hepta-Dioxins	250.00	6.194e+06	1.04	y	41:55	-	0.89	y	n
43	DPE	HxCDPE	50.00	-			-	-	-	n	n
44	DPE	HpCDPE	50.00	-			-	-	-	n	n
45	DPE	OCDPE	50.00	-			-	-	-	n	n
46	DPE	NCDPE	50.00	-			-	-	-	n	n
47	DPE	DCDPE	50.00	-			-	-	-	n	n

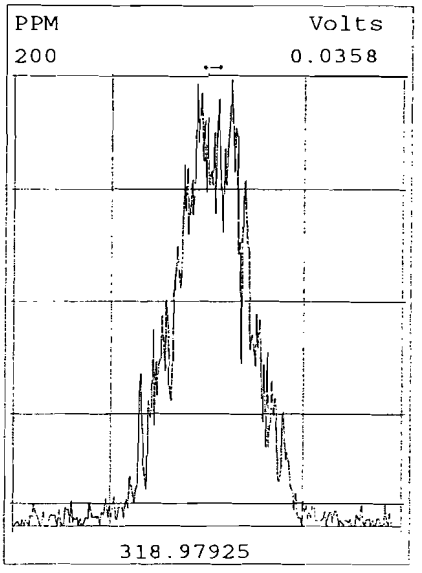
Run #5 Filename 0208005B S: 12 I: 1 Acquired: 26-FEB-08 04:44:41 Processed: 27-FEB-08 08:33:19
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: CS5_A829001 Analyst: ANALYST:CSM Instrument: Autospec
Comments: CAL._A829001

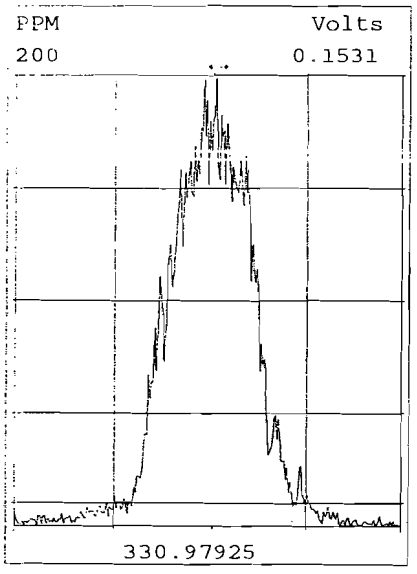
	Typ	Name	Amount	Resp	RA		RT	RF	RRF		Modified?
0	Unk	2,3,7,8-TCDF	100.00	1.209e+07	0.76	y	27:51	-	0.88	y	n
2	Unk	1,2,3,7,8-PeCDF	500.00	5.334e+07	1.56	y	32:10	-	0.84	y	n
3	Unk	2,3,4,7,8-PeCDF	500.00	5.839e+07	1.55	y	33:01	-	0.92	y	n
4	Unk	1,2,3,4,7,8-HxCDF	500.00	5.101e+07	1.16	y	37:05	-	1.01	y	n
5	Unk	1,2,3,6,7,8-HxCDF	500.00	5.156e+07	1.15	y	37:15	-	1.02	y	n
6	Unk	2,3,4,6,7,8-HxCDF	500.00	4.541e+07	1.17	y	38:02	-	0.89	y	n
7	Unk	1,2,3,7,8,9-HxCDF	500.00	4.424e+07	1.18	y	39:03	-	0.87	y	n
8	Unk	1,2,3,4,6,7,8-HpCDF	500.00	4.328e+07	1.02	y	40:56	-	1.34	y	n
9	Unk	1,2,3,4,7,8,9-HpCDF	500.00	3.876e+07	1.02	y	42:18	-	1.20	y	n
10	Unk	OCDF	1000.00	7.497e+07	0.86	y	44:46	-	1.05	y	n
11	Unk	2,3,7,8-TCDD	100.00	1.091e+07	0.77	y	28:38	-	1.06	y	n
12	Unk	1,2,3,7,8-PeCDD	500.00	4.526e+07	1.58	y	33:27	-	1.05	y	n
13	Unk	1,2,3,4,7,8-HxCDD	500.00	4.343e+07	1.25	y	38:14	-	1.03	y	n
14	Unk	1,2,3,6,7,8-HxCDD	500.00	3.975e+07	1.25	y	38:20	-	0.95	y	n
15	Unk	1,2,3,7,8,9-HxCDD	500.00	4.097e+07	1.23	y	38:45	-	0.98	y	n
16	Unk	1,2,3,4,6,7,8-HpCDD	500.00	3.400e+07	1.01	y	41:55	-	0.89	y	n
17	Unk	OCDD	1000.00	6.782e+07	0.85	y	44:39	-	0.95	y	n
18	IS/RT	13C-2,3,7,8-TCDF	100.00	1.372e+07	0.80	y	27:50	-	1.44	y	n
19	IS	13C-1,2,3,7,8-PeCDF	100.00	1.268e+07	1.59	y	32:10	-	1.33	y	n
20	IS	13C-1,2,3,6,7,8-HxCDF	100.00	1.015e+07	0.51	y	37:14	-	1.29	y	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	100.00	6.447e+06	0.44	y	40:55	-	0.82	y	n
22	IS	13C-2,3,7,8-TCDD	100.00	1.026e+07	0.76	y	28:37	-	1.08	y	n
23	IS	13C-1,2,3,7,8-PeCDD	100.00	8.646e+06	1.55	y	33:26	-	0.91	y	n
24	IS	13C-1,2,3,6,7,8-HxCDD	100.00	8.399e+06	1.34	y	38:19	-	1.07	y	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	100.00	7.626e+06	1.07	y	41:54	-	0.97	y	n
26	IS	13C-OCDD	200.00	1.425e+07	0.88	y	44:38	-	0.90	y	n
27	Surr	37C12-2,3,7,8-TCDD	100.00	2.094e+07	1.00	y	28:38	-	2.04	y	n
28	Surr	13C-2,3,4,7,8-PeCDF	500.00	6.315e+07	1.59	y	33:00	-	1.00	y	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	500.00	4.503e+07	0.51	y	37:04	-	0.89	y	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	500.00	3.915e+07	1.33	y	38:13	-	0.93	y	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	500.00	3.033e+07	0.43	y	42:17	-	0.80	y	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	500.00	4.031e+07	0.51	y	39:03	-	1.02	y	n
33	RS	13C-1,2,3,4-TCDD	100.00	9.513e+06	0.78	y	28:25	9.513e+04	-	n	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	100.00	7.877e+06	1.35	y	38:44	7.877e+04	-	n	n
35	Tot	Total Tetra-Furans	100.00	1.209e+07	0.76	y	27:51	-	0.88	y	y
36	Tot	Total Tetra-Dioxins	100.00	1.091e+07	0.77	y	28:38	-	1.06	y	n
37	Tot	Total Penta-Furans	1000.00	1.117e+08	1.56	y	32:10	-	0.88	y	y
38	Tot	Total Penta-Dioxins	500.00	4.526e+07	1.58	y	33:27	-	1.05	y	y
39	Tot	Total Hexa-Furans	2000.00	1.922e+08	1.16	y	37:05	-	0.95	y	y
40	Tot	Total Hexa-Dioxins	1000.00	1.242e+08	1.25	y	38:14	-	1.48	y	n
41	Tot	Total Hepta-Furans	1000.00	8.203e+07	1.02	y	40:56	-	1.27	y	y
42	Tot	Total Hepta-Dioxins	500.00	3.400e+07	1.01	y	41:55	-	0.89	y	y
43	DPE	HxCDPE	100.00	-			-	-	-	n	n
44	DPE	HpCDPE	100.00	-			-	-	-	n	n
45	DPE	OCDPE	100.00	-			-	-	-	n	n
46	DPE	NCDPE	100.00	-			-	-	-	n	n
47	DPE	DCDPE	100.00	-			-	-	-	n	n

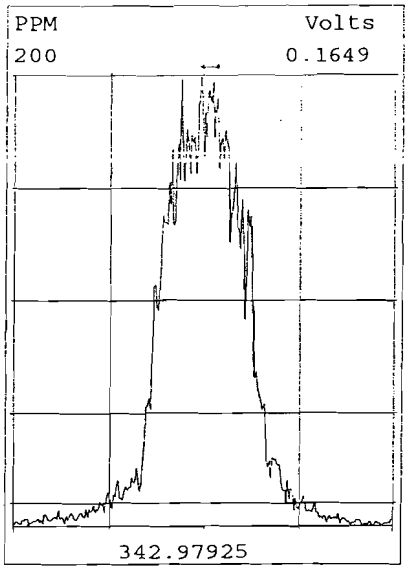
Peak Locate Examination:25-FEB-2008:17:38 File:0208005B
Experiment:8290 Function:1 Reference:PFK

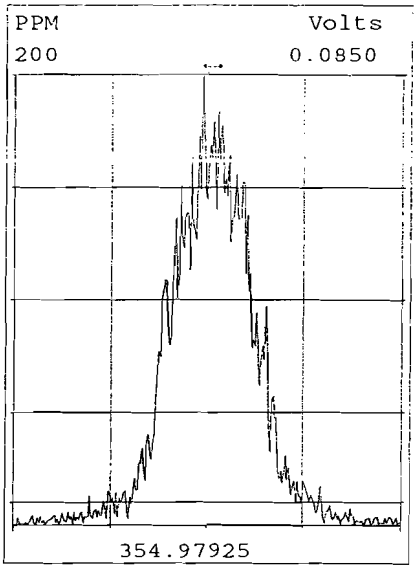


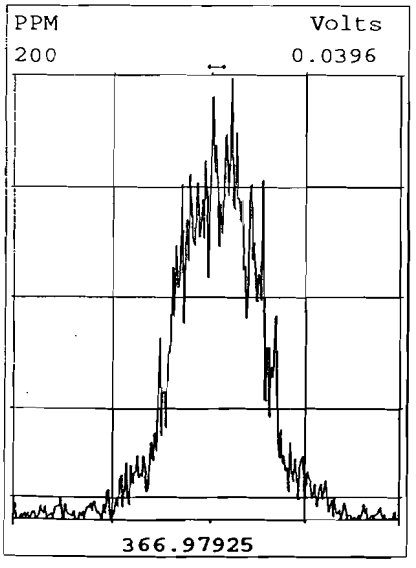


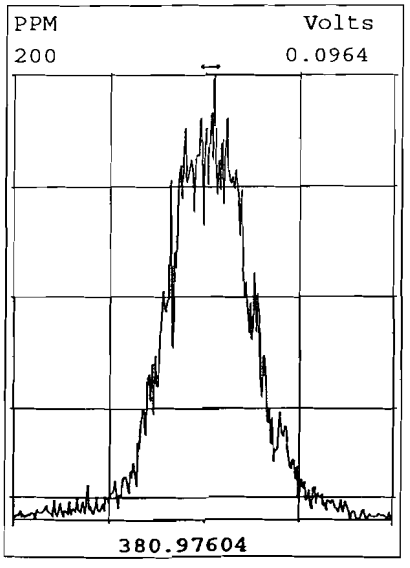




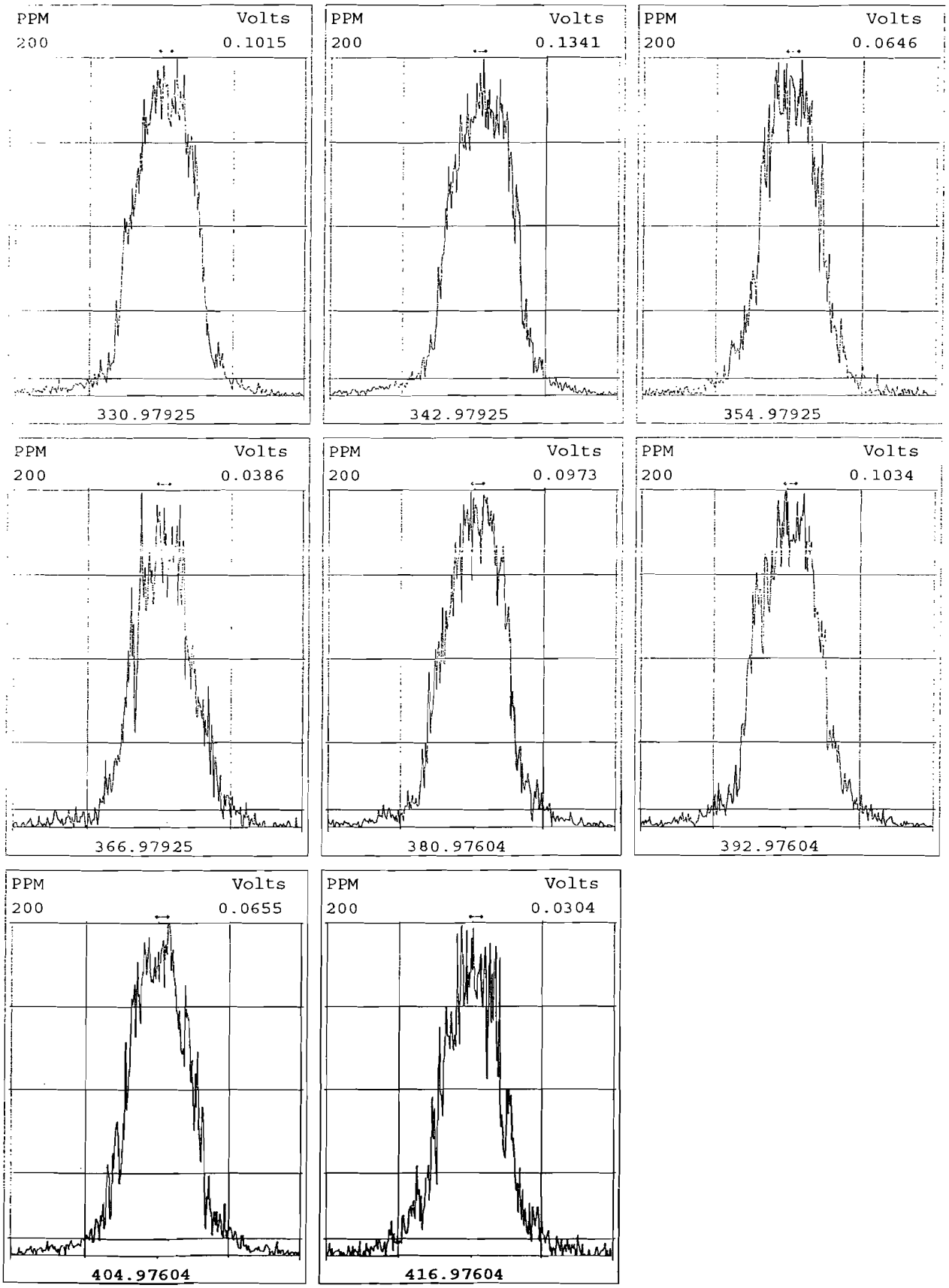




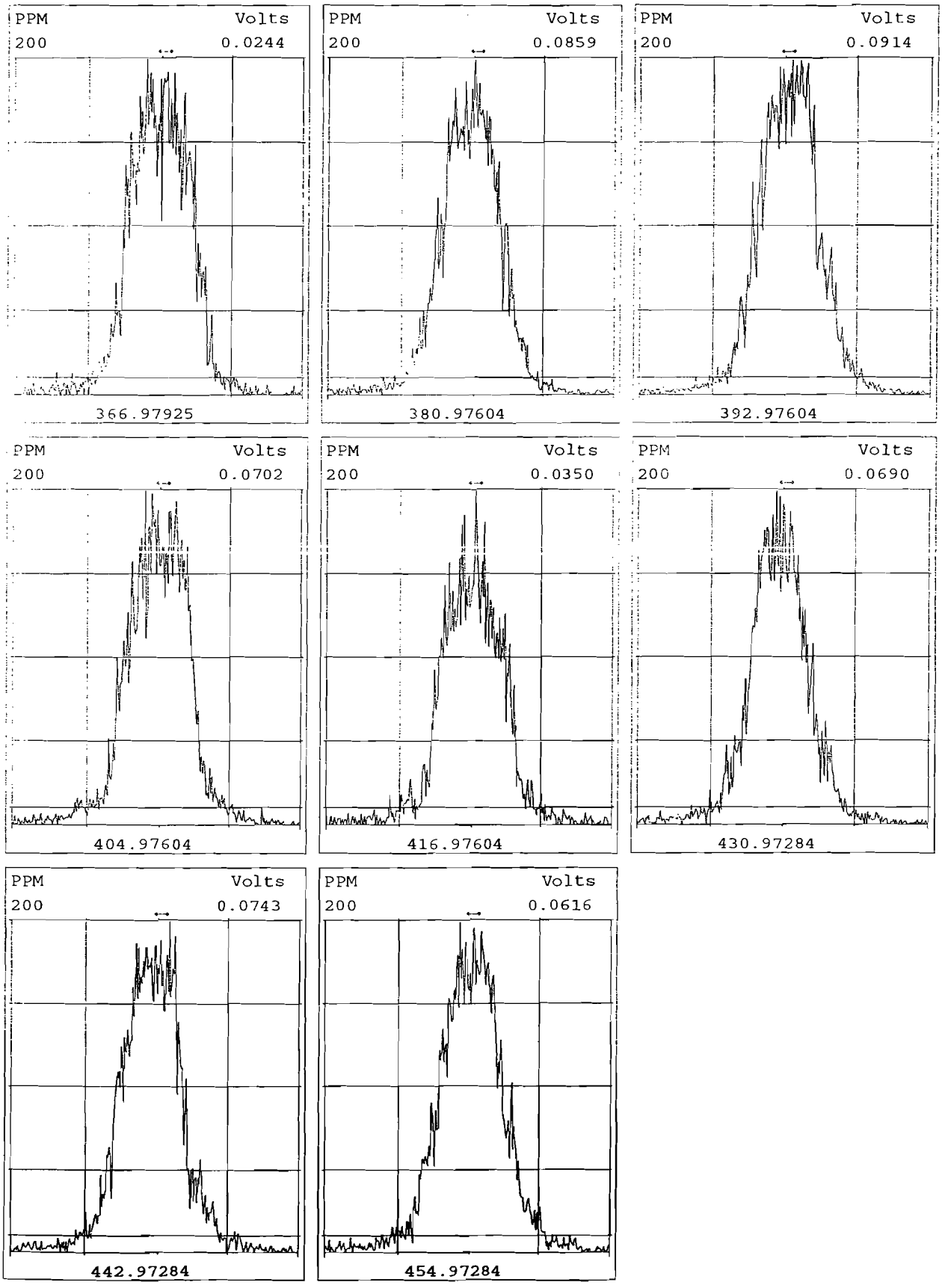




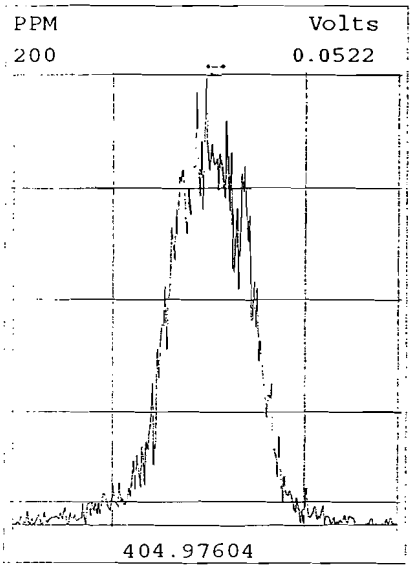
Peak Locate Examination:25-FEB-2008:17:39 File:0208005B
Experiment:8290 Function:2 Reference:PFK

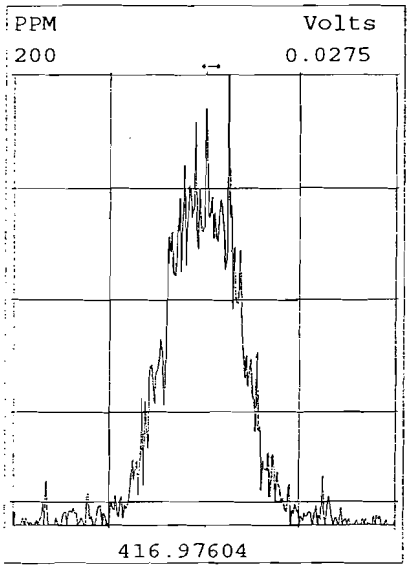


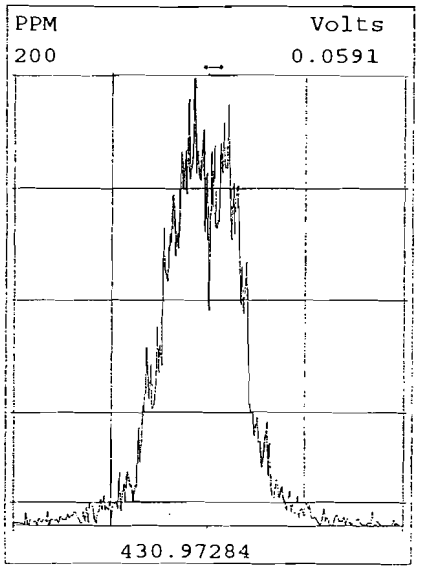
Peak Locate Examination:25-FEB-2008:17:39 File:0208005B
Experiment:8290 Function:3 Reference:PFK

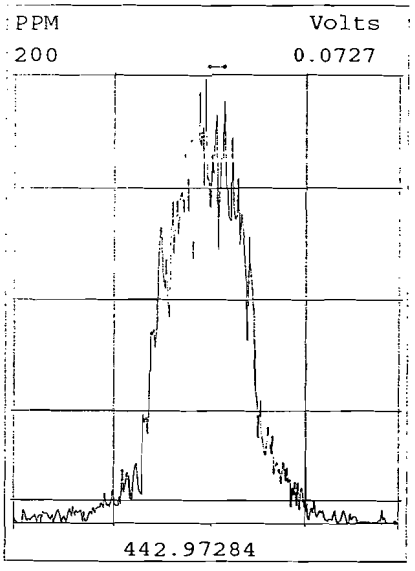


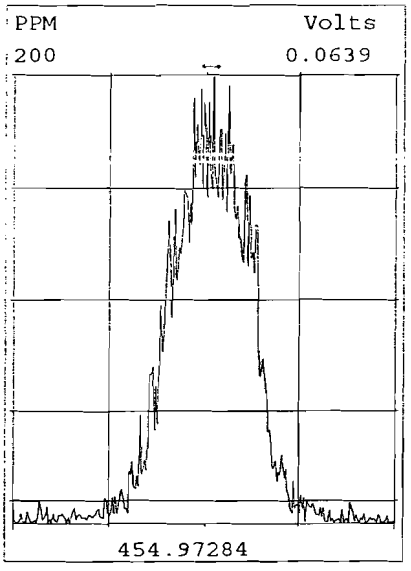
Peak Locate Examination:25-FEB-2008:17:39 File:0208005B
Experiment:8290 Function:4 Reference:PFK

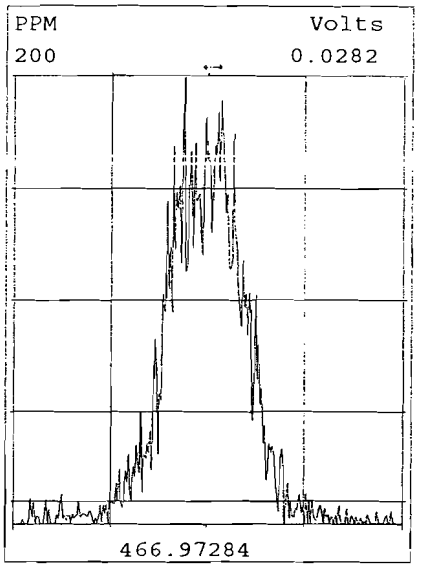


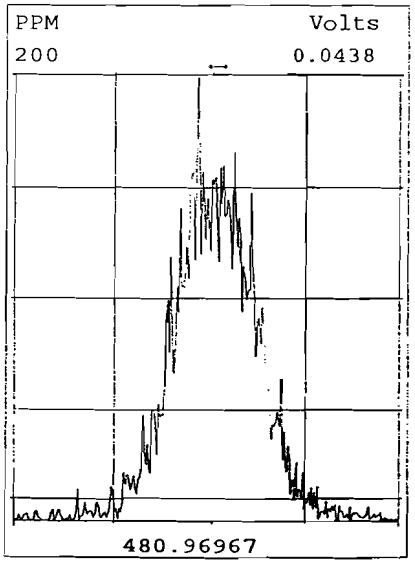




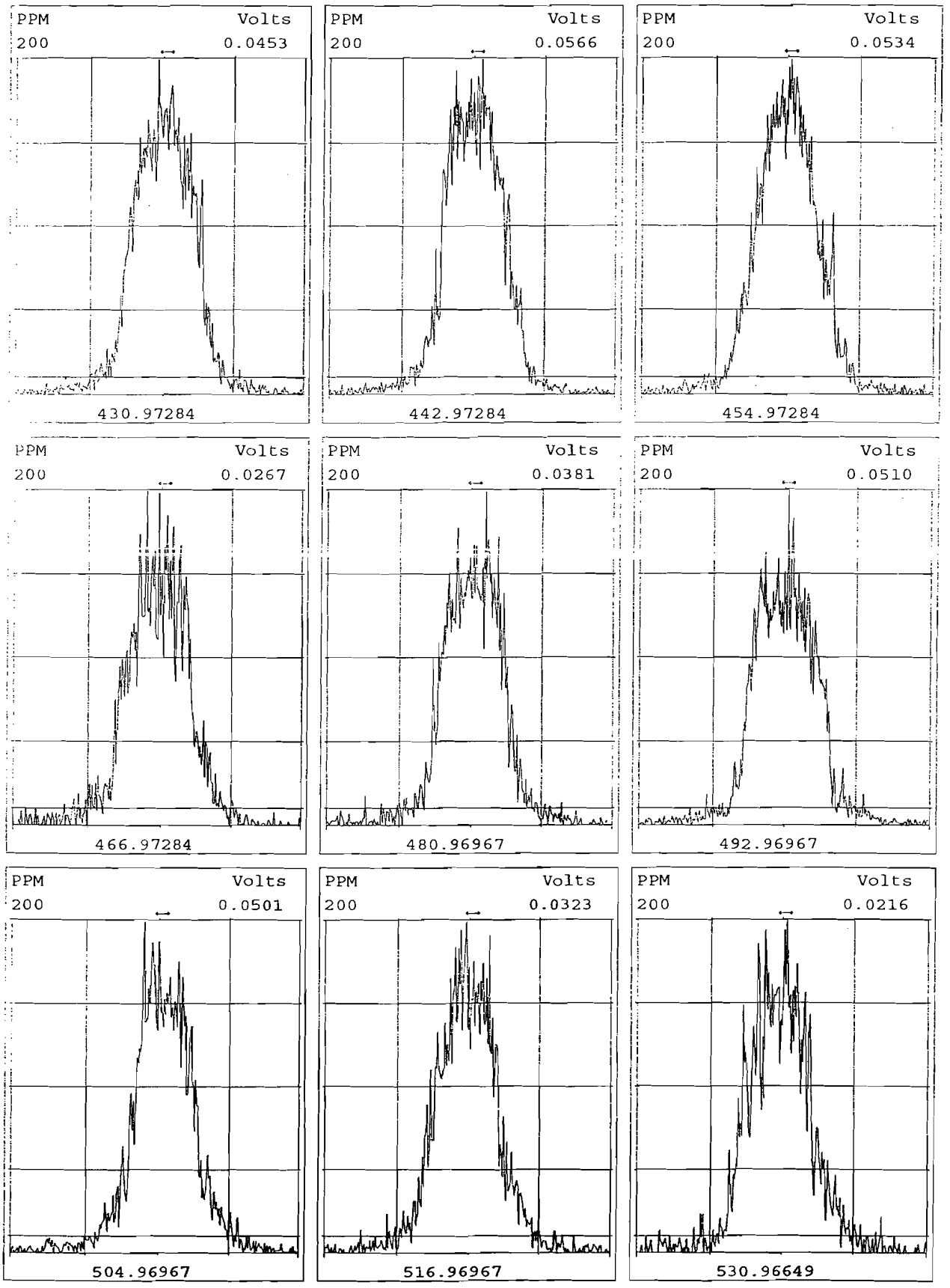








Peak Locate Examination:25-FEB-2008:17:39 File:0208005B
Experiment:8290 Function:5 Reference:PFK



USEPA

5DFA-Form V-HR-CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_02260801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: NA SDG No.: NA

Lab File ID: 0208008A S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 02/26/2008

Instrument ID: :Autospec

Time Analyzed: 20:17

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD	25.95	29.70
TCDF	24.50	29.70
PeCDD	31.35	34.05
PeCDF	29.98	34.23
HxCDD	36.30	38.70
HxCDF	35.50	39.15
HpCDD	41.22	41.90
HpCDF	40.92	42.28

frm5diox040505

USEPA

5DFB-Form V-HR-CDD-2
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_02260801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: _____ SDG No.: NA

Lab File ID: 0208008A S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 02/26/2008

Instrument ID: :Autospec

Time Analyzed: 20:17

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD / 2378-TCDD: 10 ✓

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

2347-TCDF / 2378-TCDF: NA

QC LIMITS:

Percent Valley between the TCDD / TCDF isomers must be less than or equal to 25%.

frm5diox040505

USEPA-8290A

7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES **Contract:** Loureiro Engineering

Lab Code: OH01241 **Case No.:** Centredale **TO No.:** NA **SDG No.:** NA

GC Column: JWS-DB-5 **ID:** 0.25 (mm) **Instrument ID:** :Autospec

Lab File ID: 0208008AS:2 **Date Analyzed:** 2/26/2008 **Time Analyzed:** 21:07

Initial Calib. Times: 1:17 4:37 **Initial Calib. Dates:** 2/26/2008 to 2/26/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	≤20 %D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.932	0.851	9.539		0.74		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.843	0.811	3.960		1.52		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.847	0.826	2.600		1.47		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	0.931	0.975	-4.476		1.23		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.120	1.066	5.085		1.21		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.912	0.916	-0.434		1.21		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.800	0.822	-2.692		1.22		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.295	1.271	1.894		1.06		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	0.998	1.041	-4.156		1.09		0.88	1.20
OCDF	390/392	0.978	0.938	4.311		0.91		0.76	1.02
2,3,7,8-TCDD	374/376	1.132	1.078	5.039		0.83		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.018	0.995	2.275		1.66		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	0.860	0.965	-10.894		1.17		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.056	0.982	7.563		1.21		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.015	1.019	-0.385		1.19		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.903	0.865	4.439		1.02		0.88	1.20
OCDD	442/444	0.926	0.917	0.977		0.86		0.76	1.02
LABELED COMPOUNDS				≤30	±30%				
13C-2,3,7,8-TCDF	316/318	1.466	1.392	5.340		0.78		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.106	1.183	-6.492		1.64		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	1.098	1.142	-3.817		0.5		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.783	0.775	1.079		0.43		0.37	0.51
13C-2,3,7,8-TCDD	332/334	1.018	1.043	-2.410		0.8		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.753	0.828	-9.078		1.58		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.962	0.985	-2.287		1.28		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	0.922	0.941	-2.062		1.08		0.88	1.20
13C-OCDD	470/472	0.776	0.851	-8.853		0.88		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	2.150	2.071	3.808		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.986	0.945	4.319		1.51		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.933	0.948	-1.552		0.52		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.847	0.908	-6.758		1.15		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.725	0.689	5.273		0.41		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.886	0.896	-1.075		0.51		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.81		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.26		1.05	1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

USEPA-8290A

7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name:	DATA/ANALYSIS TECHNOLOGIES			**Contract:**	Loureiro Engineering
Lab Code:	OH01241	**Case No.:** Centredale	**TO No.:** NA	**SDG No.:**	NA
GC Column:	JWS-DB-5	**ID:** 0.25 (mm)		**Instrument ID:**	:Autospec
Lab File ID:	0208008AS:2	**Date Analyzed:** 2/26/2008		**Time Analyzed:**	21:07
Initial Calib. Times:	1:17 4:37		**Initial Calib. Dates:**	2/26/2008	2/26/2008

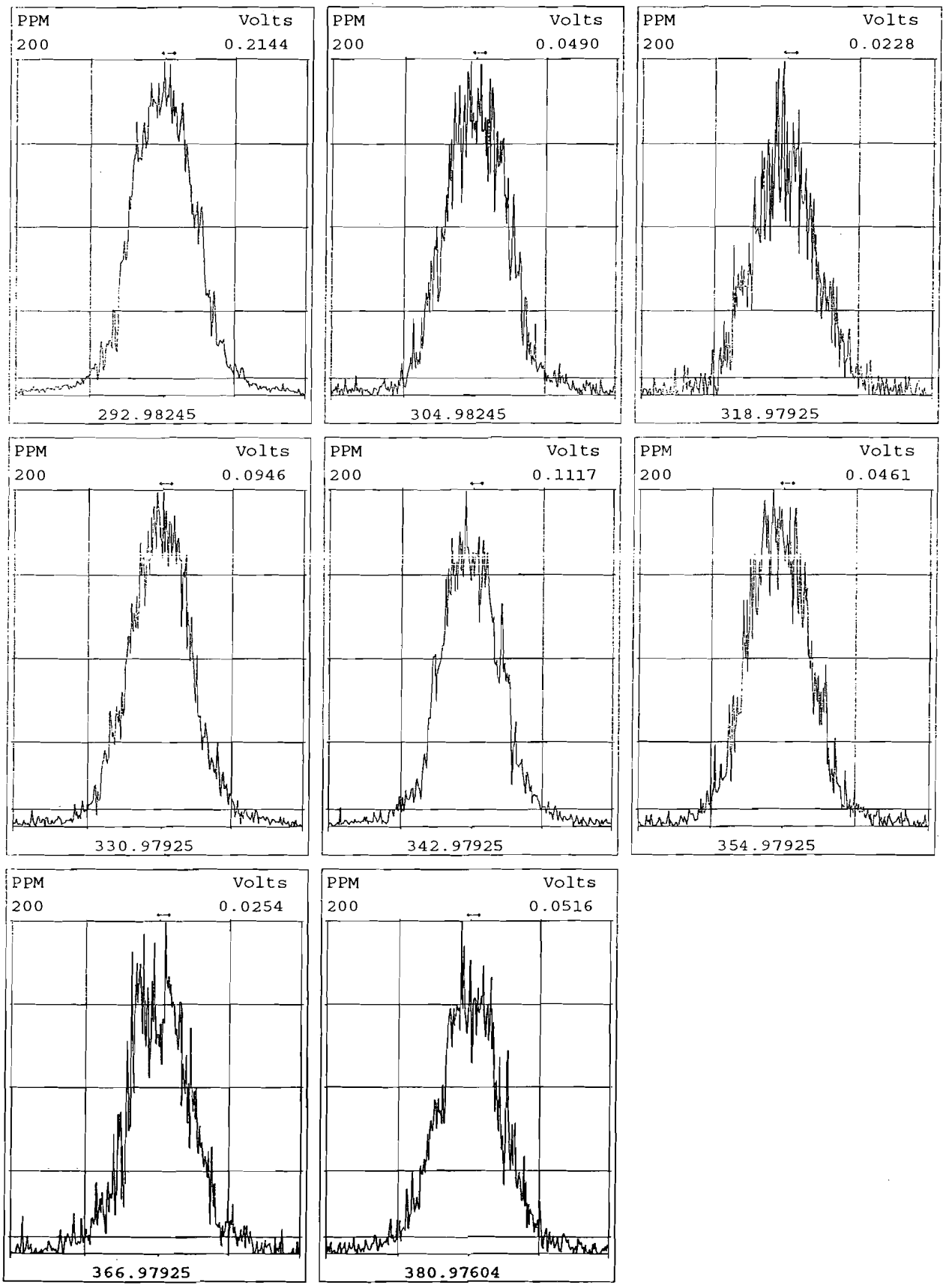
TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.001	27.85
1,2,3,7,8-PeCDF	1.000	32.17
2,3,4,7,8-PeCDF	1.026	33.02
1,2,3,4,7,8-HxCDF	0.996	37.07
1,2,3,6,7,8-HxCDF	1.001	37.25
2,3,4,6,7,8-HxCDF	1.022	38.03
1,2,3,7,8,9-HxCDF	1.049	39.05
1,2,3,4,6,7,8-HpCDF	1.000	40.93
1,2,3,4,7,8,9-HpCDF	1.034	42.30
OCDF	1.003	44.77
2,3,7,8-TCDD	1.000	28.63
1,2,3,7,8-PeCDD	1.000	33.45
1,2,3,4,7,8-HxCDD	0.997	38.23
1,2,3,6,7,8-HxCDD	1.000	38.33
1,2,3,7,8,9-HxCDD	1.011	38.77
1,2,3,4,6,7,8-HpCDD	1.000	41.92
OCDD	1.000	44.65
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.979	27.83
13C-1,2,3,7,8-PeCDF	1.132	32.17
13C-1,2,3,6,7,8-HxCDF	0.960	37.22
13C-1,2,3,4,6,7,8-HpCDF	1.056	40.92
13C-2,3,7,8-TCDD	1.007	28.62
13C-1,2,3,7,8-PeCDD	1.177	33.43
13C-1,2,3,6,7,8-HxCDD	0.989	38.33
13C-1,2,3,4,6,7,8-HpCDD	1.081	41.90
13C-OCDD	1.152	44.63
37C12-2,3,7,8-TCDD	1.001	28.63
13C-2,3,4,7,8-PeCDF	1.026	33.00
13C-1,2,3,4,7,8-HxCDF	0.996	37.07
13C-1,2,3,4,7,8-HxCDD	0.997	38.20
13C-1,2,3,4,7,8,9-HpCDF	1.009	42.28
13C12-1,2,3,7,8,9-HxCDF	1.007	39.03
Recovery Standard		
13C-1,2,3,4-TCDD	NA	28.42
13C-1,2,3,7,8,9-HxCDD	NA	38.75

frm7diox8290Rev1

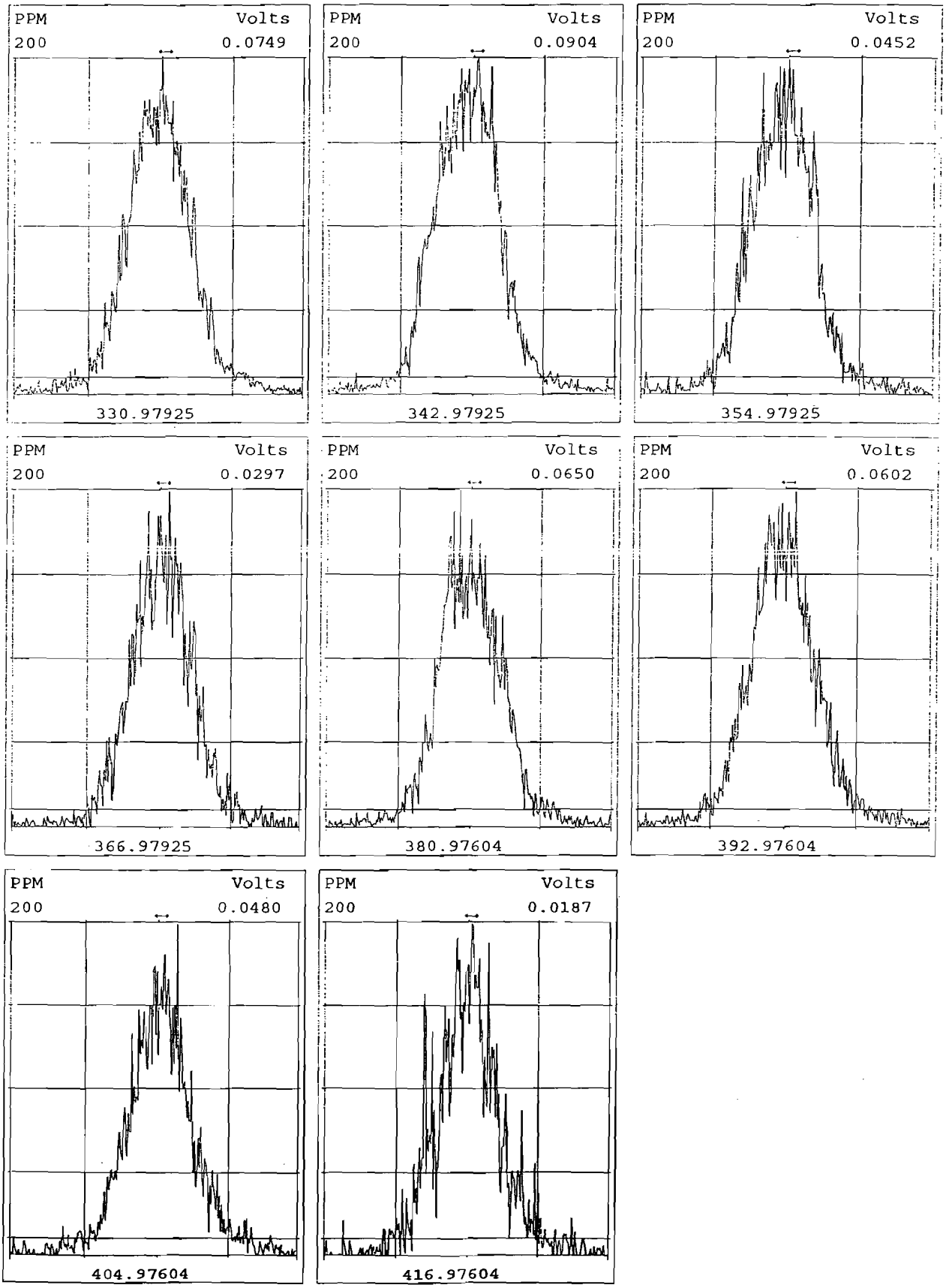
Run #6 Filename 0208008A S: 2 I: 1 Acquired: 26-FEB-08 21:07:29 Processed: 29-FEB-08 10:13:52
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Quan : V3.6 19-OCT-2005 15:45:13
Sample text: CCAL._A829001C01 Analyst: ANALYST:CSM OPUS : V3.6X 31-JUL-1998 11:15:12
Comments: CCAL._A829001C01 Instrument : Autospec

Typ	Name	Resp	RA		RT	Conc	Dev'n	Mod?
Unk	2,3,7,8-TCDF	5.663e+05	0.74	y	27:51	5.474	9.476	n
Unk	1,2,3,7,8-PeCDF	1.932e+06	1.52	y	32:10	25.988	3.951	n
Unk	2,3,4,7,8-PeCDF	1.942e+06	1.47	y	33:01	25.638	2.550	n
Unk	1,2,3,4,7,8-HxCDF	1.445e+06	1.23	y	37:04	23.881	-4.477	n
Unk	1,2,3,6,7,8-HxCDF	1.738e+06	1.21	y	37:15	26.258	5.030	n
Unk	2,3,4,6,7,8-HxCDF	1.415e+06	1.21	y	38:02	24.888	-0.447	n
Unk	1,2,3,7,8,9-HxCDF	1.241e+06	1.22	y	39:03	24.316	-2.737	n
Unk	1,2,3,4,6,7,8-HpCDF	1.433e+06	1.06	y	40:56	25.467	1.868	n
Unk	1,2,3,4,7,8,9-HpCDF	1.104e+06	1.09	y	42:18	23.973	-4.107	n
Unk	OCDF	2.144e+06	0.91	y	44:46	52.165	4.330	n
Unk	2,3,7,8-TCDD	4.775e+05	0.83	y	28:38	5.253	5.059	n
Unk	1,2,3,7,8-PeCDD	1.587e+06	1.66	y	33:27	25.566	2.264	n
Unk	1,2,3,4,7,8-HxCDD	1.169e+06	1.17	y	38:14	22.260	-10.960	n
Unk	1,2,3,6,7,8-HxCDD	1.436e+06	1.21	y	38:20	26.894	7.577	n
Unk	1,2,3,7,8,9-HxCDD	1.380e+06	1.19	y	38:46	24.904	-0.385	n
Unk	1,2,3,4,6,7,8-HpCDD	1.176e+06	1.02	y	41:55	26.103	4.410	n
Unk	OCDD	2.029e+06	0.86	y	44:39	50.496	0.992	n
IS/RT	13C-2,3,7,8-TCDF	1.215e+07	0.78	y	27:50	105.338	5.338	n
IS	13C-1,2,3,7,8-PeCDF	9.166e+06	1.64	y	32:10	93.522	-6.478	n
IS	13C-1,2,3,6,7,8-HxCDF	6.206e+06	0.50	y	37:13	96.175	-3.825	n
IS	13C-1,2,3,4,6,7,8-HpCDF	4.426e+06	0.43	y	40:55	101.050	1.050	n
IS	13C-2,3,7,8-TCDD	8.434e+06	0.80	y	28:37	97.598	-2.402	n
IS	13C-1,2,3,7,8-PeCDD	6.238e+06	1.58	y	33:26	90.969	-9.031	n
IS	13C-1,2,3,6,7,8-HxCDD	5.438e+06	1.28	y	38:20	97.681	-2.319	n
IS	13C-1,2,3,4,6,7,8-HpCDD	5.207e+06	1.08	y	41:54	97.923	-2.077	n
IS	13C-OCDD	8.765e+06	0.88	y	44:38	182.296	-8.852	n
Surr	37C12-2,3,7,8-TCDD	9.066e+05	1.00	y	28:38	5.191	3.822	n
Surr	13C-2,3,4,7,8-PeCDF	2.259e+06	1.51	y	33:00	26.072	4.290	n
Surr	13C-1,2,3,4,7,8-HxCDF	1.448e+06	0.52	y	37:04	24.623	-1.510	n
Surr	13C-1,2,3,4,7,8-HxCDD	1.151e+06	1.15	y	38:12	23.304	-6.785	n
Surr	13C-1,2,3,4,7,8,9-HpCDF	9.442e+05	0.41	y	42:17	26.305	5.219	n
ALT	13C12-1,2,3,7,8,9-HxCDF	1.252e+06	0.51	y	39:02	24.747	-1.012	n
RS	13C-1,2,3,4-TCDD	8.286e+06	0.81	y	28:25	47.791	-	n
RS/RT	13C-1,2,3,7,8,9-HxCDD	5.650e+06	1.26	y	38:45	43.943	-	n
DPE	HxCDPE	-			-	-	-	n
DPE	HpCDPE	-			-	-	-	n
DPE	OCDPE	-			-	-	-	n
DPE	NCDPE	-			-	-	-	n
DPE	DCDPE	-			-	-	-	n
LM	LOCK_MASS_F1	*			NotFnd	*	*	n
LM	LOCK_MASS_F2	-			-	-	-	n
LM	LOCK_MASS_F3	-			-	-	-	n
LM	LOCK_MASS_F4	-			-	-	-	n
LM	LOCK_MASS_F5	-			-	-	-	n

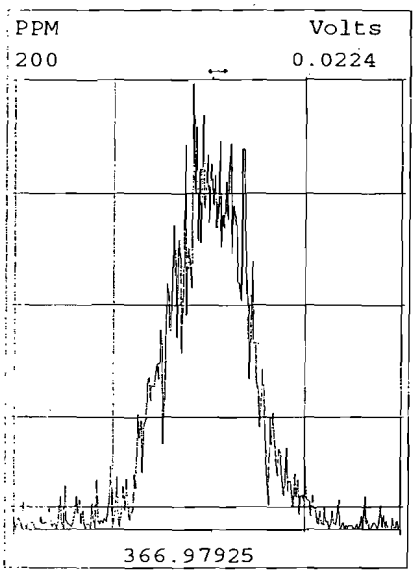
Peak Locate Examination:26-FEB-2008:20:16 File:0208008A
Experiment:8290 Function:1 Reference:PFK

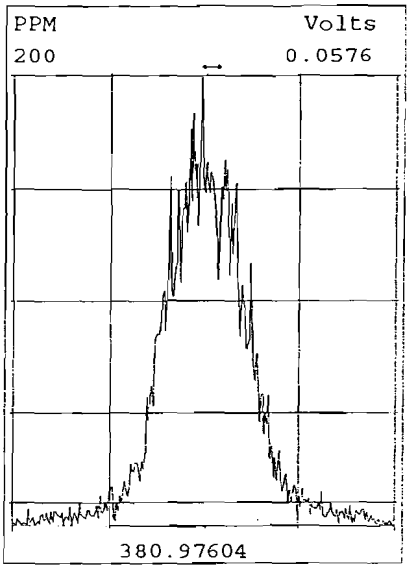


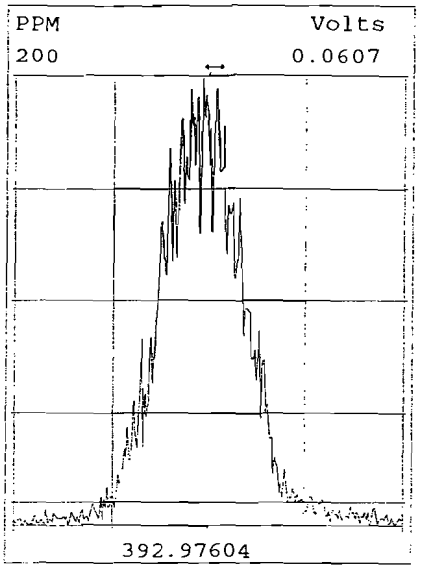
Peak Locate Examination:26-FEB-2008:20:16 File:0208008A
Experiment:8290 Function:2 Reference:PFK

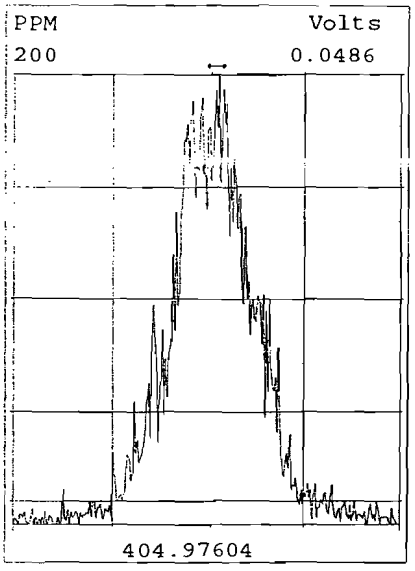


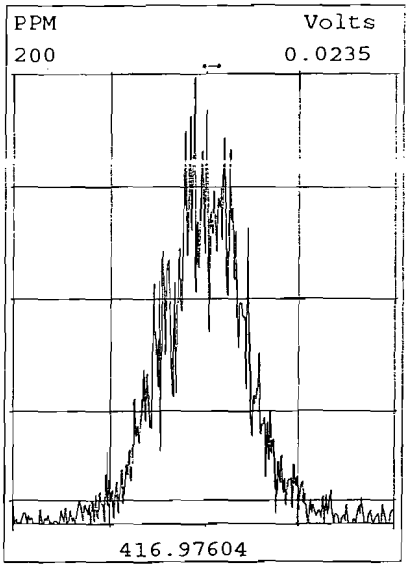
Peak Locate Examination:26-FEB-2008:20:16 File:0208008A
Experiment:8290 Function:3 Reference:PFK

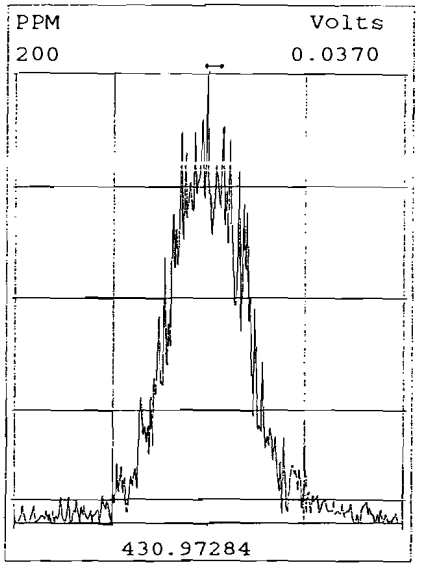


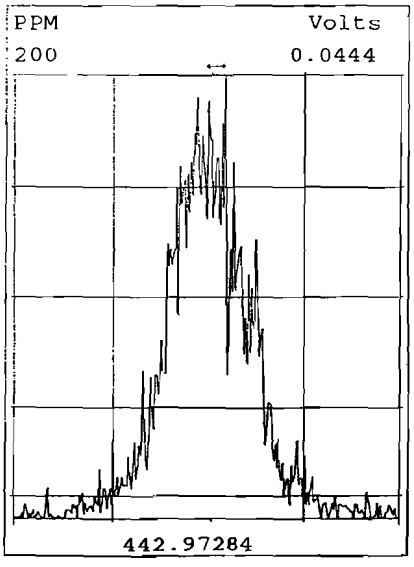


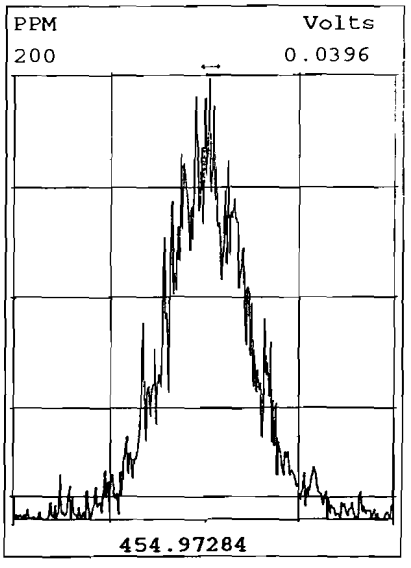




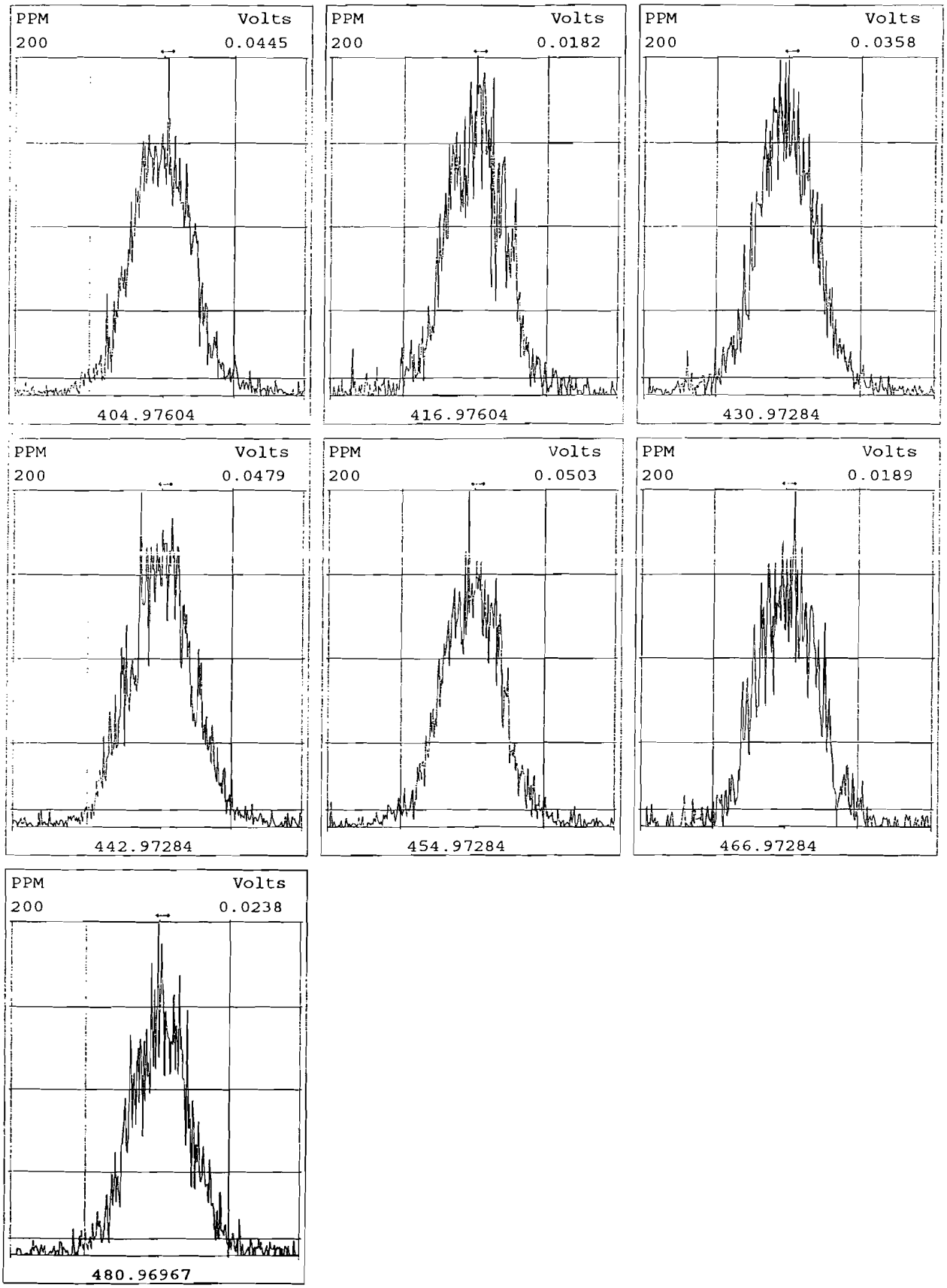




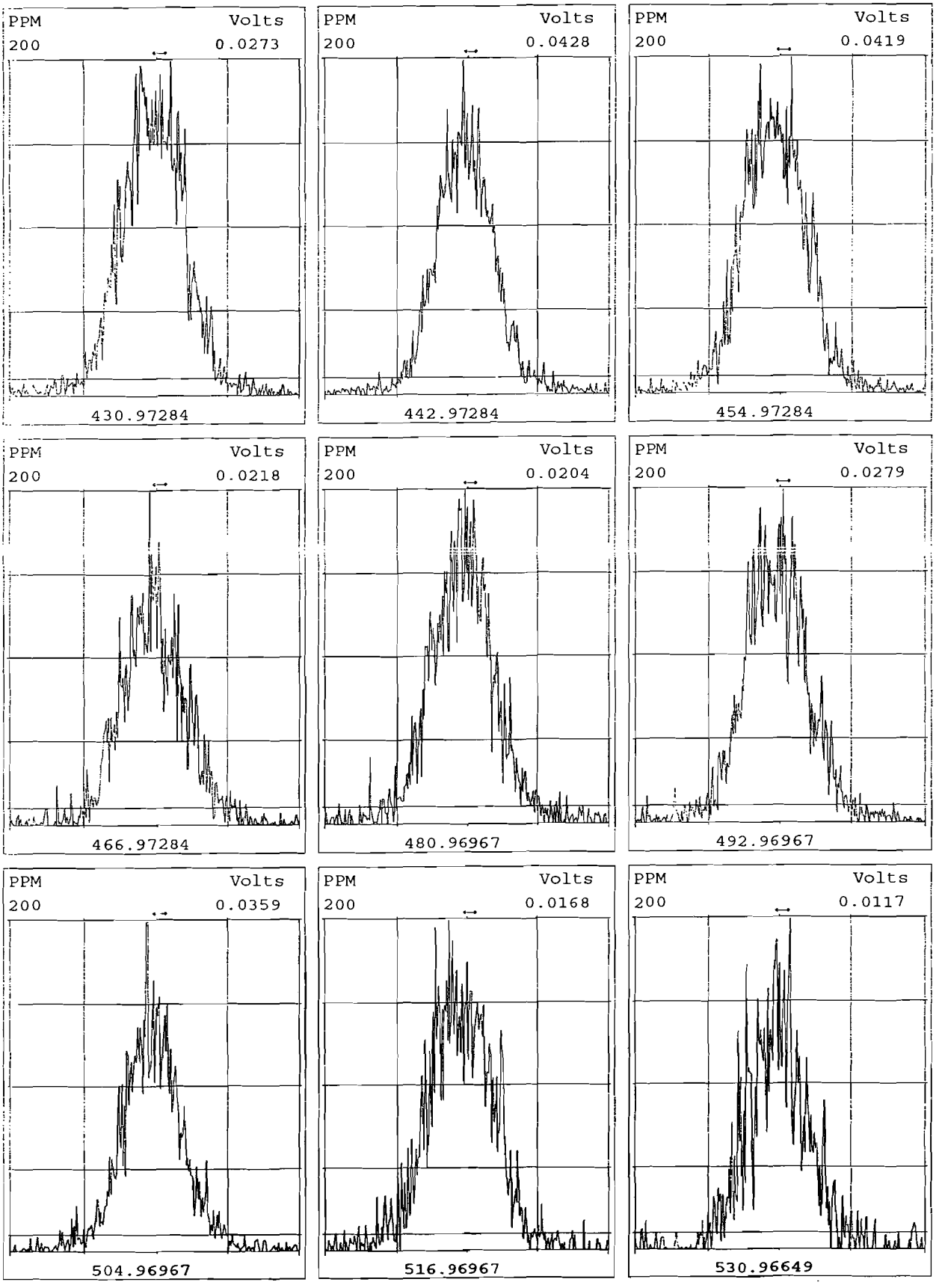




Peak Locate Examination:26-FEB-2008:20:17 File:0208008A
Experiment:8290 Function:4 Reference:PFK



Peak Locate Examination:26-FEB-2008:20:17 File:0208008A
Experiment:8290 Function:5 Reference:PFK



Run #7 Filename 0208008A S: 9 I: 1 Acquired: 27-FEB-08 02:57:02 Processed: 29-FEB-08 10:16:46
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Quan : V3.6 19-OCT-2005 15:45:13
Sample text: CCAL. A829001C02 Analyst: ANALYST:CSM OPUS : V3.6X 31-JUL-1998 11:15:12
Comments: ~~CCAL.~~ A829001C02 2 1:57 6/3/08 Instrument : Autospec

Typ	Name	RRF	Resp	RA		RT	Conc	Dev'n ±20	Mod?
Unk	2,3,7,8-TCDF	1.01	2.954e+05	0.69	y	27:50	5.932	18.649	n
Unk	1,2,3,7,8-PeCDF		1.089e+06	1.57	y	32:09	26.865	7.459	n
Unk	2,3,4,7,8-PeCDF		1.098e+06	1.52	y	33:00	26.573	6.290	n
Unk	1,2,3,4,7,8-HxCDF		9.030e+05	1.25	y	37:04	27.798	11.194	n
Unk	1,2,3,6,7,8-HxCDF		9.189e+05	1.24	y	37:13	25.874	3.495	n
Unk	2,3,4,6,7,8-HxCDF		8.648e+05	1.18	y	38:02	28.340	13.361	n
Unk	1,2,3,7,8,9-HxCDF		8.128e+05	1.23	y	39:02	29.672	18.689	n
Unk	1,2,3,4,6,7,8-HpCDF		8.744e+05	1.05	y	40:56	26.119	4.476	n
Unk	1,2,3,4,7,8,9-HpCDF		7.383e+05	1.05	y	42:18	26.936	7.745	n
Unk	OCDF		1.423e+06	0.89	y	44:45	54.913	9.827	n
Unk	2,3,7,8-TCDD	1.721	3.444e+05	0.83	y	28:36	7.988	59.754	n
Unk	1,2,3,7,8-PeCDD	1.083	8.854e+05	1.57	y	33:26	27.213	8.851	n
Unk	1,2,3,4,7,8-HxCDD		7.488e+05	1.21	y	38:12	27.783	11.132	n
Unk	1,2,3,6,7,8-HxCDD		7.040e+05	1.25	y	38:20	25.684	2.735	n
Unk	1,2,3,7,8,9-HxCDD		7.809e+05	1.22	y	38:45	27.448	9.791	n
Unk	1,2,3,4,6,7,8-HpCDD		7.186e+05	1.11	y	41:54	25.706	2.825	n
Unk	OCDD		1.322e+06	0.89	y	44:37	52.197	4.393	n
IS/RT	13C-2,3,7,8-TCDF		5.849e+06	0.78	y	27:48	109.257	±30 9.257	n
IS	13C-1,2,3,7,8-PeCDF		4.998e+06	1.60	y	32:09	109.895	9.895	n
IS	13C-1,2,3,6,7,8-HxCDF		3.331e+06	0.52	y	37:12	96.180	-3.820	n
IS	13C-1,2,3,4,6,7,8-HpCDF		2.633e+06	0.42	y	40:55	112.024	12.024	n
IS	13C-2,3,7,8-TCDD		4.001e+06	0.82	y	28:36	99.782	-0.218	n
IS	13C-1,2,3,7,8-PeCDD		3.269e+06	1.52	y	33:25	102.746	2.746	n
IS	13C-1,2,3,6,7,8-HxCDD		2.792e+06	1.29	y	38:19	93.453	-6.547	n
IS	13C-1,2,3,4,6,7,8-HpCDD		3.230e+06	1.10	y	41:53	113.207	13.207	n
IS	13C-OCDD		5.527e+06	0.87	y	44:37	214.182	7.091	n
Surr	37Cl2-2,3,7,8-TCDD		4.333e+05	1.00	y	28:36	5.230	4.606	n
Surr	13C-2,3,4,7,8-PeCDF		1.241e+06	1.61	y	32:59	26.282	5.127	n
Surr	13C-1,2,3,4,7,8-HxCDF		8.807e+05	0.54	y	37:03	27.903	11.612	n
Surr	13C-1,2,3,4,7,8-HxCDD		6.820e+05	1.35	y	38:11	26.901	7.603	n
Surr	13C-1,2,3,4,7,8,9-HpCDF		6.379e+05	0.45	y	42:17	28.643	14.572	n
ALT	13C12-1,2,3,7,8,9-HxCDF		7.812e+05	0.53	y	39:01	28.768	15.072	n
RS	13C-1,2,3,4-TCDD		3.845e+06	0.83	y	28:24	22.175	-	n
RS/RT	13C-1,2,3,7,8,9-HxCDD		3.032e+06	1.30	y	38:44	23.583	-	n
DPE	HxCDPE		-			-	-	-	n
DPE	HpCDPE		-			-	-	-	n
DPE	OCDPE		-			-	-	-	n
DPE	NCDPE		-			-	-	-	n
DPE	DCDPE		-			-	-	-	n
LM	LOCK_MASS_F1		*			NotFnd	*	*	n
LM	LOCK_MASS_F2		-			-	-	-	n
LM	LOCK_MASS_F3		-			-	-	-	n
LM	LOCK_MASS_F4		-			-	-	-	n
LM	LOCK_MASS_F5		-			-	-	-	n

DATA/ANALYSIS TECHNOLOGIES
ANALYSIS CORRECTIVE ACTION FORM

Project Number: 0208008 Analysis Date: 2/27/08

Client: Loureiro Eng Method: 8290

Samples Affected: End Point Cal

Please check the faild QC parameter.

Initial Calibration		Method Blank Contamination	
Continuing Calibration		Surrogate Recoveries	
End Calibration	✓	Laboratory Spike Recoveries	
Tune Failure		Matrix Spike Recoveries	
Verifications		Duplicate Analysis RPDs	
Instrument Contamination		Holding Time	
Run Time Failure		Other	
Internal Standard Recovery			
Retention Time Discrepance			

Please describe the corrective measures taken.

2,3,7,8-TCDD was over recovered by a Dev. of 59% due to a high level sample run previously. Another end point Calibration was run which passed Q.C. requirments

Analyst Initials

Release Data? Yes No

Basis:

Signature

USEPA

5DFA-Form V-HR-CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_02270801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: NA SDG No.: NA

Lab File ID: A829001 S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 02/27/2008

Instrument ID: :Autospec Time Analyzed: 10:02

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD	25.92	29.68
TCDF	24.48	29.70
PeCDD	31.35	34.03
PeCDF	29.95	34.22
HxCDD	36.28	38.70
HxCDF	35.48	39.13
HpCDD	41.20	41.90
HpCDF	40.92	42.28

frm5diox040505

USEPA

5DFB-Form V-HR-CDD-2
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_02270801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale manor TO No.: SDG No.: NA

Lab File ID: A829001 S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 02/27/2008

Instrument ID: :Autospec Time Analyzed: 10:02

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD / 2378-TCDD: 9 ✓

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

2347-TCDF / 2378-TCDF: NA

QC LIMITS:

Percent Valley between the TCDD / TCDF isomers must be less than or equal to 25%.

frm5diox040505

USEPA-8290A

7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES **Contract:** Loureiro Engineering

Lab Code: OH01241 **Case No.:** Centredale **TO No.:** NA **SDG No.:** NA

GC Column: JWS-DB-5 **ID:** 0.25 (mm) **Instrument ID:** :Autospec

Lab File ID: A829001S:4 **Date Analyzed:** 2/27/2008 **Time Analyzed:** 12:32

Initial Calib. Times: 1:17 4:37 **Initial Calib. Dates:** 2/26/2008 to 2/26/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	±20 %D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.941	0.851	10.534		0.75		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.884	0.811	8.971		1.55		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.888	0.826	7.484		1.52		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	1.048	0.975	7.520		1.19		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.149	1.066	7.808		1.18		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.985	0.916	7.561		1.18		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.881	0.822	7.221		1.21		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.310	1.271	3.066		1.03		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	1.059	1.041	1.684		1.03		0.88	1.20
OCDF	390/392	1.011	0.938	7.763		0.9		0.76	1.02
2,3,7,8-TCDD	374/376	1.211	1.078	12.356		0.8		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.058	0.995	6.300		1.58		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	1.003	0.965	3.893		1.26		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.040	0.982	5.922		1.26		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.084	1.019	6.406		1.28		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.893	0.865	3.233		1.01		0.88	1.20
OCDD	442/444	0.947	0.917	3.222		0.86		0.76	1.02
LABELED COMPOUNDS				±30	±30%				
13C-2,3,7,8-TCDF	316/318	1.564	1.392	12.360		0.8		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.314	1.183	11.086		1.58		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	1.217	1.142	6.549		0.51		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.919	0.775	18.635		0.43		0.37	0.51
13C-2,3,7,8-TCDD	332/334	0.995	1.043	-4.586		0.79		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.838	0.828	1.220		1.61		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.970	0.985	-1.545		1.33		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.030	0.941	9.430		1.08		0.88	1.20
13C-OCDD	470/472	0.922	0.851	8.379		0.87		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	2.171	2.071	4.824		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.932	0.945	-1.410		1.59		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.923	0.948	-2.606		0.51		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.892	0.908	-1.785		1.35		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.756	0.689	9.783		0.42		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	1.002	0.896	11.789		0.53		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.8		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.34		1.05	1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

USEPA-8290A

7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureiro Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: NA

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: A829001S:4 Date Analyzed: 2/27/2008 Time Analyzed: 12:32

Initial Calib. Times: 1:17 4:37 Initial Calib. Dates: 2/26/2008 2/26/2008

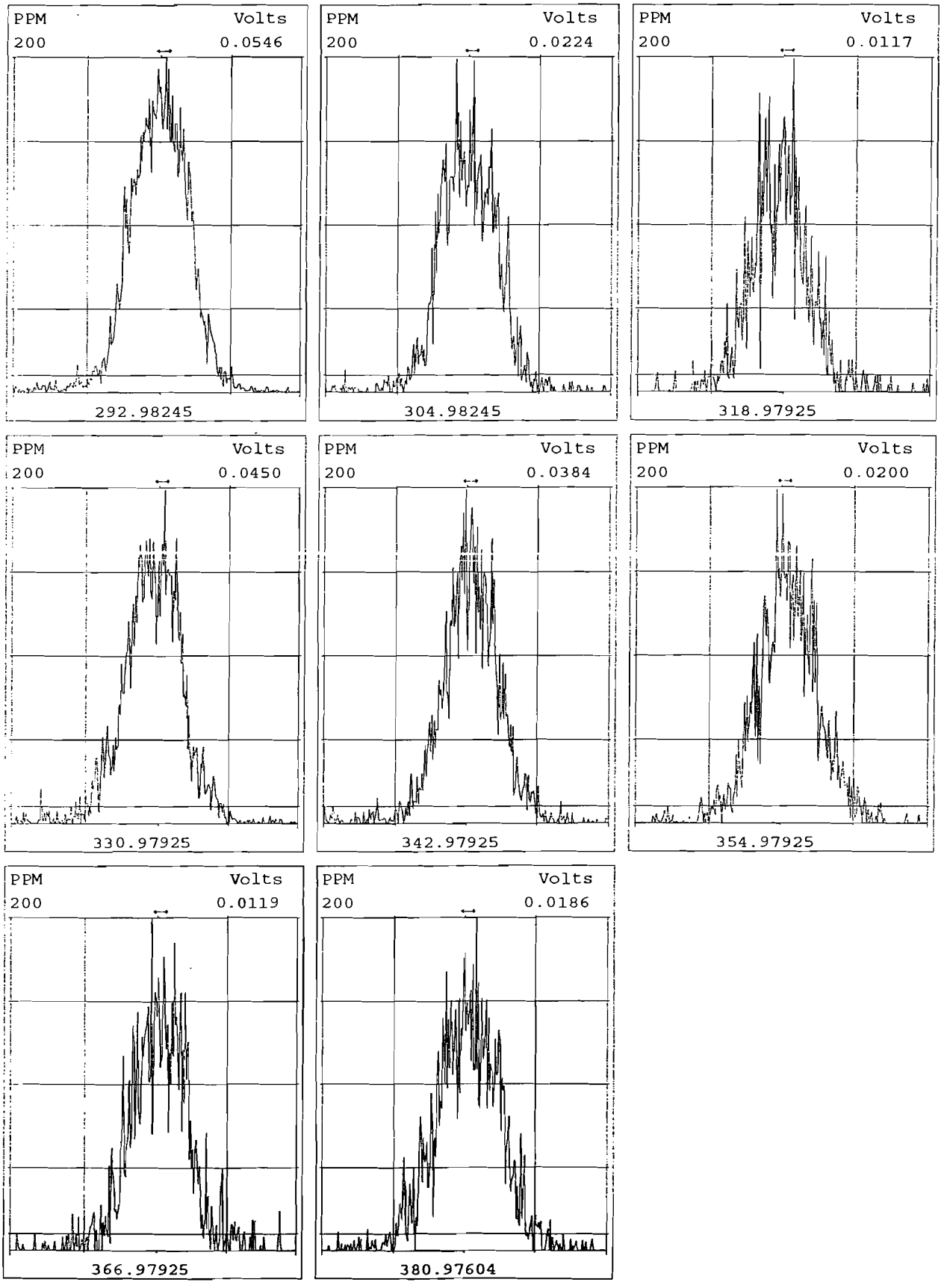
TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.001	27.80
1,2,3,7,8-PeCDF	1.001	32.13
2,3,4,7,8-PeCDF	1.027	32.98
1,2,3,4,7,8-HxCDF	0.996	37.05
1,2,3,6,7,8-HxCDF	1.000	37.22
2,3,4,6,7,8-HxCDF	1.022	38.00
1,2,3,7,8,9-HxCDF	1.049	39.03
1,2,3,4,6,7,8-HpCDF	1.000	40.92
1,2,3,4,7,8,9-HpCDF	1.034	42.28
OCDF	1.003	44.75
2,3,7,8-TCDD	1.000	28.60
1,2,3,7,8-PeCDD	1.000	33.42
1,2,3,4,7,8-HxCDD	0.998	38.20
1,2,3,6,7,8-HxCDD	1.000	38.30
1,2,3,7,8,9-HxCDD	1.011	38.72
1,2,3,4,6,7,8-HpCDD	1.000	41.90
OCDD	1.000	44.62
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.979	27.78
13C-1,2,3,7,8-PeCDF	1.132	32.12
13C-1,2,3,6,7,8-HxCDF	0.961	37.20
13C-1,2,3,4,6,7,8-HpCDF	1.057	40.90
13C-2,3,7,8-TCDD	1.007	28.58
13C-1,2,3,7,8-PeCDD	1.177	33.40
13C-1,2,3,6,7,8-HxCDD	0.989	38.28
13C-1,2,3,4,6,7,8-HpCDD	1.082	41.88
13C-OCDD	1.152	44.60
37C12-2,3,7,8-TCDD	1.001	28.60
13C-2,3,4,7,8-PeCDF	1.026	32.97
13C-1,2,3,4,7,8-HxCDF	0.995	37.02
13C-1,2,3,4,7,8-HxCDD	0.997	38.18
13C-1,2,3,4,7,8,9-HpCDF	1.009	42.27
13C12-1,2,3,7,8,9-HxCDF	1.008	39.02
Recovery Standard		
13C-1,2,3,4-TCDD	NA	28.38
13C-1,2,3,7,8,9-HxCDD	NA	38.70

frm7diox8290Rev1

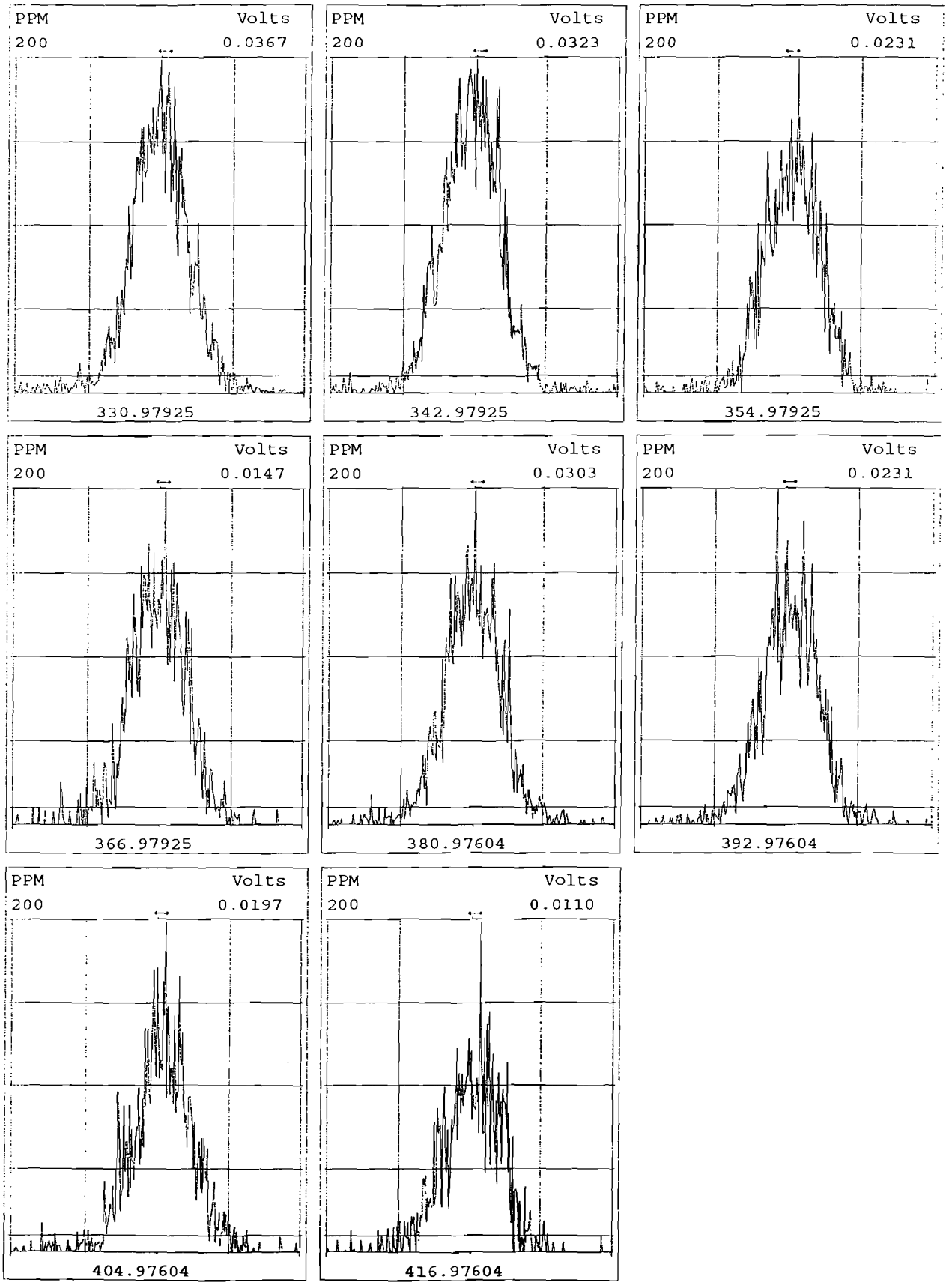
Run #8 Filename A829001 S: 4 I: 1 Acquired: 27-FEB-08 12:32:17 Processed: 29-FEB-08 10:20:55
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Quan : V3.6 19-OCT-2005 15:45:13
Sample text: CCAL._A829001C03 Analyst: ANALYST:CSM OPUS : V3.6X 31-JUL-1998 11:15:12
Comments: CCAL._A829001C03 Instrument : Autospec

Typ	Name	Resp	RA		RT	Conc	Dev'n	Mod?
Unk	2,3,7,8-TCDF	1.981e+06	0.75	y	27:48	5.525	10.507	n
Unk	1,2,3,7,8-PeCDF	7.819e+06	1.55	y	32:08	27.239	8.955	n
Unk	2,3,4,7,8-PeCDF	7.855e+06	1.52	y	32:59	26.854	7.417	n
Unk	1,2,3,4,7,8-HxCDF	6.649e+06	1.19	y	37:03	26.877	7.509	n
Unk	1,2,3,6,7,8-HxCDF	7.289e+06	1.18	y	37:13	26.948	7.793	n
Unk	2,3,4,6,7,8-HxCDF	6.249e+06	1.18	y	38:00	26.889	7.556	n
Unk	1,2,3,7,8,9-HxCDF	5.590e+06	1.21	y	39:02	26.791	7.165	n
Unk	1,2,3,4,6,7,8-HpCDF	6.278e+06	1.03	y	40:55	25.754	3.017	n
Unk	1,2,3,4,7,8,9-HpCDF	5.073e+06	1.03	y	42:17	25.419	1.675	n
Unk	OCDF	9.719e+06	0.90	y	44:45	53.900	7.801	n
Unk	2,3,7,8-TCDD	1.623e+06	0.80	y	28:36	5.620	12.399	n
Unk	1,2,3,7,8-PeCDD	5.968e+06	1.58	y	33:25	26.565	6.261	n
Unk	1,2,3,4,7,8-HxCDD	5.068e+06	1.26	y	38:12	25.966	3.864	n
Unk	1,2,3,6,7,8-HxCDD	5.258e+06	1.26	y	38:18	26.489	5.955	n
Unk	1,2,3,7,8,9-HxCDD	5.481e+06	1.28	y	38:43	26.603	6.412	n
Unk	1,2,3,4,6,7,8-HpCDD	4.793e+06	1.01	y	41:54	25.793	3.173	n
Unk	OCDD	9.101e+06	0.86	y	44:37	51.634	3.268	n
IS/RT	13C-2,3,7,8-TCDF	4.212e+07	0.80	y	27:47	112.348	12.348	n
IS	13C-1,2,3,7,8-PeCDF	3.539e+07	1.58	y	32:07	111.116	11.116	n
IS	13C-1,2,3,6,7,8-HxCDF	2.537e+07	0.51	y	37:12	106.525	6.525	n
IS	13C-1,2,3,4,6,7,8-HpCDF	1.917e+07	0.43	y	40:54	118.624	18.624	n
IS	13C-2,3,7,8-TCDD	2.680e+07	0.79	y	28:35	95.422	-4.578	n
IS	13C-1,2,3,7,8-PeCDD	2.257e+07	1.61	y	33:24	101.300	1.300	n
IS	13C-1,2,3,6,7,8-HxCDD	2.022e+07	1.33	y	38:17	98.416	-1.583	n
IS	13C-1,2,3,4,6,7,8-HpCDD	2.147e+07	1.08	y	41:53	109.435	9.435	n
IS	13C-OCDD	3.846e+07	0.87	y	44:36	216.722	8.361	n
Surr	37C12-2,3,7,8-TCDD	2.909e+06	1.00	y	28:36	5.243	4.856	n
Surr	13C-2,3,4,7,8-PeCDF	8.243e+06	1.59	y	32:58	24.647	-1.410	n
Surr	13C-1,2,3,4,7,8-HxCDF	5.856e+06	0.51	y	37:01	24.359	-2.565	n
Surr	13C-1,2,3,4,7,8-HxCDD	4.508e+06	1.35	y	38:11	24.553	-1.787	n
Surr	13C-1,2,3,4,7,8,9-HpCDF	4.060e+06	0.42	y	42:16	27.423	9.692	n
ALT	13C12-1,2,3,7,8,9-HxCDF	5.221e+06	0.53	y	39:01	27.960	11.838	n
RS	13C-1,2,3,4-TCDD	2.693e+07	0.80	y	28:23	155.300	-	n
RS/RT	13C-1,2,3,7,8,9-HxCDD	2.085e+07	1.34	y	38:42	162.170	-	n
DPE	HxCDPE	-			-	-	-	n
DPE	HpCDPE	-			-	-	-	n
DPE	OCDPE	-			-	-	-	n
DPE	NCDPE	-			-	-	-	n
DPE	DCDPE	-			-	-	-	n
LM	LOCK_MASS_F1	*			NotFnd	*	*	n
LM	LOCK_MASS_F2	-			-	-	-	n
LM	LOCK_MASS_F3	-			-	-	-	n
LM	LOCK_MASS_F4	-			-	-	-	n
LM	LOCK_MASS_F5	-			-	-	-	n

Peak Locate Examination:27-FEB-2008:08:25 File:0208008AE
Experiment:8290 Function:1 Reference:PFK



Peak Locate Examination:27-FEB-2008:08:25 File:0208008AE
Experiment:8290 Function:2 Reference:PFK



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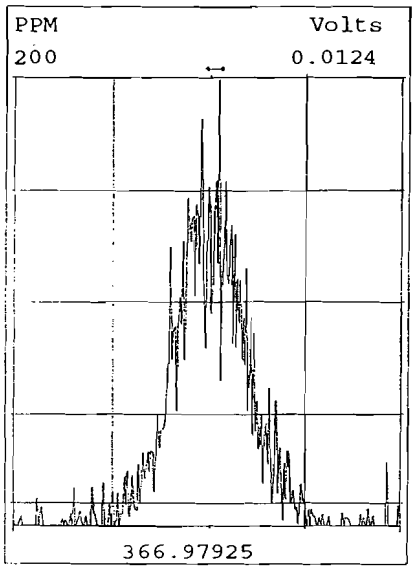
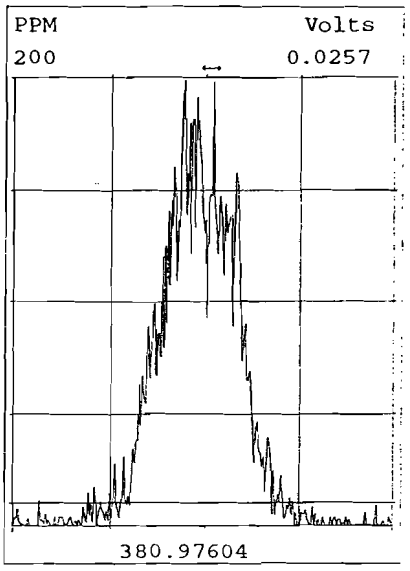
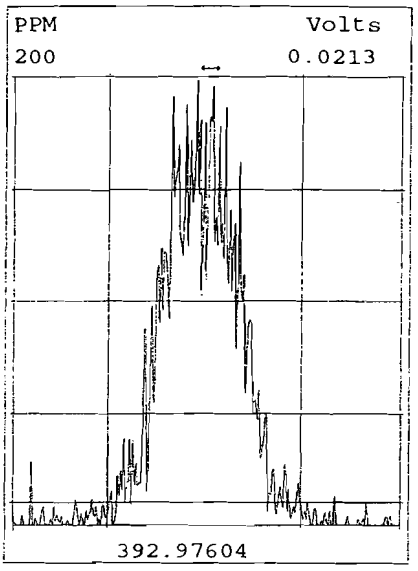
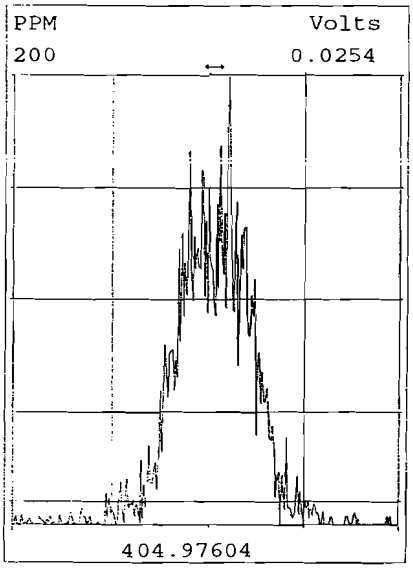
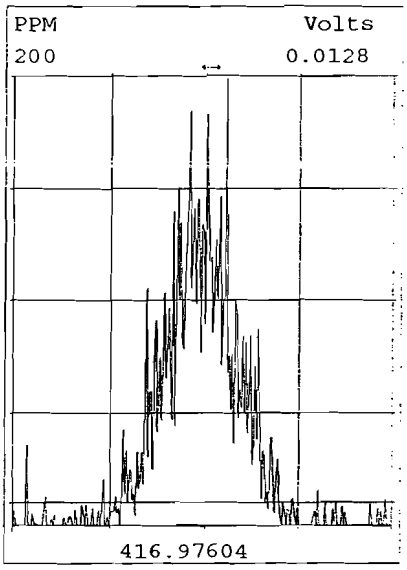
Experiment:8290 Function:3 Reference:PFK

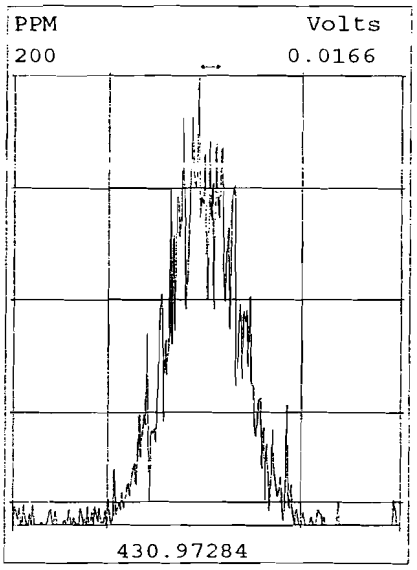


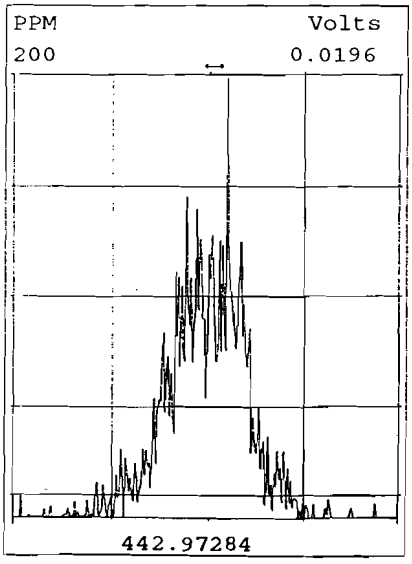


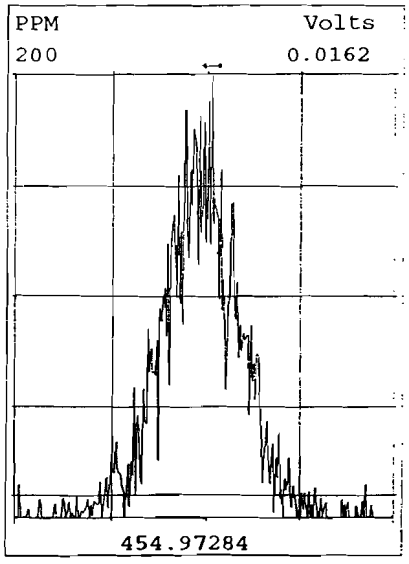




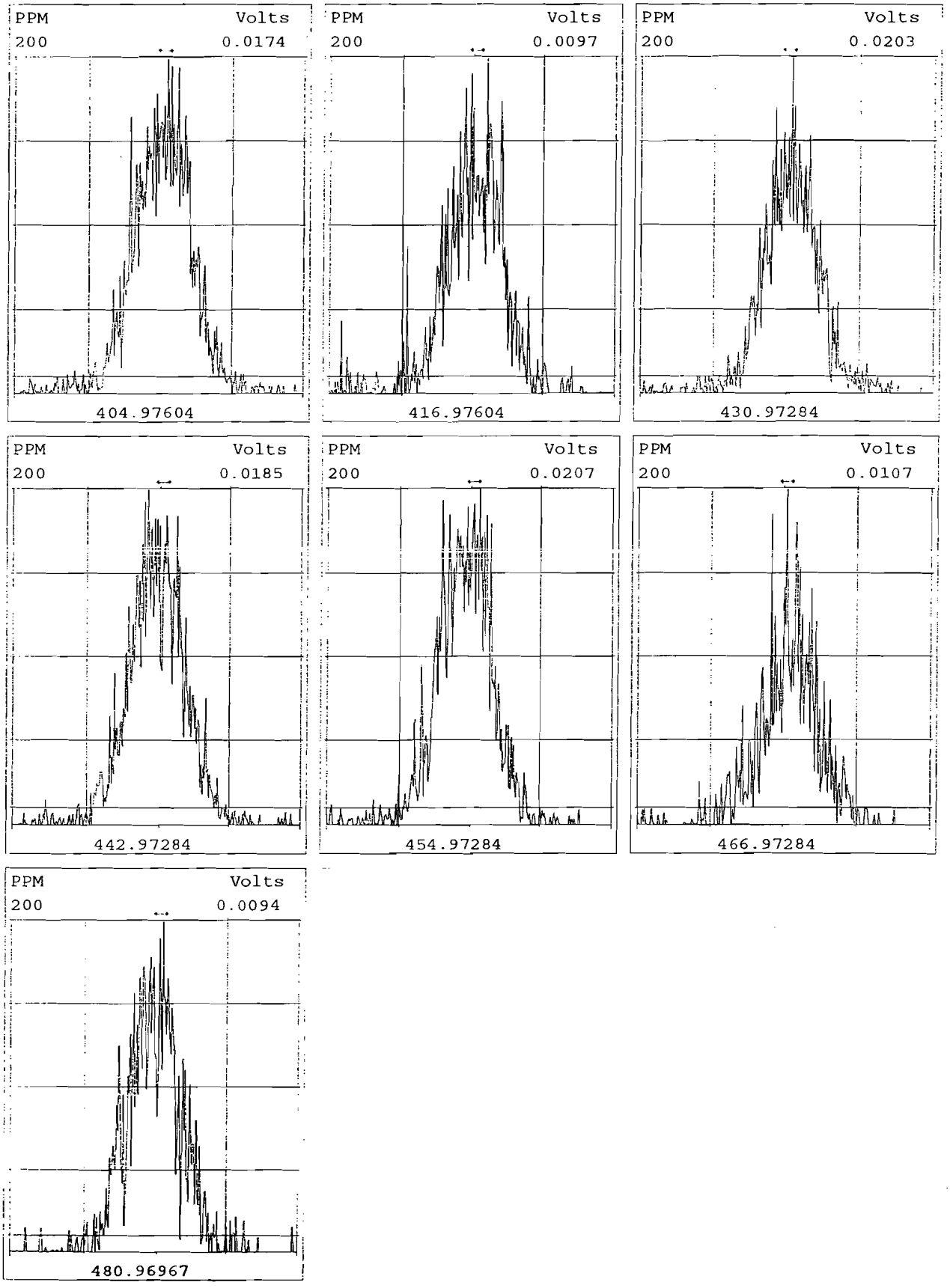




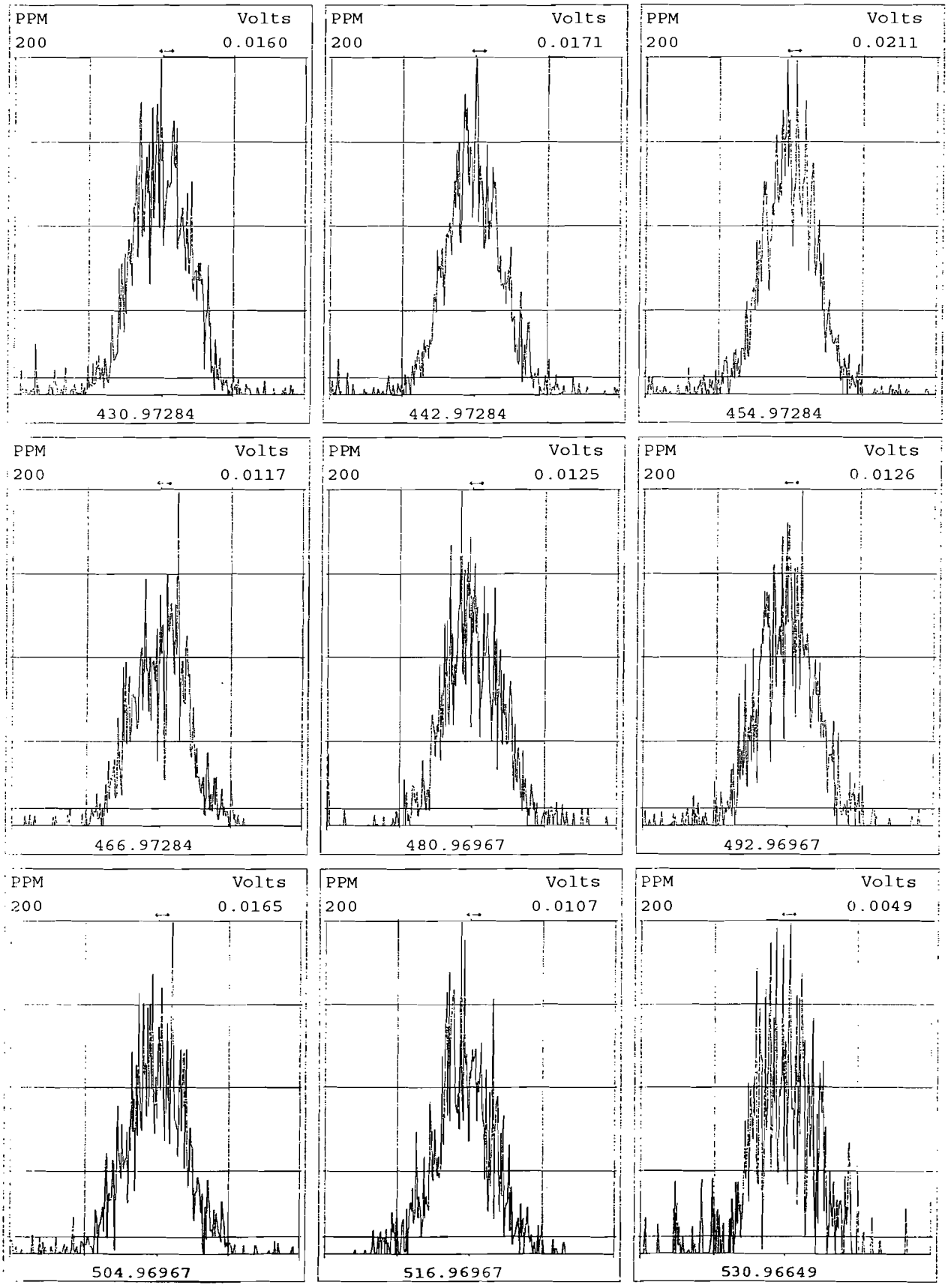




Peak Locate Examination:27-FEB-2008:08:26 File:0208008AE
Experiment:8290 Function:4 Reference:PFK



Peak Locate Examination:27-FEB-2008:08:26 File:0208008AE
Experiment:8290 Function:5 Reference:PFK



USEPA

5DFC-Form V-HR CDD-3
CDD/CDF ANALYTICAL SEQUENCE SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES **Contract:** Loureiro Engineering

Lab Code: OH01241 **Case No.:** Centredale manor **TO No.:** NA **SDG No.:** NA

GC Column: JWS-DB-5 **ID:** 0.25 (mm) **Instrument ID:** AutoSpec

Initial Calib. Date(s): 2/26/2008 2/26/2008

Initial Calib. Times: 1:17 4:37

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

LAB SAMPLE ID	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
CS1_A829001	CAL._A829001	0208005B S:8	2/26/2008	1:24	
CS2_A829001	CAL._A829001	0208005B S:9	2/26/2008	2:14	
CS3_A829001	CAL._A829001	0208005B S:10	2/26/2008	3:04	
CS4_A829001	CAL._A829001	0208005B S:11	2/26/2008	3:54	
CS5_A829001	CAL._A829001	0208005B S:12	2/26/2008	4:44	
CCAL._A829001C01	CCAL._A829001C01	0208008A S:2	2/26/2008	21:07	
CCAL._A829001C02	CCAL._A829001C03	0208008A S:9	2/27/2008	2:57	TCDD ↑
CCAL._A829001C03	CCAL._A829001C03	A829001 S:4	2/27/2008	12:32	past 12 hrs
INS._BLANK	Ins._Blank	0208008A S:3	2/26/2008	21:57	
0208008-MB	Method_Blank	0208008A S:4	2/26/2008	22:47	
0208008-1	1314216	0208008A S:5	2/26/2008	23:37	
0208008-1_MS	1314216_MS	0208008A S:6	2/27/2008	0:27	
0208008-1_MSD	1314216_MSD	0208008A S:7	2/27/2008	1:17	
0208008-LS	LAB_SPIKE	0208008A S:8	2/27/2008	2:07	

frm5cdiox040505

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1314216_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1_MS
QC Code: MS
Sample wt/vol: 11.9 g / L g Lab File ID: 0208008AS:6

Water Sample Prep: _____ (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (uL) % Solids/Lipids 82.3% Date Analyzed: 2/27/2008 0:27

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) ng/Kg

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		27:50	0.78	426.69		0.43
1,2,3,7,8-PeCDF		32:10	1.52	1038.60		0.54
2,3,4,7,8-PeCDF		33:00	1.52	1077.38		0.53
1,2,3,4,7,8-HxCDF		37:06	1.19	1100.71		0.92
1,2,3,6,7,8-HxCDF		37:15	1.20	1012.89		0.84
2,3,4,6,7,8-HxCDF		38:05	1.19	1148.87		0.98
1,2,3,7,8,9-HxCDF		39:03	1.20	1181.22		1.09
1,2,3,4,6,7,8-HpCDF		40:57	1.03	1000.36		0.53
1,2,3,4,7,8,9-HpCDF		42:17	1.02	1033.89		0.65
OCDF		44:47	0.88	2065.54		0.41
2,3,7,8-TCDD		28:37	0.80	24543.02		0.31
1,2,3,7,8-PeCDD		33:26	1.62	1018.20		1.06
1,2,3,4,7,8-HxCDD		38:16	1.24	926.07		0.77
1,2,3,6,7,8-HxCDD		38:22	1.21	1011.84		0.76
1,2,3,7,8,9-HxCDD		38:46	1.19	1144.60		0.73
1,2,3,4,6,7,8-HpCDD		41:54	1.03	1002.10		0.84
OCDD		44:39	0.86	2301.34		1.40

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:49	0.79	0.65	0.89	94	40	135
13C-1,2,3,7,8-PeCDF	IS	32:09	1.62	1.32	1.78	85	40	135
13C-1,2,3,6,7,8-HxCDF	IS	37:14	0.51	0.43	0.59	59	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:57	0.40	0.37	0.51	71	40	135
13C-2,3,7,8-TCDD	IS	28:36	0.82	0.65	0.89	92	40	135
13C-1,2,3,7,8-PeCDD	IS	33:25	1.54	1.32	1.78	87	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:22	1.33	1.05	1.43	66	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:54	1.13	0.88	1.2	72	40	135
13C-OCDD	IS	44:38	0.88	0.76	1.02	63	40	135
37C12-2,3,7,8-TCDD	Surr	28:37	1.00	1	1	133	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:59	1.62	1.32	1.78	104	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	37:04	0.50	0.43	0.59	103	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	38:15	1.25	1.05	1.43	96	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:17	0.40	0.37	0.51	100	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	39:02	0.55	0.43	0.59	81	40	135
13C-1,2,3,4-TCDD	RS	28:25	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:45	1.25	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1314216_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1_MS

Sample wt/vol: 11.85 g / L g Lab File ID: 0208008AS:6

Water Sample Prep: _____ (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 82.3% Date Analyzed: 27-02-08

% Lipids _____

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF	426.69	x 0.10 =	43
1,2,3,7,8-PeCDF	1038.60	x 0.03 =	31.16
2,3,4,7,8-PeCDF	1077.38	x 0.30 =	323.21
1,2,3,4,7,8-HxCDF	1100.71	x 0.10 =	110.07
1,2,3,6,7,8-HxCDF	1012.89	x 0.10 =	101.29
2,3,4,6,7,8-HxCDF	1148.87	x 0.10 =	114.89
1,2,3,7,8,9-HxCDF	1181.22	x 0.10 =	118.12
1,2,3,4,6,7,8-HpCDF	1000.36	x 0.01 =	10.00
1,2,3,4,7,8,9-HpCDF	1033.89	x 0.01 =	10.34
OCDF	2065.54	x 0.0003 =	0.62
2,3,7,8-TCDD	24543.02	x 1.00 =	24543.02
1,2,3,7,8-PeCDD	1018.20	x 1.00 =	1018.20
1,2,3,4,7,8-HxCDD	926.07	x 0.10 =	92.61
1,2,3,6,7,8-HxCDD	1011.84	x 0.10 =	101.18
1,2,3,7,8,9-HxCDD	1144.60	x 0.10 =	114.46
1,2,3,4,6,7,8-HpCDD	1002.10	x 0.01 =	10.02
OCDD	2301.34	x 0.0003 =	0.69
		Total =	26742.55

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1314216_MS

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1_MS

Sample wt/vol: 11.85 g / L g Lab File ID: 0208008AS:6

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 82% Date Analyzed: 27-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	4	24902.03		3.03
Total PeCDD	5	1130.84		10.32
Total HxCDD	5	3150.89		4.88
Total HpCDD	1	1002.10		8.21
FURANS				
Total TCDF	10	545.09		4.18
Total PeCDF	6	2810.90		5.25
Total HxCDF	9	5372.06		9.24
Total HpCDF	3	2047.44		5.67

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

Run #12 Filename 0208008A S: 6 I: 1 Acquired: 27-FEB-08 00:27:16 Processed: 29-FEB-08 10:38:18
Run: A829001 Analyte: 0208008A Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: 0208008-1_MS Analyst: ANALYST:CSM Instrument : Autospec 258145.491
Comments: 1314216_MS

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	2,3,7,8-TCDF	1	9.224e+06	0.78	y	27:50	4160.782	416.078	4.184	-	n
2	Unk	1,2,3,7,8-PeCDF	1	1.656e+07	1.52	y	32:10	10127.779	506.389	5.299	-	n
3	Unk	2,3,4,7,8-PeCDF	1	1.751e+07	1.52	y	33:00	10505.886	5252.943	5.201	-	n
4	Unk	1,2,3,4,7,8-HxCDF	1	1.587e+07	1.19	y	37:06	10733.459	1073.346	8.950	-	n
5	Unk	1,2,3,6,7,8-HxCDF	1	1.596e+07	1.20	y	37:15	9877.036	987.704	8.185	-	n
6	Unk	2,3,4,6,7,8-HxCDF	1	1.556e+07	1.19	y	38:05	11203.035	1120.304	9.527	-	n
7	Unk	1,2,3,7,8,9-HxCDF	1	1.436e+07	1.20	y	39:03	11518.526	1151.853	10.61	-	n
8	Unk	1,2,3,4,6,7,8-HpCDF	1	1.543e+07	1.03	y	40:57	9754.867	97.549	5.153	-	n
9	Unk	1,2,3,4,7,8,9-HpCDF	1	1.306e+07	1.02	y	42:17	10081.867	100.819	6.294	-	n
10	Unk	OCDF	1	2.269e+07	0.88	y	44:47	20141.814	20.142	3.969	-	n
11	Unk	2,3,7,8-TCDD	1	4.924e+08	0.80	y	28:37	239327.940	239327.	3.034	-	n
12	Unk	1,2,3,7,8-PeCDD	1	1.418e+07	1.62	y	33:26	9928.801	4964.401	10.32	-	n
13	Unk	1,2,3,4,7,8-HxCDD	1	1.273e+07	1.24	y	38:16	9030.423	903.042	7.497	-	n
14	Unk	1,2,3,6,7,8-HxCDD	1	1.414e+07	1.21	y	38:22	9866.816	986.682	7.372	-	n
15	Unk	1,2,3,7,8,9-HxCDD	1	1.660e+07	1.19	y	38:46	11161.418	1116.142	7.103	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	1.281e+07	1.03	y	41:54	9771.823	97.718	8.211	-	y
17	Unk	OCDD	1	2.471e+07	0.86	y	44:39	22441.161	22.441	13.66	-	n
18	IS/RT	13C-2,3,7,8-TCDF	1	1.042e+07	0.79	y	27:49	3743.664	-	2.815	93.6	n
19	IS	13C-1,2,3,7,8-PeCDF	1	8.064e+06	1.62	y	32:09	3411.501	-	5.962	85.3	n
20	IS	13C-1,2,3,6,7,8-HxCDF	1	6.063e+06	0.51	y	37:14	2358.223	-	4.509	59.0	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	1	4.978e+06	0.40	y	40:57	2852.726	-	29.00	71.3	n
22	IS	13C-2,3,7,8-TCDD	1	7.637e+06	0.82	y	28:36	3664.033	-	6.001	91.6	n
23	IS	13C-1,2,3,7,8-PeCDD	1	5.738e+06	1.54	y	33:25	3469.470	-	6.236	86.7	n
24	IS	13C-1,2,3,6,7,8-HxCDD	1	5.839e+06	1.33	y	38:22	2632.700	-	3.549	65.8	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	1	6.060e+06	1.13	y	41:54	2860.534	-	5.865	71.5	n
26	IS	13C-OCDD	1	9.610e+06	0.88	y	44:38	5016.284	-	1.717	62.7	n
27	Surr	37C12-2,3,7,8-TCDD	1	2.104e+07	1.00	y	28:37	5322.939	-	0.187	133.1	n
28	Surr	13C-2,3,4,7,8-PeCDF	1	7.944e+06	1.62	y	32:59	4169.615	-	6.724	104.2	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	1	5.900e+06	0.50	y	37:04	4107.877	-	9.496	102.7	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	1	5.076e+06	1.25	y	38:15	3828.885	-	6.142	95.7	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	1	4.185e+06	0.40	y	42:17	4007.648	-	39.56	100.2	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	1	6.524e+06	0.55	y	39:02	3236.301	-	5.750	80.9	n
33	RS	13C-1,2,3,4-TCDD	1	9.992e+06	0.81	y	28:25	57.630	-	-	-	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	1	1.126e+07	1.25	y	38:45	87.537	-	-	-	n
35	Tot	Total Tetra-Furans	10	1.178e+07	0.71	y	24:29	5315.361	-	4.184	-	y
36	Tot	Total Tetra-Dioxins	4	4.996e+08	0.78	y	26:49	242828.829	-	3.034	-	n
37	Tot	Total Penta-Furans	6	4.525e+07	1.53	y	29:58	27410.094	-	5.249	-	n
38	Tot	Total Penta-Dioxins	5	1.574e+07	1.78	y	31:54	11027.246	-	10.32	-	n
39	Tot	Total Hexa-Furans	9	7.471e+07	1.33	y	35:44	52384.954	-	9.236	-	n
40	Tot	Total Hexa-Dioxins	5	4.491e+07	1.22	y	36:18	30725.433	-	4.880	-	n
41	Tot	Total Hepta-Furans	3	2.868e+07	1.03	y	40:57	19965.351	-	5.667	-	n
42	Tot	Total Hepta-Dioxins	1	1.281e+07	1.03	y	41:54	9771.823	-	8.211	-	y
43	DPE	HxCDPE	-	-			-	-	-	-	-	n
44	DPE	HpCDPE	-	-			-	-	-	-	-	n
45	DPE	OCDPE	-	-			-	-	-	-	-	n
46	DPE	NCDPE	-	-			-	-	-	-	-	n
47	DPE	DCDPE	-	-			-	-	-	-	-	n

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1314216_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1_MSD

QC Code: MSD

Sample wt/vol: 11.8 g / L g Lab File ID: 0208008AS:7

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (uL) % Solids/Lipids 82.3% Date Analyzed: 2/27/2008 1:17

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) ng/Kg

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		27:51	0.77	417.42		1.11
1,2,3,7,8-PeCDF		32:10	1.54	1020.43		1.43
2,3,4,7,8-PeCDF		33:00	1.53	1039.94		1.41
1,2,3,4,7,8-HxCDF		37:06	1.21	1103.41		1.71
1,2,3,6,7,8-HxCDF		37:16	1.21	995.38		1.56
2,3,4,6,7,8-HxCDF		38:04	1.19	1160.63		1.82
1,2,3,7,8,9-HxCDF		39:04	1.20	1204.40		2.03
1,2,3,4,6,7,8-HpCDF		40:58	1.02	1037.58		0.62
1,2,3,4,7,8,9-HpCDF		42:19	1.04	1116.03		0.76
OCDF		44:47	0.88	2103.64		0.45
2,3,7,8-TCDD		28:38	0.80	29913.46		0.60
1,2,3,7,8-PeCDD		33:27	1.61	1048.34		2.35
1,2,3,4,7,8-HxCDD		38:15	1.24	1012.14		1.51
1,2,3,6,7,8-HxCDD		38:22	1.22	1027.72		1.48
1,2,3,7,8,9-HxCDD		38:46	1.22	1146.54		1.43
1,2,3,4,6,7,8-HpCDD		41:56	1.04	1024.52		1.51
OCDD		44:39	0.98	2741.74		3.82

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	ION RATIO LIMITS HIGH	% REC #	RECOVERY LIMITS LOW	RECOVERY LIMITS HIGH
13C-2,3,7,8-TCDF	IS	27:49	0.78	0.65	0.89	83	40	135
13C-1,2,3,7,8-PeCDF	IS	32:09	1.60	1.32	1.78	79	40	135
13C-1,2,3,6,7,8-HxCDF	IS	37:15	0.51	0.43	0.59	56	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:57	0.44	0.37	0.51	63	40	135
13C-2,3,7,8-TCDD	IS	28:37	0.82	0.65	0.89	82	40	135
13C-1,2,3,7,8-PeCDD	IS	33:25	1.54	1.32	1.78	77	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:21	1.33	1.05	1.43	59	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:55	1.06	0.88	1.2	65	40	135
13C-OCDD	IS	44:39	0.90	0.76	1.02	57	40	135
37C12-2,3,7,8-TCDD	Surr	28:38	1.00	1	1	137 *	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:59	1.41	1.32	1.78	101	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	37:05	0.50	0.43	0.59	101	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	38:14	1.28	1.05	1.43	106	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:18	0.43	0.37	0.51	101	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	39:03	0.58	0.43	0.59	83	40	135
13C-1,2,3,4-TCDD	RS	28:25	0.80	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:45	1.26	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

fm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1314216_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1_MSD

Sample wt/vol: 11.84 g / L g Lab File ID: 0208008AS:7

Water Sample Prep: _____ (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 82.3% Date Analyzed: 27-02-08

% Lipids _____

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF	417.42	x 0.10 =	42
1,2,3,7,8-PeCDF	1020.43	x 0.03 =	30.61
2,3,4,7,8-PeCDF	1039.94	x 0.30 =	311.98
1,2,3,4,7,8-HxCDF	1103.41	x 0.10 =	110.34
1,2,3,6,7,8-HxCDF	995.38	x 0.10 =	99.54
2,3,4,6,7,8-HxCDF	1160.63	x 0.10 =	116.06
1,2,3,7,8,9-HxCDF	1204.40	x 0.10 =	120.44
1,2,3,4,6,7,8-HpCDF	1037.58	x 0.01 =	10.38
1,2,3,4,7,8,9-HpCDF	1116.03	x 0.01 =	11.16
OCDF	2103.64	x 0.0003 =	0.63
2,3,7,8-TCDD	29913.46	x 1.00 =	29913.46
1,2,3,7,8-PeCDD	1048.34	x 1.00 =	1048.34
1,2,3,4,7,8-HxCDD	1012.14	x 0.10 =	101.21
1,2,3,6,7,8-HxCDD	1027.72	x 0.10 =	102.77
1,2,3,7,8,9-HxCDD	1146.54	x 0.10 =	114.65
1,2,3,4,6,7,8-HpCDD	1024.52	x 0.01 =	10.25
OCDD	2741.74	x 0.0003 =	0.82
		Total =	32144.40

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

frm18290Arev2

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1314216_MSD

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-1_MSD

Sample wt/vol: 11.84 g / L g Lab File ID: 0208008AS:7

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 82% Date Analyzed: 27-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	3	30307.04		5.83
Total PeCDD	4	1649.05		22.86
Total HxCDD	5	3317.34		9.55
Total HpCDD	4 Check	1101.32		14.74
FURANS				
Total TCDF	6	490.32		10.81
Total PeCDF	8	3201.96		13.81
Total HxCDF	9	5511.03		17.18
Total HpCDF	3	2174.93		6.63

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

3 Possible

No Impact, totals not used in recovery

Run #13 Filename 0208008A S: 7 I: 1 Acquired: 27-FEB-08 01:17:15 Processed: 29-FEB-08 10:44:36
Run: A829001 Analyte: 0208008A Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: 0208008-1_MSD Analyst: ANALYST:CSM Instrument : Autospec 310338.534
Comments: 1314216_MSD

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	2,3,7,8-TCDF	1	7.671e+06	0.77	y	27:51	4066.948	406.695	10.81	-	n
2	Unk	1,2,3,7,8-PeCDF	1	1.452e+07	1.54	y	32:10	9942.181	497.109	13.95	-	n
3	Unk	2,3,4,7,8-PeCDF	1	1.508e+07	1.53	y	33:00	10132.298	5066.149	13.69	-	n
4	Unk	1,2,3,4,7,8-HxCDF	1	1.389e+07	1.21	y	37:06	10750.717	1075.072	16.64	-	n
5	Unk	1,2,3,6,7,8-HxCDF	1	1.370e+07	1.21	y	37:16	9698.152	969.815	15.22	-	n
6	Unk	2,3,4,6,7,8-HxCDF	1	1.372e+07	1.19	y	38:04	11308.150	1130.815	17.72	-	n
7	Unk	1,2,3,7,8,9-HxCDF	1	1.278e+07	1.20	y	39:04	11734.645	1173.464	19.74	-	n
8	Unk	1,2,3,4,6,7,8-HpCDF	1	1.307e+07	1.02	y	40:58	10109.253	101.093	6.027	-	n
9	Unk	1,2,3,4,7,8,9-HpCDF	1	1.151e+07	1.04	y	42:19	10873.658	108.737	7.362	-	n
10	Unk	OCDF	1	1.934e+07	0.88	y	44:47	20496.081	20.496	4.415	-	n
11	Unk	2,3,7,8-TCDD	1	5.178e+08	0.80	y	28:38	291450.947	291450.	5.832	-	n
12	Unk	1,2,3,7,8-PeCDD	1	1.244e+07	1.61	y	33:27	10214.118	5107.059	22.86	-	n
13	Unk	1,2,3,4,7,8-HxCDD	1	1.145e+07	1.24	y	38:15	9861.436	986.144	14.67	-	n
14	Unk	1,2,3,6,7,8-HxCDD	1	1.182e+07	1.22	y	38:22	10013.186	1001.319	14.43	-	n
15	Unk	1,2,3,7,8,9-HxCDD	1	1.369e+07	1.22	y	38:46	11170.878	1117.088	13.90	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	1.103e+07	1.04	y	41:56	9982.017	99.820	14.74	-	n
17	Unk	OCDD	1	2.465e+07	0.98	y	44:39	26713.129	26.713	37.26	-	n
18	IS/RT	13C-2,3,7,8-TCDF	1	8.863e+06	0.78	y	27:49	3310.163	-	3.812	82.8	n
19	IS	13C-1,2,3,7,8-PeCDF	1	7.204e+06	1.60	y	32:09	3167.304	-	8.554	79.2	n
20	IS	13C-1,2,3,6,7,8-HxCDF	1	5.299e+06	0.51	y	37:15	2230.885	-	9.931	55.8	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	1	4.066e+06	0.44	y	40:57	2522.483	-	43.71	63.1	n
22	IS	13C-2,3,7,8-TCDD	1	6.594e+06	0.82	y	28:37	3288.260	-	6.013	82.2	n
23	IS	13C-1,2,3,7,8-PeCDD	1	4.895e+06	1.54	y	33:25	3075.595	-	11.86	76.9	n
24	IS	13C-1,2,3,6,7,8-HxCDD	1	4.811e+06	1.33	y	38:21	2347.697	-	7.951	58.7	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	1	5.108e+06	1.06	y	41:55	2609.714	-	6.808	65.2	n
26	IS	13C-OCDD	1	8.052e+06	0.90	y	44:39	4549.455	-	1.988	56.9	n
27	Surr	37C12-2,3,7,8-TCDD	1	1.872e+07	1.00	y	28:38	5484.041	-	0.215	137.1	n
28	Surr	13C-2,3,4,7,8-PeCDF	1	6.897e+06	1.41	y	32:59	4052.580	-	11.05	101.3	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	1	5.076e+06	0.50	y	37:05	4043.781	-	22.79	101.1	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	1	4.618e+06	1.28	y	38:14	4228.713	-	13.77	105.7	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	1	3.556e+06	0.43	y	42:18	4039.204	-	60.98	101.0	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	1	6.144e+06	0.58	y	39:03	3298.976	-	12.66	82.5	n
33	RS	13C-1,2,3,4-TCDD	1	9.614e+06	0.80	y	28:25	55.452	-	-	-	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	1	1.040e+07	1.26	y	38:45	80.873	-	-	-	n
35	Tot	Total Tetra-Furans	6	9.011e+06	0.77	y	24:30	4777.279	-	10.81	-	n
36	Tot	Total Tetra-Dioxins	3	5.247e+08	0.83	y	26:50	295285.614	-	5.832	-	n
37	Tot	Total Penta-Furans	8	4.601e+07	1.52	y	29:59	31197.170	-	13.81	-	n
38	Tot	Total Penta-Dioxins	4	1.957e+07	1.58	y	32:20	16066.930	-	22.86	-	n
39	Tot	Total Hexa-Furans	9	6.687e+07	1.10	y	35:43	53694.675	-	17.18	-	n
40	Tot	Total Hexa-Dioxins	5	3.924e+07	1.23	y	36:20	32321.280	-	9.552	-	y
41	Tot	Total Hepta-Furans	3	2.482e+07	1.02	y	40:58	21190.612	-	6.628	-	n
42	Tot	Total Hepta-Dioxins	4	1.186e+07	1.05	y	41:15	10730.354	-	14.74	-	n
43	DPE	HxCDPE	-	-			-	-	-	-	-	n
44	DPE	HpCDPE	-	-			-	-	-	-	-	n
45	DPE	OCDPE	-	-			-	-	-	-	-	n
46	DPE	NCDPE	-	-			-	-	-	-	-	n
47	DPE	DCDPE	-	-			-	-	-	-	-	n

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: LAB_SPIKE

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-LS

QC Code: LCS

Sample wt/vol: 10.0 g / L g Lab File ID: 0208008AS:8

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (uL) % Solids/Lipids 10000.0% Date Analyzed: 2/27/2008 2:07

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) ng/Kg

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		27:50	0.77	4.24		0.01
1,2,3,7,8-PeCDF		32:10	1.54	10.52		0.01
2,3,4,7,8-PeCDF			1.55	10.09		0.01
1,2,3,4,7,8-HxCDF		37:05	1.21	11.13		0.00
1,2,3,6,7,8-HxCDF		37:14	1.21	10.25		0.00
2,3,4,6,7,8-HxCDF		38:01	1.19	11.18		0.00
1,2,3,7,8,9-HxCDF		39:03	1.22	12.22		0.00
1,2,3,4,6,7,8-HpCDF		40:56	1.04	10.48		0.00
1,2,3,4,7,8,9-HpCDF		42:17	1.04	11.46		0.00
OCDF		44:46	0.88	21.22		0.00
2,3,7,8-TCDD		28:37	0.80	6.12		0.01
1,2,3,7,8-PeCDD		33:26	1.61	10.48		0.02
1,2,3,4,7,8-HxCDD		38:13	1.23	10.18		0.01
1,2,3,6,7,8-HxCDD		38:20	1.25	10.12		0.01
1,2,3,7,8,9-HxCDD		38:45	1.24	10.75		0.01
1,2,3,4,6,7,8-HpCDD		41:54	1.02	9.61	J	0.01
OCDD		44:38	0.86	20.87		0.01

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:49	0.81	0.65	0.89	88	40	135
13C-1,2,3,7,8-PeCDF	IS	32:09	1.64	1.32	1.78	91	40	135
13C-1,2,3,6,7,8-HxCDF	IS	37:13	0.50	0.43	0.59	74	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:55	0.43	0.37	0.51	91	40	135
13C-2,3,7,8-TCDD	IS	28:36	0.82	0.65	0.89	80	40	135
13C-1,2,3,7,8-PeCDD	IS	33:25	1.52	1.32	1.78	79	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:20	1.33	1.05	1.43	74	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:54	1.10	0.88	1.2	93	40	135
13C-OCDD	IS	44:38	0.89	0.76	1.02	89	40	135
37C12-2,3,7,8-TCDD	Surr	28:37	1.00	1	1	105	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:59	1.59	1.32	1.78	95	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	37:04	0.51	0.43	0.59	99	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	38:12	1.29	1.05	1.43	103	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:17	0.43	0.37	0.51	105	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	39:01	0.53	0.43	0.59	93	40	135
13C-1,2,3,4-TCDD	RS	28:24	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:44	1.28	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: LAB_SPIKE

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-LS

Sample wt/vol: 10.00 g / L g Lab File ID: 0208008AS:8

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 10000.0% Date Analyzed: 27-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF	4.24	x 0.10 =	0
1,2,3,7,8-PeCDF	10.52	x 0.03 =	0.32
2,3,4,7,8-PeCDF	10.09	x 0.30 =	3.03
1,2,3,4,7,8-HxCDF	11.13	x 0.10 =	1.11
1,2,3,6,7,8-HxCDF	10.25	x 0.10 =	1.02
2,3,4,6,7,8-HxCDF	11.18	x 0.10 =	1.12
1,2,3,7,8,9-HxCDF	12.22	x 0.10 =	1.22
1,2,3,4,6,7,8-HpCDF	10.48	x 0.01 =	0.10
1,2,3,4,7,8,9-HpCDF	11.46	x 0.01 =	0.11
OCDF	21.22	x 0.0003 =	0.01
2,3,7,8-TCDD	6.12	x 1.00 =	6.12
1,2,3,7,8-PeCDD	10.48	x 1.00 =	10.48
1,2,3,4,7,8-HxCDD	10.18	x 0.10 =	1.02
1,2,3,6,7,8-HxCDD	10.12	x 0.10 =	1.01
1,2,3,7,8,9-HxCDD	10.75	x 0.10 =	1.08
1,2,3,4,6,7,8-HpCDD	9.61	x 0.01 =	0.10
OCDD	20.87	x 0.0003 =	0.01
		Total =	28.28

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
LAB_SPIKE

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-LS

Sample wt/vol: 10.00 g / L g Lab File ID: 0208008AS:8

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 10000% Date Analyzed: 27-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	6.12		9.34
Total PeCDD	1	10.48		15.56
Total HxCDD	6	31.14		4.25
Total HpCDD	1	9.61		5.30
FURANS				
Total TCDF	2	4.34		8.86
Total PeCDF	4	20.74		7.19
Total HxCDF	6	44.96		3.32
Total HpCDF	3	21.97		3.27

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

Run #14 Filename 0208008A S: 8 I: 1 Acquired: 27-FEB-08 02:07:09 Processed: 29-FEB-08 13:13:10
Run: A829001 Analyte: 0208008A Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: 0208008-LS Analyst: ANALYST:CSM Instrument : Autospec 25292.913
Comments: LAB_SPIKE

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	2,3,7,8-TCDF	1	7.709e+06	0.77	y	27:50	4241.856	424.186	8.861	-	n
2	Unk	1,2,3,7,8-PeCDF	1	1.612e+07	1.54	y	32:10	10518.142	525.907	7.254	-	n
3	Unk	2,3,4,7,8-PeCDF	1	1.576e+07	1.55	y	33:00	10090.035	5045.017	7.119	-	n
4	Unk	1,2,3,4,7,8-HxCDF	1	1.491e+07	1.21	y	37:05	11133.727	1113.373	3.213	-	n
5	Unk	1,2,3,6,7,8-HxCDF	1	1.500e+07	1.21	y	37:14	10246.535	1024.653	2.938	-	n
6	Unk	2,3,4,6,7,8-HxCDF	1	1.407e+07	1.19	y	38:01	11180.065	1118.007	3.420	-	n
7	Unk	1,2,3,7,8,9-HxCDF	1	1.380e+07	1.22	y	39:03	12217.060	1221.706	3.809	-	n
8	Unk	1,2,3,4,6,7,8-HpCDF	1	1.529e+07	1.04	y	40:56	10479.912	104.799	2.976	-	n
9	Unk	1,2,3,4,7,8,9-HpCDF	1	1.369e+07	1.04	y	42:17	11460.668	114.607	3.635	-	n
10	Unk	OCDF	1	2.444e+07	0.88	y	44:46	21219.696	21.220	2.365	-	n
11	Unk	2,3,7,8-TCDD	1	9.648e+06	0.80	y	28:37	6115.348	6115.348	9.337	-	n
12	Unk	1,2,3,7,8-PeCDD	1	1.193e+07	1.61	y	33:26	10484.861	5242.430	15.56	-	n
13	Unk	1,2,3,4,7,8-HxCDD	1	1.154e+07	1.23	y	38:13	10176.493	1017.649	6.533	-	n
14	Unk	1,2,3,6,7,8-HxCDD	1	1.167e+07	1.25	y	38:20	10115.904	1011.590	6.424	-	n
15	Unk	1,2,3,7,8,9-HxCDD	1	1.288e+07	1.24	y	38:45	10754.046	1075.405	6.189	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	1.177e+07	1.02	y	41:54	9614.297	96.143	5.295	-	n
17	Unk	OCDD	1	2.350e+07	0.86	y	44:38	20873.724	20.874	5.825	-	n
18	IS/RT	13C-2,3,7,8-TCDF	1	8.539e+06	0.81	y	27:49	3500.013	-	3.986	87.5	n
19	IS	13C-1,2,3,7,8-PeCDF	1	7.560e+06	1.64	y	32:09	3647.646	-	11.09	91.2	n
20	IS	13C-1,2,3,6,7,8-HxCDF	1	5.493e+06	0.50	y	37:13	2962.956	-	10.85	74.1	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	1	4.591e+06	0.43	y	40:55	3648.386	-	13.52	91.2	n
22	IS	13C-2,3,7,8-TCDD	1	5.856e+06	0.82	y	28:36	3204.236	-	5.712	80.1	n
23	IS	13C-1,2,3,7,8-PeCDD	1	4.572e+06	1.52	y	33:25	3152.850	-	10.88	78.8	n
24	IS	13C-1,2,3,6,7,8-HxCDD	1	4.700e+06	1.33	y	38:20	2938.578	-	3.871	73.5	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	1	5.661e+06	1.10	y	41:54	3705.697	-	5.538	92.6	n
26	IS	13C-OCDD	1	9.824e+06	0.89	y	44:38	7111.935	-	1.151	88.9	n
27	Surr	37C12-2,3,7,8-TCDD	1	1.270e+07	1.00	y	28:37	4188.007	-	0.218	104.7	n
28	Surr	13C-2,3,4,7,8-PeCDF	1	6.752e+06	1.59	y	32:59	3780.429	-	11.47	94.5	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	1	5.166e+06	0.51	y	37:04	3969.897	-	18.13	99.2	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	1	4.401e+06	1.29	y	38:12	4125.258	-	5.899	103.1	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	1	4.084e+06	0.43	y	42:17	4186.046	-	14.22	104.7	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	1	5.423e+06	0.53	y	39:01	3730.485	-	13.84	93.3	n
33	RS	13C-1,2,3,4-TCDD	1	8.761e+06	0.81	y	28:24	50.530	-	-	-	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	1	8.116e+06	1.28	y	38:44	63.123	-	-	-	n
35	Tot	Total Tetra-Furans	2	7.886e+06	0.83	y	27:23	4339.108	-	8.861	-	y
36	Tot	Total Tetra-Dioxins	1	9.648e+06	0.80	y	28:37	6115.348	-	9.337	-	n
37	Tot	Total Penta-Furans	4	3.208e+07	1.62	y	29:59	20735.533	-	7.186	-	n
38	Tot	Total Penta-Dioxins	1	1.193e+07	1.61	y	33:26	10484.861	-	15.56	-	y
39	Tot	Total Hexa-Furans	6	5.802e+07	1.18	y	36:11	44961.181	-	3.315	-	n
40	Tot	Total Hexa-Dioxins	6	3.626e+07	1.35	y	36:18	31144.550	-	4.253	-	n
41	Tot	Total Hepta-Furans	3	2.902e+07	1.04	y	40:56	21972.142	-	3.273	-	n
42	Tot	Total Hepta-Dioxins	1	1.177e+07	1.02	y	41:54	9614.297	-	5.295	-	n
43	DPE	HxCDPE	-	-			-	-	-	-	-	n
44	DPE	HpCDPE	-	-			-	-	-	-	-	n
45	DPE	OCDPE	-	-			-	-	-	-	-	n
46	DPE	NCDPE	-	-			-	-	-	-	-	n
47	DPE	DCDPE	-	-			-	-	-	-	-	n

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
Method_Blank

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-MB

QC Code: MB

Sample wt/vol: 1.0 g / L g Lab File ID: 0208008AS:4

Water Sample Prep: _____ (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (uL) % Solids/Lipids 100.0% Date Analyzed: 2/26/2008 22:47

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) ng/Kg

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	0.46
1,2,3,7,8-PeCDF					U	0.53
2,3,4,7,8-PeCDF					U	0.52
1,2,3,4,7,8-HxCDF					U	0.80
1,2,3,6,7,8-HxCDF					U	0.73
2,3,4,6,7,8-HxCDF					U	0.85
1,2,3,7,8,9-HxCDF					U	0.95
1,2,3,4,6,7,8-HpCDF					U	0.61
1,2,3,4,7,8,9-HpCDF					U	0.75
OCDF					U	1.15
2,3,7,8-TCDD					U	0.53
1,2,3,7,8-PeCDD					U	0.73
1,2,3,4,7,8-HxCDD					U	1.00
1,2,3,6,7,8-HxCDD					U	0.98
1,2,3,7,8,9-HxCDD					U	0.95
1,2,3,4,6,7,8-HpCDD					U	0.69
OCDD					U	1.17

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:49	0.79	0.65	0.89	73	40	135
13C-1,2,3,7,8-PeCDF	IS	32:08	1.60	1.32	1.78	70	40	135
13C-1,2,3,6,7,8-HxCDF	IS	37:12	0.51	0.43	0.59	82	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:55	0.42	0.37	0.51	80	40	135
13C-2,3,7,8-TCDD	IS	28:35	0.81	0.65	0.89	69	40	135
13C-1,2,3,7,8-PeCDD	IS	33:25	1.60	1.32	1.78	67	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:19	1.30	1.05	1.43	78	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:53	1.10	0.88	1.2	73	40	135
13C-OCDD	IS	44:37	0.89	0.76	1.02	62	40	135
37C12-2,3,7,8-TCDD	Surr	28:36	1.00	1	1	103	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:59	1.64	1.32	1.78	100	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	37:03	0.50	0.43	0.59	85	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	38:11	1.26	1.05	1.43	91	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:17	0.42	0.37	0.51	96	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	39:01	0.51	0.43	0.59	77	40	135
13C-1,2,3,4-TCDD	RS	28:24	0.83	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:44	1.26	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: Method_Blank

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-MB

Sample wt/vol: 1.00 g / L g Lab File ID: 0208008AS:4

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 100.0% Date Analyzed: 26-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

TARGET ANALYTE	CONCENTRATION	TEF* WHO 2005	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.03 =	
2,3,4,7,8-PeCDF		x 0.30 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.0003 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 1.00 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.0003 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from Haws et al.,ToxSci 89,4-30, 2006.

frm18290Arev2

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
Method_Blank

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: NA

Matrix: Soil Lab Sample ID: 0208008-MB

Sample wt/vol: 1.00 g / L g Lab File ID: 0208008AS:4

Water Sample Prep: (SEPF/SPE) Date Received: 6-2-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 12-2-08

Injection Volume: 1 (ul) % Solids: 100% Date Analyzed: 26-02-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	0.53
Total PeCDD	0		U	0.73
Total HxCDD	0		U	0.65
Total HpCDD	0		U	0.69
FURANS				
Total TCDF	0		U	0.46
Total PeCDF	0		U	0.53
Total HxCDF	0		U	0.82
Total HpCDF	0		U	0.68

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

Run #10 Filename 0208008A S: 4 I: 1 Acquired: 26-FEB-08 22:47:22 Processed: 29-FEB-08 10:25:50
Run: A829001 Analyte: 0208008A Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: 0208008-MB Analyst: ANALYST:CSM Instrument : Autospec
Comments: Method_Blank 0.000

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	2,3,7,8-TCDF	0	*	*	n	NotFnd	*	*	0.461	-	n
2	Unk	1,2,3,7,8-PeCDF	0	*	*	n	NotFnd	*	*	0.530	-	n
3	Unk	2,3,4,7,8-PeCDF	0	*	*	n	NotFnd	*	*	0.521	-	n
4	Unk	1,2,3,4,7,8-HxCDF	0	*	*	n	NotFnd	*	*	0.798	-	n
5	Unk	1,2,3,6,7,8-HxCDF	0	*	*	n	NotFnd	*	*	0.729	-	n
6	Unk	2,3,4,6,7,8-HxCDF	0	*	*	n	NotFnd	*	*	0.849	-	n
7	Unk	1,2,3,7,8,9-HxCDF	0	*	*	n	NotFnd	*	*	0.946	-	n
8	Unk	1,2,3,4,6,7,8-HpCDF	0	*	*	n	NotFnd	*	*	0.614	-	n
9	Unk	1,2,3,4,7,8,9-HpCDF	0	*	*	n	NotFnd	*	*	0.750	-	n
10	Unk	OCDF	0	*	*	n	NotFnd	*	*	1.148	-	n
11	Unk	2,3,7,8-TCDD	0	*	*	n	NotFnd	*	*	0.534	-	n
12	Unk	1,2,3,7,8-PeCDD	0	*	*	n	NotFnd	*	*	0.733	-	n
13	Unk	1,2,3,4,7,8-HxCDD	0	*	*	n	NotFnd	*	*	0.999	-	n
14	Unk	1,2,3,6,7,8-HxCDD	0	*	*	n	NotFnd	*	*	0.983	-	n
15	Unk	1,2,3,7,8,9-HxCDD	0	*	*	n	NotFnd	*	*	0.947	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	0	*	*	n	NotFnd	*	*	0.691	-	n
17	Unk	OCDD	0	*	*	n	NotFnd	*	*	1.174	-	n
18	IS/RT	13C-2,3,7,8-TCDF	1	7.330e+06	0.79	y	27:49	2907.108	-	1.783	72.7	n
19	IS	13C-1,2,3,7,8-PeCDF	1	5.964e+06	1.60	y	32:08	2784.467	-	0.342	69.6	n
20	IS	13C-1,2,3,6,7,8-HxCDF	1	4.254e+06	0.51	y	37:12	3292.512	-	0.541	82.3	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	1	2.794e+06	0.42	y	40:55	3186.785	-	7.003	79.7	n
22	IS	13C-2,3,7,8-TCDD	1	5.223e+06	0.81	y	28:35	2765.641	-	5.543	69.1	n
23	IS	13C-1,2,3,7,8-PeCDD	1	4.013e+06	1.60	y	33:25	2677.551	-	0.549	66.9	n
24	IS	13C-1,2,3,6,7,8-HxCDD	1	3.484e+06	1.30	y	38:19	3126.132	-	0.705	78.2	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	1	3.127e+06	1.10	y	41:53	2937.882	-	4.760	73.4	n
26	IS	13C-OCDD	1	4.796e+06	0.89	y	44:37	4982.187	-	5.173	62.3	n
27	Surr	37C12-2,3,7,8-TCDD	1	1.115e+07	1.00	y	28:36	4124.374	-	0.215	103.1	n
28	Surr	13C-2,3,4,7,8-PeCDF	1	5.609e+06	1.64	y	32:59	3980.381	-	0.502	99.5	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	1	3.424e+06	0.50	y	37:03	3398.219	-	0.766	85.0	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	1	2.885e+06	1.26	y	38:11	3647.534	-	1.014	91.2	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	1	2.068e+06	0.42	y	42:17	3835.917	-	8.890	95.9	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	1	3.132e+06	0.51	y	39:01	3091.928	-	0.690	77.3	n
33	RS	13C-1,2,3,4-TCDD	1	9.054e+06	0.83	y	28:24	52.223	-	-	-	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	1	5.656e+06	1.26	y	38:44	43.987	-	-	-	n
35	Tot	Total Tetra-Furans	0	*	*	n	NotFnd	*	-	0.461	-	n
36	Tot	Total Tetra-Dioxins	0	*	*	n	NotFnd	*	-	0.534	-	n
37	Tot	Total Penta-Furans	0	*	*	n	NotFnd	*	-	0.525	-	n
38	Tot	Total Penta-Dioxins	0	*	*	n	NotFnd	*	-	0.733	-	n
39	Tot	Total Hexa-Furans	0	*	*	n	NotFnd	*	-	0.823	-	n
40	Tot	Total Hexa-Dioxins	0	*	*	n	NotFnd	*	-	0.651	-	n
41	Tot	Total Hepta-Furans	0	*	*	n	NotFnd	*	-	0.675	-	n
42	Tot	Total Hepta-Dioxins	0	*	*	n	NotFnd	*	-	0.691	-	n
43	DPE	HxCDPE	-	-			-	-	-	-	-	n
44	DPE	HpCDPE	-	-			-	-	-	-	-	n
45	DPE	OCDPE	-	-			-	-	-	-	-	n
46	DPE	NCDPE	-	-			-	-	-	-	-	n
47	DPE	DCDPE	-	-			-	-	-	-	-	n

Run #9 Filename 0208008A S: 3 I: 1 Acquired: 26-FEB-08 21:57:28 Processed: 29-FEB-08 10:24:12
Run: A829001 Analyte: A829001 Cal: A829001 Results: 0208008a Version: V3.6 19-OCT-2005 15:45:13
Sample text: INS. BLANK Analyst: ANALYST:CSM Instrument : Autospec
Comments: Ins. Blank

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
								0.000				
0	Unk	2,3,7,8-TCDF	0	*	*	n	NotFnd	*	*	13.57	-	n
2	Unk	1,2,3,7,8-PeCDF	0	*	*	n	NotFnd	*	*	28.65	-	n
3	Unk	2,3,4,7,8-PeCDF	0	*	*	n	NotFnd	*	*	28.12	-	n
4	Unk	1,2,3,4,7,8-HxCDF	0	*	*	n	NotFnd	*	*	*	-	n
5	Unk	1,2,3,6,7,8-HxCDF	0	*	*	n	NotFnd	*	*	*	-	n
6	Unk	2,3,4,6,7,8-HxCDF	0	*	*	n	NotFnd	*	*	*	-	n
7	Unk	1,2,3,7,8,9-HxCDF	0	*	*	n	NotFnd	*	*	*	-	n
8	Unk	1,2,3,4,6,7,8-HpCDF	0	*	*	n	NotFnd	*	*	*	-	n
9	Unk	1,2,3,4,7,8,9-HpCDF	0	*	*	n	NotFnd	*	*	*	-	n
10	Unk	OCDF	0	*	*	n	NotFnd	*	*	*	-	n
11	Unk	2,3,7,8-TCDD	0	*	*	n	NotFnd	*	*	*	-	n
12	Unk	1,2,3,7,8-PeCDD	0	*	*	n	NotFnd	*	*	18.21	-	n
13	Unk	1,2,3,4,7,8-HxCDD	0	*	*	n	NotFnd	*	*	*	-	n
14	Unk	1,2,3,6,7,8-HxCDD	0	*	*	n	NotFnd	*	*	*	-	n
15	Unk	1,2,3,7,8,9-HxCDD	0	*	*	n	NotFnd	*	*	*	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	0	*	*	n	NotFnd	*	*	*	-	n
17	Unk	OCDD	0	*	*	n	NotFnd	*	*	*	-	n
18	IS/RT	13C-2,3,7,8-TCDF	1	2.124e+04	0.65	n	27:49	33.963	-	46.67	34.0	n
19	IS	13C-1,2,3,7,8-PeCDF	1	1.021e+04	1.24	n	32:10	19.223	-	7.102	19.2	n
20	IS	13C-1,2,3,6,7,8-HxCDF	0	*	*	n	NotFnd	*	-	*	*	n
21	IS	13C-1,2,3,4,6,7,8-HpCDF	0	*	*	n	NotFnd	*	-	*	*	n
22	IS	13C-2,3,7,8-TCDD	0	*	*	n	NotFnd	*	-	156.8	*	n
23	IS	13C-1,2,3,7,8-PeCDD	1	1.049e+04	1.52	y	33:25	28.218	-	10.53	28.2	n
24	IS	13C-1,2,3,6,7,8-HxCDD	0	*	*	n	NotFnd	*	-	*	*	n
25	IS	13C-1,2,3,4,6,7,8-HpCDD	0	*	*	n	NotFnd	*	-	*	*	n
26	IS	13C-OCDD	0	*	*	n	NotFnd	*	-	*	*	n
27	Surr	37C12-2,3,7,8-TCDD	0	*	*	n	NotFnd	*	-	*	*	n
28	Surr	13C-2,3,4,7,8-PeCDF	1	6.490e+03	0.84	n	33:01	67.247	-	22.472	689.9	n
29	Surr	13C-1,2,3,4,7,8-HxCDF	0	*	*	n	NotFnd	*	-	*	*	n
30	Surr	13C-1,2,3,4,7,8-HxCDD	0	*	*	n	NotFnd	*	-	*	*	n
31	Surr	13C-1,2,3,4,7,8,9-HpCDF	0	*	*	n	NotFnd	*	-	*	*	n
32	ALT	13C12-1,2,3,7,8,9-HxCDF	0	*	*	n	NotFnd	*	-	*	*	n
33	RS	13C-1,2,3,4-TCDD	1	4.491e+04	23.33	n	28:24	0.259	-	-	-	n
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	0	*	*	n	NotFnd	*	-	-	-	n
35	Tot	Total Tetra-Furans	0	*	*	n	NotFnd	*	-	13.57	-	n
36	Tot	Total Tetra-Dioxins	0	*	*	n	NotFnd	*	-	*	-	n
37	Tot	Total Penta-Furans	0	*	*	n	NotFnd	*	-	28.38	-	n
38	Tot	Total Penta-Dioxins	0	*	*	n	NotFnd	*	-	18.21	-	n
39	Tot	Total Hexa-Furans	1	1.230e+03	1.11	y	36:49	*	-	*	-	n
40	Tot	Total Hexa-Dioxins	0	*	*	n	NotFnd	*	-	*	-	n
41	Tot	Total Hepta-Furans	0	*	*	n	NotFnd	*	-	*	-	n
42	Tot	Total Hepta-Dioxins	1	2.368e+03	1.12	y	42:20	*	-	*	-	n
43	DPE	HxCDPE	-	-			-	-	-	-	-	n
44	DPE	HpCDPE	-	-			-	-	-	-	-	n
45	DPE	OCDPE	-	-			-	-	-	-	-	n
46	DPE	NCDPE	-	-			-	-	-	-	-	n
47	DPE	DCDPE	-	-			-	-	-	-	-	n

DAT Labs, Inc. Extraction Form

Project # CQ08008

Sample: (SOLIDS) LIQUID AIR

Analysis: 8290

Prepared By: CSN

Date: 2/12/08

Spike Witness: JX

Solvent Manufac: EMD

Solvent Lot # 47064

Extraction	Solvent	Volume mls	Reps
✓ Soxhlet	Hexane		
Sep Funnel	Methanol		
Sonication	Methylene Chloride		
Cont. Ext	ACN		
Vial	Ethyl Acetate		
SPE Distill	IPX		
Other	✓ Toluene	300mL	19hr
No Extract	Water		
Other (Describe)	Start Time: 5:00pm 2/12/08 End Time: 12:00pm 2/13/08		

SURROGATE ID	VOL mls / (ul)	CONC
Sur SL - 36-18	40.0	100ng/mL 4.0ng/total
ALT SL - 36-19	40.0	100ng/mL 4.0ng/total
SL -		

LS/MS ID	VOL mls / (ul)	CONC 4/10/20 ng/total
~~SL~~ EDF-5908	40µL	100-500ng/mL
SL -		
SL -		

INT STD ID	VOL mls / (ul)	CONC
IS SL - 35-70	40.0	100ng/mL 4.0ng/total
RS ~~SL~~ EPA-1613 SS	25.0	200ng/mL 5.0ng/total
SL -		

COMMENTS

SAMPLE ID	TOTAL SAMPLE AMNT	SAMPLE AMNT EXTRACTED	TOTAL EXTRACT VOL (ADD ALL REPS)	FINAL EXTRACT VOL mls / (ul)	SURR INIT	SPK INIT	IS INIT
MB		✓	300mL Toluene	20µL Nonane	JX		
1	11.81 (g)						
1ms	11.85 (g)						
1msD	11.84 (g)						
LS					JX	JX	

If extract was split for additional analyses, please note the aliquot volume for this analysis and at what point the extract was spiked.

ALIQUOT VOLUME: _____ mls ul (Circle one)

Extract was spiked: Before After the split. (Circle one)

Additional samples may be listed on the back of this page.

RCC 6-4-08

DATFRM1013

DAT Labs Inc

Percent Solids Summary Table

Project #: **0208008** %solid=((c-a)/b)*100

Analyst: CSM

		a	b		c			
Sample ID	Start Date	Tare Weight (g)	Wet Wt(g) Sample-Tare	End Date	Dry Weight Sample+Tare	%Solids	%Moisture 100-%solids	Comments
0208008-1	2/11/08	1.1351	5.6665	2/12/08	5.7983	82.2942	17.7058	

SECTION 4

PROJECT CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD

Narrative

Laboratory name:	Data/Analysis Technologies, Inc.
Case Number:	Centredale Manor
Sample Numbers:	Sample **"1314216"**
SDG #	NA
Contract Number	Loureiro Engineering
Task Order Number	NA
Cooler Temperature:	4.1°C

Quality Control:

CRQL: The EDL was reported

Laboratory Control spikes: LCS was within limits.
Matrix Spike and Duplicate: A matrix spike and duplicate spike was ran with the set. The recoveries are reported and were within the control limits of the method. The analyte 2,3,7,8-TCDD appeared to not be homogenous in the sample and led to sample, MS and MSD results which were not comparable.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8290.

Internal Standard Ion Ratios: The internal standard ion ratios met the QC guidelines in EPA 8290.

Confirmations: 2,3,7,8-TCDF was not present in the sample, therefore no confirmation analysis was made.

Report reviewed and prepared by

R.K. Mitchum, PhD. President

DAT, Inc., 7715 Corporate Blvd., Plain City, OH 43064

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

D.A.T., Inc.
CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: David Scotti
100 Northwest Drive
Plainville, CT 06062

Project Mgr.: _____

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 15RP601
Site Name: Centredale Manor
Location: N. Providence State: RI
Sampler(s): M. Winbourne

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8= $NaHSO_4$ 9= Iced 10= _____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

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Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Dioxin/Furans (8290)	QA Reporting Notes (check if needed)
	1314211	2/5/08	0830	G	SO	9			1			HOLD until further notice
	1314212		0840						1			
	1314213		0915						1			
	1314214		0925						1			
	1314215		1006	G					1			
	1314216	2/5/08	1155	C	SO	9			1		X	

QA Reporting Notes (check if needed):
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

☐ Fax results when available to (____) _____
☑ E-mail to dnscotti@loureiro.com
EDD Format _____

Condition upon receipt: ☒ Iced ☐ Ambient ☐ °C 4.1°C ✓

Relinquished by:	Received by:	Date:	Time:
Mark Wenk	Cooler for Shipment (under custody seal)	2/5/08	1300
	J. Owens 2-6-08 PAL# 0208008 4.1°C	2/6/08	1030 AM

DAT Labs Inc.
Sample Receipt Report

Client: LOUREIRO ENGINEERING ASOC.

Custodian Initial: JO Date: 2

The client has been contacted. ____ Yes ____ No

Upon receipt of samples, check if any of the following discrepancies have been noted.

	Discrepancy Type	Specify applicable client ID or "all"
	COC and samples do not match	
	No unique sample identifications	
	Samples received outside of the required temp criteria. Receipt Temp: 2.4 C	
	No preservation type was noted Correction Factor: 1.7 C	
	No date of collection stated Corrected Temp: 4.1 C ✓	
	No time of collection stated	
	The sample collector was not named	
	Sample containers were not appropriate	
	Sample labels were destroyed or unreadable	
	Samples were received outside of holding time	
	There was not enough sample to perform the requested analysis.	
	Samples showed sign of damage or contamination.	
	Aqueous samples for volatile analysis: Headspace? Y N If Yes, list sample ID(s) in details:	
	Sample pH acidic basic neutral Check pH of aqueous samples if no preservation is noted on COC.	

Details: _____

Sample pH for nonvolatile aqueous samples and presence or absence of headspace (Y or N) for VOA aqueous samples shall be recorded at time of sample log-in.
Under no circumstances shall VOA vials be opened at time of sample receipt

Other Discrepancies:

Sample ID	Discrepancy

☑ *Upon receipt, the samples met all of DAT's acceptance criteria.* *DAT Project #* 0208008

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ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

Inc. 5000

July 14, 2008

Mr. David N. Scotti, P.G.
Loureiro Engineering Associates, Inc.
100 Northwest Drive
Plainville, CT 06062

Dear Mr. Scotti:

Enclosed is the quality assurance review of the analytical data for the aqueous samples collected on February 25, 2008, for the Centredale Manor Restoration Project Site in North Providence, Rhode Island. These samples were analyzed for volatile organic compounds by SW-846 Method 8260C.

The results for several compounds were rejected because the compounds were not recovered in the associated laboratory control samples. The data quality for the samples was generally adequate; however, the following qualifications were made.

- The positive results for several compounds in several samples should be considered "not-detected" due to laboratory and equipment blank contamination.

- The reported positive results for several compounds in several samples were qualified as estimated due to calibration issues, low matrix spike recoveries, and field duplicate imprecision.

- The reported positive results for several compounds in several samples should be considered estimated due to undiluted and diluted analysis results imprecision and quantitation that exceeded the instrument calibration range.

- All reporting limits were raised to the level of the low concentration standard in the initial calibration (with sample-specific dilution adjustments).

A rigorous review of all data associated with the project samples was performed; several non-industry standard laboratory practices were observed that could not be resolved. These practices were associated with manual integration, the initial calibration, and reporting discrepancies as detailed in the quality assurance report. Although Environmental Standards considers the data to be qualititatively reliable (except as previously noted), the reported results should be considered quantitative estimates and used with an understanding of the limitations described in the report.

1140 Valley Forge Road P.O. Box 810 Valley Forge, PA 19482 Tel: 610.935.5577 Fax: 610.935.5583 Web: www.envstd.com

If you have any questions or comments, please do not hesitate to call.

Sincerely,

Patrick A. Conlon
Senior Quality Assurance Chemist

Sincerely,

David R. Blye, CEAC
Quality Assurance Specialist/
Principal

PAC/DRB:hm
Enc.

ENVIRONMENTAL STANDARDS
Setting the Standards for Innovative Environmental Solutions

Inc. 5000

QUALITY ASSURANCE REVIEW

OF AQUEOUS SAMPLES

COLLECTED ON FEBRUARY 25, 2008

FOR CENTREDALE MANOR RESTORATION PROJECT

NORTH PROVIDENCE, RHODE ISLAND

July 14, 2008

Prepared for:

LOUREIRO ENGINEERING ASSOCIATES, INC.
100 Northwest Drive
Plainville, CT 06062

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1140 Valley Forge Road
P.O. Box 810
Valley Forge, PA 19482-0810

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Section 1 **Quality Assurance Review**

A. Organic Data

B. Conclusions

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Section 3 **Organic Data Support Documentation**

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Section 5 **Project Correspondence**

Executive Summary

An analytical quality assurance (QA) review was performed on data generated from the analyses of 15 aqueous samples (including quality control (QC) samples and dilution analyses) collected in association with the Centredale Manor Restoration Project Site on February 25, 2008, by Loureiro Engineering Associates, Inc. All samples were analyzed for volatile organic compounds SW-846 Method 8260C. Three comprehensive Contract Laboratory Program (CLP)-like raw data packages were prepared by the laboratory and were reviewed by Environmental Standards, Inc.

The results for several compounds were rejected because the compounds were not recovered in the associated laboratory control samples. The data quality for the samples was generally adequate; however, the following qualifications were made.

Sample results were qualified for the following reasons:

- The positive results for several compounds in several samples should be considered “not-detected” due to laboratory and equipment blank contamination.

- The reported positive results for several compounds in several samples were qualified as estimated due to calibration issues, low matrix spike recoveries, and field duplicate imprecision.

- The reported positive results for several compounds in several samples should be considered estimated due to undiluted and diluted analysis result imprecision and quantitation that exceeded the instrument calibration range.

- All reporting limits were raised to the level of the low concentration standard in the initial calibration (with sample-specific dilution adjustments).

Introduction

This quality assurance (QA) review is based upon a rigorous examination of data generated from the analyses of 15 aqueous samples (including associated quality control (QC) samples and dilution analyses) collected in association with the Centredale Manor Restoration Project Site in North Providence, Rhode Island, on February 25, 2008, by Loureiro Engineering Associates, Inc. The samples that have undergone a QA review are listed on Table 1. Table 1 presents the field sample number, laboratory sample number, sample delivery group (SDG), matrix, collection date, and parameter analyzed and reviewed for each sample.

This review has been performed with guidance from the "Region I, EPA – New England Data Validation Functional Guidelines for Evaluating Environmental Analysis." The validation performed was a Tier III or full validation of the data in accordance with this document.

The reported analytical results are presented on qualified analysis reports (Form I's) in Section 2, "Target Analyte Summary." The qualified Form I's include all final data validation qualifiers and results. Data were examined to determine the usability of the analytical results and compliance relative to requirements specified in SW-846 Method 8260C. In addition, the deliverables prepared according to a Contract Laboratory Program (CLP)-like data package were evaluated. Qualifier codes have been placed next to reported results on the Form I's to enable the data user to quickly assess the qualitative and/or quantitative reliability of any result based on the criteria evaluated. Details of this QA review are presented in Section 1 of this report.

This critical QA review identifies data quality issues for specific samples and specific evaluation criteria. The data qualifications allow the data end-user to best understand the usability of the analysis results. Data not qualified in this report should be considered valid based on the QC criteria that have been reviewed.

TABLE 1

SUMMARY OF SAMPLE DATA REVIEWED

CENTERDALE MANOR SITE RESTORATION PROJECT SITE

Loureiro Engineering Associates, Inc. Sample Identification	Laboratory Sample Number	Sample Delivery Group	Matrix	Date of Sample Collection	Parameter Analyzed and Reviewed
1316057	0208030-02	1316057	Aq	2/25/08	V
1316057_MS (Matrix Spike)	0208030-02_MS	1316057	Aq	2/25/08	V
1316057_MSD (Matrix Spike Duplicate)	0208030-02_MSD	1316057	Aq	2/25/08	V
1316057DL (Diluted Reanalysis)	0208030-02DL	1316057	Aq	2/25/08	V
1316057DL_MS (Matrix Spike)	0208030-02DL_MS	1316057	Aq	2/25/08	V
1316057DL_MSD (Matrix Spike Duplicate)	0208030-02DL_MSD	1316057	Aq	2/25/08	V
1316058 (Field Duplicate of 1316061)	0208030-05	1316057	Aq	2/25/08	V
1316058DL (Diluted Reanalysis)	0208030-05DL	1316057	Aq	2/25/08	V
1316061 (Field Duplicate of 1316058)	0208030-06	1316057	Aq	2/25/08	V
1316059	0208030-20	1316057	Aq	2/25/08	V
1316059DL (Diluted Reanalysis)	0208030-20DL	1316057	Aq	2/25/08	V
1316060	0208030-18	1316057	Aq	2/25/08	V
1316063	0208030-04	1316057	Aq	2/25/08	V
1316074 (Equipment Blank)	0208030-07	1316057	Aq	2/25/08	V
1316075	0208030-16	1316057	Aq	2/25/08	V

TABLE 1 (Cont.)

NOTES:

V	-	Volatile Organic Compounds by Gas Chromatography Mass Spectrometry (GC/MS) by US EPA SW-846 Method 8260C. (15 analyses)
Aq	-	Aqueous.

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 15 aqueous samples (including QC samples and dilution analyses) collected as part of the Centredale Manor Restoration Project Site in North Providence, Rhode Island, were performed by Data/Analytical Technologies Inc. (DAT) of Plain City, Ohio. All samples were analyzed for volatile organic compounds according to SW-846 Method 8260C. The samples and analyses reviewed for all samples are identified on Table 1. The data were presented in three Contract Laboratory Program (CLP)-like data packages.

The findings offered in this report are based upon a rigorous review of the following:

- sample holding times
- blank analysis results
- analytical sequence
- laboratory control sample (LCS) recoveries
- matrix spike and matrix spike duplicate (MS/MSD) accuracy and precision
- qualitative identification
- retention times (RTs)
- dilution vs. undiluted result comparison
- sample condition upon laboratory receipt
- initial calibration and continuing calibration verifications (CCVs)
- quantitation of results
- gas chromatogram/mass spectral (GC/MS) tuning and system performance
- performance evaluation accuracy
- labeled standard recoveries
- field duplicate precision

The qualified analytical results for volatile organic compounds are provided as a summary of the data in Section 2 of this report.

Several issues were identified as detailed below. Issues are presented in two categories – reporting issues and procedural issues. Reporting issues are data deliverable issues that can easily be corrected and that may or may not impact the usability of the reported results. Procedural issues are issues that cannot be corrected and address method compliance issues; these issues may or may not impact the usability of the reported results. Comments are also presented. Comments address issues for which the data reviewer has provided information in order to clarify issues relating to the data. The data reviewer has included copies of relevant raw data, QC forms, and other documentation needed to support any changes made to the data package in the Organic Data Support Documentation (Section 3) of this review. The following issues and comments do not necessarily affect data usability (*viz.,* items necessitating data qualification).

Reporting Issues

1. Several samples (*e.g.,* 1316059, 1316063, 1316075) had apparent positive results reported on the Form I's as "0 µg/L" that were flagged with a "J" by the laboratory to indicate positive detections quantitated below the reporting/detection limit. In addition, apparent "non-detects" were reported on the Form I's as "0 µg/L" that were flagged with a "U" to indicate not-detected. In general, the incorrect and inconsistent dilution and purge volume information (see Comment 1), coupled with the observation that all results were presented in mass units (ng) in the instrument raw data, made it impossible to verify reported positive results and reporting/detection limits in field samples, QC samples, or standards; Environmental Standards was not able to definitively determine if the detection/reporting limits reported on the Form I's were valid (*i.e.*, if low-concentration positive results should be flagged by the laboratory as estimated ["J" flagged]) or as not-detected ("U" flagged). Method detection limit (MDL) study results were not included in the data package provided to assist in the evaluation. The laboratory was contacted to clarify why "0" values were reported on Form I's, the overall reporting format, and the reporting limits utilized for the analyses (*i.e.,* provide a valid MDL study).

   The laboratory indicated the "0 J" and "0 U" results reported on several Form I's were the result of rounding conventions in the software and that the MDL was used as the reporting limit; an MDL study spreadsheet was provided. Upon receipt of the MDL study in effect at the time of analysis, Environmental Standards identified possible issues that could impact the validity of the MDL study. Due to numerous high-concentration target compounds requiring dilutions and the general uncertainty of the validity of the MDL study, Environmental Standards requested the laboratory to reprocess all sample results utilizing the low-initial calibration standard (4 µg/L) analyzed on 3/6/08 as a demonstrated reporting limit and to resubmit Form I's. Positive results for target compounds (supported by acceptable mass spectra) at concentrations below 4 µg/L (sample-specific dilution adjusted as appropriate) were requested to be reported with a "J" flag; "not-detected" results were to be reported as "4µg/L U" (dilution adjusted as appropriate). The laboratory resubmitted the reprocessed Form I's as requested, but several Form I's were not resubmitted or not processed correctly. (see Project Correspondence [Section 5]).

2. Based on a review of raw data for the initial calibration performed on 3/6/08, several issues and irregularities were identified. Environmental Standards observed that the Volatile Organics Initial Calibration (ICAL) Data summary form (Form 6) included relative response factors (RRFs) for each target compound at six concentration levels, although the laboratory included raw data for seven concentration levels in the data package. It was not clear if seven initial calibration standards had actually been utilized as it appeared that the average response factors (RFs) presented on the Form 6 were averaged from only the six RRFs presented (for each target compound) on the Form 6. Environmental Standards contacted the laboratory for clarification. The laboratory indicated that all seven standards had been used in the ICAL but that the form software is limited to display only up to six calibration points. The laboratory provided additional calibration information verifying the use of seven calibration points. The resubmitted

calibration information, however, still did not provide adequate information to allow for the recalculation of the reported results. A conference call was conducted on 6/4/08 between representatives of Environmental Standards and the laboratory to address the initial calibration and other issues. The highlights of this call relative to the initial calibration are presented below.

- The laboratory *does* include all seven standards from 4 µg/L to 100 µg/L in the calibration curve.
- The laboratory *does not* use the average RFs to quantitate positive results as originally presented in the data package.
- The resubmitted information indicated a linear regression curve is used as the primary quantitation technique; for selected compounds, a quadratic curve is used to quantitate results. Incomplete information was provided (*e.g.,* the y-intercept) to allow the data reviewer to recalculate positive results.
- The laboratory indicated that the linear regression curve are not forced through zero (*i.e.,* does not assume a zero response for a blank and arbitrarily set the beginning of the curve at the origin).
- The negative value observed on the quantitation report (*e.g.,* methylene chloride in sample 13160057) for an apparent positive response observed on a chromatogram supports the laboratory's assertion that the linear regression curves are not forced through zero. A negative value would only be possible with a negative y-intercept.
- The laboratory agreed to submit calibration plots (or linear regression graphs with line equations for the linear response compounds) for all compounds that were detected in the samples. The laboratory was unwilling to provide plots for all target compounds included in the initial calibration. Environmental Standards anticipated that the plots would allow for recalculation of reported results in the samples. Environmental Standards was not able to recalculate results for compounds in QC samples (MS/MSD, LCS) that were not also detected in samples.
- Upon receipt of the calibration plots, Environmental Standards noted that the information provided contradicted information detailed above (Bullet No. 4). The plots provided indicated that the linear regression curves were forced though the origin.
- Linear regressions plot were received for all reported compounds except methyl acetate, methyl cyclohexane, chloromethane, and toluene; all linear regressions that were received were within criteria except the regression for acetone.

In general, inconsistent or incomplete initial calibration information was provided by the laboratory such that recalculation of positive results required assumptions or was not possible. Qualification of data as a result of calibration issues is addressed in the Organic Data Qualifiers section. Specific initial calibration issues are detailed below (see Section 5).

3. A number of manual integrations in the calibration standards were observed and reviewed to the extent possible. A rigorous evaluation of instrument integrations is not possible without access to laboratory data files. Based on the available data, there was no apparent consistency in the approach used for these manual integrations. A number

of the manual integrations were clearly not consistent with typical automatic software integrations. Some integrations added extended baseline area to the peak, others cut off sloping areas from the peak both fore and aft of the apex, others appeared to be incorrect use of the baseline, and yet others appeared to be integrations of heavily splitting peaks (a symptom indicating possible column capacity issues with the high standards). Upon request, the laboratory provided enhanced views of the manual integrations performed, but it was still not clear why the manual integrations were performed or if they were performed correctly. The presence of numerous manually integrated compounds in the laboratory's calibration standards is alarming because the instrument's performance and ability to accurately quantitate target compounds is demonstrated, in part, by successful multi-level calibrations. In the 6/4/08 conference call, Environmental Standards requested the laboratory personnel to explain the manual integration policy and procedures employed at the laboratory and to review the manual integrations performed. The laboratory subsequently responded that the manual integrations had been performed acceptably. It is probable that the 3/6/08 ICAL would not have met compliance criteria without the manual integrations. Environmental Standards did not have access to the laboratory data files, and therefore, the appropriateness and acceptability of the manual integrations could not be ascertained or verified. For this reason, all positive results should be considered quantitatively estimated. There was no direct reason observed to dispute the overall usability of the data set. Qualification of data as a result of calibration issues is addressed in the Organic Data Qualifiers section (see Section 5).

4. Based on a review of the 3/6/08 ICAL Form 6, the RRFs for all target compounds quantitated against the internal standard chlorobenzene-d_5 were abnormally high relative to target compounds quantitated against the other internal standards. The RRFs are typically expected to be approximately "1." The RRFs for target compounds quantitated against chlorobenzene-d_5 were approximately "50." The laboratory indicated that the internal standard chlorobenzene-d_5 was quantified using peak height, while compounds utilizing this internal standard were quantitated using peak areas, resulting in high RRFs. It was not clear why the mixed quantitation modes had been used but there was no apparent effect on the sample results as the samples and calibration standards appear to have been quantitated identically.

5. Based on a review of the MS/MSD raw data, the laboratory incorrectly calculated the recovery of several spiked compounds (*e.g.*, those spiked compounds that were reported as positive results in the unspiked sample) on the MS/MSD summary forms. Environmental Standards confirmed the mis-calculated recovery results with the laboratory and corrected MS/MSD summary forms were submitted by the laboratory (see Section 5). The resubmitted MS/MSD forms still contained presentation inaccuracies, particularly with respect to the presentation of the amount spiked in the MS/MSD and in the calculated recoveries. Qualification of data due to out-of-criteria MS/MSD recoveries is addressed in the Data Qualifiers section.

6. The laboratory did not summarize the LCS recovery results. Environmental Standards could not determine the "true values" from the information provided and therefore, utilized the LCS sample concentrators and the MS/MSD results to provide a general

assessment of the laboratory's analytical performance. From the raw data and reported LCS concentrations, tetrachloroethylene was reported at an elevated concentration in the 3/10/08 LCS that may be the result of potential carryover contamination from a high concentration sample. The LCS was the last sample analyzed in the sequence and the immediate preceding sample may have been the source of the carryover; accordingly, no impact to associated samples was apparent. In addition, 1,2,3-trichloropropane, 2-chlorotoluene, and 4-chlorotoluene were not detected in the LCS performed on 3/10/08 but were detected in the LCS performed on 3/11/08 and in the MS/MSD analyses. Corrective actions were not noted by the laboratory as a result of the lack of recovery for 1,2,3-trichloropropane, 2-chlorotoluene, and 4-chlorotoluene. Qualification of data due to low LCS recoveries is addressed in the Organic Data Qualifiers section.

7. The laboratory did not provide the Volatile Organic Instrument Performance Check – Bromoflurobenzene (BFB) summary form (BFB Tune) or raw data presumably performed prior to the initial calibration performed on 3/6/08 on Instrument F4500. The 3/6/08 initial calibration was utilized to quantitate target compound detections in project samples. Environmental Standards could not evaluate if GC/MS instrument tuning criteria was met prior to the analysis of the initial calibration standards associated with the project samples.

<u>Procedural Issue</u>

- According to the raw data, all BFB instrument tunes appeared to be performed using 200-ng of the tuning compound bromofluorobenzene. Bromofluorobenzene is also a volatile surrogate compound that is included in the continuing calibration standards and the laboratory did not analyze a separate tune standard at the beginning of the analytical sequence, but rather tuned the instrument using the bromofluorobenzene included in the calibration standard. SW-846 Method 8260C requires that 50 ng or less of BFB be used to establish the tune of the instrument. In addition, SW-846 Method 8260C stipulates that the default practice for selection of scans for a tune is to average the chromatographic peak apex of BFB with the scan preceding and following the apex, with background subtraction. All BFB instrument tunes provided in the data package did not follow this practice; a manual integration of the BFB peak that was not centered around the apex was performed. The laboratory was contacted to explain BFB tune procedures and indicated that the specific Method 8260C tune requirements cited above are guidance (not a requirement) provided that the laboratory can demonstrate the instrument is properly tuned. All Method 8260C ion abundance criteria for percent relative abundance were met (demonstrating acceptable instrument tune) for the BFB tunes provided.

Comments

1. The header information on the Form I's provided by the laboratory contained incorrect information with regard to the volume sample purged onto the instrument during the analysis and the dilution factors utilized. In addition, an inconsistent target compound list was utilized for the samples in this data set. Upon request, the laboratory resubmitted Form I's with corrected header information and a standardized list of target compounds. The laboratory also provided documentation to verify the dilution factors and purge volumes (see Section 5).

2. The laboratory did not provide documentation in the original data package that the samples were preserved. Upon request, the laboratory provided information to verify that all samples were properly preserved (See Section 5).

3. Form I VOA-TIC forms were provided for each sample, but mass spectral library searches for non-target compounds were not performed. The laboratory confirmed that library searches were not performed.

4. Sample 1316057 was designated on the Chain-of-Custody (COC) as the MS/MSD sample for this data set. The laboratory appropriately spiked aliquots of this sample for the MS/MSD analyses. When sample 1316057 required a further dilution due to high concentrations of target compounds (see Comment 5), the laboratory also reanalyzed and reported "diluted" MS/MSD samples. Environmental Standards evaluated both sets of MS/MSD results. For the purpose of evaluating the effect of the matrix on the sample results, the results of the original MS/MSD were applied to the "original" sample 1316057 and the results of the diluted MS/MSD were applied to the "diluted" sample 1316057 (1316057dl).

5. Several samples were analyzed for volatile organic compounds at dilutions or were reanalyzed at the dilutions indicated on the table below due to suspected or observed high levels of target compounds. When compounds exceeded the linear range of the instrument in the original analysis (diluted or undiluted), a second reanalysis at a higher dilution was performed to allow quantitation in the instrument's calibrated range. When an original analysis and a diluted reanalyses were performed and reported, both sets of results were evaluated in this QA review and qualified, as necessary. The dilutions resulted in elevated reporting limits for compounds that were not detected in these samples. Qualification of data due to quantitation of results that exceeded the instrument calibration range is addressed in the Organic Data Qualifiers section.

Sample	Dilution Factor	Compound(s) Exceeding Instrument's Calibrated Range
1316057	500x	tetrachloroehylene
1316057dl	5000x	none
1316058	50x	trichloroethene
1316058dl	500x	none
1316059	1x	tetrachloroehylene and trichloroethene
1316059dl	50x	none
1316060	500x	none
1316061	500x	none
1316074	500x	none

6. The cover page of the data package, which contained 424 pages, indicated that sample "1316068" was included in the data package; however, there was no sample 1316068 in the data set. Sample 1316058dl was included in the 424-page data package but was not listed on the data package cover page. The laboratory confirmed the error with the cover page (see Section 5).

7. Trip blanks were not collected or analyzed in association with this data set. Possible contamination introduced during sampling and transport activities could not be assessed.

8. Sample 1316074 was identified as an equipment blank; however, this sample was analyzed at a 500x dilution and several high-concentration target volatile organic compounds were observed. It was not clear if the high concentrations were the result of contamination in the field, laboratory preparation, or instrument carryover. Several high-concentration samples were analyzed in the same sequence with the equipment blank and carryover contamination is suspected. Environmental Standard utilized these equipment blank results to evaluate the field sample results because all project samples were analyzed in the same timeframe, on the same instrument and potential instrument carryover contamination affecting the samples may be indicated by the equipment blank results.

9. The laboratory identified sample 1316057 as "057" throughout the data packages. Environmental Standards used the sample identification indicated on the sample Chain-of-Custody (COC).

With respect to data usability, the principal areas of concern are blank contamination, calibration issues, out-of-criteria, MS/MSD recoveries, low LCS recoveries, possible carryover contamination, field duplicate precision, quantitation recoveries that exceeded over the calibrated range of the instrument, and quantitation below the concentration of the lowest calibration standard. Based on a rigorous review of the data provided, the following organic data qualifiers are offered. The following

data usability issues represent an interpretation of the QC results obtained for the project samples. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Organic Data Qualifiers

- The analyses for 1,2,3-trichloropropane; 2-chlorotoluene; and 4-chlorotoluene in samples 1316074, 1316060, 1316057, and 1316058dl, should be considered unreliable, and the "not-detected" results have been flagged "R" on the qualified Form I's. The compound 1,2,3-trichloropropane; 2-chlorotoluene; and 4-chlorotoluene were not recovered in the associated LCS analysis.

- Due to their presence in equipment and/or laboratory blanks, the following compounds in the samples listed below should be considered "not-detected" and the reported positive results have been flagged "U" the qualified Form I's. Furthermore, results that were reported below the sample-specific reporting limit were replaced with the reporting limit and the appropriate "U" qualifier. It should be noted that dilution factors and sample volume were taken into consideration when evaluating blank contamination.

Compound	Sample(s) With Positive Results Qualified as "Not-Detected" ("U")
chloromethane	1316059 and 1316063
methylene chloride	1316057dl, 1316061, 1316063, 1316075, 1316059, and 1316059dl
trichloroethene	1316057dl
tetrachloroethylene	1316058, 1316058dl, 1316060, and 1316063
naphthalene	1316058, 1316063, and 1316075
toluene	1316059

- The reported positive results for the following compounds in the samples listed below should be considered estimated and have been flagged "J" the qualified Form I's. The on-column concentrations of these compounds exceeded the calibration ranges of the instrument.

Sample	Compound(s) Exceeding Instrument's Calibrated Range
1316057	tetrachloroehylene
1316058	trichloroethene
1316059	tetrachloroehylene and dibromochloromethane

- The reported positive results for methylene chloride and dibromochloromethane in sample 1316057dl should be considered estimated and have been flagged "J" on the qualified Form I's (unless previously flagged "U"). Methylene chloride and dibromochloromethane were observed in sample 1316057dl but not in a lower dilution analysis of this sample (sample 1316057). The results for methylene chloride and dibromochloromethane in sample 1316057dl should be used with caution as possible instrument or glassware contamination is suspected.

- The reported positive results for dibromochloromethane in sample 1316059 should be considered estimated and have been flagged "J" on the qualified Form I's. Dibromochloromethane was observed in sample 1316059 at a concentration that exceeded the instrument's calibration range but was not detected in the diluted reanalysis of sample 1316059 (sample 1316059dl). The results for dibromochloromethane in sample 1316059 should be used with caution as possible instrument or glassware contamination is evident.

- The reported positive results for acetone in samples 1316059 and 1316063 should be considered estimated and have been flagged "J" on the qualified Form I's. Low linear correlation coefficients (< 0.995) were observed for acetone in the associated initial calibration.

- The reported positive results for the methyl cyclohexane, chloromethane, methyl acetate, and toluene in all samples should be considered estimated and have been flagged "J" on the qualified Form I's. Environmental Standards could not confirm the reported quantitative results from the initial calibration information provided.

- All reported positive results should be considered estimated and have been flagged "J" on the qualified Form I's. Numerous manual integrations were observed that may have impacted the acceptability of the initial calibration.

- The reporting limits for bromomethane; methyl acetate; and 1,2-dibromo-3-chloropropane in samples 1316063, 1316075, 1316059, 1316058, and 1316061 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the qualified Form I's. High percent differences (%Ds > 20%), coupled with decreasing instrument sensitivity, were observed for bromomethane; methyl acetate; and 1,2-dibromo-3-chloropropane in the associated continuing calibration check standard analyses.

- The reporting limits for methyl acetate; 2-butanone; *sec*-butylbenzene; 1,2-dibromo-3-chloropropane; and naphthalene in samples 1316074, 1316060, 1316057, 1316057dl, 1316058dl, and 1316059dl may be higher than reported, and the "not-detected" results have been flagged "UJ" on the qualified Form I's. High %Ds (> 20%), coupled with decreasing instrument sensitivity, were observed for methyl acetate; 2-butanone; *sec*-butylbenzene; 1,2-dibromo-3-chloropropane; and naphthalene in the associated continuing calibration check standard analyses.

- The reporting limits for 1,2-dibromo-3-chloropropane; acetone; methyl acetate; 2-butanone; 4-methyl-2-pentanone; and 2-hexanone in sample 1316057 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the qualified Form I's. Low recoveries (< 70%) were observed for these compounds in the associated matrix spike and/or matrix spike duplicate analyses.

- The reported positive results for vinyl chloride in sample 1316057 and for methylene chloride in sample 1316057dl should be considered estimated and have been flagged "J" on the qualified Form I's. High recoveries (> 130%) were observed for vinyl chloride and methylene chloride in the associated matrix spike and/or matrix spike duplicate analyses.

- The reported positive results for tetrachloroethylene in samples 1316057 and 1316057dl and for methylene chloride in sample 1316057dl should be considered estimated and have been flagged "J" on the qualified Form I's. High relative percent differences (RPD > 20%) were observed between the results for tetrachloroethylene in the associated matrix spike and matrix spike duplicate analyses.

- One field duplicate pair (sample 1316058 and its duplicate, sample 1316061) was submitted and analyzed for volatile organic compounds with this data set. In general, acceptable precision and sample representativeness were demonstrated by the correlation observed in the field duplicate pair. The reported positive results for trichloroethene and tetrachloroethylene in samples 1316058 and 1316061 should be considered estimated and have been flagged "J" on the qualified Form I's. Large discrepancies (RPD > 20% when both results were $\geq 5\times$ the reporting limit) were observed between the results for these compounds in the sample and its field duplicate. A complete comparison of the reported positive results has been included in Section 3.

- All positive results reported at concentrations less than the sample-specific reporting limit (low concentration initial calibration standard adjusted for dilution factors and sample weight/volume) should be considered estimated and have been flagged "J" on the data tables.

A complete support documentation of this organic QA review is provided in Section 3 of this report.

B. Conclusions

This QA review has identified a number of aspects of the data that required qualification. Portions of the data were qualified for reasons that include blank contamination, out-of-criteria LCS and MS/MSD recovery and/or precision, instrument calibration issues, reporting issues, instrument carryover issues. In order to use any of the data, the data user should understand the qualifications and limitations as specified in this QA review. The Project Case Narrative and Project Chain-of-Custody Record are presented in Section 4 of this report. Project Correspondence is presented in Section 5.

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Date: 7/14/08

SECTION 2

TARGET ANALYTE SUMMARY

ORGANIC DATA QUALIFIERS

ND The compound was not detected at or above the associated numerical value.

U This compound was “not-detected” or it was detected in a blank at a similar level.

R Unusable result; compound may or may not be present in the sample.

J Quantitation is estimated due to limitations identified during the quality assurance review (data validation).

E Quantitation is estimated due to limitations identified during the quality assurance review (data validation).

UJ This compound was analyzed for but was not detected. The associated detection limit is probably higher due to a low bias identified during the quality assurance review.

Resubmitted

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

~~057~~ 131605

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q	
75-71-8	Dichlorodifluoromethane	2000	U	
74-87-3	Chloromethane	2000	U	
75-01-4	Vinyl chloride	480	~~JD~~	
74-83-9	Bromomethane	2000	U	
75-00-3	Chloroethane	2000	U	
75-69-4	Trichlorofluoromethane	2000	U	
75-35-4	1,1-Dichloroethene	2000	U	
67-64-1	Acetone	2000	U	
79-20-9	Methyl Acetate	2000	U	
75-15-0	Carbon disulfide	2000	U	
1634-04-4	Methyl Tert-butyl ether	2000	U	
75-09-2	Methylene Chloride	2000	U	
156-60-5	Trans-1,2-dichloroethene	2000	U	
75-34-3	1,1-Dichloroethane	2000	U	
78-93-3	2-Butanone	2000	U	
594-20-7	Propane, 2,2-dichloro-	2000	U	
540-59-0	cis-1,2-Dichloroethene	21000	~~D~~	J
67-66-3	Chloroform	2000	U	
74-97-5	Bromochloromethane	2000	U	
110-82-7	Cyclohexane	2000	U	
71-55-6	1,1,1,-Trichloroethane	2000	U	
56-23-5	Carbon tetrachloride	2000	U	
563-58-6	1,1-Dichloropropene	2000	U	
71-43-2	Benzene	2000	U	
75-34-3	1,2-Dichloroethane	2000	U	
108-87-2	Methylcyclohexane	2000	U	
127-18-4	Trichloroethene	10000	~~D~~	J
78-87-5	1,2-Dichloropropane	2000	U	
108-10-1	4-Methyl-2-pentanone	2000	U	
74-95-3	Dibromomethane	2000	U	
75-27-4	Bromodichloromethane	2000	U	
591-78-6	2-Hexanone	2000	U	
108-88-3	Toluene	2000	U	
71-55-6	1,1,2-Trichloroethane	2000	U	
127-18-4	Tetrachloroethylene	220000	~~EJ~~	J
142-28-9	1,3-Dichloropropane	2000	U	
124-48-1	Dibromochloromethane	2000	U	
106-93-4	1,2-Dibromoethane	2000	U	
108-90-7	Chlorobenzene	2000	U	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	UR
95-49-8	2-Chlorotoluene	2000	UR
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	UR
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

~~057~~ 1316057d1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110804.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	20000	U
74-87-3	Chloromethane	20000	U
75-01-4	Vinyl chloride	20000	U
74-83-9	Bromomethane	20000	U
75-00-3	Chloroethane	20000	U
75-69-4	Trichlorofluoromethane	20000	U
75-35-4	1,1-Dichloroethene	20000	U
67-64-1	Acetone	20000	U
79-20-9	Methyl Acetate	20000	U
75-15-0	Carbon disulfide	20000	U
75-09-2	Methylene Chloride	20000 ~~3600~~	~~JD~~ U
156-60-5	Trans-1,2-dichloroethene	20000	U
75-34-3	1,1-Dichloroethane	20000	U
78-93-3	2-Butanone	20000	U
594-20-7	Propane, 2,2-dichloro-	20000	U
540-59-0	cis-1,2-Dichloroethene	19000	J~~D~~
67-66-3	Chloroform	20000	U
74-97-5	Bromochloromethane	20000	U
110-82-7	Cyclohexane	20000	U
71-55-6	1,1,1,-Trichloroethane	20000	U
56-23-5	Carbon tetrachloride	20000	U
563-58-6	1,1-Dichloropropene	20000	U
71-43-2	Benzene	20000	U
75-34-3	1,2-Dichloroethane	20000	U
108-87-2	Methylcyclohexane	20000	U
127-18-4	Trichloroethene	28000	~~D~~ U
78-87-5	1,2-Dichloropropane	20000	U
108-10-1	4-Methyl-2-pentanone	20000	U
74-95-3	Dibromomethane	20000	U
75-27-4	Bromodichloromethane	20000	U
591-78-6	2-Hexanone	20000	U
108-88-3	Toluene	20000	U
71-55-6	1,1,2-Trichloroethane	20000	U
127-18-4	Tetrachloroethylene	160000	~~D~~ J
142-28-9	1,3-Dichloropropane	20000	U
124-48-1	Dibromochloromethane	120000	~~D~~ J
106-93-4	1,2-Dibromoethane	20000	U
108-90-7	Chlorobenzene	20000	U
100-41-4	Ethylbenzene	20000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110804.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
630-20-6	1,1,1,2-Tetrachloroethane	20000	U
106-42-3	m/p-Xylene	20000	U
95-47-6	o-Xylene	20000	U
100-42-5	Styrene	20000	U
75-25-2	Bromoform	20000	U
98-82-8	Isopropylbenzene	20000	U
108-86-1	Bromobenzene	20000	U
79-34-5	1,1,2,2-Tetrachloroethane	20000	U
103-65-1	n-Propylbenzene	20000	U
96-18-4	1,2,3-Trichloropropane	20000	U
95-49-8	2-Chlorotoluene	20000	U
108-67-8	1,3,5-Trimethylbenzene	20000	U
106-43-4	4-Chlorotoluene	20000	U
135-98-8	sec-Butylbenzene	20000	U
95-63-6	1,2,4-Trimethylbenzene	20000	U
98-06-6	tert-Butylbenzene	20000	U
541-73-1	1,3-Dichlorobenzene	20000	U
49-87-6	p-Isopropyltoluene	20000	U
105-51-8	n-Butylbenzene	20000	U
106-46-7	1,4-Dichlorobenzene	20000	U
95-50-1	1,2-Dichlorobenzene	20000	U
96-12-8	1,2-Dibromo-3-chloropropane	20000	U
120-82-1	1,2,4-Trichlorobenzene	20000	U
87-68-3	Hexachlorobutadiene	20000	U
91-20-3	Naphthalene	20000	U
87-61-6	1,2,3-Trichlorobenzene	20000	U

Resubmitted

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 100uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100812.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl chloride	30	J~~D~~
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
79-20-9	Methyl Acetate	200	U
75-15-0	Carbon disulfide	200	U
1634-04-4	Methyl Tert-butyl ether	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	Trans-1,2-dichloroethene	96	J~~D~~
75-34-3	1,1-Dichloroethane	200	U
78-93-3	2-Butanone	200	U
594-20-7	Propane, 2,2-dichloro-	200	U
540-59-0	cis-1,2-Dichloroethene	1100	~~D~~ J
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
110-82-7	Cyclohexane	200	U
71-55-6	1,1,1,-Trichloroethane	200	U
56-23-5	Carbon tetrachloride	200	U
563-58-6	1,1-Dichloropropene	200	U
71-43-2	Benzene	200	U
75-34-3	1,2-Dichloroethane	200	U
108-87-2	Methylcyclohexane	100	J~~D~~
127-18-4	Trichloroethene	23000	~~ED~~ J
78-87-5	1,2-Dichloropropane	200	U
108-10-1	4-Methyl-2-pentanone	200	U
74-95-3	Dibromomethane	200	U
75-27-4	Bromodichloromethane	200	U
591-78-6	2-Hexanone	200	U
108-88-3	Toluene	200	U
71-55-6	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethylene	4400	~~D J~~ U
142-28-9	1,3-Dichloropropane	200	U
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 100uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100812.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	28	J~~Ø~~
630-20-6	1,1,1,2-Tetrachloroethane	200	U
106-42-3	m/p-Xylene	96	J~~Ø~~
95-47-6	o-Xylene	56	J~~Ø~~
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
98-82-8	Isopropylbenzene	200	U
108-86-1	Bromobenzene	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
103-65-1	n-Propylbenzene	200	U
96-18-4	1,2,3-Trichloropropane	200	U
95-49-8	2-Chlorotoluene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
106-43-4	4-Chlorotoluene	200	U
135-98-8	sec-Butylbenzene	200	U
95-63-6	1,2,4-Trimethylbenzene	200	U
98-06-6	tert-Butylbenzene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
49-87-6	p-Isopropyltoluene	200	U
105-51-8	n-Butylbenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	200 ~~23~~	~~JØ~~ U
87-61-6	1,2,3-Trichlorobenzene	200	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316058 dL

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100820.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1500	J~~D~~
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	22000	~~D~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	15000	~~D~~ u
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100820.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg) UG/L		Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	UR
95-49-8	2-Chlorotoluene	2000	UR
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	UR
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100811.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	4 ~~0~~	U
74-87-3	Chloromethane	4 ~~1~~	~~BU~~
75-01-4	Vinyl chloride	2	J
74-83-9	Bromomethane	4 ~~0~~	U
75-00-3	Chloroethane	~~0~~	U
75-69-4	Trichlorofluoromethane	~~0~~	U
75-35-4	1,1-Dichloroethene	~~0~~	U
67-64-1	Acetone	6	J
79-20-9	Methyl Acetate	4 ~~0~~	U
75-15-0	Carbon disulfide	4 ~~0~~	U
1634-04-4	Methyl Tert-butyl ether	12	J
75-09-2	Methylene Chloride	4	U
156-60-5	Trans-1,2-dichloroethene	4 ~~0~~	U
75-34-3	1,1-Dichloroethane	4 ~~0~~	U
78-93-3	2-Butanone	~~1~~	U
594-20-7	Propane, 2,2-dichloro-	~~0~~	U
540-59-0	cis-1,2-Dichloroethene	26	J
67-66-3	Chloroform	2	J
74-97-5	Bromochloromethane	4 ~~0~~	U
110-82-7	Cyclohexane	~~0~~	U
71-55-6	1,1,1,-Trichloroethane	~~0~~	U
56-23-5	Carbon tetrachloride	~~0~~	U
563-58-6	1,1-Dichloropropene	~~0~~	U
71-43-2	Benzene	~~0~~	U
75-34-3	1,2-Dichloroethane	~~0~~	U
108-87-2	Methylcyclohexane	~~0~~	U
127-18-4	Trichloroethene	21	J
78-87-5	1,2-Dichloropropane	4 ~~0~~	U
108-10-1	4-Methyl-2-pentanone	~~0~~	U
74-95-3	Dibromomethane	~~0~~	U
75-27-4	Bromodichloromethane	~~0~~	U
591-78-6	2-Hexanone	~~0~~	U
108-88-3	Toluene	4 ~~0~~	U
71-55-6	1,1,2-Trichloroethane	4 ~~0~~	U
127-18-4	Tetrachloroethylene	730	~~E~~J
142-28-9	1,3-Dichloropropane	4 ~~0~~	U
124-48-1	Dibromochloromethane	560	~~E~~J
106-93-4	1,2-Dibromoethane	4 ~~0~~	U
108-90-7	Chlorobenzene	4 ~~0~~	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100811.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4 ~~0~~	U
630-20-6	1,1,1,2-Tetrachloroethane	~~0~~	U
106-42-3	m/p-Xylene	~~0~~	U
95-47-6	o-Xylene	~~0~~	U
100-42-5	Styrene	~~0~~	U
75-25-2	Bromoform	~~0~~	U
98-82-8	Isopropylbenzene	~~0~~	U
108-86-1	Bromobenzene	~~0~~	U
79-34-5	1,1,2,2-Tetrachloroethane	~~0~~	U
103-65-1	n-Propylbenzene	~~0~~	U
96-18-4	1,2,3-Trichloropropane	~~0~~	U
95-49-8	2-Chlorotoluene	~~0~~	U
108-67-8	1,3,5-Trimethylbenzene	~~0~~	U
106-43-4	4-Chlorotoluene	~~0~~	U
135-98-8	sec-Butylbenzene	~~0~~	U
95-63-6	1,2,4-Trimethylbenzene	~~0~~	U
98-06-6	tert-Butylbenzene	~~0~~	U
541-73-1	1,3-Dichlorobenzene	~~0~~	U
49-87-6	p-Isopropyltoluene	~~0~~	U
105-51-8	n-Butylbenzene	~~0~~	U
106-46-7	1,4-Dichlorobenzene	~~0~~	U
95-50-1	1,2-Dichlorobenzene	~~0~~	U
96-12-8	1,2-Dibromo-3-chloropropane	~~0~~	U
120-82-1	1,2,4-Trichlorobenzene	~~0~~	U
87-68-3	Hexachlorobutadiene	~~0~~	U
91-20-3	Naphthalene	~~0~~	U
87-61-6	1,2,3-Trichlorobenzene	~~0~~	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059 dl

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 100uL

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 03110803.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: ~~1.0~~ 50

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

RL should be 200

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200 ~~27~~	U
74-87-3	Chloromethane	~~43~~	U
75-01-4	Vinyl chloride	~~10~~	U
74-83-9	Bromomethane	~~37~~	U
75-00-3	Chloroethane	~~12~~	U
75-69-4	Trichlorofluoromethane	~~21~~	U
75-35-4	1,1-Dichloroethene	~~22~~	U
67-64-1	Acetone	~~140~~	U
79-20-9	Methyl Acetate	~~47~~	U J
75-15-0	Carbon disulfide	~~5~~	U
1634-04-4	Methyl Tert-butyl ether	~~14~~	U
75-09-2	Methylene Chloride	200 ~~50~~	U
156-60-5	Trans-1,2-dichloroethene	200 8	U
75-34-3	1,1-Dichloroethane	7	U
78-93-3	2-Butanone	~~51~~	U
594-20-7	Propane, 2,2-dichloro-	~~18~~	U
540-59-0	cis-1,2-Dichloroethene	~~10~~	U
67-66-3	Chloroform	~~11~~	U
74-97-5	Bromochloromethane	~~18~~	U
110-82-7	Cyclohexane	~~13~~	U
71-55-6	1,1,1,-Trichloroethane	~~12~~	U
56-23-5	Carbon tetrachloride	~~9~~	U
563-58-6	1,1-Dichloropropene	~~13~~	U
71-43-2	Benzene	~~9~~	U
75-34-3	1,2-Dichloroethane	~~9~~	U
108-87-2	Methylcyclohexane	~~20~~	U
127-18-4	Trichloroethene	~~32~~	U
78-87-5	1,2-Dichloropropane	~~7~~	U
108-10-1	4-Methyl-2-pentanone	~~44~~	U
74-95-3	Dibromomethane	~~24~~	U
75-27-4	Bromodichloromethane	~~10~~	U
591-78-6	2-Hexanone	~~37~~	U
108-88-3	Toluene	~~25~~	U
71-55-6	1,1,2-Trichloroethane	~~18~~	U
127-18-4	Tetrachloroethylene	590	J
142-28-9	1,3-Dichloropropane	200 ~~23~~	U
124-48-1	Dibromochloromethane	~~11~~	U
106-93-4	1,2-Dibromoethane	~~28~~	U
108-90-7	Chlorobenzene	~~12~~	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316059

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-20 100uL

Sample wt/vol: 0.1 (g/ml) ML Lab File ID: 03110803.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: ~~10~~ 50

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	200 ~~14~~	U
630-20-6	1,1,1,2-Tetrachloroethane	~~8~~	U
106-42-3	m/p-Xylene	~~11~~	U
95-47-6	o-Xylene	~~20~~	U
100-42-5	Styrene	~~14~~	U
75-25-2	Bromoform	~~14~~	U
98-82-8	Isopropylbenzene	~~18~~	U
108-86-1	Bromobenzene	~~8~~	U
79-34-5	1,1,2,2-Tetrachloroethane	~~23~~	U
103-65-1	n-Propylbenzene	~~19~~	U
96-18-4	1,2,3-Trichloropropane	~~29~~	U
95-49-8	2-Chlorotoluene	~~44~~	U
108-67-8	1,3,5-Trimethylbenzene	~~14~~	U
106-43-4	4-Chlorotoluene	~~12~~	U
135-98-8	sec-Butylbenzene	~~58~~	U
95-63-6	1,2,4-Trimethylbenzene	~~21~~	U
98-06-6	tert-Butylbenzene	~~29~~	U
541-73-1	1,3-Dichlorobenzene	~~20~~	U
49-87-6	p-Isopropyltoluene	~~52~~	U
105-51-8	n-Butylbenzene	~~66~~	U
106-46-7	1,4-Dichlorobenzene	~~26~~	U
95-50-1	1,2-Dichlorobenzene	~~17~~	U
96-12-8	1,2-Dibromo-3-chloropropane	~~53~~	U
120-82-1	1,2,4-Trichlorobenzene	~~40~~	U
87-68-3	Hexachlorobutadiene	~~71~~	U
91-20-3	Naphthalene	~~33~~	U
87-61-6	1,2,3-Trichlorobenzene	~~28~~	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316060

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-18 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100817.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1800	J~~D~~
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	2400	~~B~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	40000	~~BJ~~ U
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316060

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-18 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100817.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg) UG/L		Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	UR
95-49-8	2-Chlorotoluene	2000	UR
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	UR
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316061

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-6 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100813.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000 ~~520~~	~~JD~~ U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1900	J~~D~~
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	42000	~~D~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	11000	~~D~~ J
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316061

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-6 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100813.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	240	~~JB~~ J
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

Re Submitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
1316063

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-4a 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100809.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	4 ~~0~~	~~JB~~ u
75-01-4	Vinyl chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
67-64-1	Acetone	16	J
79-20-9	Methyl Acetate	1	J
75-15-0	Carbon disulfide	4	U
1634-04-4	Methyl Tert-butyl ether	4	U
75-09-2	Methylene Chloride	4 ~~1~~	~~J~~ u
156-60-5	Trans-1,2-dichloroethene	4	U
75-34-3	1,1-Dichloroethane	4	U
78-93-3	2-Butanone	4	U
594-20-7	Propane, 2,2-dichloro-	4	U
540-59-0	cis-1,2-Dichloroethene	4	U
67-66-3	Chloroform	4	U
74-97-5	Bromochloromethane	4	U
110-82-7	Cyclohexane	4	U
71-55-6	1,1,1,-Trichloroethane	4	U
56-23-5	Carbon tetrachloride	4	U
563-58-6	1,1-Dichloropropene	4	U
71-43-2	Benzene	4	U
75-34-3	1,2-Dichloroethane	4	U
108-87-2	Methylcyclohexane	4	U
127-18-4	Trichloroethene	4	U
78-87-5	1,2-Dichloropropane	4	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	4	U
75-27-4	Bromodichloromethane	4	U
591-78-6	2-Hexanone	4	U
108-88-3	Toluene	4	U
71-55-6	1,1,2-Trichloroethane	4	U
127-18-4	Tetrachloroethylene	4 ~~2~~	~~J~~ u
142-28-9	1,3-Dichloropropane	4	U
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316063

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-4a 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100809.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
106-42-3	m/p-Xylene	4	U
95-47-6	o-Xylene	4	U
100-42-5	Styrene	4	U
75-25-2	Bromoform	4	U
98-82-8	Isopropylbenzene	4	U
108-86-1	Bromobenzene	4	U
79-34-5	1,1,2,2-Tetrachloroethane	4	U
103-65-1	n-Propylbenzene	4	U
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	4	U
95-63-6	1,2,4-Trimethylbenzene	4	U
98-06-6	tert-Butylbenzene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
49-87-6	p-Isopropyltoluene	4	U
105-51-8	n-Butylbenzene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	4 ~~0~~	~~J~~ U
87-61-6	1,2,3-Trichlorobenzene	4	U

Re Submitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316074 — Equipment Blank

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-7 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100816.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	45000	~~D~~ J
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	2000	U
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	960	~~JD~~ J
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2600	~~D~~ J
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	20000	~~D~~ J
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316074

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-7 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100816.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	~~U~~ R
95-49-8	2-Chlorotoluene	2000	~~U~~ R
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	~~U~~ R
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	430	~~JBD~~ J
87-61-6	1,2,3-Trichlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316075

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-16a 5.0m

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100810.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0	U
74-87-3	Chloromethane	0	U
75-01-4	Vinyl chloride	0	U
74-83-9	Bromomethane	0	U
75-00-3	Chloroethane	0	U
75-69-4	Trichlorofluoromethane	0	U
75-35-4	1,1-Dichloroethene	0	U
67-64-1	Acetone	3	U
79-20-9	Methyl Acetate	0	U
75-15-0	Carbon disulfide	0	U
1634-04-4	Methyl Tert-butyl ether	0	U
75-09-2	Methylene Chloride	1	U
156-60-5	Trans-1,2-dichloroethene	0	U
75-34-3	1,1-Dichloroethane	0	U
78-93-3	2-Butanone	1	U
594-20-7	Propane, 2,2-dichloro-	0	U
540-59-0	cis-1,2-Dichloroethene	0	U
67-66-3	Chloroform	0	U
74-97-5	Bromochloromethane	0	U
110-82-7	Cyclohexane	0	U
71-55-6	1,1,1,-Trichloroethane	0	U
56-23-5	Carbon tetrachloride	0	U
563-58-6	1,1-Dichloropropene	0	U
71-43-2	Benzene	0	U
75-34-3	1,2-Dichloroethane	0	U
108-87-2	Methylcyclohexane	0	U
127-18-4	Trichloroethene	0	U
78-87-5	1,2-Dichloropropane	0	U
108-10-1	4-Methyl-2-pentanone	0	U
74-95-3	Dibromomethane	0	U
75-27-4	Bromodichloromethane	0	U
591-78-6	2-Hexanone	0	U
108-88-3	Toluene	0	U
71-55-6	1,1,2-Trichloroethane	0	U
127-18-4	Tetrachloroethylene	0	U
142-28-9	1,3-Dichloropropane	0	U
124-48-1	Dibromochloromethane	0	U
106-93-4	1,2-Dibromoethane	0	U
108-90-7	Chlorobenzene	0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316075

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-16a 5.0m

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100810.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4 0	U
630-20-6	1,1,1,2-Tetrachloroethane	0	U
106-42-3	m/p-Xylene	0	U
95-47-6	o-Xylene	0	U
100-42-5	Styrene	0	U
75-25-2	Bromoform	0	U
98-82-8	Isopropylbenzene	0	U
108-86-1	Bromobenzene	0	U
79-34-5	1,1,2,2-Tetrachloroethane	0	U
103-65-1	n-Propylbenzene	0	U
96-18-4	1,2,3-Trichloropropane	0	U
95-49-8	2-Chlorotoluene	0	U
108-67-8	1,3,5-Trimethylbenzene	0	U
106-43-4	4-Chlorotoluene	0	U
135-98-8	sec-Butylbenzene		U
95-63-6	1,2,4-Trimethylbenzene	0	U
98-06-6	tert-Butylbenzene	0	U
541-73-1	1,3-Dichlorobenzene	0	U
49-87-6	p-Isopropyltoluene		U
105-51-8	n-Butylbenzene		U
106-46-7	1,4-Dichlorobenzene	0	U
95-50-1	1,2-Dichlorobenzene	0	U
96-12-8	1,2-Dibromo-3-chloropropane		U
120-82-1	1,2,4-Trichlorobenzene	4 0	U
87-68-3	Hexachlorobutadiene		U
91-20-3	Naphthalene	4 0	~~J~~ 5.5 U
87-61-6	1,2,3-Trichlorobenzene	4 0	U

SECTION 3

ORGANIC DATA SUPPORT DOCUMENTATION

ORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: LOUREIRO
Sample Collection Dates: 2/25/08
Job Number: 20085078
Project Manager: Kyle Clay
Laboratory: DAT

Reviewed by: PAE
Approved by: [illegible]
Completion Date:

Applicable Sample No's ( ) Refer to Table 1 in the Quality Assurance Review

Deliverable: CLP-Like (X)
Tier I ( )
Tier II ( )
Limited ( )
Other:

Sample No.: See table

Lab Control No.:

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail Check (√) if Yes or Footnote Letter for Comments Below					Problems Identified Check (√) if Yes or Footnote Letter for Comments Below					Support Documentation Attachments Check (√) if Yes or Footnote Letter for Comments Below				
Holding Times	✓														
Blank Analysis: Target Cmpds						✓					✓				
Sys Montr Cmps/Surrogates	✓														
Matrix Spike/Matrix Spike Duplicate						✓					✓				
Blank Spike						✓					✓				
Duplicate Analysis ( ) Field ( ) Lab						✓					✓				
Qualitative Identification: Target Cmpds						✓					✓				
Qualitative Identification: TICs															
DFTPP & BFB Mass Tuning						✓					✓				
GC Instrument Performance						✓					✓				
Initial Calibrations						✓					✓				
Continuing Calibrations	✓														
Quantitation of Results						✓					✓				
DDT/Endrin Breakdown															
Surrogate Retention Time Shifts															
Internal Standards Performance	✓														
Resolution Check Standards															
Analytical Sequence						✓					✓				
Florisil Cartridge & GPC Calibration															
GC Column Agreement															
Condition Upon Receipt	✓														
Percent Solids															
Others:															

Comments:

BLANK ANALYSIS RESULTS FOR ORGANIC PARAMETERS

Fraction (1)	Matrix (Aq./S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (µg/L, mg/L, mg/Kg)	Qualification limit 5×	Qualification limit 10×
✓		MB	IBLK2	2 Hexanone	4 ug/L	20	
"		"	"	Naphthalene	25 "	100	
~~"~~		~~"~~	~~"~~	~~Chloromethane~~	~~.4~~	~~2.0~~	~~e.~~
✓		MB	IBLK1	~~ND~~ Chloromethane	0.4 ug/L		
✓		MB	~~M~~ BLK 2	ND			
✓	Aq	EB	1316074 - 500x (Equipment Blank)	DCM	45000		
				TCE	960		
				Toluene	2600		
				PCE	20000		
				Naphthalene	430		

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: _____

EVALAUTION OF ORGANIC DUPLICATE ANALYSIS PRECISION

Units ug/L	PRECISION OBJECTIVES*		
	Analyte > or = 5 X RL	RPD < or =	20
	Analyte < 5 X RL	Difference < or = RL Times	1

* Enter the project-specific or default acceptance criteria

ANALYTE	1316058 Analyte Concentration	Qual	RL	1316061 Analyte Concentration	Qual	RL	Difference	RPD	Notes
Methylene Chloride		U	2000	520		2000	480	NA	IN
Cis-1,2-Dichloroethene	1500	J	2000	1900	J	2000	400	NA	IN
Trichloroethene	22000		2000	42000		2000	NA	62.50%	1
Tetrachloroethene	15000		2000	11000		2000	NA	30.77%	1
m&p Xylene		U	2000	240	J	2000	760	NA	IN
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!

NOTES:

Qual) Column to enter J, U, U*, or B

RPD) Relative Percent Difference

RL) Reporting Limit

J) The analyte concentration should be considered estimated.

U) The analyte was not-detected in the sample. The half of the numerical value will be used for comparison purposes.

U* or B) The result was blank qualified. The numerical value will be used for comparison purposes.

NA) The RPD or Difference is not applicable.

1) Both results are > or = 5 X RL and RPD over acceptance limit, flag positive results "J".

2) At least one of the results is < 5 X RL and difference is over acceptance limit, flag positive results "J" and "not-detected" results "UJ".

Comments:

A. GCMS Volatiles by 8260C

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

	SAMPLE NO.	SMC1 #	SMC2 #	SMC3 #	TOT OUT
01	MBLK2	96	98	103	0
02	1316059	92	95	105	0
03	057	98	99	101	0
04	1316057MS	94	101	101	0
05	057MSD	101	98	108	0
06	BSPK	104	98	99	0
07	057MS	91	98	114	0

			QC LIMITS
SMC1	=	Dibromofluoromethane(surr)	(0-0)
SMC2	=	Toluene-d8(surr)	(0-0)
SMC3	=	BFB(surr)	(0-0)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

	SAMPLE NO.	SMC1 #	SMC2 #	SMC3 #	TOT OUT
01	IBLK2	97	96	98	0
02	1316074	95	96	105	0
03	1316060	104	98	101	0
04	057	91	92	104	0
05	1316058	97	97	101	0
06	057MS	100	99	102	0
07	1316057MSD	84	97	99	0
08	057MSD	96	96	97	0
09	BSPK1	102	102	103	0

			QC LIMITS
SMC1	=	Dibromofluoromethane(surr)	(0-0)
SMC2	=	Toluene-d8(surr)	(0-0)
SMC3	=	BFB(surr)	(0-0)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D System Monitoring Compound diluted out

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

	SAMPLE NO.	SMC1 #	SMC2 #	SMC3 #	TOT OUT
01	IBLK1	98	100	100	0
02	1316063	102	98	101	0
03	1316075	95	94	107	0
04	1316059	99	99	103	0
05	1316058	92	95	101	0
06	1316061	97	94	97	0

QC LIMITS

SMC1	=	Dibromofluoromethane(surr)	(0-0)
SMC2	=	Toluene-d8(surr)	(0-0)
SMC3	=	BFB(surr)	(0-0)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

Resubmittal

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120000	0.0	180000	150 *	70 - 80
Chloromethane	120000	0.0	250000	208 *	70 - 130
Vinyl chloride	120000	480	180000	150 *	70 - 130
Bromomethane	120000	0.0	140000	117	70 - 130
Chloroethane	120000	0.0	170000	142 *	70 - 130
Trichlorofluoromethane	120000	0.0	140000	117	70 - 130
1,1-Dichloroethene	120000	0.0	140000	117	70 - 130
Methylene Chloride	120000	0.0	140000	117	70 - 130
Trans-1,2-dichloroethene	120000	0.0	140000	117	70 - 130
1,1-Dichloroethane	120000	0.0	150000	125	70 - 130
Propane, 2,2-dichloro-	120000	0.0	170000	142 *	70 - 130
cis-1,2-Dichloroethene	120000	21000	170000	117	70 - 130
Chloroform	120000	0.0	150000	125	70 - 130
Bromochloromethane	120000	0.0	160000	133 *	70 - 130
1,1,1,-Trichloroethane	120000	0.0	150000	125	70 - 130
Carbon tetrachloride	120000	0.0	150000	125	70 - 130
1,1-Dichloropropene	120000	0.0	160000	133 *	70 - 130
Benzene	120000	0.0	150000	125	70 - 130
1,2-Dichloroethane	120000	0.0	150000	125	70 - 130
Trichloroethene	120000	10000	160000	125	70 - 130
1,2-Dichloropropane	120000	0.0	150000	125	70 - 130
Dibromomethane	120000	0.0	140000	117	70 - 130
Bromodichloromethane	120000	0.0	140000	117	70 - 130
Toluene	120000	0.0	140000	117	70 - 130
1,1,2-Trichloroethane	120000	0.0	130000	108	70 - 130
Tetrachloroethylene	120000	220000 (E)	640000 (E)	350 *	70 - 130
1,3-Dichloropropane	120000	0.0	130000	108	70 - 130
Dibromochloromethane	120000	0.0	130000	108	70 - 130
1,2-Dibromoethane	120000	0.0	120000	100	70 - 130

Not (+), not ok

"J" high

Should be 124%

Spike conc ?** no Quant

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 32 outside limits

Spike Recovery: 10 out of 64 outside limits

spike added was adjusted for the Dilution performed.

Lab diluted & Re run MS/MSD for PCE, use 057dl MS/MSD

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120000	0.0	150000	125	70 - 130
Ethylbenzene	120000	0.0	140000	117	70 - 130
1,1,1,2-Tetrachloroethane	120000	0.0	140000	117	70 - 130
m/p-Xylene	240000	0.0	290000	121	70 - 130
o-Xylene	120000	0.0	150000	125	70 - 130
Styrene	120000	0.0	140000	117	70 - 130
Bromoform	120000	0.0	120000	100	70 - 130
Isopropylbenzene	120000	0.0	150000	125	70 - 130
Bromobenzene	120000	0.0	150000	125	70 - 130
1,1,2,2-Tetrachloroethane	120000	0.0	130000	108	70 - 130
n-Propylbenzene	120000	0.0	150000	125	70 - 130
1,2,3-Trichloropropane	120000	0.0	120000	100	70 - 130
2-Chlorotoluene	120000	0.0	140000	117	70 - 130
1,3,5-Trimethylbenzene	120000	0.0	140000	117	70 - 130
4-Chlorotoluene	120000	0.0	150000	125	70 - 130
sec-Butylbenzene	120000	0.0	140000	117	70 - 130
1,2,4-Trimethylbenzene	120000	0.0	150000	125	70 - 130
tert-Butylbenzene	120000	0.0	150000	125	70 - 130
1,3-Dichlorobenzene	120000	0.0	150000	125	70 - 130
p-Isopropyltoluene	120000	0.0	140000	117	70 - 130
n-Butylbenzene	120000	0.0	130000	108	70 - 130
1,4-Dichlorobenzene	120000	0.0	140000	117	70 - 130
1,2-Dichlorobenzene	120000	0.0	140000	117	70 - 130
1,2-Dibromo-3-chloropropane	120000	0.0	93000	78	70 - 130
1,2,4-Trichlorobenzene	120000	0.0	130000	108	70 - 130
Hexachlorobutadiene	120000	0.0	140000	117	70 - 130
Naphthalene	120000	0.0	94000	78	70 - 130
1,2,3-Trichlorobenzene	120000	0.0	130000	108	70 - 130
Acetone	120000	0.0	86000	72	70 - 130
Methyl Acetate	120000	0.0	91000	76	70 - 130
Carbon disulfide	120000	0.0	130000	108	70 - 130
2-Butanone	120000	0.0	94000	78	70 - 130
Cyclohexane	120000	0.0	140000	117	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 34 outside limits

Spike Recovery: 2 out of 67 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120000	0.0	120000	100	70 - 130
4-Methyl-2-pentanone	120000	0.0	90000	75	70 - 130
2-Hexanone	120000	0.0	99000	83	70 - 130
Methyl Tert-butyl ether	120000	0.0	110000	92	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	
Dichlorodifluoromethane	120000	160000	133 *	12	30	70 - 80	* NO factor
Chloromethane	120000	220000	183 *	13	20	70 - 130	* ND; high
Vinyl chloride	120000	170000	142 *	5	20	70 - 130	"J" high
Bromomethane	120000	130000	108	8	20	70 - 130	
Chloroethane	120000	150000	125	13	20	70 - 130	
Trichlorofluoromethane	120000	130000	108	8	20	70 - 130	
1,1-Dichloroethene	120000	130000	108	8	20	70 - 130	
Methylene Chloride	120000	120000	100	16	20	70 - 130	
Trans-1,2-dichloroethene	120000	140000	117	0	20	70 - 130	
1,1-Dichloroethane	120000	140000	117	7	20	70 - 130	
Propane, 2,2-dichloro-	120000	150000	125	13	20	70 - 130	
cis-1,2-Dichloroethene	120000	150000	108	15	20	70 - 130	
Chloroform	120000	130000	108	15	20	70 - 130	
Bromochloromethane	120000	130000	108	21 *	20	70 - 130	*
1,1,1,-Trichloroethane	120000	140000	117	7	20	70 - 130	
Carbon tetrachloride	120000	140000	117	7	20	70 - 130	
1,1-Dichloropropene	120000	140000	117	13	20	70 - 130	
Benzene	120000	130000	108	15	20	70 - 130	
1,2-Dichloroethane	120000	120000	100	22 *	20	70 - 130	*
Trichloroethene	120000	160000	125	0	20	70 - 130	
1,2-Dichloropropane	120000	130000	108	15	20	70 - 130	
Dibromomethane	120000	120000	100	16	20	70 - 130	
Bromodichloromethane	120000	120000	100	16	20	70 - 130	
Toluene	120000	120000	100	16	20	70 - 130	
1,1,2-Trichloroethane	120000	110000	92	16	20	70 - 130	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 3 out of 4 outside limits

Spike Recovery: 4 out of 7 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120000	900000	567 *	~~47~~ * 34	20	70 - 130	"J" ok Kim Light RPD
1,3-Dichloropropane	120000	110000	92	16	20	70 - 130	
Dibromochloromethane	120000	110000	92	16	20	70 - 130	
1,2-Dibromoethane	120000	100000	83	19	20	70 - 130	
Chlorobenzene	120000	140000	117	7	20	70 - 130	
Ethylbenzene	120000	130000	108	8	20	70 - 130	
1,1,1,2-Tetrachloroethane	120000	130000	108	8	20	70 - 130	
m/p-Xylene	240000	270000	113	7	20	70 - 130	
o-Xylene	120000	140000	117	7	20	70 - 130	
Styrene	120000	130000	108	8	20	70 - 130	
Bromoform	120000	100000	83	19	20	70 - 130	
Isopropylbenzene	120000	150000	125	0	20	70 - 130	
Bromobenzene	120000	130000	108	15	20	70 - 130	
1,1,2,2-Tetrachloroethane	120000	100000	83	26 *	20	70 - 130	"*"
n-Propylbenzene	120000	150000	125	0	20	70 - 130	
1,2,3-Trichloropropane	120000	100000	83	19	20	70 - 130	
2-Chlorotoluene	120000	140000	117	0	20	70 - 130	
1,3,5-Trimethylbenzene	120000	140000	117	0	20	70 - 130	
4-Chlorotoluene	120000	140000	117	7	20	70 - 130	
sec-Butylbenzene	120000	140000	117	0	20	70 - 130	
1,2,4-Trimethylbenzene	120000	140000	117	7	20	70 - 130	
tert-Butylbenzene	120000	140000	117	7	20	70 - 130	
1,3-Dichlorobenzene	120000	140000	117	7	20	70 - 130	
p-Isopropyltoluene	120000	140000	117	0	20	70 - 130	
n-Butylbenzene	120000	140000	117	8	20	70 - 130	
1,4-Dichlorobenzene	120000	140000	117	0	20	70 - 130	
1,2-Dichlorobenzene	120000	130000	108	8	20	70 - 130	
1,2-Dibromo-3-chloropropane	120000	79000	66 *	17	20	70 - 130	UJ
1,2,4-Trichlorobenzene	120000	130000	108	0	20	70 - 130	
Hexachlorobutadiene	120000	160000	133 *	13	20	70 - 130	
Naphthalene	120000	96000	80	3	20	70 - 130	
1,2,3-Trichlorobenzene	120000	120000	100	8	20	70 - 130	
Acetone	120000	64000	53 *	30 *	20	70 - 130	UJ

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 4 out of 0 outside limits

Spike Recovery: 5 out of 0 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120000	69000	58 *	27 *	20	70 - 130	UJ low
Carbon disulfide	120000	130000	108	0	20	70 - 130	
2-Butanone	120000	57000	48 *	48 *	20	70 - 130	UJ low
Cyclohexane	120000	110000	92	24 *	20	70 - 130	*
Methylcyclohexane	120000	120000	100	0	20	70 - 130	
4-Methyl-2-pentanone	120000	76000	63 *	17	20	70 - 130	UJ LOW
2-Hexanone	120000	77000	64 *	26 *	20	70 - 130	UJ LOW
Methyl Tert-butyl ether	120000	98000	82	11	20	70 - 130	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 4 out of 0 outside limits

Spike Recovery: 4 out of 0 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

COMPOUND	SPIKE ADDED ng (~~ug/L~~)	SAMPLE CONCENTRATION ng (~~ug/L~~)	MS CONCENTRATION ng (ug/L)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120	0.0	180	150 *	70 - 80
Chloromethane	120	0.0	250	208 *	70 - 130
Vinyl chloride	120	48 ~~480~~	180	150 ~~0~~ *	70 - 130
Bromomethane	120	0.0	140	117	70 - 130
Chloroethane	120	0.0	170	142 *	70 - 130
Trichlorofluoromethane	120	0.0	140	117	70 - 130
1,1-Dichloroethene	120	0.0	140	117	70 - 130
Methylene Chloride	120	0.0	140	117	70 - 130
Trans-1,2-dichloroethene	120	0.0	140	117	70 - 130
1,1-Dichloroethane	120	0.0	150	125	70 - 130
Propane, 2,2-dichloro-	120	0.0	170	142 *	70 - 130
cis-1,2-Dichloroethene	120	21 ~~21000~~	170	124 ~~0~~ *	70 - 130
Chloroform	120	0.0	150	125	70 - 130
Bromochloromethane	120	0.0	160	133 *	70 - 130
1,1,1,-Trichloroethane	120	0.0	150	125	70 - 130
Carbon tetrachloride	120	0.0	150	125	70 - 130
1,1-Dichloropropene	120	0.0	160	133 *	70 - 130
Benzene	120	0.0	150	125	70 - 130
1,2-Dichloroethane	120	0.0	150	125	70 - 130
Trichloroethene	120	10 ~~10000~~	160	125 ~~0~~ *	70 - 130
1,2-Dichloropropane	120	0.0	150	125	70 - 130
Dibromomethane	120	0.0	140	117	70 - 130
Bromodichloromethane	120	0.0	140	117	70 - 130
Toluene	120	0.0	140	117	70 - 130
1,1,2-Trichloroethane	120	0.0	130	108	70 - 130
Tetrachloroethylene	120	220 ~~220000~~ (E)	640 (E)	350 ~~0~~ *	70 - 130
1,3-Dichloropropane	120	0.0	130	108	70 - 130
Dibromochloromethane	120	0.0	130	108	70 - 130
1,2-Dibromoethane	120	0.0	120	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 32 outside limits

Spike Recovery: 14 out of 64 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120	0.0	150	125	70 - 130
Ethylbenzene	120	0.0	140	117	70 - 130
1,1,1,2-Tetrachloroethane	120	0.0	140	117	70 - 130
m/p-Xylene	240 ~~120~~	0.0	290	121 ~~242~~*	70 - 130
o-Xylene	120	0.0	150	125	70 - 130
Styrene	120	0.0	140	117	70 - 130
Bromoform	120	0.0	120	100	70 - 130
Isopropylbenzene	120	0.0	150	125	70 - 130
Bromobenzene	120	0.0	150	125	70 - 130
1,1,2,2-Tetrachloroethane	120	0.0	130	108	70 - 130
n-Propylbenzene	120	0.0	150	125	70 - 130
1,2,3-Trichloropropane	120	0.0	120	100	70 - 130
2-Chlorotoluene	120	0.0	140	117	70 - 130
1,3,5-Trimethylbenzene	120	0.0	140	117	70 - 130
4-Chlorotoluene	120	0.0	150	125	70 - 130
sec-Butylbenzene	120	0.0	140	117	70 - 130
1,2,4-Trimethylbenzene	120	0.0	150	125	70 - 130
tert-Butylbenzene	120	0.0	150	125	70 - 130
1,3-Dichlorobenzene	120	0.0	150	125	70 - 130
p-Isopropyltoluene	120	0.0	140	117	70 - 130
n-Butylbenzene	120	0.0	130	108	70 - 130
1,4-Dichlorobenzene	120	0.0	140	117	70 - 130
1,2-Dichlorobenzene	120	0.0	140	117	70 - 130
1,2-Dibromo-3-chloropropane	120	0.0	93	78	70 - 130
1,2,4-Trichlorobenzene	120	0.0	130	108	70 - 130
Hexachlorobutadiene	120	0.0	140	117	70 - 130
Naphthalene	120	0.0	94	78	70 - 130
1,2,3-Trichlorobenzene	120	0.0	130	108	70 - 130
Acetone	120	0.0	86	72	70 - 130
Methyl Acetate	120	0.0	91	76	70 - 130
Carbon disulfide	120	0.0	130	108	70 - 130
2-Butanone	120	0.0	94	78	70 - 130
Cyclohexane	120	0.0	140	117	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 34 outside limits

Spike Recovery: 5 out of 67 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120	0.0	120	100	70 - 130
4-Methyl-2-pentanone	120	0.0	90	75	70 - 130
2-Hexanone	120	0.0	99	83	70 - 130
Methyl Tert-butyl ether	120	0.0	110	92	70 - 130

COMPOUND	SPIKE ADDED ng ~~(ug/L)~~	MSD CONCENTRATION ng ~~(ug/L)~~	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	120	160	133 *	12	30	70 - 80
Chloromethane	120	220	183 *	13	20	70 - 130
Vinyl chloride	120	170	140 ~~0~~ *	6 ~~0~~	20	70 - 130
Bromomethane	120	130	108	8	20	70 - 130
Chloroethane	120	150	125	13	20	70 - 130
Trichlorofluoromethane	120	130	108	8	20	70 - 130
1,1-Dichloroethene	120	130	108	8	20	70 - 130
Methylene Chloride	120	120	100	16	20	70 - 130
Trans-1,2-dichloroethene	120	140	117	0	20	70 - 130
1,1-Dichloroethane	120	140	117	7	20	70 - 130
Propane, 2,2-dichloro-	120	150	125	13	20	70 - 130
cis-1,2-Dichloroethene	120	150	107 ~~0~~ *	13 ~~0~~	20	70 - 130
Chloroform	120	130	108	15	20	70 - 130
Bromochloromethane	120	130	108	21 *	20	70 - 130
1,1,1,-Trichloroethane	120	140	117	7	20	70 - 130
Carbon tetrachloride	120	140	117	7	20	70 - 130
1,1-Dichloropropene	120	140	117	13	20	70 - 130
Benzene	120	130	108	15	20	70 - 130
1,2-Dichloroethane	120	120	100	22 *	20	70 - 130
Trichloroethene	120	160	125 ~~0~~ *	0	20	70 - 130
1,2-Dichloropropane	120	130	108	15	20	70 - 130
Dibromomethane	120	120	100	16	20	70 - 130
Bromodichloromethane	120	120	100	16	20	70 - 130
Toluene	120	120	100	16	20	70 - 130
1,1,2-Trichloroethane	120	110	92	16	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 4 outside limits

Spike Recovery: 7 out of 7 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120	900	570 ~~0~~ *	34% 0	20	70 - 130
1,3-Dichloropropane	120	110	92	16	20	70 - 130
Dibromochloromethane	120	110	92	16	20	70 - 130
1,2-Dibromoethane	120	100	83	19	20	70 - 130
Chlorobenzene	120	140	117	7	20	70 - 130
Ethylbenzene	120	130	108	8	20	70 - 130
1,1,1,2-Tetrachloroethane	120	130	108	8	20	70 - 130
m/p-Xylene	240 ~~120~~	270	113 ~~225~~ *	7	20	70 - 130
o-Xylene	120	140	117	7	20	70 - 130
Styrene	120	130	108	8	20	70 - 130
Bromoform	120	100	83	19	20	70 - 130
Isopropylbenzene	120	150	125	0	20	70 - 130
Bromobenzene	120	130	108	15	20	70 - 130
1,1,2,2-Tetrachloroethane	120	100	83	26 *	20	70 - 130
n-Propylbenzene	120	150	125	0	20	70 - 130
1,2,3-Trichloropropane	120	100	83	19	20	70 - 130
2-Chlorotoluene	120	140	117	0	20	70 - 130
1,3,5-Trimethylbenzene	120	140	117	0	20	70 - 130
4-Chlorotoluene	120	140	117	7	20	70 - 130
sec-Butylbenzene	120	140	117	0	20	70 - 130
1,2,4-Trimethylbenzene	120	140	117	7	20	70 - 130
tert-Butylbenzene	120	140	117	7	20	70 - 130
1,3-Dichlorobenzene	120	140	117	7	20	70 - 130
p-Isopropyltoluene	120	140	117	0	20	70 - 130
n-Butylbenzene	120	140	117	8	20	70 - 130
1,4-Dichlorobenzene	120	140	117	0	20	70 - 130
1,2-Dichlorobenzene	120	130	108	8	20	70 - 130
1,2-Dibromo-3-chloropropane	120	79	66 *	17	20	70 - 130
1,2,4-Trichlorobenzene	120	130	108	0	20	70 - 130
Hexachlorobutadiene	120	160	133 *	13	20	70 - 130
Naphthalene	120	96	80	3	20	70 - 130
1,2,3-Trichlorobenzene	120	120	100	8	20	70 - 130
Acetone	120	64	53 *	30 *	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 3 out of 0 outside limits

Spike Recovery: 6 out of 0 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120	69	58 *	27 *	20	70 - 130
Carbon disulfide	120	130	108	0	20	70 - 130
2-Butanone	120	57	48 *	48 *	20	70 - 130
Cyclohexane	120	110	92	24 *	20	70 - 130
Methylcyclohexane	120	120	100	0	20	70 - 130
4-Methyl-2-pentanone	120	76	63 *	17	20	70 - 130
2-Hexanone	120	77	64 *	26 *	20	70 - 130
Methyl Tert-butyl ether	120	98	82	11	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 4 out of 0 outside limits

Spike Recovery: 4 out of 0 outside limits

COMMENTS:

Resubmittal - used for tetrachloroethylene only 1316057dL

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057 DL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120000	0.0	160000	133 *	70 - 80
Chloromethane	120000	0.0	190000	158 *	70 - 130
Vinyl chloride	120000	0.0	170000	142 *	70 - 130
Bromomethane	120000	0.0	160000	133 *	70 - 130
Chloroethane	120000	0.0	160000	133 *	70 - 130
Trichlorofluoromethane	120000	0.0	140000	117	70 - 130
1,1-Dichloroethene	120000	0.0	140000	117	70 - 130
Methylene Chloride	120000	3600	170000	139 ~~142~~ *	70 - 130
Trans-1,2-dichloroethene	120000	0.0	130000	108	70 - 130
1,1-Dichloroethane	120000	0.0	140000	117	70 - 130
Propane, 2,2-dichloro-	120000	0.0	160000	133 *	70 - 130
cis-1,2-Dichloroethene	120000	16 ~~19~~000	150000	112 ~~108~~	70 - 130
Chloroform	120000	0.0	130000	108	70 - 130
Bromochloromethane	120000	0.0	150000	125	70 - 130
1,1,1,-Trichloroethane	120000	0.0	130000	108	70 - 130
Carbon tetrachloride	120000	0.0	130000	108	70 - 130
1,1-Dichloropropene	120000	0.0	140000	117	70 - 130
Benzene	120000	0.0	130000	108	70 - 130
1,2-Dichloroethane	120000	0.0	140000	117	70 - 130
Trichloroethene	120000	27 ~~28~~000	150000	103 ~~100~~	70 - 130
1,2-Dichloropropane	120000	0.0	140000	117	70 - 130
Dibromomethane	120000	0.0	140000	117	70 - 130
Bromodichloromethane	120000	0.0	130000	108	70 - 130
Toluene	120000	0.0	130000	108	70 - 130
1,1,2-Trichloroethane	120000	0.0	130000	108	70 - 130
Tetrachloroethylene	120000	160000	250000	75 ~~73~~	70 - 130
1,3-Dichloropropane	120000	0.0	120000	100	70 - 130
Dibromochloromethane	120000	~~120000~~	120000	100 ~~3~~	70 - 130
1,2-Dibromoethane	120000	0.0	120000	100	70 - 130

Reported as ND originally. Not used for reporting purposes

No (+) N/A results Report original

J+

not (+)

* ✓ ok

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 32 outside limits

Spike Recovery: 11 out of 64 outside limits

adjusted for Dilution

* This MS/MSD only applied to tetrachloroethylene in Sample 057DL

COMMENTS:

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120000	0.0	140000	117	70 - 130
Ethylbenzene	120000	0.0	130000	108	70 - 130
1,1,1,2-Tetrachloroethane	120000	0.0	130000	108	70 - 130
m/p-Xylene	240000	0.0	260000	108	70 - 130
o-Xylene	120000	0.0	140000	117	70 - 130
Styrene	120000	0.0	130000	108	70 - 130
Bromoform	120000	0.0	120000	100	70 - 130
Isopropylbenzene	120000	0.0	140000	117	70 - 130
Bromobenzene	120000	0.0	150000	125	70 - 130
1,1,2,2-Tetrachloroethane	120000	0.0	130000	108	70 - 130
n-Propylbenzene	120000	0.0	140000	117	70 - 130
1,2,3-Trichloropropane	120000	0.0	130000	108	70 - 130
2-Chlorotoluene	120000	0.0	140000	117	70 - 130
1,3,5-Trimethylbenzene	120000	0.0	140000	117	70 - 130
4-Chlorotoluene	120000	0.0	150000	125	70 - 130
sec-Butylbenzene	120000	0.0	100000	83	70 - 130
1,2,4-Trimethylbenzene	120000	0.0	140000	117	70 - 130
tert-Butylbenzene	120000	0.0	150000	125	70 - 130
1,3-Dichlorobenzene	120000	0.0	150000	125	70 - 130
p-Isopropyltoluene	120000	0.0	140000	117	70 - 130
n-Butylbenzene	120000	0.0	130000	108	70 - 130
1,4-Dichlorobenzene	120000	0.0	140000	117	70 - 130
1,2-Dichlorobenzene	120000	0.0	130000	108	70 - 130
1,2-Dibromo-3-chloropropane	120000	0.0	100000	83	70 - 130
1,2,4-Trichlorobenzene	120000	0.0	140000	117	70 - 130
Hexachlorobutadiene	120000	0.0	140000	117	70 - 130
Naphthalene	120000	0.0	120000	100	70 - 130
1,2,3-Trichlorobenzene	120000	0.0	130000	108	70 - 130
Acetone	120000	0.0	110000	92	70 - 130
Methyl Acetate	120000	0.0	110000	92	70 - 130
Carbon disulfide	120000	0.0	130000	108	70 - 130
2-Butanone	120000	0.0	110000	92	70 - 130
Cyclohexane	120000	0.0	120000	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 34 outside limits

Spike Recovery: 3 out of 67 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120000	0.0	120000	100	70 - 130
4-Methyl-2-pentanone	120000	0.0	110000	92	70 - 130
2-Hexanone	120000	0.0	110000	92	70 - 130
Methyl Tert-butyl ether	120000	0.0	110000	92	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	
Dichlorodifluoromethane	120000	160000	133 *	0	30	70 - 80	N/A NOTE
Chloromethane	120000	190000	158 *	0	20	70 - 130	
Vinyl chloride	120000	160000	133 *	7	20	70 - 130	
Bromomethane	120000	140000	117	13	20	70 - 130	
Chloroethane	120000	160000	133 *	0	20	70 - 130	N/A
Trichlorofluoromethane	120000	140000	117	0	20	70 - 130	
1,1-Dichloroethene	120000	130000	108	8	20	70 - 130	
Methylene Chloride	120000	130000	108	27 *	20	70 - 130	N/A J
Trans-1,2-dichloroethene	120000	130000	108	0	20	70 - 130	
1,1-Dichloroethane	120000	140000	117	0	20	70 - 130	
Propane, 2,2-dichloro-	120000	160000	133 *	0	20	70 - 130	N/A NOT
cis-1,2-Dichloroethene	120000	150000	108	0	20	70 - 130	
Chloroform	120000	140000	117	8	20	70 - 130	
Bromochloromethane	120000	150000	125	0	20	70 - 130	
1,1,1,-Trichloroethane	120000	140000	117	8	20	70 - 130	
Carbon tetrachloride	120000	140000	117	8	20	70 - 130	
1,1-Dichloropropene	120000	130000	108	8	20	70 - 130	
Benzene	120000	130000	108	0	20	70 - 130	
1,2-Dichloroethane	120000	130000	108	8	20	70 - 130	
Trichloroethene	120000	140000	92	8	20	70 - 130	
1,2-Dichloropropane	120000	140000	117	0	20	70 - 130	
Dibromomethane	120000	140000	117	0	20	70 - 130	
Bromodichloromethane	120000	130000	108	0	20	70 - 130	
Toluene	120000	130000	108	0	20	70 - 130	
1,1,2-Trichloroethane	120000	130000	108	0	20	70 - 130	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 3 out of 4 outside limits

Spike Recovery: 6 out of 7 outside limits

COMMENTS:

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120000	290000	108	36 *	20	70 - 130	J ~~N/A~~
1,3-Dichloropropane	120000	130000	108	8	20	70 - 130	
Dibromochloromethane	120000	130000	108 ~~8~~	8 ~~200~~	20	70 - 130	N/A
1,2-Dibromoethane	120000	120000	100	0	20	70 - 130	
Chlorobenzene	120000	140000	117	0	20	70 - 130	
Ethylbenzene	120000	130000	108	0	20	70 - 130	
1,1,1,2-Tetrachloroethane	120000	140000	117	8	20	70 - 130	
m/p-Xylene	240000	280000	117	8	20	70 - 130	
o-Xylene	120000	150000	125	7	20	70 - 130	
Styrene	120000	140000	117	8	20	70 - 130	
Bromoform	120000	130000	108	8	20	70 - 130	
Isopropylbenzene	120000	150000	125	7	20	70 - 130	
Bromobenzene	120000	140000	117	7	20	70 - 130	
1,1,2,2-Tetrachloroethane	120000	130000	108	0	20	70 - 130	
n-Propylbenzene	120000	140000	117	0	20	70 - 130	
1,2,3-Trichloropropane	120000	130000	108	0	20	70 - 130	
2-Chlorotoluene	120000	150000	125	7	20	70 - 130	
1,3,5-Trimethylbenzene	120000	140000	117	0	20	70 - 130	
4-Chlorotoluene	120000	150000	125	0	20	70 - 130	
sec-Butylbenzene	120000	100000	83	0	20	70 - 130	
1,2,4-Trimethylbenzene	120000	150000	125	7	20	70 - 130	
tert-Butylbenzene	120000	140000	117	7	20	70 - 130	
1,3-Dichlorobenzene	120000	150000	125	0	20	70 - 130	
p-Isopropyltoluene	120000	140000	117	0	20	70 - 130	
n-Butylbenzene	120000	120000	100	8	20	70 - 130	
1,4-Dichlorobenzene	120000	130000	108	8	20	70 - 130	
1,2-Dichlorobenzene	120000	130000	108	0	20	70 - 130	
1,2-Dibromo-3-chloropropane	120000	100000	83	0	20	70 - 130	
1,2,4-Trichlorobenzene	120000	130000	108	8	20	70 - 130	
Hexachlorobutadiene	120000	130000	108	8	20	70 - 130	
Naphthalene	120000	120000	100	0	20	70 - 130	
1,2,3-Trichlorobenzene	120000	120000	100	8	20	70 - 130	
Acetone	120000	98000	82	11	20	70 - 130	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 0 outside limits

Spike Recovery: 1 out of 0 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120000	94000	78	16	20	70 - 130
Carbon disulfide	120000	120000	100	8	20	70 - 130
2-Butanone	120000	96000	80	14	20	70 - 130
Cyclohexane	120000	110000	92	8	20	70 - 130
Methylcyclohexane	120000	120000	100	0	20	70 - 130
4-Methyl-2-pentanone	120000	110000	92	0	20	70 - 130
2-Hexanone	120000	110000	92	0	20	70 - 130
Methyl Tert-butyl ether	120000	110000	92	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 0 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

COMPOUND	SPIKE ADDED ng (~~ug/L~~)	SAMPLE CONCENTRATION ng (~~ug/L~~)	MS CONCENTRATION ng (~~ug/L~~)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120	0.0	160	133 *	70 - 80
Chloromethane	120	0.0	190	158 *	70 - 130
Vinyl chloride	120	0.0	170	142 *	70 - 130
Bromomethane	120	0.0	160	133 *	70 - 130
Chloroethane	120	0.0	160	133 *	70 - 130
Trichlorofluoromethane	120	0.0	140	117	70 - 130
1,1-Dichloroethene	120	0.0	140	117	70 - 130
Methylene Chloride	120	-9 ? 0.0	170	142 *	70 - 130
Trans-1,2-dichloroethene	120	0.0	130	108	70 - 130
1,1-Dichloroethane	120	0.0	140	117	70 - 130
Propane, 2,2-dichloro-	120	0.0	160	133 *	70 - 130
cis-1,2-Dichloroethene	120	16 ~~16000~~	150	112 ~~0 *~~	70 - 130
Chloroform	120	0.0	130	108	70 - 130
Bromochloromethane	120	0.0	150	125	70 - 130
1,1,1,-Trichloroethane	120	0.0	130	108	70 - 130
Carbon tetrachloride	120	0.0	130	108	70 - 130
1,1-Dichloropropene	120	0.0	140	117	70 - 130
Benzene	120	0.0	130	108	70 - 130
1,2-Dichloroethane	120	0.0	140	117	70 - 130
Trichloroethene	120	27 ~~27000~~	150	103 ~~0 *~~	70 - 130
1,2-Dichloropropane	120	0.0	140	117	70 - 130
Dibromomethane	120	0.0	140	117	70 - 130
Bromodichloromethane	120	0.0	130	108	70 - 130
Toluene	120	0.0	130	108	70 - 130
1,1,2-Trichloroethane	120	0.0	130	108	70 - 130
Tetrachloroethylene	120	161 ~~160000~~	250	74 ~~0 *~~	70 - 130
1,3-Dichloropropane	120	0.0	120	100	70 - 130
Dibromochloromethane	120	0.0	120	100	70 - 130
1,2-Dibromoethane	120	0.0	120	100	70 - 130

actual values from this package at 5000X dilution

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 32 outside limits

Spike Recovery: 15 out of 64 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120	0.0	140	117	70 - 130
Ethylbenzene	120	0.0	130	108	70 - 130
1,1,1,2-Tetrachloroethane	120	0.0	130	108	70 - 130
m/p-Xylene	240 ~~120~~	0.0	260	108 ~~217~~ *	70 - 130
o-Xylene	120	0.0	140	117	70 - 130
Styrene	120	0.0	130	108	70 - 130
Bromoform	120	0.0	120	100	70 - 130
Isopropylbenzene	120	0.0	140	117	70 - 130
Bromobenzene	120	0.0	150	125	70 - 130
1,1,2,2-Tetrachloroethane	120	0.0	130	108	70 - 130
n-Propylbenzene	120	0.0	140	117	70 - 130
1,2,3-Trichloropropane	120	0.0	130	108	70 - 130
2-Chlorotoluene	120	0.0	140	117	70 - 130
1,3,5-Trimethylbenzene	120	0.0	140	117	70 - 130
4-Chlorotoluene	120	0.0	150	125	70 - 130
sec-Butylbenzene	120	0.0	100	83	70 - 130
1,2,4-Trimethylbenzene	120	0.0	140	117	70 - 130
tert-Butylbenzene	120	0.0	150	125	70 - 130
1,3-Dichlorobenzene	120	0.0	150	125	70 - 130
p-Isopropyltoluene	120	0.0	140	117	70 - 130
n-Butylbenzene	120	0.0	130	108	70 - 130
1,4-Dichlorobenzene	120	0.0	140	117	70 - 130
1,2-Dichlorobenzene	120	0.0	130	108	70 - 130
1,2-Dibromo-3-chloropropane	120	0.0	100	83	70 - 130
1,2,4-Trichlorobenzene	120	0.0	140	117	70 - 130
Hexachlorobutadiene	120	0.0	140	117	70 - 130
Naphthalene	120	0.0	120	100	70 - 130
1,2,3-Trichlorobenzene	120	0.0	130	108	70 - 130
Acetone	120	0.0	110	92	70 - 130
Methyl Acetate	120	0.0	110	92	70 - 130
Carbon disulfide	120	0.0	130	108	70 - 130
2-Butanone	120	0.0	110	92	70 - 130
Cyclohexane	120	0.0	120	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 34 outside limits

Spike Recovery: 6 out of 67 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120	0.0	120	100	70 - 130
4-Methyl-2-pentanone	120	0.0	110	92	70 - 130
2-Hexanone	120	0.0	110	92	70 - 130
Methyl Tert-butyl ether	120	0.0	110	92	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	120	160	133 *	0	30	70 - 80
Chloromethane	120	190	158 *	0	20	70 - 130
Vinyl chloride	120	160	133 *	7	20	70 - 130
Bromomethane	120	140	117	13	20	70 - 130
Chloroethane	120	160	133 *	0	20	70 - 130
Trichlorofluoromethane	120	140	117	0	20	70 - 130
1,1-Dichloroethene	120	130	108	8	20	70 - 130
Methylene Chloride	120	130	108	27 *	20	70 - 130
Trans-1,2-dichloroethene	120	130	108	0	20	70 - 130
1,1-Dichloroethane	120	140	117	0	20	70 - 130
Propane, 2,2-dichloro-	120	160	133 *	0	20	70 - 130
cis-1,2-Dichloroethene	120	150	112 ~~0 *~~	0	20	70 - 130
Chloroform	120	140	117	8	20	70 - 130
Bromochloromethane	120	150	125	0	20	70 - 130
1,1,1,-Trichloroethane	120	140	117	8	20	70 - 130
Carbon tetrachloride	120	140	117	8	20	70 - 130
1,1-Dichloropropene	120	130	108	8	20	70 - 130
Benzene	120	130	108	0	20	70 - 130
1,2-Dichloroethane	120	130	108	8	20	70 - 130
Trichloroethene	120	140	94% 0 *	0	20	70 - 130
1,2-Dichloropropane	120	140	117	0	20	70 - 130
Dibromomethane	120	140	117	0	20	70 - 130
Bromodichloromethane	120	130	108	0	20	70 - 130
Toluene	120	130	108	0	20	70 - 130
1,1,2-Trichloroethane	120	130	108	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 4 outside limits

Spike Recovery: 9 out of 7 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120	290	0 *	0	20	70 - 130
1,3-Dichloropropane	120	130	108	8	20	70 - 130
Dibromochloromethane	120	130	108	8	20	70 - 130
1,2-Dibromoethane	120	120	100	0	20	70 - 130
Chlorobenzene	120	140	117	0	20	70 - 130
Ethylbenzene	120	130	108	0	20	70 - 130
1,1,1,2-Tetrachloroethane	120	140	117	8	20	70 - 130
m/p-Xylene	240 ~~120~~	280	117 ~~233*~~	7	20	70 - 130
o-Xylene	120	150	125	7	20	70 - 130
Styrene	120	140	117	8	20	70 - 130
Bromoform	120	130	108	8	20	70 - 130
Isopropylbenzene	120	150	125	7	20	70 - 130
Bromobenzene	120	140	117	7	20	70 - 130
1,1,2,2-Tetrachloroethane	120	130	108	0	20	70 - 130
n-Propylbenzene	120	140	117	0	20	70 - 130
1,2,3-Trichloropropane	120	130	108	0	20	70 - 130
2-Chlorotoluene	120	150	125	7	20	70 - 130
1,3,5-Trimethylbenzene	120	140	117	0	20	70 - 130
4-Chlorotoluene	120	150	125	0	20	70 - 130
sec-Butylbenzene	120	100	83	0	20	70 - 130
1,2,4-Trimethylbenzene	120	150	125	7	20	70 - 130
tert-Butylbenzene	120	140	117	7	20	70 - 130
1,3-Dichlorobenzene	120	150	125	0	20	70 - 130
p-Isopropyltoluene	120	140	117	0	20	70 - 130
n-Butylbenzene	120	120	100	8	20	70 - 130
1,4-Dichlorobenzene	120	130	108	8	20	70 - 130
1,2-Dichlorobenzene	120	130	108	0	20	70 - 130
1,2-Dibromo-3-chloropropane	120	100	83	0	20	70 - 130
1,2,4-Trichlorobenzene	120	130	108	8	20	70 - 130
Hexachlorobutadiene	120	130	108	8	20	70 - 130
Naphthalene	120	120	100	0	20	70 - 130
1,2,3-Trichlorobenzene	120	120	100	8	20	70 - 130
Acetone	120	98	82	11	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 2 out of 0 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120	94	78	16	20	70 - 130
Carbon disulfide	120	120	100	8	20	70 - 130
2-Butanone	120	96	80	14	20	70 - 130
Cyclohexane	120	110	92	8	20	70 - 130
Methylcyclohexane	120	120	100	0	20	70 - 130
4-Methyl-2-pentanone	120	110	92	0	20	70 - 130
2-Hexanone	120	110	92	0	20	70 - 130
Methyl Tert-butyl ether	120	110	92	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 0 outside limits

COMMENTS:

Resubmitted -

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08 — End of 3/10/08 Sequence

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	33	
74-87-3	Chloromethane	45	
75-01-4	Vinyl chloride	32	
74-83-9	Bromomethane	28	
75-00-3	Chloroethane	33	
75-69-4	Trichlorofluoromethane	26	
75-35-4	1,1-Dichloroethene	26	
67-64-1	Acetone	17	
79-20-9	Methyl Acetate	16	
75-15-0	Carbon disulfide	24	
1634-04-4	Methyl Tert-butyl ether	22	
75-09-2	Methylene Chloride	26	
156-60-5	Trans-1,2-dichloroethene	26	
75-34-3	1,1-Dichloroethane	29	
78-93-3	2-Butanone	16	
594-20-7	Propane, 2,2-dichloro-	31	
540-59-0	cis-1,2-Dichloroethene	36	
67-66-3	Chloroform	28	
74-97-5	Bromochloromethane	31	
110-82-7	Cyclohexane	24	
71-55-6	1,1,1,-Trichloroethane	27	
56-23-5	Carbon tetrachloride	28	
563-58-6	1,1-Dichloropropene	28	
71-43-2	Benzene	28	
75-34-3	1,2-Dichloroethane	27	
108-87-2	Methylcyclohexane	25	
127-18-4	Trichloroethene	37	
78-87-5	1,2-Dichloropropane	28	
108-10-1	4-Methyl-2-pentanone	19	
74-95-3	Dibromomethane	28	
75-27-4	Bromodichloromethane	27	
591-78-6	2-Hexanone	20	B
108-88-3	Toluene	28	
71-55-6	1,1,2-Trichloroethane	26	
127-18-4	Tetrachloroethylene	270	E
142-28-9	1,3-Dichloropropane	26	
124-48-1	Dibromochloromethane	28	
106-93-4	1,2-Dibromoethane	24	
108-90-7	Chlorobenzene	28	

Results not Summarized, used MS/MSD to Assess Samples Except as noted

possible Carryover from 0317 MSD

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	26	
630-20-6	1,1,1,2-Tetrachloroethane	28	
106-42-3	m/p-Xylene	54	
95-47-6	o-Xylene	29	
100-42-5	Styrene	27	
75-25-2	Bromoform	23	
98-82-8	Isopropylbenzene	28	
108-86-1	Bromobenzene	28	
79-34-5	1,1,2,2-Tetrachloroethane	24	
103-65-1	n-Propylbenzene	28	
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	27	
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	27	
95-63-6	1,2,4-Trimethylbenzene	28	
98-06-6	tert-Butylbenzene	28	
541-73-1	1,3-Dichlorobenzene	28	
49-87-6	p-Isopropyltoluene	26	
105-51-8	n-Butylbenzene	26	
106-46-7	1,4-Dichlorobenzene	28	
95-50-1	1,2-Dichlorobenzene	27	
96-12-8	1,2-Dibromo-3-chloropropane	20	
120-82-1	1,2,4-Trichlorobenzene	27	
87-68-3	Hexachlorobutadiene	28	
91-20-3	Naphthalene	26	B
87-61-6	1,2,3-Trichlorobenzene	25	

non detected, presumably spiked. Quality Assoc. suggests "UJ"

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

original. use Resubmittal

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	170	
74-87-3	Chloromethane	230	
75-01-4	Vinyl chloride	160	
74-83-9	Bromomethane	140	
75-00-3	Chloroethane	160	
75-69-4	Trichlorofluoromethane	130	
75-35-4	1,1-Dichloroethene	130	
67-64-1	Acetone	85	
79-20-9	Methyl Acetate	78	
75-15-0	Carbon disulfide	120	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	130	
156-60-5	Trans-1,2-dichloroethene	130	
75-34-3	1,1-Dichloroethane	140	
78-93-3	2-Butanone	82	
594-20-7	Propane, 2,2-dichloro-	160	
540-59-0	cis-1,2-Dichloroethene	180	
67-66-3	Chloroform	140	
74-97-5	Bromochloromethane	160	
110-82-7	Cyclohexane	120	
71-55-6	1,1,1,-Trichloroethane	140	
56-23-5	Carbon tetrachloride	140	
563-58-6	1,1-Dichloropropene	140	
71-43-2	Benzene	140	
75-34-3	1,2-Dichloroethane	140	
108-87-2	Methylcyclohexane	130	
127-18-4	Trichloroethene	190	
78-87-5	1,2-Dichloropropane	140	
108-10-1	4-Methyl-2-pentanone	96	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	130	
591-78-6	2-Hexanone	100	B
108-88-3	Toluene	140	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	1300	E
142-28-9	1,3-Dichloropropane	130	
124-48-1	Dibromochloromethane	140	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	140	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	130	
630-20-6	1,1,1,2-Tetrachloroethane	140	
106-42-3	m/p-Xylene	270	
95-47-6	o-Xylene	140	
100-42-5	Styrene	140	
75-25-2	Bromoform	110	
98-82-8	Isopropylbenzene	140	
108-86-1	Bromobenzene	140	
79-34-5	1,1,2,2-Tetrachloroethane	120	
103-65-1	n-Propylbenzene	140	
96-18-4	1,2,3-Trichloropropane	3	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	130	
106-43-4	4-Chlorotoluene	1	U
135-98-8	sec-Butylbenzene	140	
95-63-6	1,2,4-Trimethylbenzene	140	
98-06-6	tert-Butylbenzene	140	
541-73-1	1,3-Dichlorobenzene	140	
49-87-6	p-Isopropyltoluene	130	
105-51-8	n-Butylbenzene	130	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	99	
120-82-1	1,2,4-Trichlorobenzene	140	
87-68-3	Hexachlorobutadiene	140	
91-20-3	Naphthalene	130	B
87-61-6	1,2,3-Trichlorobenzene	130	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110807.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08 ok

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	150	
74-87-3	Chloromethane	180	
75-01-4	Vinyl chloride	160	
74-83-9	Bromomethane	130	
75-00-3	Chloroethane	150	
75-69-4	Trichlorofluoromethane	130	
75-35-4	1,1-Dichloroethene	120	
67-64-1	Acetone	100	
79-20-9	Methyl Acetate	97	
75-15-0	Carbon disulfide	120	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	130	
156-60-5	Trans-1,2-dichloroethene	120	
75-34-3	1,1-Dichloroethane	130	
78-93-3	2-Butanone	100	
594-20-7	Propane, 2,2-dichloro-	150	
540-59-0	cis-1,2-Dichloroethene	130	
67-66-3	Chloroform	130	
74-97-5	Bromochloromethane	150	
110-82-7	Cyclohexane	110	
71-55-6	1,1,1,-Trichloroethane	130	
56-23-5	Carbon tetrachloride	130	
563-58-6	1,1-Dichloropropene	130	
71-43-2	Benzene	130	
75-34-3	1,2-Dichloroethane	130	
108-87-2	Methylcyclohexane	110	
127-18-4	Trichloroethene	150	
78-87-5	1,2-Dichloropropane	140	
108-10-1	4-Methyl-2-pentanone	100	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	130	
591-78-6	2-Hexanone	110	
108-88-3	Toluene	130	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	150	
142-28-9	1,3-Dichloropropane	120	
124-48-1	Dibromochloromethane	120	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	130	

no Action

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110807.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	120	
630-20-6	1,1,1,2-Tetrachloroethane	130	
106-42-3	m/p-Xylene	250	
95-47-6	o-Xylene	130	
100-42-5	Styrene	130	
75-25-2	Bromoform	110	
98-82-8	Isopropylbenzene	130	
108-86-1	Bromobenzene	130	
79-34-5	1,1,2,2-Tetrachloroethane	120	
103-65-1	n-Propylbenzene	120	
96-18-4	1,2,3-Trichloropropane	120	
95-49-8	2-Chlorotoluene	120	
108-67-8	1,3,5-Trimethylbenzene	120	
106-43-4	4-Chlorotoluene	120	
135-98-8	sec-Butylbenzene	85	
95-63-6	1,2,4-Trimethylbenzene	120	
98-06-6	tert-Butylbenzene	120	
541-73-1	1,3-Dichlorobenzene	130	
49-87-6	p-Isopropyltoluene	110	
105-51-8	n-Butylbenzene	110	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	110	
120-82-1	1,2,4-Trichlorobenzene	120	
87-68-3	Hexachlorobutadiene	120	
91-20-3	Naphthalene	110	
87-61-6	1,2,3-Trichlorobenzene	110	

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID: 03100808.D Lab Sample ID: INS._BLANK 3/10/0

Date Analyzed: 03/10/08 Time Analyzed: 15:52

GC Column: RTX-502 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: F4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	1316063	0208030-4A 5.0ML	03100809.D	16:58
02	1316075	0208030-16A 5.0ML	03100810.D	17:33
03	1316059	0208030-20 5.0ML	03100811.D	18:09
04	1316058	0208030-5 100UL	03100812.D	18:44
05	1316061	0208030-6 10UL	03100813.D	19:19

ok

COMMENTS:

Resubmitted

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/10/0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100808.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	0	J
75-01-4	Vinyl chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
67-64-1	Acetone	4	U
79-20-9	Methyl Acetate	4	U
75-15-0	Carbon disulfide	4	U
1634-04-4	Methyl Tert-butyl ether	4	U
75-09-2	Methylene Chloride	4	U
156-60-5	Trans-1,2-dichloroethene	4	U
75-34-3	1,1-Dichloroethane	4	U
78-93-3	2-Butanone	4	U
594-20-7	Propane, 2,2-dichloro-	4	U
540-59-0	cis-1,2-Dichloroethene	4	U
67-66-3	Chloroform	4	U
74-97-5	Bromochloromethane	4	U
110-82-7	Cyclohexane	4	U
71-55-6	1,1,1,-Trichloroethane	4	U
56-23-5	Carbon tetrachloride	4	U
563-58-6	1,1-Dichloropropene	4	U
71-43-2	Benzene	4	U
75-34-3	1,2-Dichloroethane	4	U
108-87-2	Methylcyclohexane	4	U
127-18-4	Trichloroethene	4	U
78-87-5	1,2-Dichloropropane	4	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	4	U
75-27-4	Bromodichloromethane	4	U
591-78-6	2-Hexanone	4	U
108-88-3	Toluene	4	U
71-55-6	1,1,2-Trichloroethane	4	U
127-18-4	Tetrachloroethylene	4	U
142-28-9	1,3-Dichloropropane	4	U
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U

< RV 0.4

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/10/0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100808.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
106-42-3	m/p-Xylene	4	U
95-47-6	o-Xylene	4	U
100-42-5	Styrene	4	U
75-25-2	Bromoform	4	U
98-82-8	Isopropylbenzene	4	U
108-86-1	Bromobenzene	4	U
79-34-5	1,1,2,2-Tetrachloroethane	4	U
103-65-1	n-Propylbenzene	4	U
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	4	U
95-63-6	1,2,4-Trimethylbenzene	4	U
98-06-6	tert-Butylbenzene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
49-87-6	p-Isopropyltoluene	4	U
105-51-8	n-Butylbenzene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	4	U
87-61-6	1,2,3-Trichlorobenzene	4	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/10/0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100808.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0	U
74-87-3	Chloromethane	0	J
75-01-4	Vinyl chloride	0	U
74-83-9	Bromomethane	0	U
75-00-3	Chloroethane	0	U
75-69-4	Trichlorofluoromethane	0	U
75-35-4	1,1-Dichloroethene	0	U
67-64-1	Acetone	3	U
79-20-9	Methyl Acetate	0	U
75-15-0	Carbon disulfide	0	U
1634-04-4	Methyl Tert-butyl ether	0	U
75-09-2	Methylene Chloride	0	U
156-60-5	Trans-1,2-dichloroethene	0	U
75-34-3	1,1-Dichloroethane	0	U
78-93-3	2-Butanone	1	U
594-20-7	Propane, 2,2-dichloro-	0	U
540-59-0	cis-1,2-Dichloroethene	0	U
67-66-3	Chloroform	0	U
74-97-5	Bromochloromethane	0	U
110-82-7	Cyclohexane	0	U
71-55-6	1,1,1,-Trichloroethane	0	U
56-23-5	Carbon tetrachloride	0	U
563-58-6	1,1-Dichloropropene	0	U
71-43-2	Benzene	0	U
75-34-3	1,2-Dichloroethane	0	U
108-87-2	Methylcyclohexane	0	U
127-18-4	Trichloroethene	0	U
78-87-5	1,2-Dichloropropane	0	U
108-10-1	4-Methyl-2-pentanone	0	U
74-95-3	Dibromomethane	0	U
75-27-4	Bromodichloromethane	0	U
591-78-6	2-Hexanone	0	U
108-88-3	Toluene	0	U
71-55-6	1,1,2-Trichloroethane	0	U
127-18-4	Tetrachloroethylene	0	U
142-28-9	1,3-Dichloropropane	0	U
124-48-1	Dibromochloromethane	0	U
106-93-4	1,2-Dibromoethane	0	U
108-90-7	Chlorobenzene	0	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/10/0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100808.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	0	U
630-20-6	1,1,1,2-Tetrachloroethane	0	U
106-42-3	m/p-Xylene	0	U
95-47-6	o-Xylene	0	U
100-42-5	Styrene	0	U
75-25-2	Bromoform	0	U
98-82-8	Isopropylbenzene	0	U
108-86-1	Bromobenzene	0	U
79-34-5	1,1,2,2-Tetrachloroethane	0	U
103-65-1	n-Propylbenzene	0	U
96-18-4	1,2,3-Trichloropropane	0	U
95-49-8	2-Chlorotoluene	0	U
108-67-8	1,3,5-Trimethylbenzene	0	U
106-43-4	4-Chlorotoluene	0	U
135-98-8	sec-Butylbenzene	1	U
95-63-6	1,2,4-Trimethylbenzene	0	U
98-06-6	tert-Butylbenzene	0	U
541-73-1	1,3-Dichlorobenzene	0	U
49-87-6	p-Isopropyltoluene	1	U
105-51-8	n-Butylbenzene	1	U
106-46-7	1,4-Dichlorobenzene	0	U
95-50-1	1,2-Dichlorobenzene	0	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	0	U
87-68-3	Hexachlorobutadiene	1	U
91-20-3	Naphthalene	0	U
87-61-6	1,2,3-Trichlorobenzene	0	U

4A
VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

IBLK2

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID: 03100815.D Lab Sample ID: INS._BLANK

Date Analyzed: 03/10/08 Time Analyzed: 20:31

GC Column: RTX-502 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: F4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	1316074	0208030-7 10UL	03100816.D	21:01
02	1316060	0208030-18 10UL	03100817.D	21:33
03	057	0208030-2 10UL	03100818.D	22:08
04	1316058	0208030-5 10UL	03100820.D	23:06
05	057MS	0208030-2 MS 1.0UL	03100821.D	23:44
06	1316057MSD	0208030-2 MSD 1.0UL	03100822.D	00:20
07	057MSD	0208030-2 MSD 1.0UL	03100823.D	00:55
08	BSPK1	0208030-LS	03100824.D	01:30

ok

COMMENTS:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK2

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100815.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	3	U
74-87-3	Chloromethane	4	U
75-01-4	Vinyl chloride	1	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
67-64-1	Acetone	14	U
79-20-9	Methyl Acetate	5	U
75-15-0	Carbon disulfide	0	U
1634-04-4	Methyl Tert-butyl ether	1	U
75-09-2	Methylene Chloride	4	U
156-60-5	Trans-1,2-dichloroethene	0	U
75-34-3	1,1-Dichloroethane	0	U
78-93-3	2-Butanone	5	U
594-20-7	Propane, 2,2-dichloro-	2	U
540-59-0	cis-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
74-97-5	Bromochloromethane	2	U
110-82-7	Cyclohexane	1	U
71-55-6	1,1,1,-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	0	U
563-58-6	1,1-Dichloropropene	1	U
71-43-2	Benzene	0	U
75-34-3	1,2-Dichloroethane	0	U
108-87-2	Methylcyclohexane	2	U
127-18-4	Trichloroethene	3	U
78-87-5	1,2-Dichloropropane	0	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	2	U
75-27-4	Bromodichloromethane	0	U
591-78-6	2-Hexanone	4	J
108-88-3	Toluene	2	U
71-55-6	1,1,2-Trichloroethane	2	U
127-18-4	Tetrachloroethylene	2	U
142-28-9	1,3-Dichloropropane	2	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	3	U
108-90-7	Chlorobenzene	1	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK2

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100815.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	1	U
630-20-6	1,1,1,2-Tetrachloroethane	0	U
106-42-3	m/p-Xylene	1	U
95-47-6	o-Xylene	2	U
100-42-5	Styrene	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	2	U
108-86-1	Bromobenzene	0	U
79-34-5	1,1,2,2-Tetrachloroethane	2	U
103-65-1	n-Propylbenzene	2	U
96-18-4	1,2,3-Trichloropropane	3	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
135-98-8	sec-Butylbenzene	6	U
95-63-6	1,2,4-Trimethylbenzene	2	U
98-06-6	tert-Butylbenzene	3	U
541-73-1	1,3-Dichlorobenzene	2	U
49-87-6	p-Isopropyltoluene	5	U
105-51-8	n-Butylbenzene	7	U
106-46-7	1,4-Dichlorobenzene	3	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	7	U
91-20-3	Naphthalene	25	
87-61-6	1,2,3-Trichlorobenzene	3	U

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

MBLK2

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID: 03110802.D Lab Sample ID: INS._BLANK 3/11/0

Date Analyzed: 03/11/08 Time Analyzed: 10:04

GC Column: RTX-502 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: F4500

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	1316059	0208030-20 100UL	03110803.D	11:04
02	057	0208030-2 1.0UL	03110804.D	11:53
03	1316057MS	0208030-2 1.0UL MS	03110805.D	12:35
04	057MSD	0208030-2 1.0UL MSD	03110806.D	13:29
05	BSPK	0208030-LS	03110807.D	14:05
06	057MS	0208030-2 1.0UL MS	03110808.D	16:04

ok

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MBLK2

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/11/0

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110802.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	3	U
74-87-3	Chloromethane	4	U
75-01-4	Vinyl chloride	1	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	1	U
75-69-4	Trichlorofluoromethane	2	U
75-35-4	1,1-Dichloroethene	2	U
67-64-1	Acetone	14	U
79-20-9	Methyl Acetate	5	U
75-15-0	Carbon disulfide	0	U
1634-04-4	Methyl Tert-butyl ether	1	U
75-09-2	Methylene Chloride	4	U
156-60-5	Trans-1,2-dichloroethene	0	U
75-34-3	1,1-Dichloroethane	0	U
78-93-3	2-Butanone	5	U
594-20-7	Propane, 2,2-dichloro-	2	U
540-59-0	cis-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
74-97-5	Bromochloromethane	2	U
110-82-7	Cyclohexane	1	U
71-55-6	1,1,1,-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	0	U
563-58-6	1,1-Dichloropropene	1	U
71-43-2	Benzene	0	U
75-34-3	1,2-Dichloroethane	0	U
108-87-2	Methylcyclohexane	2	U
127-18-4	Trichloroethene	3	U
78-87-5	1,2-Dichloropropane	0	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	2	U
75-27-4	Bromodichloromethane	0	U
591-78-6	2-Hexanone	4	U
108-88-3	Toluene	2	U
71-55-6	1,1,2-Trichloroethane	2	U
127-18-4	Tetrachloroethylene	2	U
142-28-9	1,3-Dichloropropane	2	U
124-48-1	Dibromochloromethane	1	U
106-93-4	1,2-Dibromoethane	3	U
108-90-7	Chlorobenzene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MBLK2

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/11/0

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110802.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	1	U
630-20-6	1,1,1,2-Tetrachloroethane	0	U
106-42-3	m/p-Xylene	1	U
95-47-6	o-Xylene	2	U
100-42-5	Styrene	1	U
75-25-2	Bromoform	1	U
98-82-8	Isopropylbenzene	2	U
108-86-1	Bromobenzene	0	U
79-34-5	1,1,2,2-Tetrachloroethane	2	U
103-65-1	n-Propylbenzene	2	U
96-18-4	1,2,3-Trichloropropane	3	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	1	U
106-43-4	4-Chlorotoluene	1	U
135-98-8	sec-Butylbenzene	6	U
95-63-6	1,2,4-Trimethylbenzene	2	U
98-06-6	tert-Butylbenzene	3	U
541-73-1	1,3-Dichlorobenzene	2	U
49-87-6	p-Isopropyltoluene	5	U
105-51-8	n-Butylbenzene	7	U
106-46-7	1,4-Dichlorobenzene	3	U
95-50-1	1,2-Dichlorobenzene	2	U
96-12-8	1,2-Dibromo-3-chloropropane	5	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	7	U
91-20-3	Naphthalene	3	U
87-61-6	1,2,3-Trichlorobenzene	3	U

Resubmittal

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	0.162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	0.443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	3.086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	2.579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	0.178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	2.197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	0.771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	0.076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	0.395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	0.266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	0.329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	44.899	5.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

Resubmittal (not originally provided)

Calibration Report

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration

Linear or Quad.

Calibration Files
1 =03060804 2 =03060805 3 =03060806 4 =03060807 5 =03060808
6 =03060809 7 =03060810

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
1)	I	Benzene, pentafluoro			ISTD		
2)	M	Dichlorodifluorometh	LinF	-----	0.4665	-----	0.9997
3)	M	Chloromethane	QuadF	-----	1.1761	-0.0868	0.9987
4)	M	Vinyl chloride	LinF	-----	1.0762	-----	0.9994
5)	M	Bromomethane	LinF	-----	0.3889	-----	0.9982
6)	M	Chloroethane	LinF	-----	0.7351	-----	0.9938
7)	M	Trichlorofluorometha	LinF	-----	0.7267	-----	0.9996
8)	M	1,1-Dichloroethene	LinF	-----	0.7746	-----	0.9960
9)	M	Acetone	LinF	-----	0.1421	-----	0.9912
10)	M	Methyl Acetate	LinF	-----	0.3910	-----	0.9985
11)	M	Carbon disulfide	LinF	-----	3.1058	-----	0.9992
12)	M	Methyl Tert-butyl et	LinF	-----	2.5951	-----	0.9995
13)	M	Methylene Chloride	LinF	-----	0.9523	-----	0.9997
14)	M	Trans-1,2-dichloroet	LinF	-----	0.8959	-----	0.9991
15)	M	1,1-Dichloroethane	LinF	-----	1.6345	-----	0.9998
16)	M	2-Butanone	LinF	-----	0.1552	-----	0.9944
17)	M	Propane, 2,2-dichlor	LinF	-----	0.7725	-----	0.9954
18)	M	cis-1,2-Dichloroethe	LinF	-----	0.9261	-----	0.9995
19)	M	Chloroform	LinF	-----	1.2017	-----	0.9994
20)	M	Methane, bromochloro	LinF	-----	0.3085	-----	0.9978
21)	M	Cyclohexane	LinF	-----	2.1896	-----	0.9997
22)	M	1,1,1,-Trichloroetha	LinF	-----	0.7686	-----	0.9994
23)	S	Dibromofluoromethane	LinF	-----	0.0980	-----	0.9964
24)	M	Carbon tetrachloride	LinF	-----	0.5691	-----	0.9993
25)	M	1,1-Dichloropropene	LinF	-----	1.1001	-----	0.9999
26)	M	Benzene	LinF	-----	3.6507	-----	0.9995
27)	M	1,2-Dichloroethane	LinF	-----	0.8757	-----	0.9997
28)	I	1,2-Difluorobenzene			ISTD		
29)	M	Cyclohexane, methyl-	LinF	-----	0.7649	-----	0.9997
30)	M	Trichloroethene	LinF	-----	0.3315	-----	0.9998
31)	M	1,2-Dichloropropane	LinF	-----	0.4567	-----	0.9998
32)	M	Methyl Isobutyl Keto	LinF	-----	0.0770	-----	0.9975
33)	M	Dibromomethane	LinF	-----	0.2073	-----	0.9991
34)	M	Bromodichloromethane	LinF	-----	0.3955	-----	0.9990
35)	S	Toluene-d8(surr)	LinF	-----	1.0972	-----	0.9990
36)	M	2-Hexanone	LinF	-----	0.4179	-----	0.9988
37)	M	Toluene	LinF	-----	0.9787	-----	0.9991
38)	M	1,1,2-Trichloroethan	LinF	-----	0.2878	-----	0.9997
39)	M	Tetrachloroethylene	LinF	-----	0.2092	-----	0.9998
40)		1,3-Dichloropropane	LinF	-----	0.6562	-----	0.9998
41)	M	Dibromochloromethane	LinF	-----	0.2751	-----	0.9994
42)	M	1,2-Dibromoethane	LinF	-----	0.3318	-----	0.9998
43)	I	Chlorobenzene-d5 (in			ISTD		

1d ②

Calibration Report

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration

Calibration Files
1 =03060804 2 =03060805 3 =03060806 4 =03060807 5 =03060808
6 =03060809 7 =03060810

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
44)	M	Chlorobenzene	LinF	-----	4.6224 e1	-----	0.9974
45)	M	Ethylbenzene	LinF	-----	8.4079 e1	-----	0.9981
46)	M	1,1,1,2-Tetrachloroe	LinF	-----	1.2862 e1	-----	0.9960
47)	M	m/p-Xylene	LinF	-----	3.6140 e1	-----	0.9963
48)	M	o-Xylene	LinF	-----	3.0705 e1	-----	0.9971
49)	M	Styrene	LinF	-----	5.8091 e1	-----	0.9957
50)	M	Bromoform	LinF	-----	8.0982	-----	0.9992
51)	M	Isopropylbenzene	LinF	-----	7.4287 e1	-----	0.9963
52)	S	BFB(surr)	LinF	-----	1.2504 e1	-----	0.9984
53)	M	Bromobenzene	LinF	-----	1.4905 e1	-----	0.9981
54)	M	1,1,2,2-Tetrachloroe	LinF	-----	2.4550 e1	-----	0.9998
55)	M	n-Propylbenzene	LinF	-----	9.5337 e1	-----	0.9970
56)	M	1,2,3-Trichloropropa	LinF	-----	0.4216	-----	0.9998
57)	M	2-Chlorotoluene	LinF	-----	1.3597	-----	0.9938
58)	M	1,3,5-Trimethylbenze	LinF	-----	5.9395 e1	-----	0.9961
59)	M	4-Chlorotoluene	LinF	-----	1.3893	-----	0.9934
60)	M	sec-Butylbenzene	LinF	-----	8.3021 e1	-----	0.9977
61)	M	1,2,4-Trimethylbenze	LinF	-----	5.7616 e1	-----	0.9963
62)	M	tert-Butylbenzene	LinF	-----	5.5533 e1	-----	0.9984
63)	M	1,3-Dichlorobenzene	LinF	-----	2.8678 e1	-----	0.9977
64)	M	p-Isopropyltoluene	LinF	-----	6.6408 e1	-----	0.9985
65)	I	1,4-Dichlorobenzene-		----------ISTD----------			
66)	M	n-Butylbenzene	LinF	-----	3.6857	-----	0.9999
67)	M	1,4-Dichlorobenzene	LinF	-----	1.7057	-----	0.9996
68)	M	1,2-Dichlorobenzene	LinF	-----	1.5330	-----	0.9995
69)	M	1,2-Dibromo-3-chloro	LinF	-----	0.2126	-----	0.9936
70)	M	1,2,4-Trichlorobenze	LinF	-----	0.8907	-----	0.9988
71)	M	Hexachlorobutadiene	LinF	-----	0.3181	-----	0.9857
72)	M	Naphthalene	QuadF	-----	3.0598	-0.0596	0.9890
73)	M	1,2,3-Trichlorobenze	QuadF	-----	0.8944	-0.0350	0.9984

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Resubmittal Same Ical as in 560 page package

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

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RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	0.162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	0.443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	3.086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	2.579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	0.178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	2.197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	0.771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	0.076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	0.395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	0.266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	0.329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	44.899	5.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

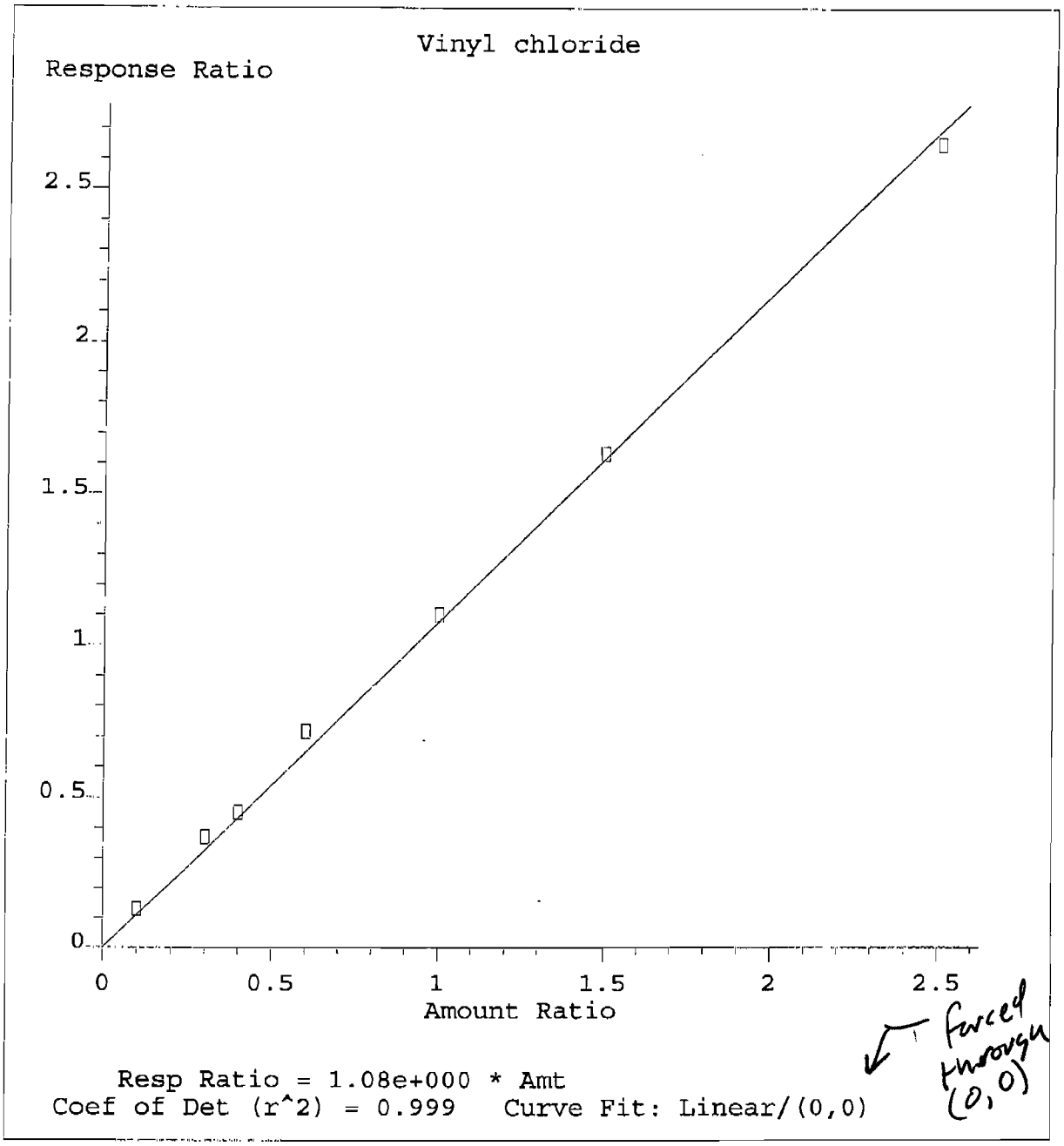
Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

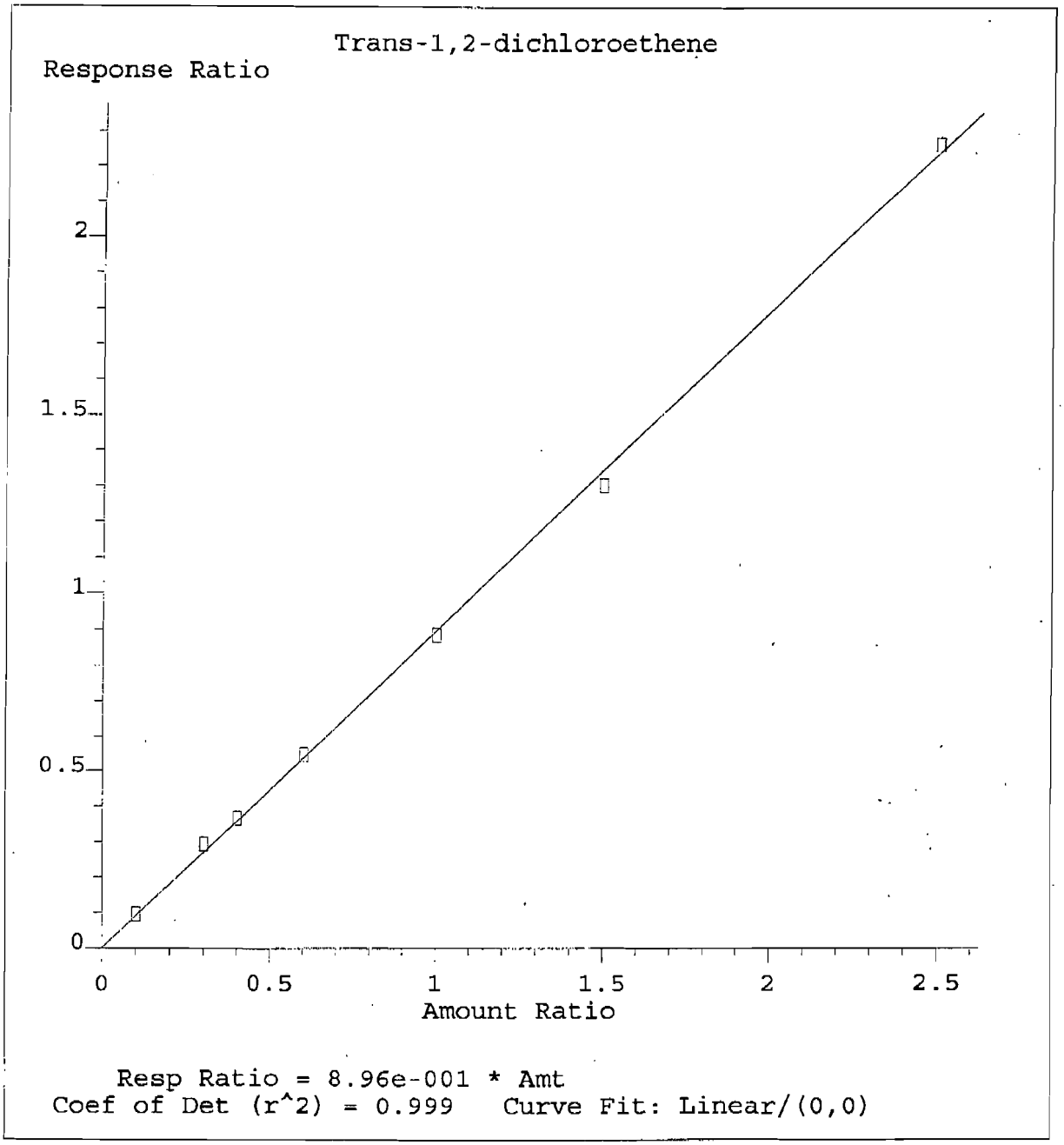
LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

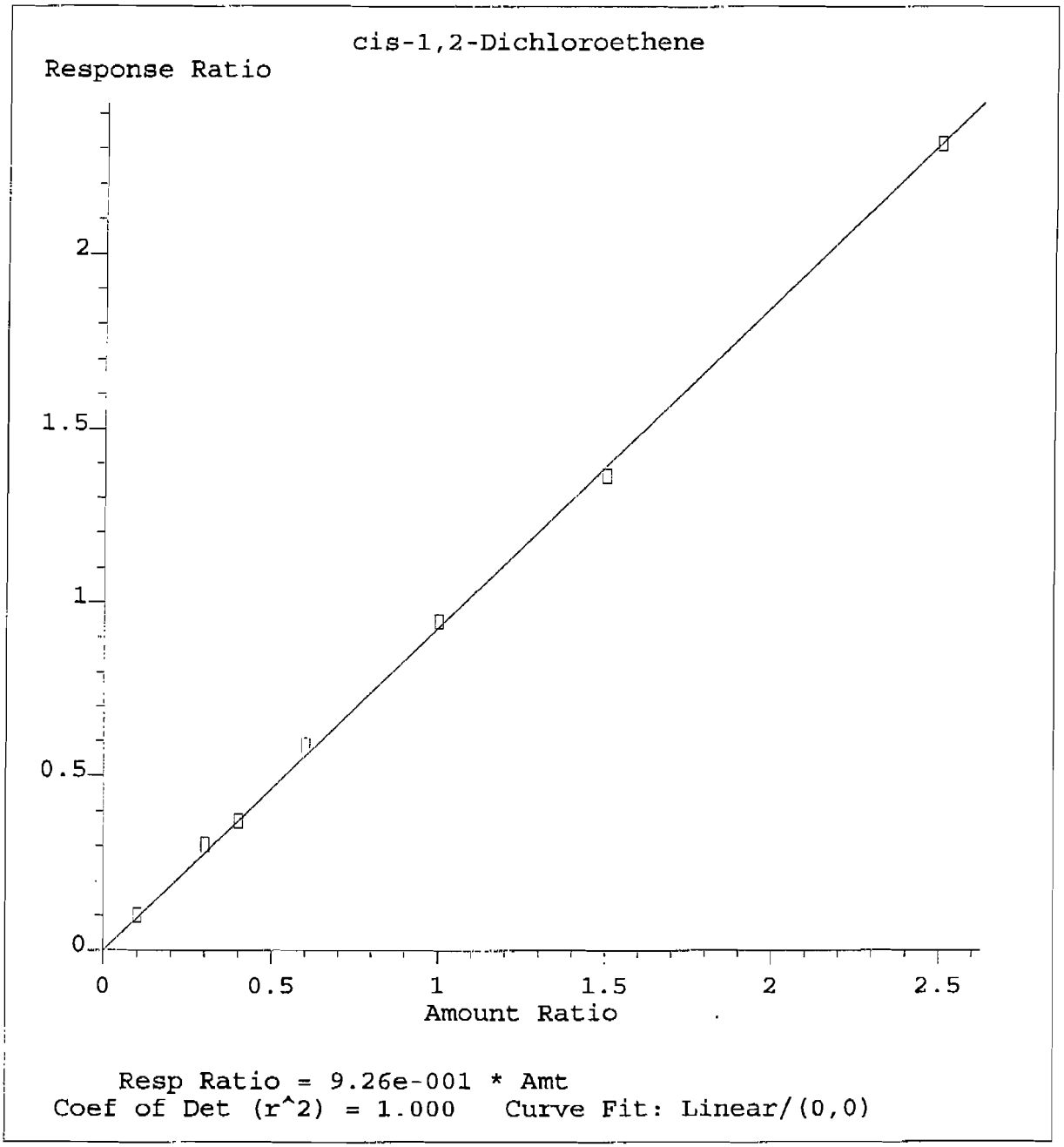
* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.



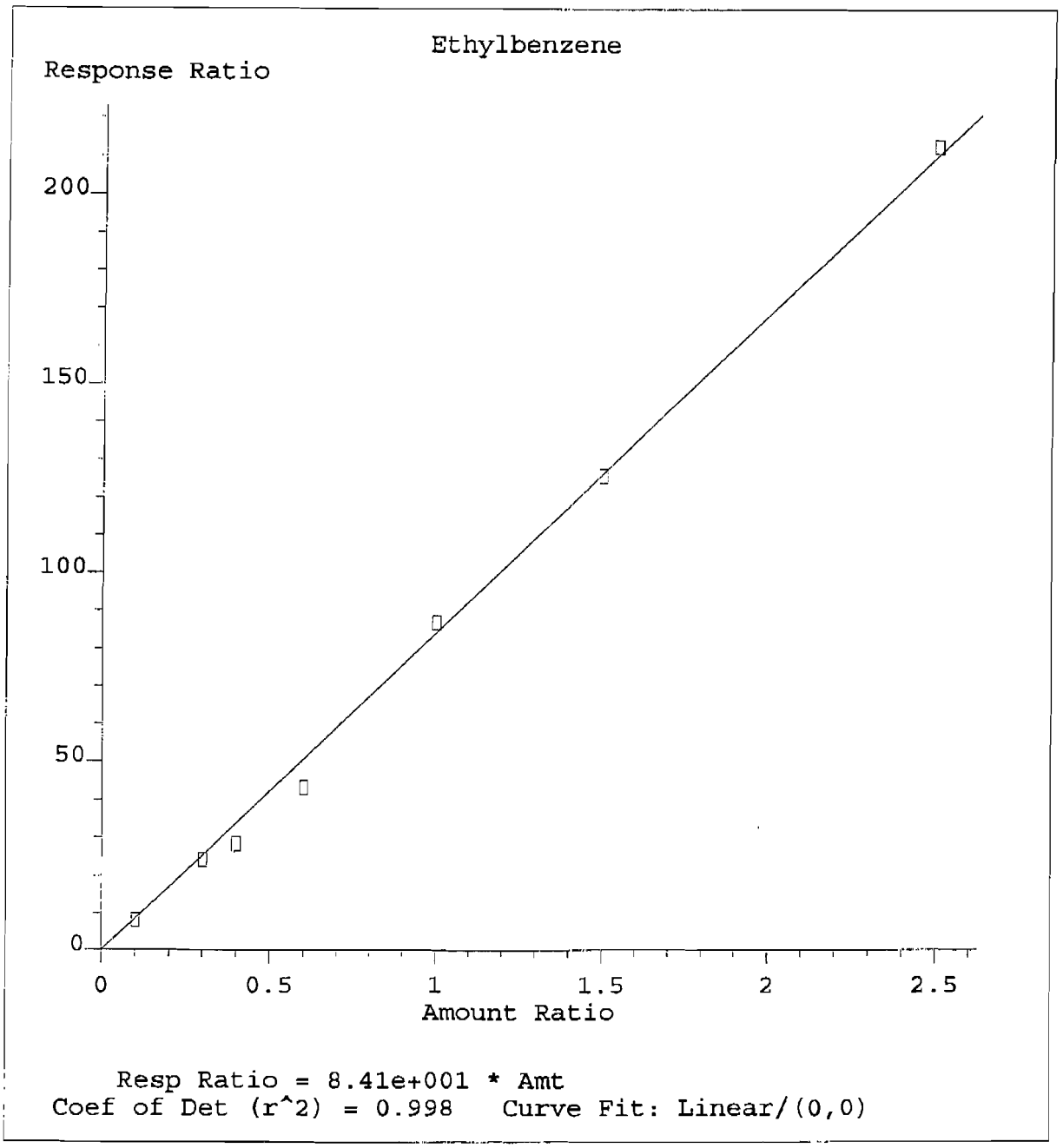
Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



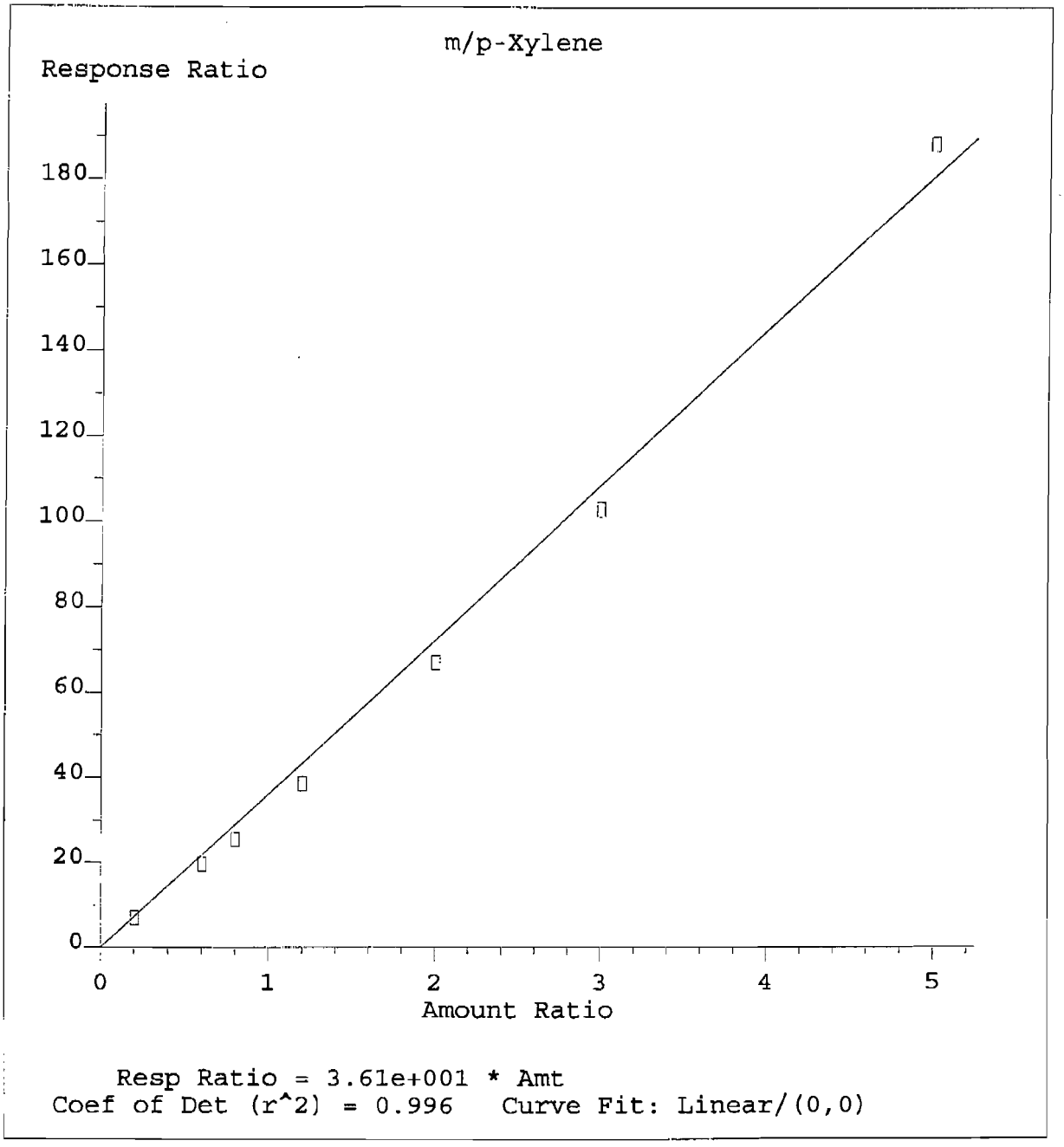
Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



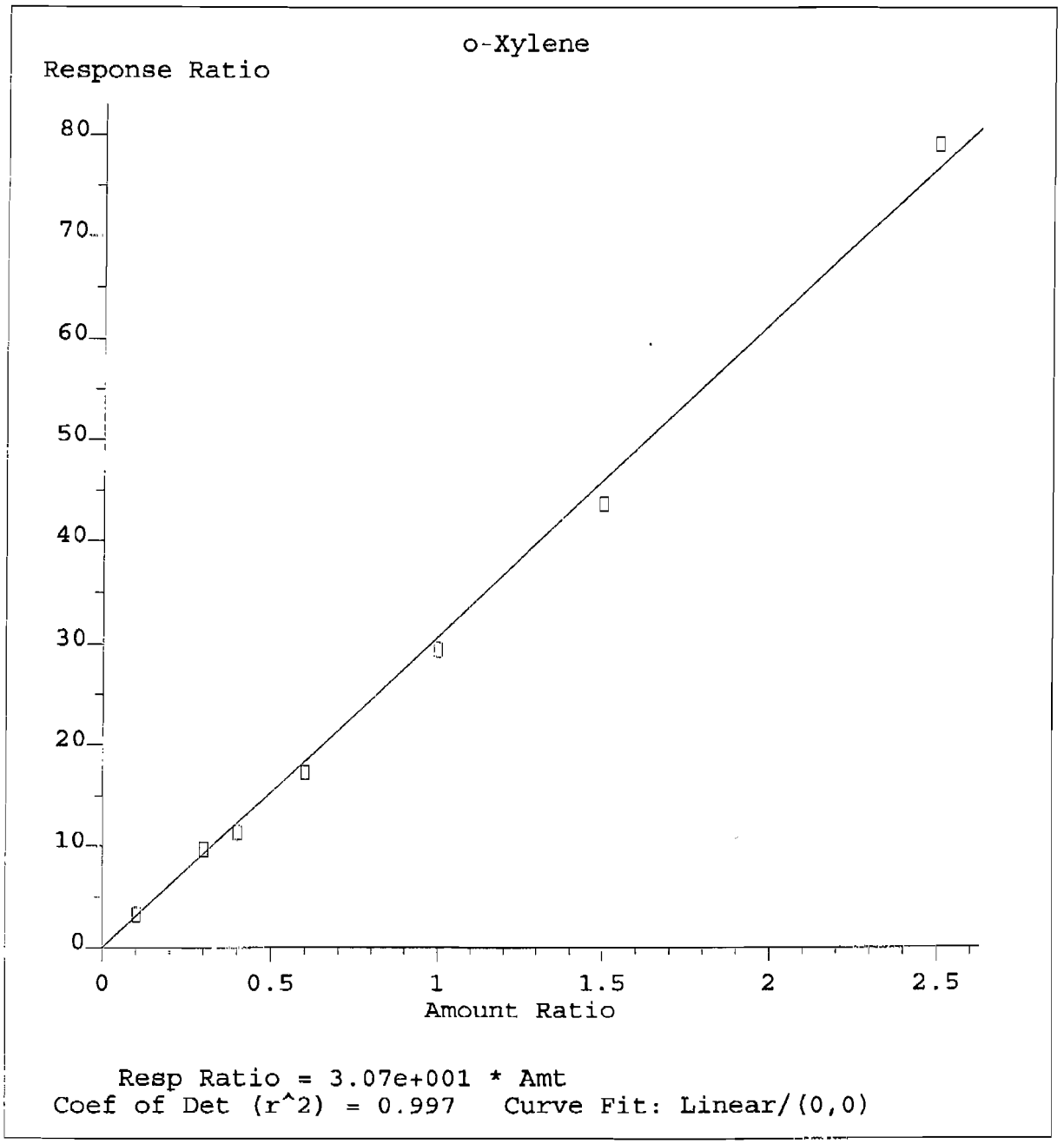
Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

Compound #47: m/p-Xylene (Page 3)

Lvl ID	Conc	Response	Lvl ID	Conc	Response
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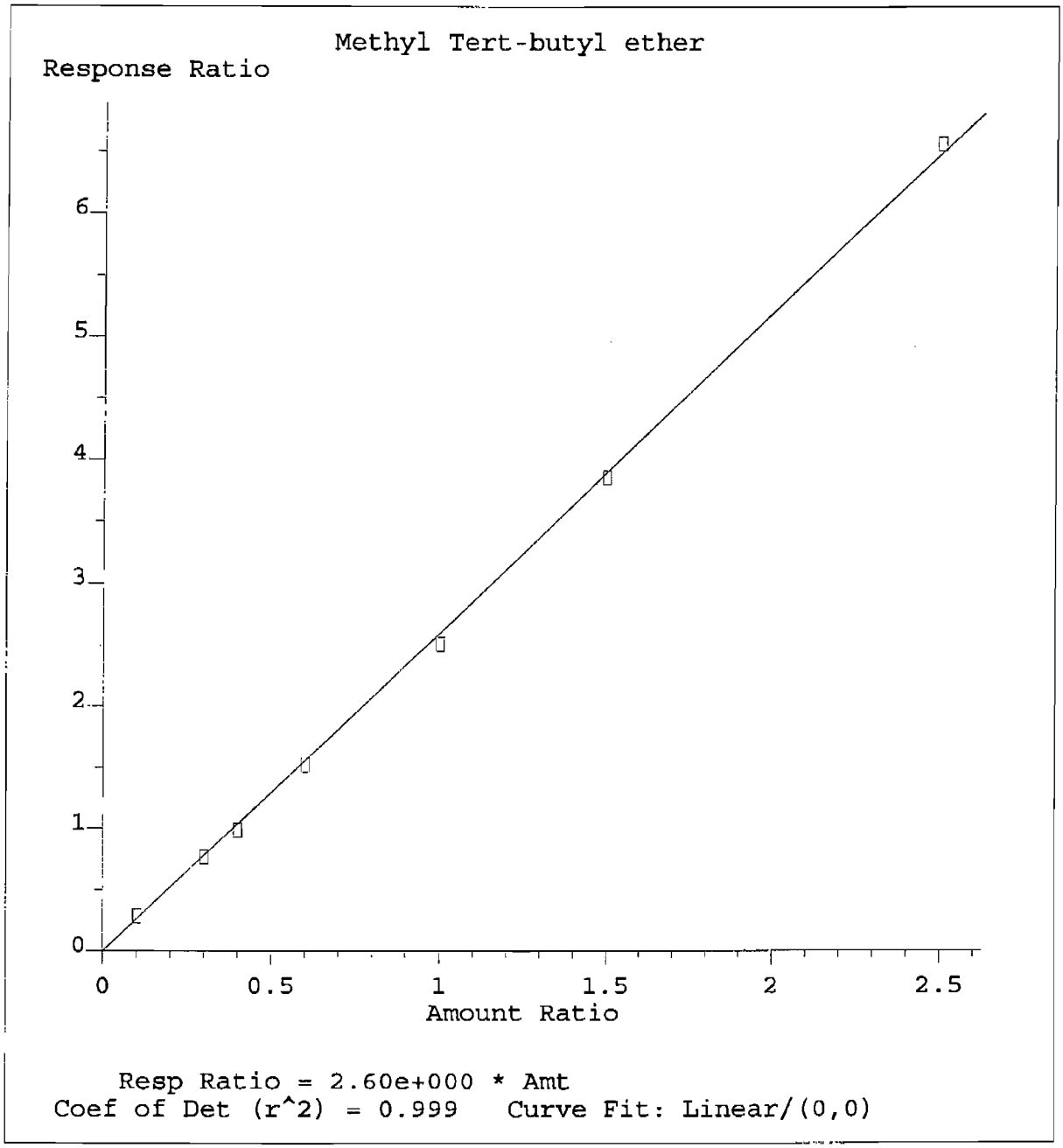
2	120.000	6971480			
3	160.000	11249195			
4	240.000	17305492			
5	400.000	28311224			
6	600.000	46112762			
7	1000.000	79839419			

	Integration Parameter File	Sum?
Tgt		
Q1		☐
Q2		☐
Q3		☐

Area Correction Mass: 0.00

Correction Factor: 0.000

Prev | Next | Plot | Page 1 | Page 2 | OK | Cancel | Help



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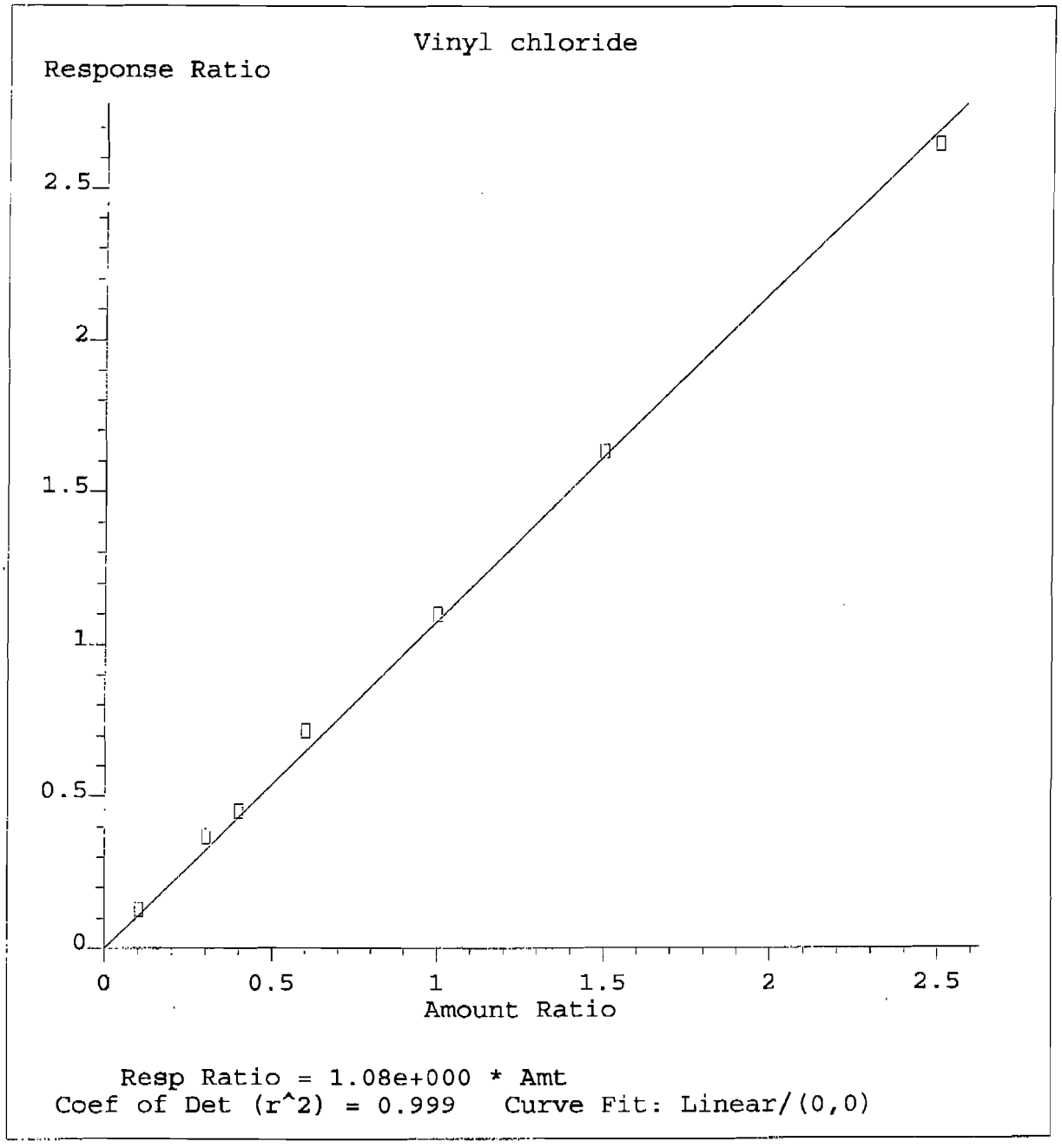
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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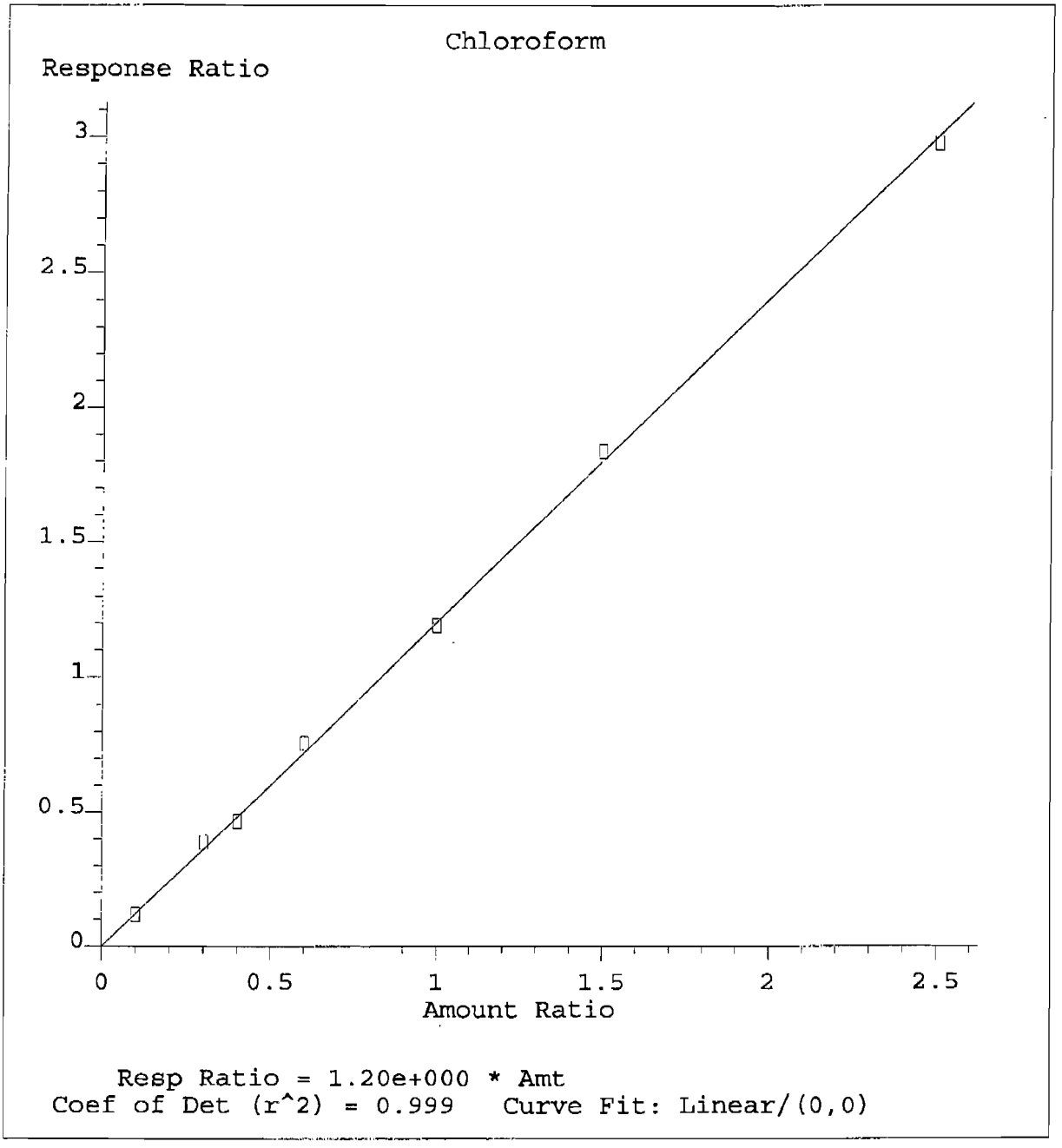
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
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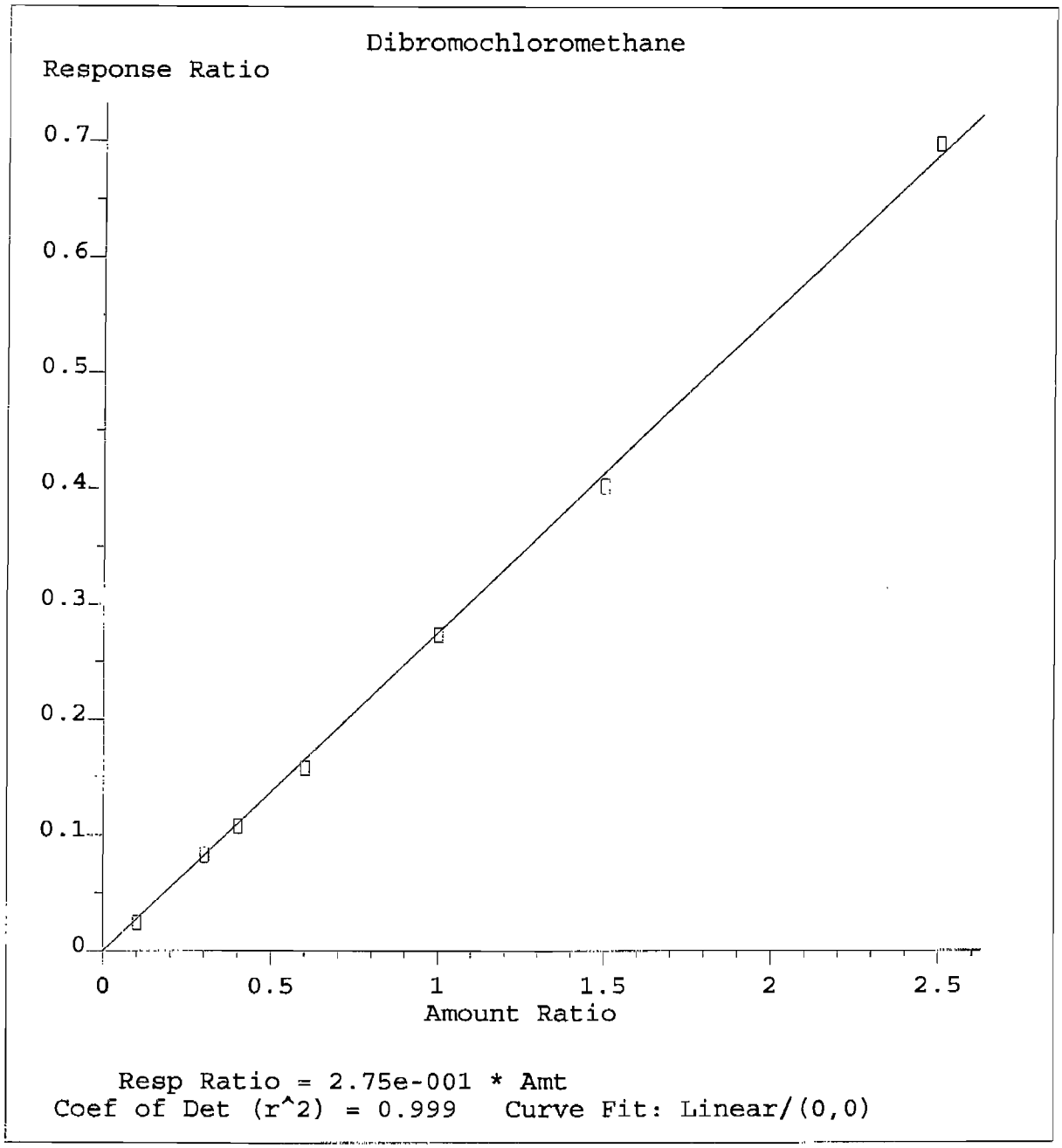

Method Name: C:\HPCHEM\1\METHODS\82608003.M
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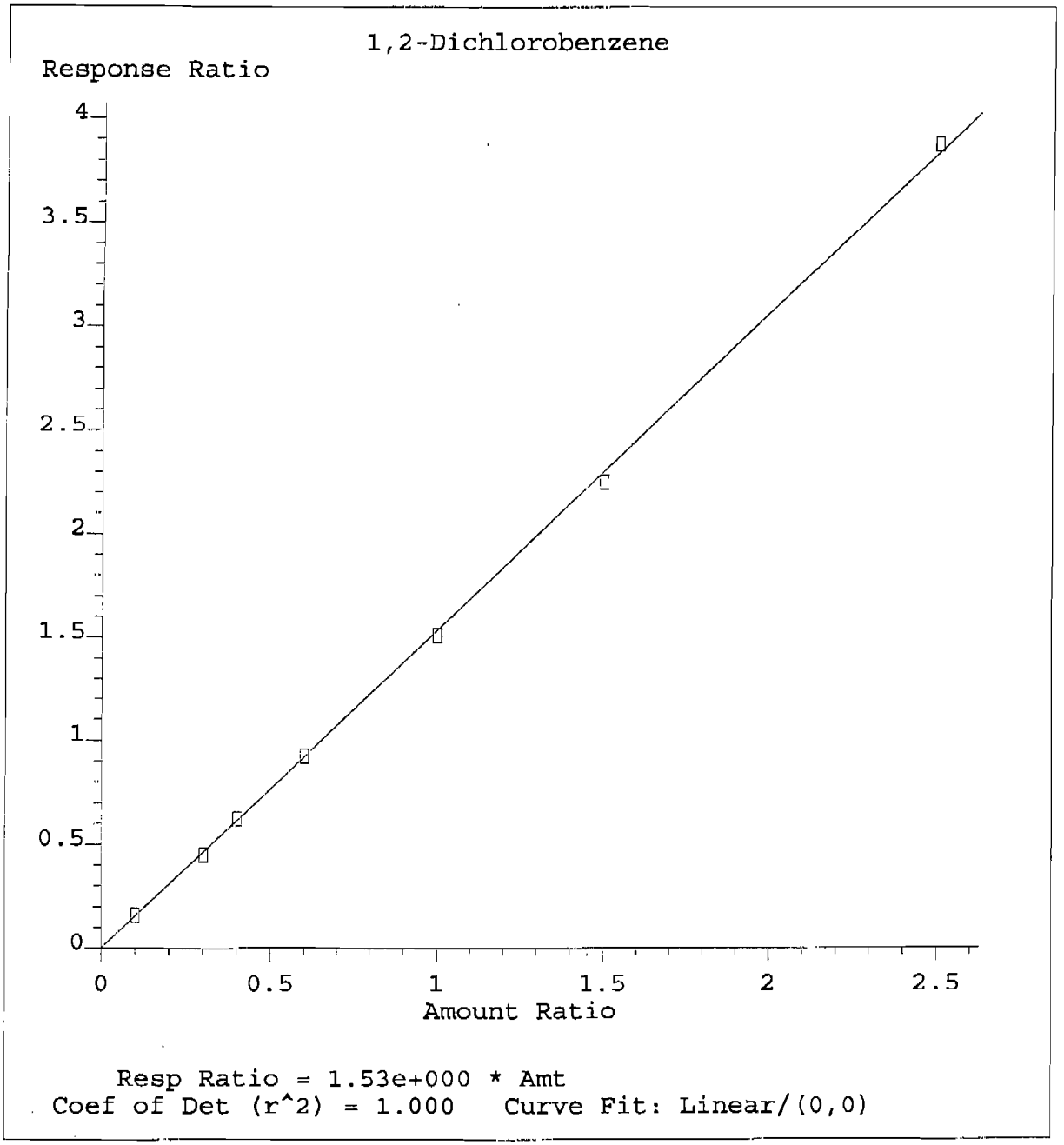
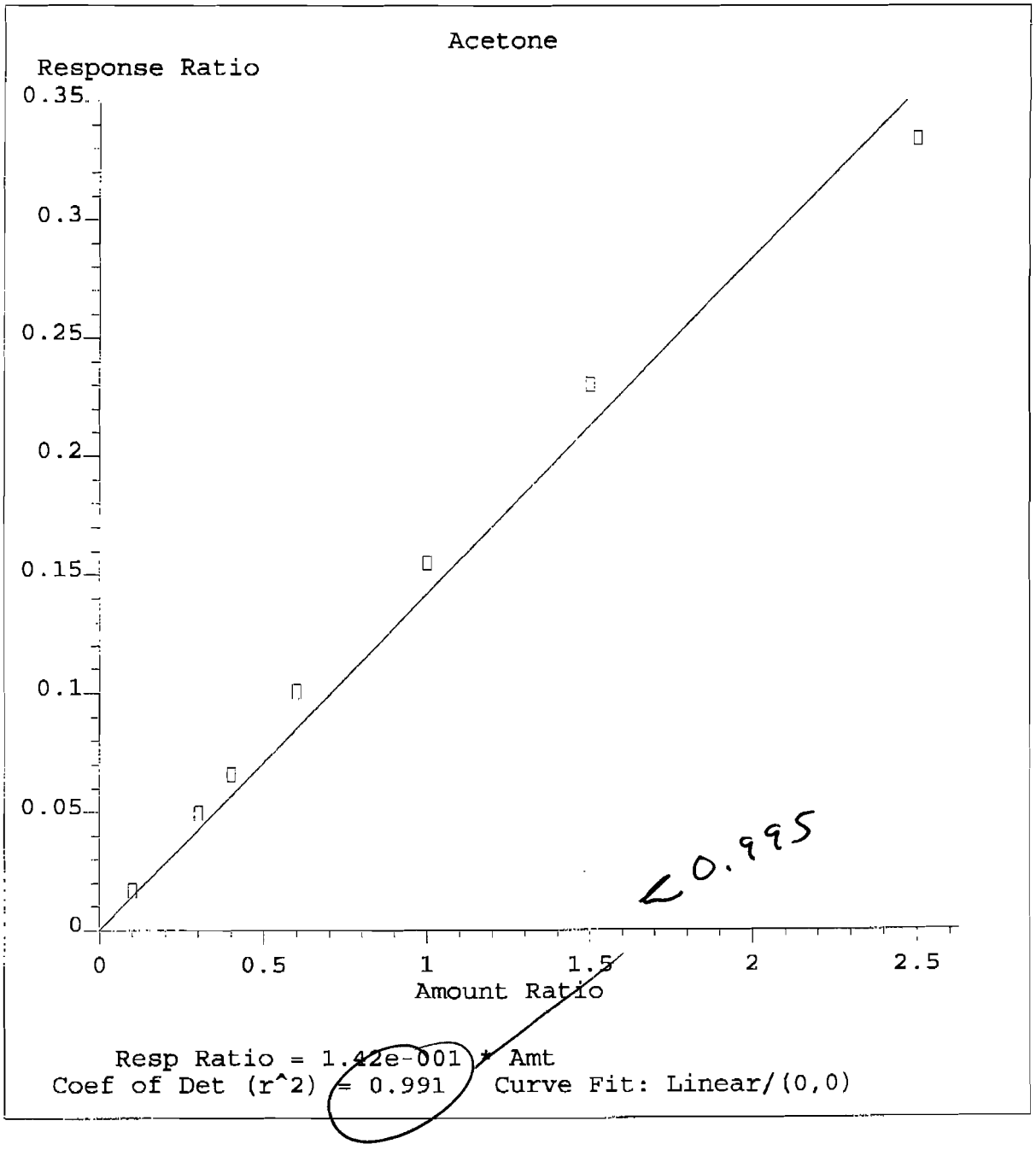
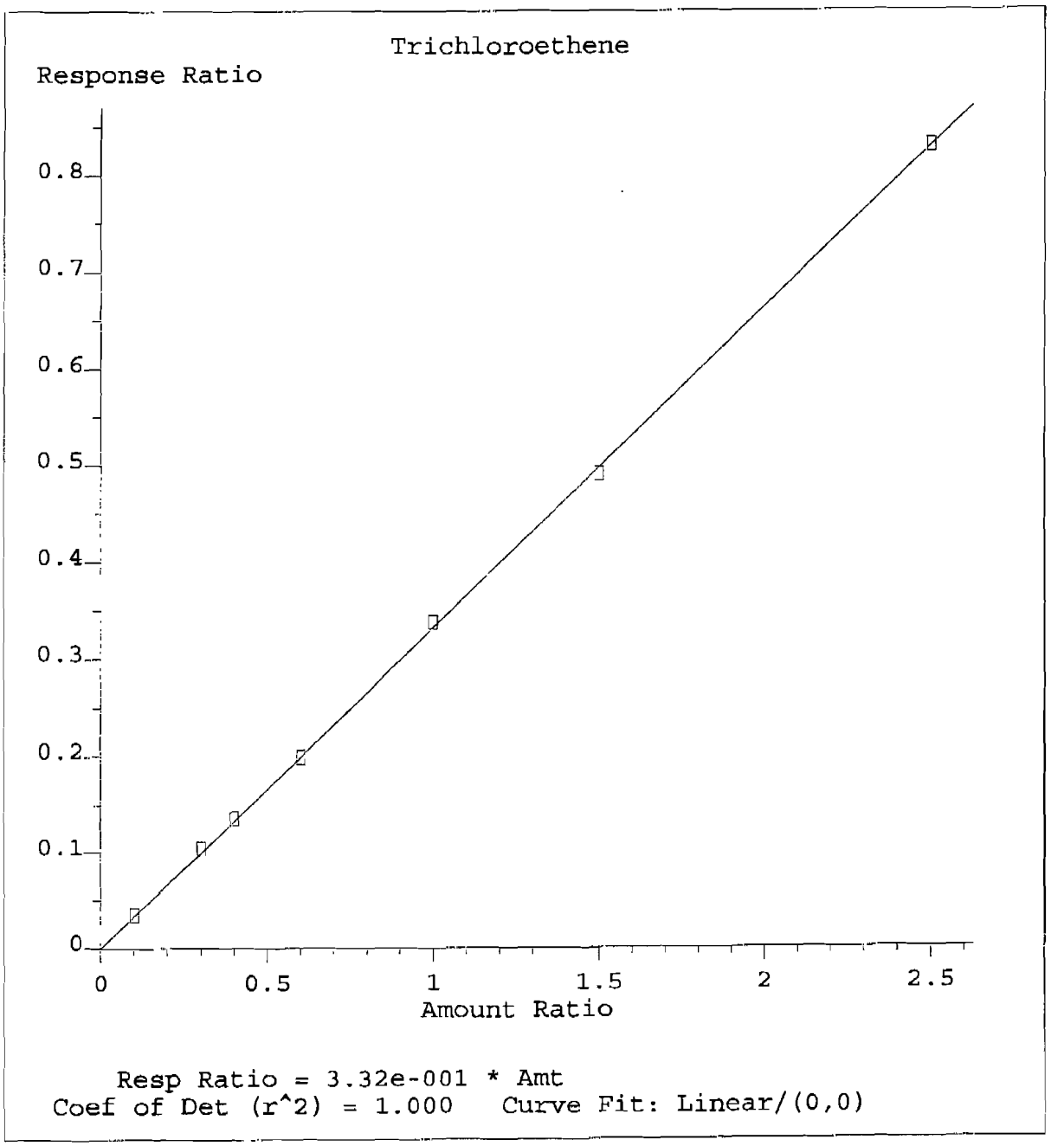


Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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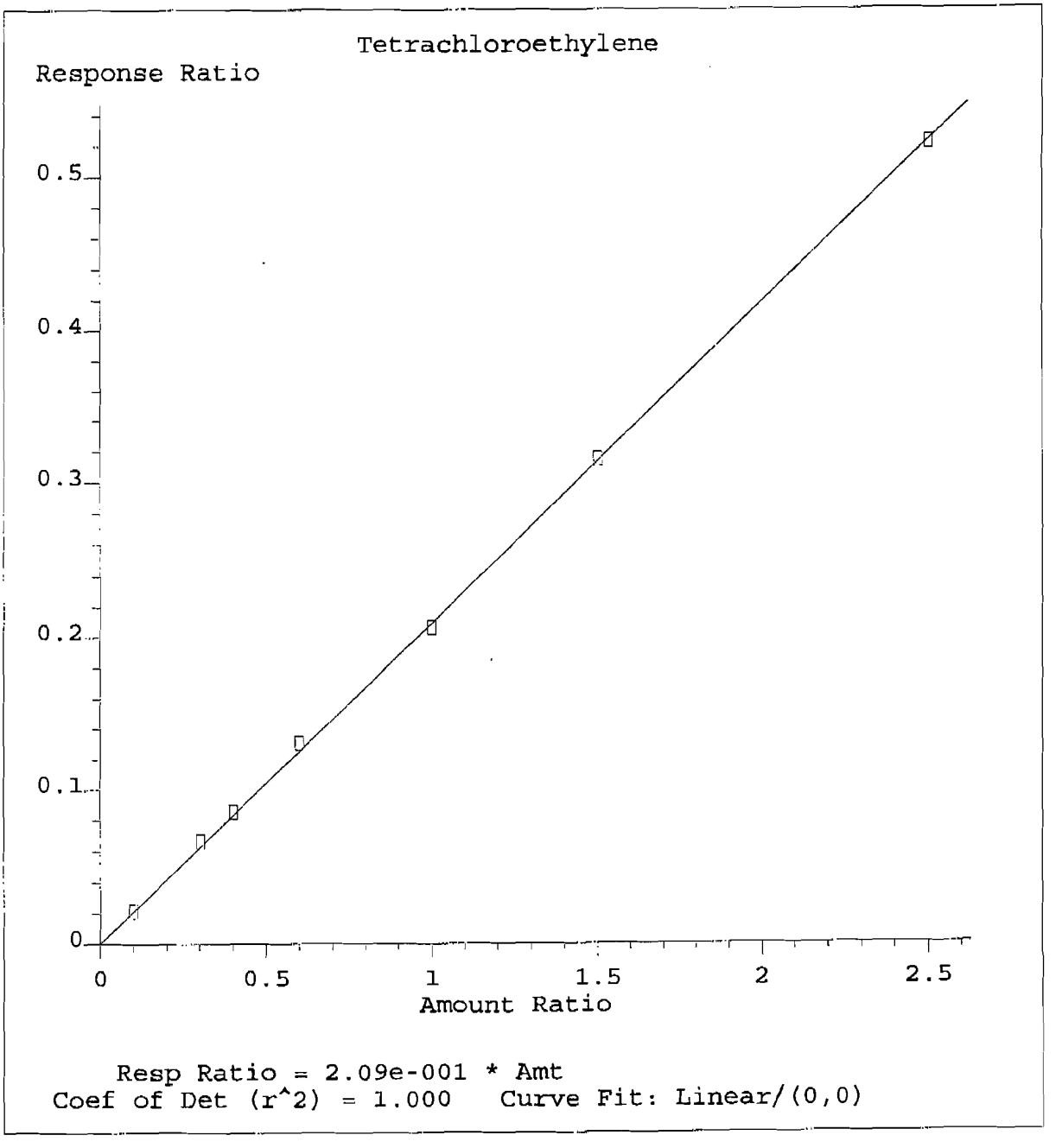
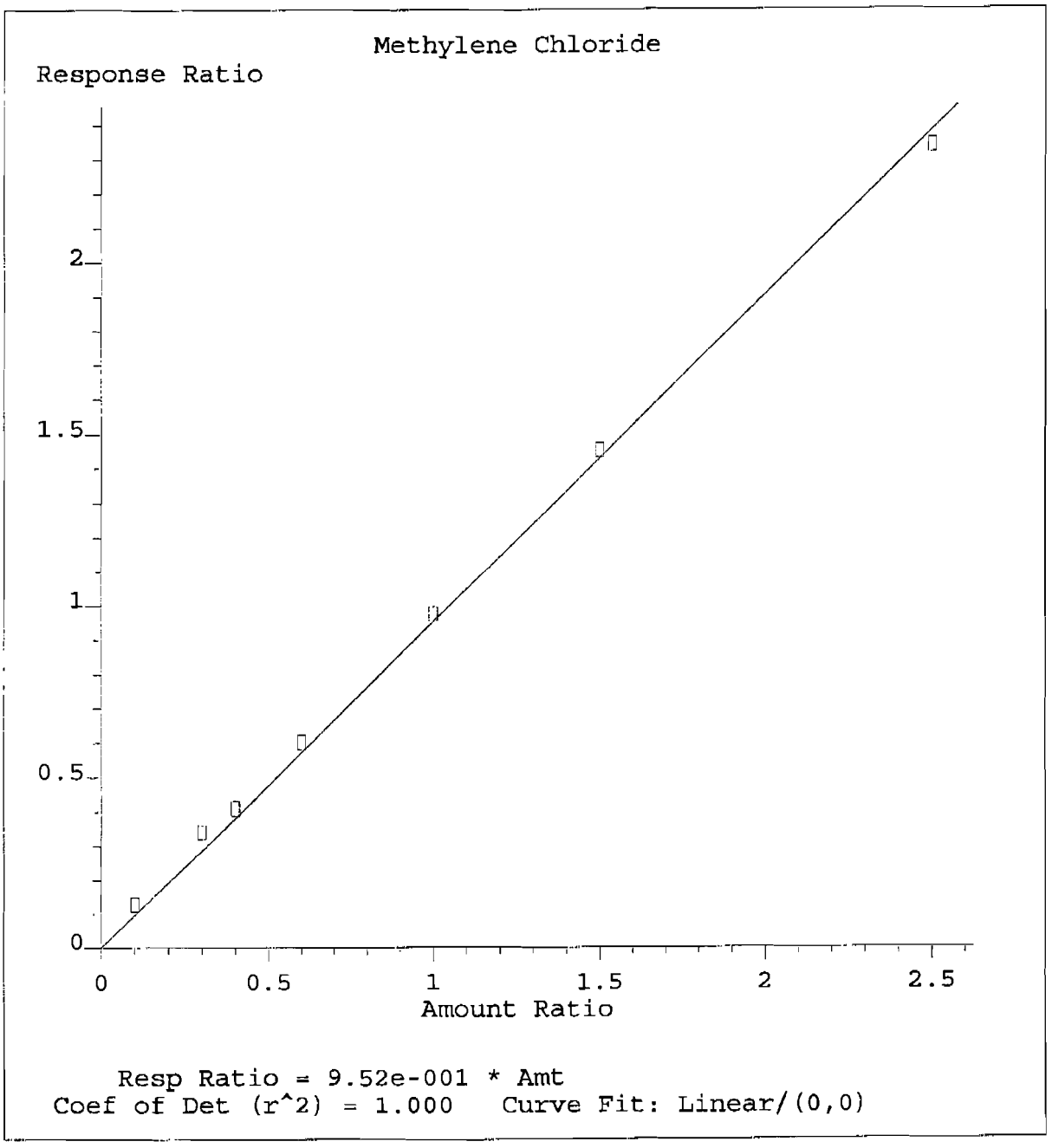
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

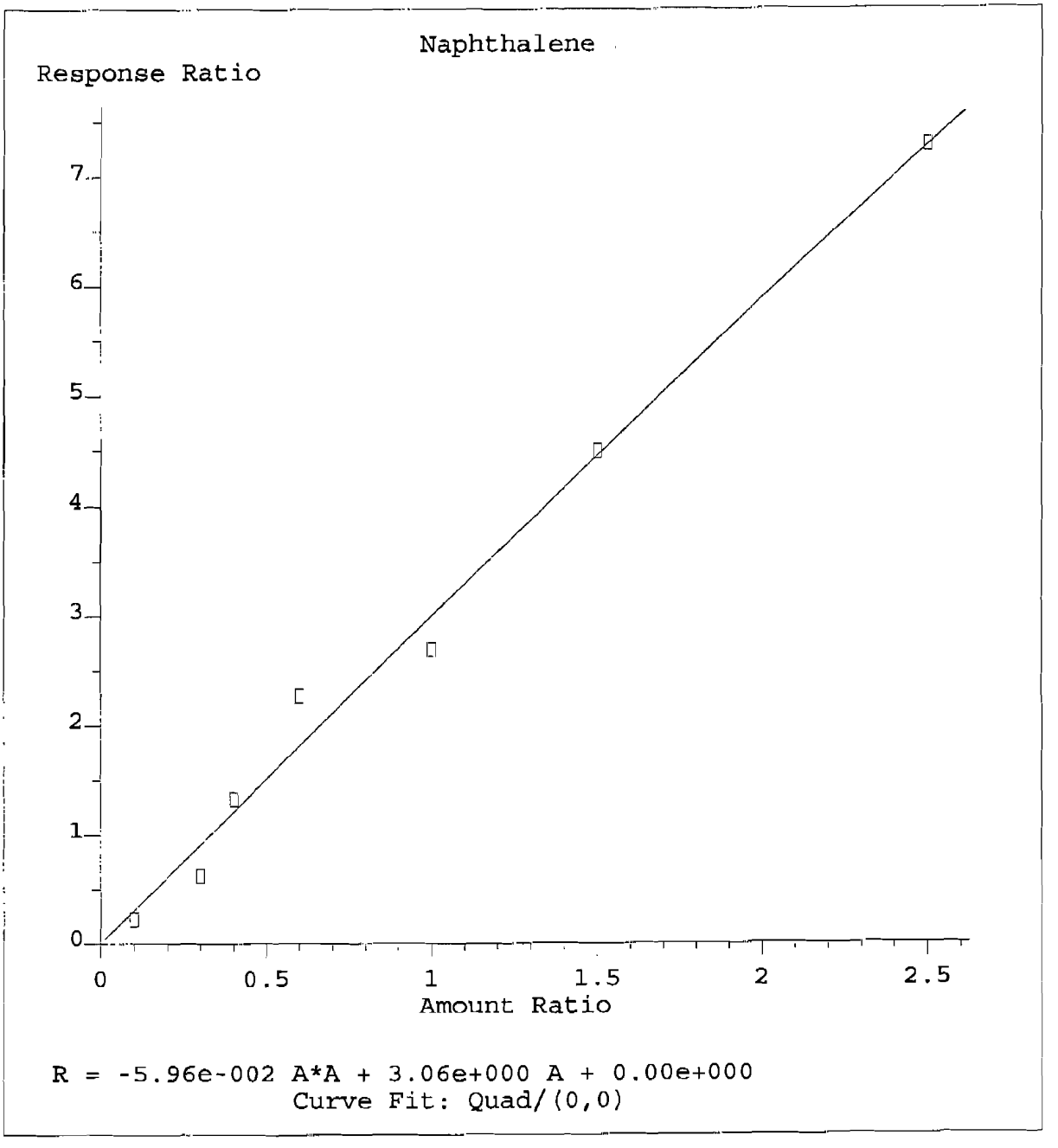


Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

All positive results
were < adjusted RL (not used by ESS)



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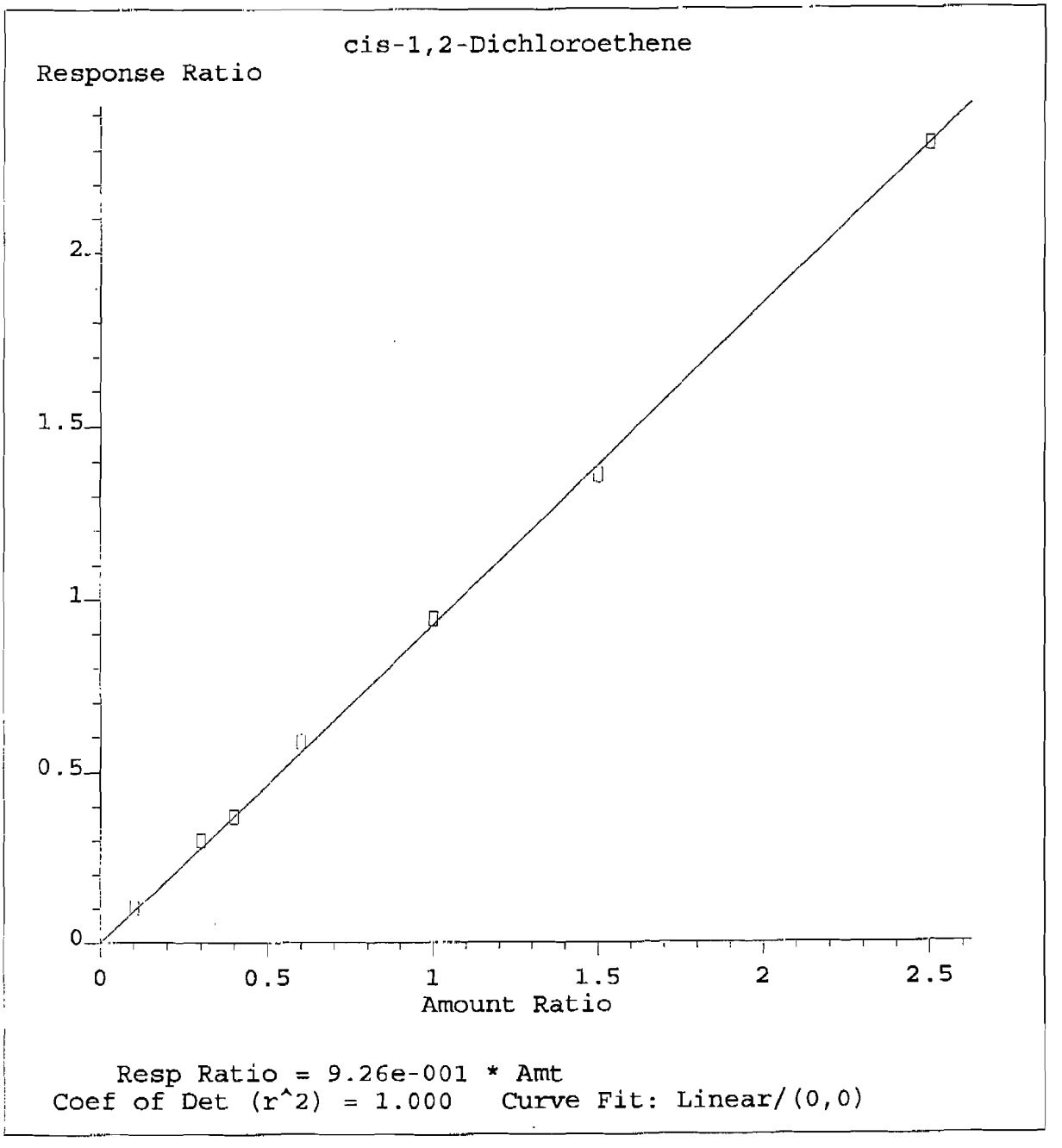

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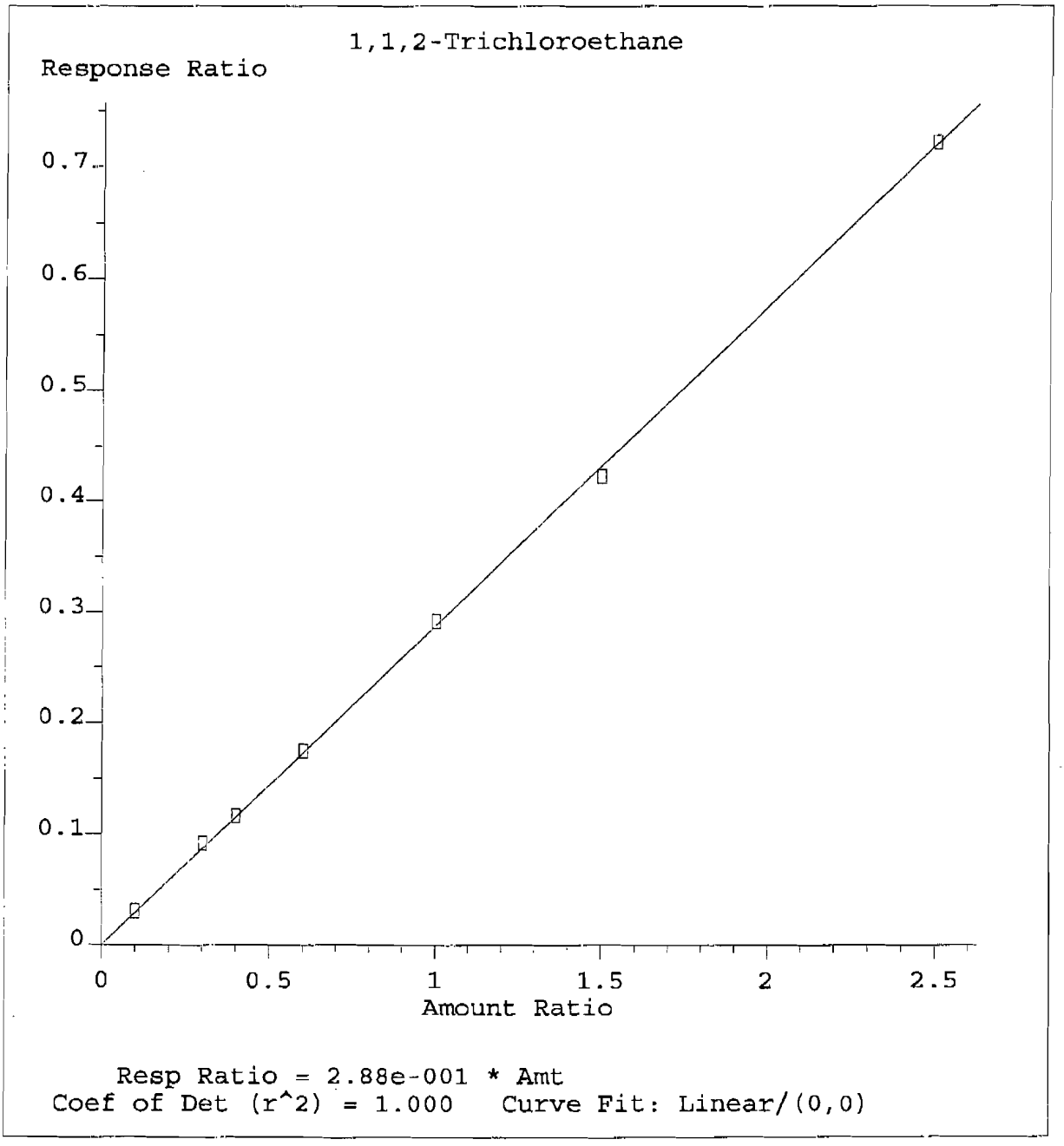

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Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	0.162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	0.443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	3.086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	2.579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	0.178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	2.197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	0.771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	0.076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	0.395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
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All other compounds must meet a minimum RRF of 0.010.

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VOLATILE ORGANICS INITIAL CALIBRATION DATA

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Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

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Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	0.266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	0.329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	44.899	5.7
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 =
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D 03060809.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

200 ng on column

no Impact

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID: 03100801.D BFB Injection Date: 03/10/08

Instrument ID: F4500 BFB Injection Time: 08:22

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	19.2
75	30.0 - 66.0% of mass 95	40.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	0.3 (0.5)1
174	50.0 - 120.0% of mass 95	59.5
175	4.0 - 9.0% of mass 174	4.7 (7.9)1
176	93.0 - 101.0% of mass 174	57.3 (96.3)1
177	5.0 - 9.0% of mass 176	4.4 (7.7)2

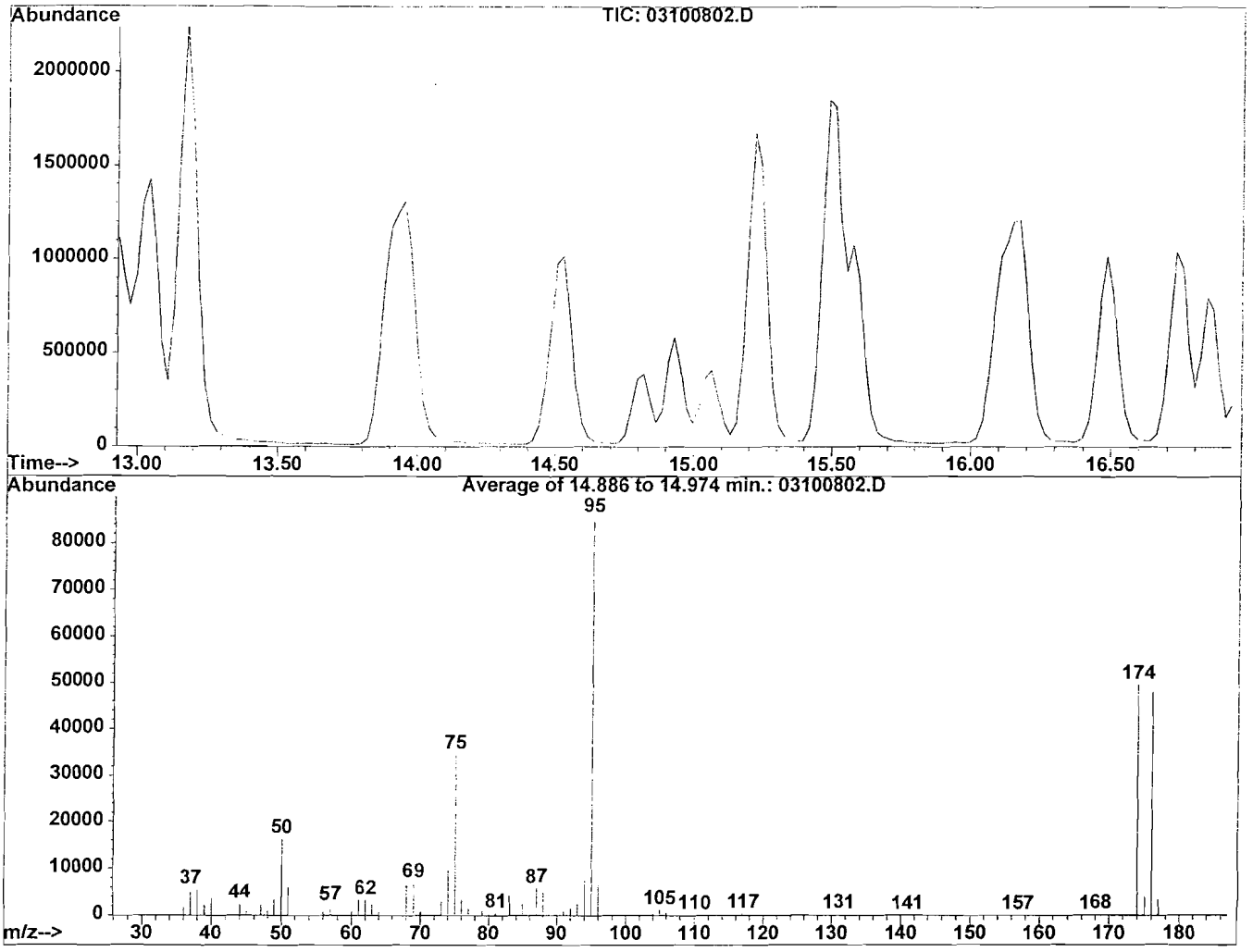
1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CVER1	CCAL_82608003C02	03100802.D	03/10/08	09:28
02	IBLK1	INS._BLANK 3/10/08	03100808.D	03/10/08	15:52
03	1316063	0208030-4A 5.0ML	03100809.D	03/10/08	16:58
04	1316075	0208030-16A 5.0ML	03100810.D	03/10/08	17:33
05	1316059	0208030-20 5.0ML	03100811.D	03/10/08	18:09
06	1316058	0208030-5 100UL	03100812.D	03/10/08	18:44
07	1316061	0208030-6 10UL	03100813.D	03/10/08	19:19

BFB

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
MS Integration Params: LSCINT.E
Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260



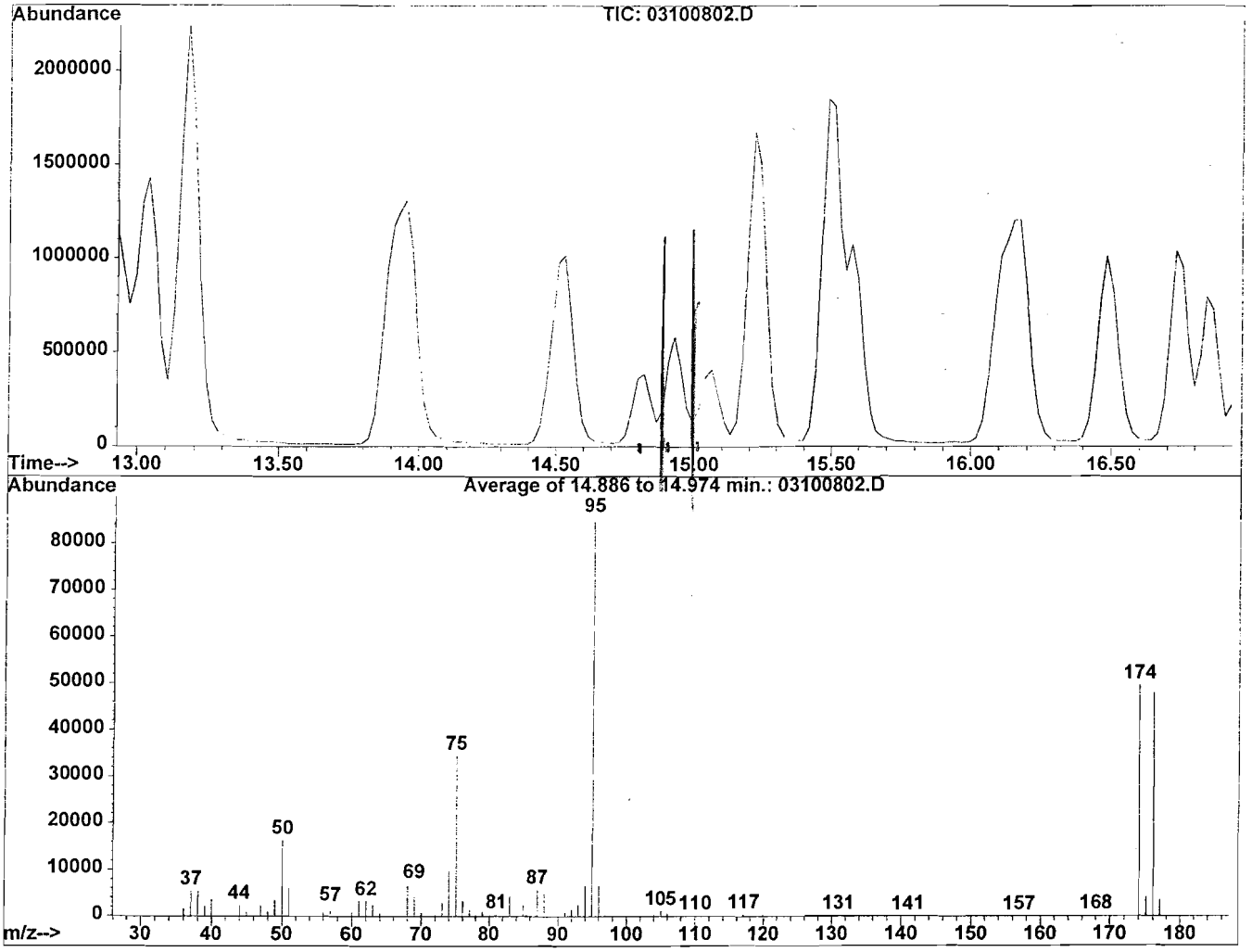
Spectrum Information: Average of 14.886 to 14.974 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.1	16348	PASS
75	95	30	60	40.4	34631	PASS
95	95	100	100	100.0	85661	PASS
96	95	5	9	7.7	6568	PASS
173	174	0.00	2	0.6	282	PASS
174	95	50	120	58.0	49654	PASS
175	174	5	9	8.4	4153	PASS
176	174	95	101	96.7	48026	PASS
177	176	5	9	7.4	3564	PASS

03100802.D 82608003.M Wed Mar 19 13:58:12 2008

BFB

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
MS Integration Params: LSCINT.E
Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260



Spectrum Information: Average of 14.886 to 14.974 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.1	16348	PASS
75	95	30	60	40.4	34631	PASS
95	95	100	100	100.0	85661	PASS
96	95	5	9	7.7	6568	PASS
173	174	0.00	2	0.6	282	PASS
174	95	50	120	58.0	49654	PASS
175	174	5	9	8.4	4153	PASS
176	174	95	101	96.7	48026	PASS
177	176	5	9	7.4	3564	PASS

03100802.D 82608003.M Wed Mar 19 13:58:12 2008

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date: 03/10/08 Time: 09:28

Lab File ID: 03100802.D Init. Calib. Date(s): 03/06/08 03/06/08

Heated Purge: (Y/N) N Init. Calib. Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

±20%

COMPOUND	RRF	RRF1	MIN RRF	% D	MAX % D	
Dichlorodifluoromethane	0.481	0.477	0.100	0.9	20.0	
Chloromethane	1.220	1.148	0.100	5.9	20.0	
Vinyl chloride	1.170	1.209	0.100	-3.4	20.0	
Bromomethane	0.357	0.233	0.100	34.7	20.0	↓ J/UJ
Chloroethane	0.831	0.879	0.100	-5.7	20.0	
Trichlorofluoromethane	0.752	0.739	0.100	1.7	20.0	
1,1-Dichloroethene	0.818	0.826	0.100	-1.0	20.0	
Acetone	0.162	0.131	0.100	19.4	20.0	
Methyl Acetate	0.443	0.347	0.100	21.5	20.0	↓ J/UJ
Carbon disulfide	3.086	3.277	0.100	-6.2	20.0	
Methyl Tert-butyl ether	2.579	2.457	0.100	4.7	20.0	
Methylene Chloride	1.064	1.046	0.100	1.7	20.0	
Trans-1,2-dichloroethene	0.918	0.978	0.100	-6.5	20.0	
1,1-Dichloroethane	1.559	1.774	0.200	-13.8	20.0	
2-Butanone	0.178	0.152	0.100	14.7	20.0	
Propane, 2,2-dichloro-	0.787	0.917	0.100	-16.5	20.0	
cis-1,2-Dichloroethene	0.963	0.981	0.100	-1.8	20.0	
Chloroform	1.218	1.273	0.200	-4.6	20.0	
Bromochloromethane	0.311	0.354	0.100	-13.6	20.0	
Cyclohexane	2.197	2.267	0.100	-3.2	20.0	
1,1,1,-Trichloroethane	0.785	0.797	0.100	-1.5	20.0	
Carbon tetrachloride	0.572	0.606	0.100	-5.9	20.0	
1,1-Dichloropropene	1.107	1.148	0.100	-3.7	20.0	
Benzene	3.460	3.624	0.500	-4.7	20.0	
1,2-Dichloroethane	0.884	0.895	0.100	-1.2	20.0	
Methylcyclohexane	0.771	0.769	0.100	0.3	20.0	
Trichloroethene	0.339	0.341	0.200	-0.8	20.0	
1,2-Dichloropropane	0.457	0.454	0.100	0.5	20.0	
4-Methyl-2-pentanone	0.076	0.065	0.100	14.7	20.0	
Dibromomethane	0.224	0.219	0.100	2.2	20.0	
Bromodichloromethane	0.393	0.392	0.200	0.1	20.0	
2-Hexanone	0.395	0.339	0.100	14.2	20.0	
Toluene	0.931	0.947	0.100	-1.8	20.0	
1,1,2-Trichloroethane	0.294	0.270	0.100	8.5	20.0	
Tetrachloroethylene	0.215	0.233	0.200	-8.4	20.0	
1,3-Dichloropropane	0.642	0.610	0.100	5.0	20.0	
Dibromochloromethane	0.266	0.256	0.100	3.7	20.0	
1,2-Dibromoethane	0.329	0.303	0.100	7.9	20.0	
Chlorobenzene	44.899	45.132	0.500	-0.5	20.0	

All other compounds must meet a minimum RRF of 0.010.

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date: 03/10/08 Time: 09:28

Lab File ID: 03100802.D Init. Calib. Date(s): 03/06/08 03/06/08

Heated Purge: (Y/N) N Init. Calib. Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

COMPOUND	RRF	RRF1	MIN RRF	% D	MAX % D
Ethylbenzene	78.932	75.681	0.100	4.1	20.0
1,1,1,2-Tetrachloroethane	12.550	12.760	0.100	-1.7	20.0
m/p-Xylene	33.223	34.384	0.100	-3.5	20.0
o-Xylene	30.004	29.800	0.300	0.7	20.0
Styrene	52.820	54.373	0.300	-2.9	20.0
Bromoform	7.929	6.852	0.100	13.6	20.0
Isopropylbenzene	68.582	70.005	0.100	-2.1	20.0
Bromobenzene	14.869	14.746	0.100	0.8	20.0
1,1,2,2-Tetrachloroethane	25.043	21.095	0.300	15.8	20.0
n-Propylbenzene	87.291	89.389	0.100	-2.4	20.0
1,2,3-Trichloropropane	0.413	0.356	0.100	13.9	20.0
2-Chlorotoluene	1.203	1.250	0.100	-3.9	20.0
1,3,5-Trimethylbenzene	56.233	56.644	0.100	-0.7	20.0
4-Chlorotoluene	1.219	1.274	0.100	-4.6	20.0
sec-Butylbenzene	78.657	79.730	0.100	-1.4	20.0
1,2,4-Trimethylbenzene	53.146	55.319	0.100	-4.1	20.0
tert-Butylbenzene	53.725	54.145	0.100	-0.8	20.0
1,3-Dichlorobenzene	27.921	28.066	0.600	-0.5	20.0
p-Isopropyltoluene	62.870	63.157	0.100	-0.5	20.0
n-Butylbenzene	3.536	3.521	0.100	0.4	20.0
1,4-Dichlorobenzene	1.691	1.739	0.500	-2.8	20.0
1,2-Dichlorobenzene	1.526	1.479	0.400	3.1	20.0
1,2-Dibromo-3-chloropropane	0.235	0.187	0.050	20.4	20.0
1,2,4-Trichlorobenzene	0.898	0.913	0.200	-1.7	20.0
Hexachlorobutadiene	0.379	0.350	0.100	7.7	20.0
Naphthalene	2.858	2.450	0.100	14.3	20.0
1,2,3-Trichlorobenzene	0.862	0.848	0.100	1.6	20.0
Dibromofluoromethane(surr)	0.099	0.102		-3.2	
Toluene-d8(surr)	1.038	1.046		-0.7	
BFB(surr)	12.772	12.423		2.7	

J/UJ

All other compounds must meet a minimum RRF of 0.010.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID (Standard): 03100802.D Date Analyzed: 03/10/08

Instrument ID: F4500 Time Analyzed: 09:28

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge (Y/N): N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR STD	11031752	6.67	25453589	8.12	485349	12.88
	UPPER LIMIT	22063504	6.17	50907178	7.62	970698	12.38
	LOWER LIMIT	5515876	7.17	12726795	8.62	242675	13.38
	SAMPLE NO.						
01	IBLK1	10819819	6.61	23636284	8.06	449952	12.82
02	1316063	10816372	6.60	24243071	8.05	437211	12.81
03	1316075	9945887	6.51	24450776	7.95	415521	12.79
04	1316059	10316404	6.64	23399837	8.08	427535	12.83
05	1316058	9002742	6.54	21105368	7.99	377258	12.82
06	1316061	11654946	6.57	28013781	8.02	480929	12.83

IS1 = Benzene, pentafluoro- (in
IS2 = 1,2-Difluorobenzene (ins)
IS3 = Chlorobenzene-d5 (ins)
IS4 = 1,4-Dichlorobenzene-d4 (

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID (Standard): 03100802.D Date Analyzed: 03/10/08

Instrument ID: F4500 Time Analyzed: 09:28

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge (Y/N): Y

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	8580125	16.99				
	UPPER LIMIT	17160250	16.49				
	LOWER LIMIT	4290063	17.49				
	EPA SAMPLE NO.						
01	IBLK1	8238192	16.93				
02	1316063	7933404	16.93				
03	1316075	7907989	16.93				
04	1316059	7818185	16.94				
05	1316058	6549662	16.96				
06	1316061	8556394	16.96				

IS1 = Benzene, pentafluoro- (in
IS2 = 1,2-Difluorobenzene (ins)
IS3 = Chlorobenzene-d5 (ins)
IS4 = 1,4-Dichlorobenzene-d4 (

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID: 03100814.D BFB Injection Date: 03/10/08 — Same CCAL Standard

Instrument ID: F4500 BFB Injection Time: 19:52

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	19.8
75	30.0 - 66.0% of mass 95	39.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.1 (0.2)1
174	50.0 - 120.0% of mass 95	58.1
175	4.0 - 9.0% of mass 174	4.7 (8.1)1
176	93.0 - 101.0% of mass 174	55.4 (95.2)1
177	5.0 - 9.0% of mass 176	4.0 (7.2)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IBLK2	INS. BLANK	03100815.D	03/10/08	20:31
02	1316074	0208030-7 10UL	03100816.D	03/10/08	21:01
03	1316060	0208030-18 10UL	03100817.D	03/10/08	21:33
04	057	0208030-2 10UL	03100818.D	03/10/08	22:08
05	1316058	0208030-5 10UL	03100820.D	03/10/08	23:06
06	057MS	0208030-2 MS 1.0UL	03100821.D	03/10/08	23:44
07	1316057MSD	0208030-2 MSD 1.0UL	03100822.D	03/11/08	00:20
08	057MSD	0208030-2 MSD 1.0UL	03100823.D	03/11/08	00:55
09	BSPK1	0208030-LS	03100824.D	03/11/08	01:30

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date: 03/10/08 Time: 19:52

Lab File ID: 03100814.D Init. Calib. Date(s): 03/06/08 03/06/08

Heated Purge: (Y/N) N Init. Calib. Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

COMPOUND	RRF	RRF1	MIN RRF	% D	MAX % D	
Dichlorodifluoromethane	0.481	0.539	0.100	-12.1	20.0	↑-no positive, no Actn
Chloromethane	1.220	1.931	0.100	-58.2	20.0	
Vinyl chloride	1.170	1.251	0.100	-6.9	20.0	
Bromomethane	0.357	0.346	0.100	3.2	20.0	
Chloroethane	0.831	0.998	0.100	-20.0	20.0	ok
Trichlorofluoromethane	0.752	0.871	0.100	-15.9	20.0	
1,1-Dichloroethene	0.818	0.857	0.100	-4.7	20.0	
Acetone	0.162	0.142	0.100	12.3	20.0	
Methyl Acetate	0.443	0.326	0.100	26.4	20.0	↓ J/UJ
Carbon disulfide	3.086	3.423	0.100	-10.9	20.0	
Methyl Tert-butyl ether	2.579	2.474	0.100	4.1	20.0	
Methylene Chloride	1.064	1.060	0.100	0.3	20.0	
Trans-1,2-dichloroethene	0.918	0.994	0.100	-8.3	20.0	
1,1-Dichloroethane	1.559	1.881	0.200	-20.6	20.0	no +
2-Butanone	0.178	0.131	0.100	26.4	20.0	↓ J/UJ
Propane, 2,2-dichloro-	0.787	0.963	0.100	-22.4	20.0	no positive
cis-1,2-Dichloroethene	0.963	0.986	0.100	-2.3	20.0	
Chloroform	1.218	1.323	0.200	-8.7	20.0	
Bromochloromethane	0.311	0.385	0.100	-23.7	20.0	no +
Cyclohexane	2.197	2.425	0.100	-10.4	20.0	
1,1,1,-Trichloroethane	0.785	0.859	0.100	-9.5	20.0	
Carbon tetrachloride	0.572	0.618	0.100	-8.1	20.0	
1,1-Dichloropropene	1.107	1.242	0.100	-12.2	20.0	
Benzene	3.460	3.838	0.500	-10.9	20.0	
1,2-Dichloroethane	0.884	0.982	0.100	-11.0	20.0	
Methylcyclohexane	0.771	0.790	0.100	-2.4	20.0	
Trichloroethene	0.339	0.347	0.200	-2.5	20.0	
1,2-Dichloropropane	0.457	0.491	0.100	-7.5	20.0	
4-Methyl-2-pentanone	0.076	0.066	0.100	13.8	20.0	
Dibromomethane	0.224	0.229	0.100	-2.1	20.0	
Bromodichloromethane	0.393	0.399	0.200	-1.5	20.0	
2-Hexanone	0.395	0.357	0.100	9.8	20.0	
Toluene	0.931	0.986	0.100	-5.9	20.0	
1,1,2-Trichloroethane	0.294	0.289	0.100	1.8	20.0	
Tetrachloroethylene	0.215	0.231	0.200	-7.7	20.0	
1,3-Dichloropropane	0.642	0.648	0.100	-1.1	20.0	
Dibromochloromethane	0.266	0.270	0.100	-1.5	20.0	
1,2-Dibromoethane	0.329	0.305	0.100	7.5	20.0	
Chlorobenzene	44.899	47.387	0.500	-5.5	20.0	

All other compounds must meet a minimum RRF of 0.010.

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date: 03/10/08 Time: 19:52

Lab File ID: 03100814.D Init. Calib. Date(s): 03/06/08 03/06/08

Heated Purge: (Y/N) N Init. Calib. Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

COMPOUND	RRF	RRF1	MIN RRF	% D	MAX % D	
Ethylbenzene	78.932	81.524	0.100	-3.3	20.0	
1,1,1,2-Tetrachloroethane	12.550	13.420	0.100	-6.9	20.0	
m/p-Xylene	33.223	35.530	0.100	-6.9	20.0	
o-Xylene	30.004	31.799	0.300	-6.0	20.0	
Styrene	52.820	57.133	0.300	-8.2	20.0	
Bromoform	7.929	7.279	0.100	8.2	20.0	
Isopropylbenzene	68.582	73.247	0.100	-6.8	20.0	
Bromobenzene	14.869	15.934	0.100	-7.2	20.0	
1,1,2,2-Tetrachloroethane	25.043	22.113	0.300	11.7	20.0	
n-Propylbenzene	87.291	96.339	0.100	-10.4	20.0	
1,2,3-Trichloropropane	0.413	0.383	0.100	7.4	20.0	
2-Chlorotoluene	1.203	1.392	0.100	-15.7	20.0	
1,3,5-Trimethylbenzene	56.233	60.697	0.100	-7.9	20.0	
4-Chlorotoluene	1.219	1.427	0.100	-17.1	20.0	
sec-Butylbenzene	78.657	60.278	0.100	23.4	20.0	J/UJ
1,2,4-Trimethylbenzene	53.146	60.088	0.100	-13.1	20.0	
tert-Butylbenzene	53.725	57.693	0.100	-7.4	20.0	
1,3-Dichlorobenzene	27.921	30.080	0.600	-7.7	20.0	
p-Isopropyltoluene	62.870	69.733	0.100	-10.9	20.0	
n-Butylbenzene	3.536	3.610	0.100	-2.1	20.0	
1,4-Dichlorobenzene	1.691	1.702	0.500	-0.6	20.0	
1,2-Dichlorobenzene	1.526	1.518	0.400	0.5	20.0	
1,2-Dibromo-3-chloropropane	0.235	0.173	0.050	26.4	20.0	J/UJ
1,2,4-Trichlorobenzene	0.898	0.898	0.200	0.0	20.0	
Hexachlorobutadiene	0.379	0.360	0.100	5.1	20.0	
Naphthalene	2.858	1.974	0.100	30.9	20.0	J/UJ
1,2,3-Trichlorobenzene	0.862	0.834	0.100	3.2	20.0	
Dibromofluoromethane(surr)	0.099	0.103		-4.2		
Toluene-d8(surr)	1.038	1.106		-6.5		
BFB(surr)	12.772	13.491		-5.6		

All other compounds must meet a minimum RRF of 0.010.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID (Standard): 03100814.D Date Analyzed: 03/10/08

Instrument ID: F4500 Time Analyzed: 19:52

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge (Y/N): N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR STD	9711738	6.53	22455173	8.00	438136	12.81
	UPPER LIMIT	19423476	6.03	44910346	7.50	876272	12.31
	LOWER LIMIT	4855869	7.03	11227587	8.50	219068	13.31
	SAMPLE NO.						
01	IBLK2	10419193	6.56	23865104	8.03	438284	12.83
02	1316074	9677597	6.52	22456186	7.99	406539	12.81
03	1316060	9552006	6.58	21674890	8.05	398389	12.82
04	057	9999138	6.53	23689956	7.97	403938	12.81
05	1316058	8972729	6.54	20292203	8.00	378605	12.82
06	057MS	8853943	6.56	20793999	8.02	380890	12.85
07	1316057MSD	12664562	6.56	29268074	8.01	536785	12.85
08	057MSD	12990294	6.64	28523896	8.10	513714	12.86
09	BSPK1	10205584	6.61	22180176	8.08	433462	12.86

IS1 = Benzene, pentafluoro- (in
IS2 = 1,2-Difluorobenzene (ins)
IS3 = Chlorobenzene-d5 (ins)
IS4 = 1,4-Dichlorobenzene-d4 (

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID (Standard): 03100814.D Date Analyzed: 03/10/08

Instrument ID: F4500 Time Analyzed: 19:52

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge (Y/N): Y

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	8170782	16.94				
	UPPER LIMIT	16341564	16.44				
	LOWER LIMIT	4085391	17.44				
	EPA SAMPLE NO.						
01	IBLK2	7830366	16.96				
02	1316074	7609149	16.95				
03	1316060	7022694	16.95				
04	057	7768551	16.94				
05	1316058	6956368	16.96				
06	057MS	7262980	16.98				
07	1316057MSD	9563447	16.99				
08	057MSD	9256667	16.97				
09	BSPK1	7718620	16.98				

IS1 = Benzene, pentafluoro- (in
IS2 = 1,2-Difluorobenzene (ins)
IS3 = Chlorobenzene-d5 (ins)
IS4 = 1,4-Dichlorobenzene-d4 (

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID: 03110801.D BFB Injection Date: 03/11/08 - Ccal Standard

Instrument ID: F4500 BFB Injection Time: 07:45

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	19.5
75	30.0 - 66.0% of mass 95	40.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	50.0 - 120.0% of mass 95	59.6
175	4.0 - 9.0% of mass 174	5.0 (8.5)1
176	93.0 - 101.0% of mass 174	57.8 (96.8)1
177	5.0 - 9.0% of mass 176	4.5 (7.8)2

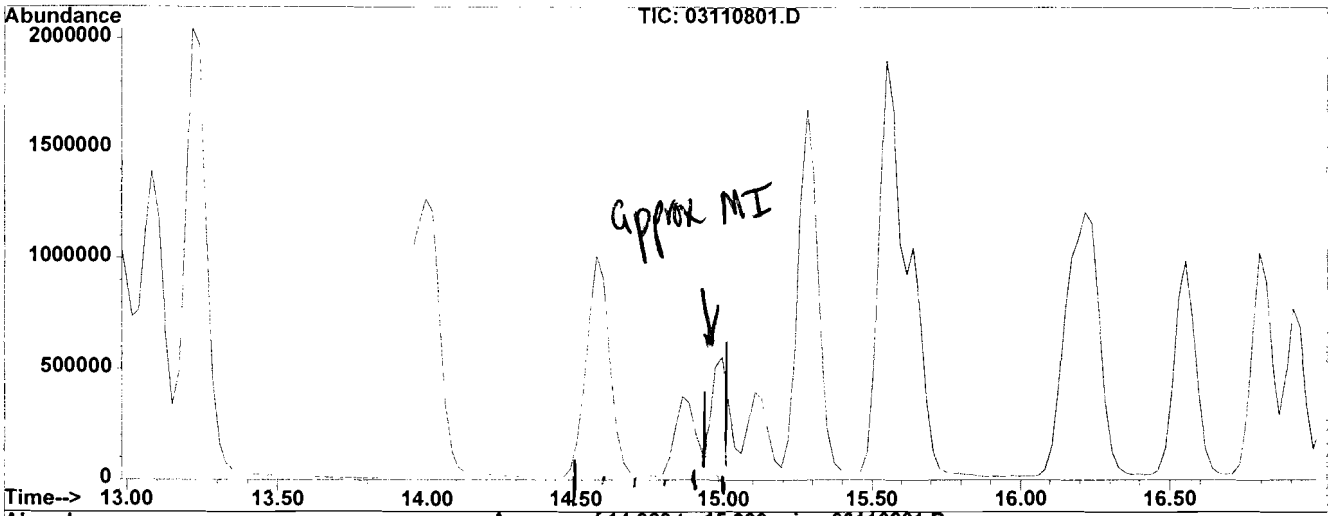
1-Value is % mass 174 2-Value is % mass 176

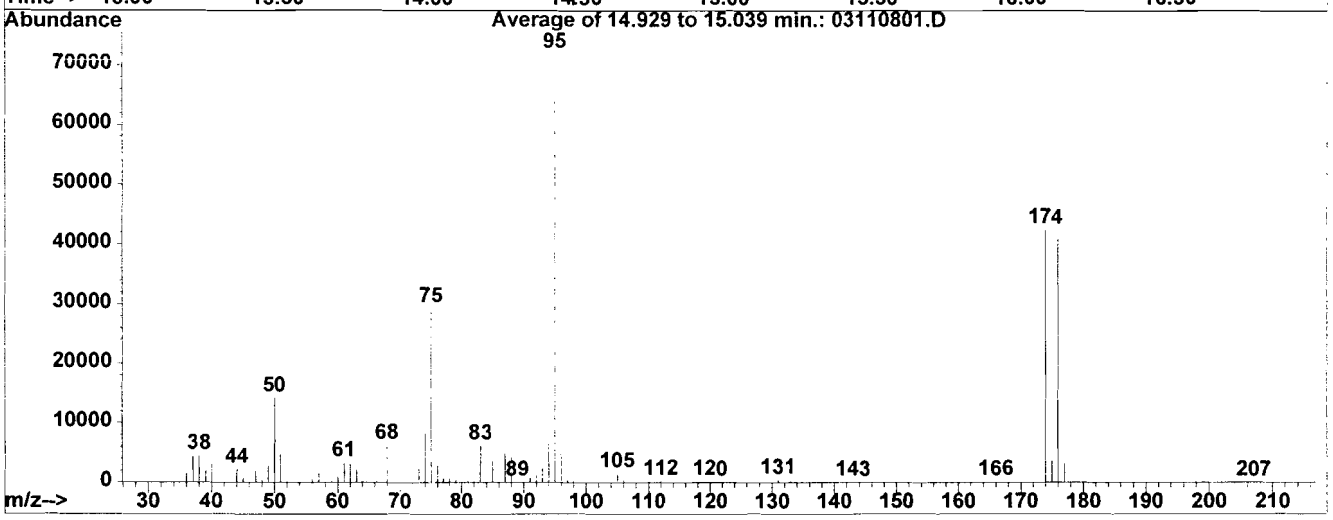
THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	MBLK2	INS._BLANK 3/11/08	03110802.D	03/11/08	10:04
02	1316059	0208030-20 100UL	03110803.D	03/11/08	11:04
03	057	0208030-2 1.0UL	03110804.D	03/11/08	11:53
04	1316057MS	0208030-2 1.0UL MS	03110805.D	03/11/08	12:35
05	057MSD	0208030-2 1.0UL MSD	03110806.D	03/11/08	13:29
06	BSPK	0208030-LS	03110807.D	03/11/08	14:05
07	057MS	0208030-2 1.0UL MS	03110808.D	03/11/08	16:04

BFB

Data File : C:\GALWIN98\DATA\0208030B\03110801.D Vial: 1
Acq On : 11 Mar 08 07:45 Operator: csm
Sample : CCAL_82608003C04 Inst :
Misc : Multiplr: 1.00
MS Integration Params: LSCINT.E
Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260





Spectrum Information: Average of 14.929 to 15.039 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.8	14208	PASS
75	95	30	60	40.8	29329	PASS
95	95	100	100	100.0	71921	PASS
96	95	5	9	7.5	5423	PASS
173	174	0.00	2	0.3	124	PASS
174	95	50	120	59.0	42467	PASS
175	174	5	9	8.7	3675	PASS
176	174	95	101	96.4	40941	PASS
177	176	5	9	7.9	3231	PASS

03110801.D 82608003.M Wed Mar 19 16:03:57 2008

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date: 03/11/08 Time: 07:45

Lab File ID: 03110801.D Init. Calib. Date(s): 03/06/08 03/06/08

Heated Purge: (Y/N) N Init. Calib. Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

COMPOUND	RRF	RRF1	MIN RRF	% D	MAX % D	
Dichlorodifluoromethane	0.481	0.466	0.100	3.2	20.0	
Chloromethane	1.220	1.517	0.100	-24.3	20.0	no positive
Vinyl chloride	1.170	1.279	0.100	-9.3	20.0	
Bromomethane	0.357	0.410	0.100	-14.8	20.0	
Chloroethane	0.831	0.902	0.100	-8.5	20.0	
Trichlorofluoromethane	0.752	0.774	0.100	-3.0	20.0	
1,1-Dichloroethene	0.818	0.821	0.100	-0.4	20.0	
Acetone	0.162	0.143	0.100	12.0	20.0	
Methyl Acetate	0.443	0.317	0.100	28.4	20.0	J/UJ
Carbon disulfide	3.086	3.123	0.100	-1.2	20.0	
Methyl Tert-butyl ether	2.691	2.305	0.100	14.3	20.0	
Methylene Chloride	1.064	0.995	0.100	6.5	20.0	
Trans-1,2-dichloroethene	0.918	0.940	0.100	-2.4	20.0	
1,1-Dichloroethane	1.559	1.714	0.200	-9.9	20.0	
2-Butanone	0.178	0.137	0.100	23.0	20.0	J/UJ
Propane, 2,2-dichloro-	0.787	0.928	0.100	-17.9	20.0	
cis-1,2-Dichloroethene	0.963	0.957	0.100	0.6	20.0	
Chloroform	1.218	1.267	0.200	-4.1	20.0	
Bromochloromethane	0.311	0.356	0.100	-14.5	20.0	
Cyclohexane	2.197	2.209	0.100	-0.5	20.0	
1,1,1,-Trichloroethane	0.785	0.803	0.100	-2.3	20.0	
Carbon tetrachloride	0.572	0.592	0.100	-3.4	20.0	
1,1-Dichloropropene	1.107	1.113	0.100	-0.5	20.0	
Benzene	3.460	3.412	0.500	1.4	20.0	
1,2-Dichloroethane	0.884	0.874	0.100	1.2	20.0	
Methylcyclohexane	0.771	0.757	0.100	1.9	20.0	
Trichloroethene	0.339	0.343	0.200	-1.3	20.0	
1,2-Dichloropropane	0.457	0.466	0.100	-2.0	20.0	
4-Methyl-2-pentanone	0.076	0.062	0.100	19.3	20.0	
Dibromomethane	0.224	0.221	0.100	1.2	20.0	
Bromodichloromethane	0.393	0.399	0.200	-1.6	20.0	
2-Hexanone	0.395	0.338	0.100	14.4	20.0	
Toluene	0.931	0.951	0.100	-2.2	20.0	
1,1,2-Trichloroethane	0.294	0.286	0.100	3.0	20.0	
Tetrachloroethylene	0.215	0.236	0.200	-9.7	20.0	
1,3-Dichloropropane	0.642	0.635	0.100	1.0	20.0	
Dibromochloromethane	0.266	0.260	0.100	2.1	20.0	
1,2-Dibromoethane	0.329	0.310	0.100	6.0	20.0	
Chlorobenzene	44.899	46.138	0.500	-2.8	20.0	

All other compounds must meet a minimum RRF of 0.010.

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date: 03/11/08 Time: 07:45

Lab File ID: 03110801.D Init. Calib. Date(s): 03/06/08 03/06/08

Heated Purge: (Y/N) N Init. Calib. Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

COMPOUND	RRF	RRF1	MIN RRF	% D	MAX % D
Ethylbenzene	78.932	78.786	0.100	0.2	20.0
1,1,1,2-Tetrachloroethane	12.550	13.078	0.100	-4.2	20.0
m/p-Xylene	33.223	34.722	0.100	-4.5	20.0
o-Xylene	30.004	30.831	0.300	-2.8	20.0
Styrene	52.820	57.062	0.300	-8.0	20.0
Bromoform	7.929	7.226	0.100	8.9	20.0
Isopropylbenzene	68.582	71.331	0.100	-4.0	20.0
Bromobenzene	14.869	16.015	0.100	-7.7	20.0
1,1,2,2-Tetrachloroethane	25.043	22.878	0.300	8.6	20.0
n-Propylbenzene	87.291	93.281	0.100	-6.9	20.0
1,2,3-Trichloropropane	0.413	0.369	0.100	10.8	20.0
2-Chlorotoluene	1.203	1.367	0.100	-13.6	20.0
1,3,5-Trimethylbenzene	56.233	59.599	0.100	-6.0	20.0
4-Chlorotoluene	1.219	1.383	0.100	-13.5	20.0
sec-Butylbenzene	78.657	59.190	0.100	24.8	20.0
1,2,4-Trimethylbenzene	53.146	58.628	0.100	-10.3	20.0
tert-Butylbenzene	53.725	56.874	0.100	-5.9	20.0
1,3-Dichlorobenzene	27.921	30.213	0.600	-8.2	20.0
p-Isopropyltoluene	62.870	66.458	0.100	-5.7	20.0
n-Butylbenzene	3.536	3.490	0.100	1.3	20.0
1,4-Dichlorobenzene	1.691	1.688	0.500	0.1	20.0
1,2-Dichlorobenzene	1.526	1.513	0.400	0.8	20.0
1,2-Dibromo-3-chloropropane	0.235	0.172	0.050	26.7	20.0
1,2,4-Trichlorobenzene	0.898	0.903	0.200	-0.6	20.0
Hexachlorobutadiene	0.379	0.348	0.100	8.2	20.0
Naphthalene	2.858	2.110	0.100	26.2	20.0
1,2,3-Trichlorobenzene	0.862	0.817	0.100	5.1	20.0
Dibromofluoromethane(surr)	0.099	0.094		5.4	
Toluene-d8(surr)	1.038	1.053		-1.4	
BFB(surr)	12.772	13.271		-3.9	

All other compounds must meet a minimum RRF of 0.010.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID (Standard): 03110801.D Date Analyzed: 03/11/08

Instrument ID: F4500 Time Analyzed: 07:45

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge (Y/N): N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR STD	10455199	6.65	23086416	8.12	448801	12.93
	UPPER LIMIT	20910398	6.15	46172832	7.62	897602	12.43
	LOWER LIMIT	5227600	7.15	11543208	8.62	224401	13.43
	SAMPLE NO.						
01	MBLK2	9959372	6.51	22004701	7.98	428002	12.77
02	1316059	11837359	6.53	23397117	7.99	431463	12.81
03	057	10769519	6.57	22381245	8.03	404411	12.82
04	1316057MS	10242870	6.52	22821855	7.99	455003	12.81
05	057MSD	9921698	6.59	21517753	8.05	401100	12.84
06	BSPK	10268924	6.60	22504800	8.07	422741	12.85
07	057MS	10201775	6.59	22294454	8.06	406063	12.89

IS1 = Benzene, pentafluoro- (in
IS2 = 1,2-Difluorobenzene (ins)
IS3 = Chlorobenzene-d5 (ins)
IS4 = 1,4-Dichlorobenzene-d4 (

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Lab File ID (Standard): 03110801.D Date Analyzed: 03/11/08

Instrument ID: F4500 Time Analyzed: 07:45

GC Column: RTX-502.2 ID: 0.53 (mm) Heated Purge (Y/N): Y

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	8386163	17.05				
	UPPER LIMIT	16772326	16.55				
	LOWER LIMIT	4193082	17.55				
	EPA SAMPLE NO.						
01	MBLK2	7631112	16.90				
02	1316059	8210606	16.94				
03	057	7449657	16.94				
04	1316057MS	8146170	16.95				
05	057MSD	7930255	16.96				
06	BSPK	7367204	16.97				
07	057MS	8107773	17.03				

IS1 = Benzene, pentafluoro- (in
IS2 = 1,2-Difluorobenzene (ins)
IS3 = Chlorobenzene-d5 (ins)
IS4 = 1,4-Dichlorobenzene-d4 (

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110806.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	160000	D
74-87-3	Chloromethane	190000	D
75-01-4	Vinyl chloride	160000	D
74-83-9	Bromomethane	140000	D
75-00-3	Chloroethane	160000	D
75-69-4	Trichlorofluoromethane	140000	D
75-35-4	1,1-Dichloroethene	130000	D
67-64-1	Acetone	98000	D
79-20-9	Methyl Acetate	94000	D
75-15-0	Carbon disulfide	120000	D
1634-04-4	Methyl Tert-butyl ether	110000	D
75-09-2	Methylene Chloride	130000	D
156-60-5	Trans-1,2-dichloroethene	130000	D
75-34-3	1,1-Dichloroethane	140000	D
78-93-3	2-Butanone	96000	D
594-20-7	Propane, 2,2-dichloro-	160000	D
540-59-0	cis-1,2-Dichloroethene	150000	D
67-66-3	Chloroform	140000	D
74-97-5	Bromochloromethane	150000	D
110-82-7	Cyclohexane	110000	D
71-55-6	1,1,1,-Trichloroethane	140000	D
56-23-5	Carbon tetrachloride	140000	D
563-58-6	1,1-Dichloropropene	130000	D
71-43-2	Benzene	130000	D
75-34-3	1,2-Dichloroethane	130000	D
108-87-2	Methylcyclohexane	120000	D
127-18-4	Trichloroethene	140000	D
78-87-5	1,2-Dichloropropane	140000	D
108-10-1	4-Methyl-2-pentanone	110000	D
74-95-3	Dibromomethane	140000	D
75-27-4	Bromodichloromethane	130000	D
591-78-6	2-Hexanone	110000	D
108-88-3	Toluene	130000	D
71-55-6	1,1,2-Trichloroethane	130000	D
127-18-4	Tetrachloroethylene	290000	D
142-28-9	1,3-Dichloropropane	130000	D
124-48-1	Dibromochloromethane	130000	D
106-93-4	1,2-Dibromoethane	120000	D
108-90-7	Chlorobenzene	140000	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110806.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	130000	D
630-20-6	1,1,1,2-Tetrachloroethane	140000	D
106-42-3	m/p-Xylene	280000	D
95-47-6	o-Xylene	150000	D
100-42-5	Styrene	140000	D
75-25-2	Bromoform	130000	D
98-82-8	Isopropylbenzene	150000	D
108-86-1	Bromobenzene	140000	D
79-34-5	1,1,2,2-Tetrachloroethane	130000	D
103-65-1	n-Propylbenzene	140000	D
96-18-4	1,2,3-Trichloropropane	130000	D
95-49-8	2-Chlorotoluene	150000	D
108-67-8	1,3,5-Trimethylbenzene	140000	D
106-43-4	4-Chlorotoluene	150000	D
135-98-8	sec-Butylbenzene	100000	D
95-63-6	1,2,4-Trimethylbenzene	150000	D
98-06-6	tert-Butylbenzene	140000	D
541-73-1	1,3-Dichlorobenzene	150000	D
49-87-6	p-Isopropyltoluene	140000	D
105-51-8	n-Butylbenzene	120000	D
106-46-7	1,4-Dichlorobenzene	130000	D
95-50-1	1,2-Dichlorobenzene	130000	D
96-12-8	1,2-Dibromo-3-chloropropane	100000	D
120-82-1	1,2,4-Trichlorobenzene	130000	D
87-68-3	Hexachlorobutadiene	130000	D
91-20-3	Naphthalene	120000	D
87-61-6	1,2,3-Trichlorobenzene	120000	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110808.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	160	
74-87-3	Chloromethane	190	
75-01-4	Vinyl chloride	170	
74-83-9	Bromomethane	160	
75-00-3	Chloroethane	160	
75-69-4	Trichlorofluoromethane	140	
75-35-4	1,1-Dichloroethene	140	
67-64-1	Acetone	110	
79-20-9	Methyl Acetate	110	
75-15-0	Carbon disulfide	130	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	170	
156-60-5	Trans-1,2-dichloroethene	130	
75-34-3	1,1-Dichloroethane	140	
78-93-3	2-Butanone	110	
594-20-7	Propane, 2,2-dichloro-	160	
540-59-0	cis-1,2-Dichloroethene	150	
67-66-3	Chloroform	130	
74-97-5	Bromochloromethane	150	
110-82-7	Cyclohexane	120	
71-55-6	1,1,1,-Trichloroethane	130	
56-23-5	Carbon tetrachloride	130	
563-58-6	1,1-Dichloropropene	140	
71-43-2	Benzene	130	
75-34-3	1,2-Dichloroethane	140	
108-87-2	Methylcyclohexane	120	
127-18-4	Trichloroethene	150	
78-87-5	1,2-Dichloropropane	140	
108-10-1	4-Methyl-2-pentanone	110	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	130	
591-78-6	2-Hexanone	110	
108-88-3	Toluene	130	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	250	
142-28-9	1,3-Dichloropropane	120	
124-48-1	Dibromochloromethane	120	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	140	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110808.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	130	
630-20-6	1,1,1,2-Tetrachloroethane	130	
106-42-3	m/p-Xylene	260	
95-47-6	o-Xylene	140	
100-42-5	Styrene	130	
75-25-2	Bromoform	120	
98-82-8	Isopropylbenzene	140	
108-86-1	Bromobenzene	150	
79-34-5	1,1,2,2-Tetrachloroethane	130	
103-65-1	n-Propylbenzene	140	
96-18-4	1,2,3-Trichloropropane	130	
95-49-8	2-Chlorotoluene	140	
108-67-8	1,3,5-Trimethylbenzene	140	
106-43-4	4-Chlorotoluene	150	
135-98-8	sec-Butylbenzene	100	
95-63-6	1,2,4-Trimethylbenzene	140	
98-06-6	tert-Butylbenzene	150	
541-73-1	1,3-Dichlorobenzene	150	
49-87-6	p-Isopropyltoluene	140	
105-51-8	n-Butylbenzene	130	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	100	
120-82-1	1,2,4-Trichlorobenzene	140	
87-68-3	Hexachlorobutadiene	140	
91-20-3	Naphthalene	120	
87-61-6	1,2,3-Trichlorobenzene	130	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110806.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	160	
74-87-3	Chloromethane	190	
75-01-4	Vinyl chloride	160	
74-83-9	Bromomethane	140	
75-00-3	Chloroethane	160	
75-69-4	Trichlorofluoromethane	140	
75-35-4	1,1-Dichloroethene	130	
67-64-1	Acetone	98	
79-20-9	Methyl Acetate	94	
75-15-0	Carbon disulfide	120	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	130	
156-60-5	Trans-1,2-dichloroethene	130	
75-34-3	1,1-Dichloroethane	140	
78-93-3	2-Butanone	96	
594-20-7	Propane, 2,2-dichloro-	160	
540-59-0	cis-1,2-Dichloroethene	150	
67-66-3	Chloroform	140	
74-97-5	Bromochloromethane	150	
110-82-7	Cyclohexane	110	
71-55-6	1,1,1,-Trichloroethane	140	
56-23-5	Carbon tetrachloride	140	
563-58-6	1,1-Dichloropropene	130	
71-43-2	Benzene	130	
75-34-3	1,2-Dichloroethane	130	
108-87-2	Methylcyclohexane	120	
127-18-4	Trichloroethene	140	
78-87-5	1,2-Dichloropropane	140	
108-10-1	4-Methyl-2-pentanone	110	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	130	
591-78-6	2-Hexanone	110	
108-88-3	Toluene	130	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	290	
142-28-9	1,3-Dichloropropane	130	
124-48-1	Dibromochloromethane	130	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	140	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110806.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	130	
630-20-6	1,1,1,2-Tetrachloroethane	140	
106-42-3	m/p-Xylene	280	
95-47-6	o-Xylene	150	
100-42-5	Styrene	140	
75-25-2	Bromoform	130	
98-82-8	Isopropylbenzene	150	
108-86-1	Bromobenzene	140	
79-34-5	1,1,2,2-Tetrachloroethane	130	
103-65-1	n-Propylbenzene	140	
96-18-4	1,2,3-Trichloropropane	130	
95-49-8	2-Chlorotoluene	150	
108-67-8	1,3,5-Trimethylbenzene	140	
106-43-4	4-Chlorotoluene	150	
135-98-8	sec-Butylbenzene	100	
95-63-6	1,2,4-Trimethylbenzene	150	
98-06-6	tert-Butylbenzene	140	
541-73-1	1,3-Dichlorobenzene	150	
49-87-6	p-Isopropyltoluene	140	
105-51-8	n-Butylbenzene	120	
106-46-7	1,4-Dichlorobenzene	130	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	100	
120-82-1	1,2,4-Trichlorobenzene	130	
87-68-3	Hexachlorobutadiene	130	
91-20-3	Naphthalene	120	
87-61-6	1,2,3-Trichlorobenzene	120	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 ms 1.0u

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100821.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	180000	D
74-87-3	Chloromethane	250000	D
75-01-4	Vinyl chloride	180000	D
74-83-9	Bromomethane	140000	D
75-00-3	Chloroethane	170000	D
75-69-4	Trichlorofluoromethane	140000	D
75-35-4	1,1-Dichloroethene	140000	D
67-64-1	Acetone	86000	D
79-20-9	Methyl Acetate	91000	D
75-15-0	Carbon disulfide	130000	D
1634-04-4	Methyl Tert-butyl ether	110000	D
75-09-2	Methylene Chloride	140000	D
156-60-5	Trans-1,2-dichloroethene	140000	D
75-34-3	1,1-Dichloroethane	150000	D
78-93-3	2-Butanone	94000	D
594-20-7	Propane, 2,2-dichloro-	170000	D
540-59-0	cis-1,2-Dichloroethene	170000	D
67-66-3	Chloroform	150000	D
74-97-5	Bromochloromethane	160000	D
110-82-7	Cyclohexane	140000	D
71-55-6	1,1,1,-Trichloroethane	150000	D
56-23-5	Carbon tetrachloride	150000	D
563-58-6	1,1-Dichloropropene	160000	D
71-43-2	Benzene	150000	D
75-34-3	1,2-Dichloroethane	150000	D
108-87-2	Methylcyclohexane	120000	D
127-18-4	Trichloroethene	160000	D
78-87-5	1,2-Dichloropropane	150000	D
108-10-1	4-Methyl-2-pentanone	90000	D
74-95-3	Dibromomethane	140000	D
75-27-4	Bromodichloromethane	140000	D
591-78-6	2-Hexanone	99000	BD
108-88-3	Toluene	140000	D
71-55-6	1,1,2-Trichloroethane	130000	D
127-18-4	Tetrachloroethylene	640000	ED
142-28-9	1,3-Dichloropropane	130000	D
124-48-1	Dibromochloromethane	130000	D
106-93-4	1,2-Dibromoethane	120000	D
108-90-7	Chlorobenzene	150000	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 ms 1.0u

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100821.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	140000	D
630-20-6	1,1,1,2-Tetrachloroethane	140000	D
106-42-3	m/p-Xylene	290000	D
95-47-6	o-Xylene	150000	D
100-42-5	Styrene	140000	D
75-25-2	Bromoform	120000	D
98-82-8	Isopropylbenzene	150000	D
108-86-1	Bromobenzene	150000	D
79-34-5	1,1,2,2-Tetrachloroethane	130000	D
103-65-1	n-Propylbenzene	150000	D
96-18-4	1,2,3-Trichloropropane	120000	D
95-49-8	2-Chlorotoluene	140000	D
108-67-8	1,3,5-Trimethylbenzene	140000	D
106-43-4	4-Chlorotoluene	150000	D
135-98-8	sec-Butylbenzene	140000	D
95-63-6	1,2,4-Trimethylbenzene	150000	D
98-06-6	tert-Butylbenzene	150000	D
541-73-1	1,3-Dichlorobenzene	150000	D
49-87-6	p-Isopropyltoluene	140000	D
105-51-8	n-Butylbenzene	130000	D
106-46-7	1,4-Dichlorobenzene	140000	D
95-50-1	1,2-Dichlorobenzene	140000	D
96-12-8	1,2-Dibromo-3-chloropropane	93000	D
120-82-1	1,2,4-Trichlorobenzene	130000	D
87-68-3	Hexachlorobutadiene	140000	D
91-20-3	Naphthalene	94000	BD
87-61-6	1,2,3-Trichlorobenzene	130000	D

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 msd 1.0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100822.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	190000	D
74-87-3	Chloromethane	240000	D
75-01-4	Vinyl chloride	180000	D
74-83-9	Bromomethane	170000	D
75-00-3	Chloroethane	170000	D
75-69-4	Trichlorofluoromethane	130000	D
75-35-4	1,1-Dichloroethene	140000	D
67-64-1	Acetone	62000	D
79-20-9	Methyl Acetate	73000	D
75-15-0	Carbon disulfide	130000	D
1634-04-4	Methyl Tert-butyl ether	97000	D
75-09-2	Methylene Chloride	120000	D
156-60-5	Trans-1,2-dichloroethene	130000	D
75-34-3	1,1-Dichloroethane	140000	D
78-93-3	2-Butanone	62000	D
594-20-7	Propane, 2,2-dichloro-	160000	D
540-59-0	cis-1,2-Dichloroethene	160000	D
67-66-3	Chloroform	130000	D
74-97-5	Bromochloromethane	130000	D
110-82-7	Cyclohexane	130000	D
71-55-6	1,1,1,-Trichloroethane	140000	D
56-23-5	Carbon tetrachloride	140000	D
563-58-6	1,1-Dichloropropene	150000	D
71-43-2	Benzene	140000	D
75-34-3	1,2-Dichloroethane	120000	D
108-87-2	Methylcyclohexane	130000	D
127-18-4	Trichloroethene	150000	D
78-87-5	1,2-Dichloropropane	120000	D
108-10-1	4-Methyl-2-pentanone	75000	D
74-95-3	Dibromomethane	110000	D
75-27-4	Bromodichloromethane	120000	D
591-78-6	2-Hexanone	80000	BD
108-88-3	Toluene	130000	D
71-55-6	1,1,2-Trichloroethane	110000	D
127-18-4	Tetrachloroethylene	530000	ED
142-28-9	1,3-Dichloropropane	110000	D
124-48-1	Dibromochloromethane	110000	D
106-93-4	1,2-Dibromoethane	100000	D
108-90-7	Chlorobenzene	140000	D

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 msd 1.0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100822.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	140000	D
630-20-6	1,1,1,2-Tetrachloroethane	130000	D
106-42-3	m/p-Xylene	280000	D
95-47-6	o-Xylene	140000	D
100-42-5	Styrene	130000	D
75-25-2	Bromoform	100000	D
98-82-8	Isopropylbenzene	150000	D
108-86-1	Bromobenzene	130000	D
79-34-5	1,1,2,2-Tetrachloroethane	110000	D
103-65-1	n-Propylbenzene	150000	D
96-18-4	1,2,3-Trichloropropane	100000	D
95-49-8	2-Chlorotoluene	140000	D
108-67-8	1,3,5-Trimethylbenzene	140000	D
106-43-4	4-Chlorotoluene	150000	D
135-98-8	sec-Butylbenzene	150000	D
95-63-6	1,2,4-Trimethylbenzene	140000	D
98-06-6	tert-Butylbenzene	150000	D
541-73-1	1,3-Dichlorobenzene	140000	D
49-87-6	p-Isopropyltoluene	140000	D
105-51-8	n-Butylbenzene	140000	D
106-46-7	1,4-Dichlorobenzene	140000	D
95-50-1	1,2-Dichlorobenzene	130000	D
96-12-8	1,2-Dibromo-3-chloropropane	82000	D
120-82-1	1,2,4-Trichlorobenzene	130000	D
87-68-3	Hexachlorobutadiene	160000	D
91-20-3	Naphthalene	110000	BD
87-61-6	1,2,3-Trichlorobenzene	120000	D

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 ms 1.0u

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100821.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	180	
74-87-3	Chloromethane	250	
75-01-4	Vinyl chloride	180	
74-83-9	Bromomethane	140	
75-00-3	Chloroethane	170	
75-69-4	Trichlorofluoromethane	140	
75-35-4	1,1-Dichloroethene	140	
67-64-1	Acetone	86	
79-20-9	Methyl Acetate	91	
75-15-0	Carbon disulfide	130	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	140	
156-60-5	Trans-1,2-dichloroethene	140	
75-34-3	1,1-Dichloroethane	150	
78-93-3	2-Butanone	94	
594-20-7	Propane, 2,2-dichloro-	170	
540-59-0	cis-1,2-Dichloroethene	170	
67-66-3	Chloroform	150	
74-97-5	Bromochloromethane	160	
110-82-7	Cyclohexane	140	
71-55-6	1,1,1,-Trichloroethane	150	
56-23-5	Carbon tetrachloride	150	
563-58-6	1,1-Dichloropropene	160	
71-43-2	Benzene	150	
75-34-3	1,2-Dichloroethane	150	
108-87-2	Methylcyclohexane	120	
127-18-4	Trichloroethene	160	
78-87-5	1,2-Dichloropropane	150	
108-10-1	4-Methyl-2-pentanone	90	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	140	
591-78-6	2-Hexanone	99	B
108-88-3	Toluene	140	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	640	E
142-28-9	1,3-Dichloropropane	130	
124-48-1	Dibromochloromethane	130	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	150	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 ms 1.0u

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100821.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg) UG/L		Q
100-41-4	Ethylbenzene	140	
630-20-6	1,1,1,2-Tetrachloroethane	140	
106-42-3	m/p-Xylene	290	
95-47-6	o-Xylene	150	
100-42-5	Styrene	140	
75-25-2	Bromoform	120	
98-82-8	Isopropylbenzene	150	
108-86-1	Bromobenzene	150	
79-34-5	1,1,2,2-Tetrachloroethane	130	
103-65-1	n-Propylbenzene	150	
96-18-4	1,2,3-Trichloropropane	120	
95-49-8	2-Chlorotoluene	140	
108-67-8	1,3,5-Trimethylbenzene	140	
106-43-4	4-Chlorotoluene	150	
135-98-8	sec-Butylbenzene	140	
95-63-6	1,2,4-Trimethylbenzene	150	
98-06-6	tert-Butylbenzene	150	
541-73-1	1,3-Dichlorobenzene	150	
49-87-6	p-Isopropyltoluene	140	
105-51-8	n-Butylbenzene	130	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	140	
96-12-8	1,2-Dibromo-3-chloropropane	93	
120-82-1	1,2,4-Trichlorobenzene	130	
87-68-3	Hexachlorobutadiene	140	
91-20-3	Naphthalene	94	B
87-61-6	1,2,3-Trichlorobenzene	130	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 msd 1.0

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100822.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg) UG/L		Q
75-71-8	Dichlorodifluoromethane	190	
74-87-3	Chloromethane	240	
75-01-4	Vinyl chloride	180	
74-83-9	Bromomethane	170	
75-00-3	Chloroethane	170	
75-69-4	Trichlorofluoromethane	130	
75-35-4	1,1-Dichloroethene	140	
67-64-1	Acetone	62	
79-20-9	Methyl Acetate	73	
75-15-0	Carbon disulfide	130	
1634-04-4	Methyl Tert-butyl ether	97	
75-09-2	Methylene Chloride	120	
156-60-5	Trans-1,2-dichloroethene	130	
75-34-3	1,1-Dichloroethane	140	
78-93-3	2-Butanone	62	
594-20-7	Propane, 2,2-dichloro-	160	
540-59-0	cis-1,2-Dichloroethene	160	
67-66-3	Chloroform	130	
74-97-5	Bromochloromethane	130	
110-82-7	Cyclohexane	130	
71-55-6	1,1,1,-Trichloroethane	140	
56-23-5	Carbon tetrachloride	140	
563-58-6	1,1-Dichloropropene	150	
71-43-2	Benzene	140	
75-34-3	1,2-Dichloroethane	120	
108-87-2	Methylcyclohexane	130	
127-18-4	Trichloroethene	150	
78-87-5	1,2-Dichloropropane	120	
108-10-1	4-Methyl-2-pentanone	75	
74-95-3	Dibromomethane	110	
75-27-4	Bromodichloromethane	120	
591-78-6	2-Hexanone	80	B
108-88-3	Toluene	130	
71-55-6	1,1,2-Trichloroethane	110	
127-18-4	Tetrachloroethylene	530	E
142-28-9	1,3-Dichloropropane	110	
124-48-1	Dibromochloromethane	110	
106-93-4	1,2-Dibromoethane	100	
108-90-7	Chlorobenzene	140	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 msd 1.0

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100822.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	140	
630-20-6	1,1,1,2-Tetrachloroethane	130	
106-42-3	m/p-Xylene	280	
95-47-6	o-Xylene	140	
100-42-5	Styrene	130	
75-25-2	Bromoform	100	
98-82-8	Isopropylbenzene	150	
108-86-1	Bromobenzene	130	
79-34-5	1,1,2,2-Tetrachloroethane	110	
103-65-1	n-Propylbenzene	150	
96-18-4	1,2,3-Trichloropropane	100	
95-49-8	2-Chlorotoluene	140	
108-67-8	1,3,5-Trimethylbenzene	140	
106-43-4	4-Chlorotoluene	150	
135-98-8	sec-Butylbenzene	150	
95-63-6	1,2,4-Trimethylbenzene	140	
98-06-6	tert-Butylbenzene	150	
541-73-1	1,3-Dichlorobenzene	140	
49-87-6	p-Isopropyltoluene	140	
105-51-8	n-Butylbenzene	140	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	82	
120-82-1	1,2,4-Trichlorobenzene	130	
87-68-3	Hexachlorobutadiene	160	
91-20-3	Naphthalene	110	B
87-61-6	1,2,3-Trichlorobenzene	120	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	33	
74-87-3	Chloromethane	45	
75-01-4	Vinyl chloride	32	
74-83-9	Bromomethane	28	
75-00-3	Chloroethane	33	
75-69-4	Trichlorofluoromethane	26	
75-35-4	1,1-Dichloroethene	26	
67-64-1	Acetone	17	
79-20-9	Methyl Acetate	16	
75-15-0	Carbon disulfide	24	
1634-04-4	Methyl Tert-butyl ether	22	
75-09-2	Methylene Chloride	26	
156-60-5	Trans-1,2-dichloroethene	26	
75-34-3	1,1-Dichloroethane	29	
78-93-3	2-Butanone	16	
594-20-7	Propane, 2,2-dichloro-	31	
540-59-0	cis-1,2-Dichloroethene	36	
67-66-3	Chloroform	28	
74-97-5	Bromochloromethane	31	
110-82-7	Cyclohexane	24	
71-55-6	1,1,1,-Trichloroethane	27	
56-23-5	Carbon tetrachloride	28	
563-58-6	1,1-Dichloropropene	28	
71-43-2	Benzene	28	
75-34-3	1,2-Dichloroethane	27	
108-87-2	Methylcyclohexane	25	
127-18-4	Trichloroethene	37	
78-87-5	1,2-Dichloropropane	28	
108-10-1	4-Methyl-2-pentanone	19	
74-95-3	Dibromomethane	28	
75-27-4	Bromodichloromethane	27	
591-78-6	2-Hexanone	20	B
108-88-3	Toluene	28	
71-55-6	1,1,2-Trichloroethane	26	
127-18-4	Tetrachloroethylene	270	E
142-28-9	1,3-Dichloropropane	26	
124-48-1	Dibromochloromethane	28	
106-93-4	1,2-Dibromoethane	24	
108-90-7	Chlorobenzene	28	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	26	
630-20-6	1,1,1,2-Tetrachloroethane	28	
106-42-3	m/p-Xylene	54	
95-47-6	o-Xylene	29	
100-42-5	Styrene	27	
75-25-2	Bromoform	23	
98-82-8	Isopropylbenzene	28	
108-86-1	Bromobenzene	28	
79-34-5	1,1,2,2-Tetrachloroethane	24	
103-65-1	n-Propylbenzene	28	
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	27	
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	27	
95-63-6	1,2,4-Trimethylbenzene	28	
98-06-6	tert-Butylbenzene	28	
541-73-1	1,3-Dichlorobenzene	28	
49-87-6	p-Isopropyltoluene	26	
105-51-8	n-Butylbenzene	26	
106-46-7	1,4-Dichlorobenzene	28	
95-50-1	1,2-Dichlorobenzene	27	
96-12-8	1,2-Dibromo-3-chloropropane	20	
120-82-1	1,2,4-Trichlorobenzene	27	
87-68-3	Hexachlorobutadiene	28	
91-20-3	Naphthalene	26	B
87-61-6	1,2,3-Trichlorobenzene	25	

J/R

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	170	
74-87-3	Chloromethane	230	
75-01-4	Vinyl chloride	160	
74-83-9	Bromomethane	140	
75-00-3	Chloroethane	160	
75-69-4	Trichlorofluoromethane	130	
75-35-4	1,1-Dichloroethene	130	
67-64-1	Acetone	85	
79-20-9	Methyl Acetate	78	
75-15-0	Carbon disulfide	120	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	130	
156-60-5	Trans-1,2-dichloroethene	130	
75-34-3	1,1-Dichloroethane	140	
78-93-3	2-Butanone	82	
594-20-7	Propane, 2,2-dichloro-	160	
540-59-0	cis-1,2-Dichloroethene	180	
67-66-3	Chloroform	140	
74-97-5	Bromochloromethane	160	
110-82-7	Cyclohexane	120	
71-55-6	1,1,1,-Trichloroethane	140	
56-23-5	Carbon tetrachloride	140	
563-58-6	1,1-Dichloropropene	140	
71-43-2	Benzene	140	
75-34-3	1,2-Dichloroethane	140	
108-87-2	Methylcyclohexane	130	
127-18-4	Trichloroethene	190	
78-87-5	1,2-Dichloropropane	140	
108-10-1	4-Methyl-2-pentanone	96	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	130	
591-78-6	2-Hexanone	100	B
108-88-3	Toluene	140	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	1300	E
142-28-9	1,3-Dichloropropane	130	
124-48-1	Dibromochloromethane	140	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	140	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	130	
630-20-6	1,1,1,2-Tetrachloroethane	140	
106-42-3	m/p-Xylene	270	
95-47-6	o-Xylene	140	
100-42-5	Styrene	140	
75-25-2	Bromoform	110	
98-82-8	Isopropylbenzene	140	
108-86-1	Bromobenzene	140	
79-34-5	1,1,2,2-Tetrachloroethane	120	
103-65-1	n-Propylbenzene	140	
96-18-4	1,2,3-Trichloropropane	3	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	130	
106-43-4	4-Chlorotoluene	1	U
135-98-8	sec-Butylbenzene	140	
95-63-6	1,2,4-Trimethylbenzene	140	
98-06-6	tert-Butylbenzene	140	
541-73-1	1,3-Dichlorobenzene	140	
49-87-6	p-Isopropyltoluene	130	
105-51-8	n-Butylbenzene	130	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	99	
120-82-1	1,2,4-Trichlorobenzene	140	
87-68-3	Hexachlorobutadiene	140	
91-20-3	Naphthalene	130	B
87-61-6	1,2,3-Trichlorobenzene	130	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110807.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	150	
74-87-3	Chloromethane	180	
75-01-4	Vinyl chloride	160	
74-83-9	Bromomethane	130	
75-00-3	Chloroethane	150	
75-69-4	Trichlorofluoromethane	130	
75-35-4	1,1-Dichloroethene	120	
67-64-1	Acetone	100	
79-20-9	Methyl Acetate	97	
75-15-0	Carbon disulfide	120	
1634-04-4	Methyl Tert-butyl ether	110	
75-09-2	Methylene Chloride	130	
156-60-5	Trans-1,2-dichloroethene	120	
75-34-3	1,1-Dichloroethane	130	
78-93-3	2-Butanone	100	
594-20-7	Propane, 2,2-dichloro-	150	
540-59-0	cis-1,2-Dichloroethene	130	
67-66-3	Chloroform	130	
74-97-5	Bromochloromethane	150	
110-82-7	Cyclohexane	110	
71-55-6	1,1,1,-Trichloroethane	130	
56-23-5	Carbon tetrachloride	130	
563-58-6	1,1-Dichloropropene	130	
71-43-2	Benzene	130	
75-34-3	1,2-Dichloroethane	130	
108-87-2	Methylcyclohexane	110	
127-18-4	Trichloroethene	150	
78-87-5	1,2-Dichloropropane	140	
108-10-1	4-Methyl-2-pentanone	100	
74-95-3	Dibromomethane	140	
75-27-4	Bromodichloromethane	130	
591-78-6	2-Hexanone	110	
108-88-3	Toluene	130	
71-55-6	1,1,2-Trichloroethane	130	
127-18-4	Tetrachloroethylene	150	
142-28-9	1,3-Dichloropropane	120	
124-48-1	Dibromochloromethane	120	
106-93-4	1,2-Dibromoethane	120	
108-90-7	Chlorobenzene	130	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 1.0 (g/ml) ML Lab File ID: 03110807.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	120	
630-20-6	1,1,1,2-Tetrachloroethane	130	
106-42-3	m/p-Xylene	250	
95-47-6	o-Xylene	130	
100-42-5	Styrene	130	
75-25-2	Bromoform	110	
98-82-8	Isopropylbenzene	130	
108-86-1	Bromobenzene	130	
79-34-5	1,1,2,2-Tetrachloroethane	120	
103-65-1	n-Propylbenzene	120	
96-18-4	1,2,3-Trichloropropane	120	
95-49-8	2-Chlorotoluene	120	
108-67-8	1,3,5-Trimethylbenzene	120	
106-43-4	4-Chlorotoluene	120	
135-98-8	sec-Butylbenzene	85	
95-63-6	1,2,4-Trimethylbenzene	120	
98-06-6	tert-Butylbenzene	120	
541-73-1	1,3-Dichlorobenzene	130	
49-87-6	p-Isopropyltoluene	110	
105-51-8	n-Butylbenzene	110	
106-46-7	1,4-Dichlorobenzene	140	
95-50-1	1,2-Dichlorobenzene	130	
96-12-8	1,2-Dibromo-3-chloropropane	110	
120-82-1	1,2,4-Trichlorobenzene	120	
87-68-3	Hexachlorobutadiene	120	
91-20-3	Naphthalene	110	
87-61-6	1,2,3-Trichlorobenzene	110	

Sample List for Group VOA_Apr_3_2008_2

Printing Date 4/7/2008 4:24:05 PM

Lab File ID	SAMPLE NO.	Lab Sample ID	Date Acq.	Date Rec.	Date Due
03060804.D	VSTD20	CS1_20ng_82608003	03/06/08 19:20	02/28/08	
03060805.D	VSTD60	CS2_60ng_82608003	03/06/08 19:59	02/28/08	
03060806.D	VSTD80	CS3_80ng_82608003	03/06/08 20:38	02/28/08	
03060807.D	VSTD120	CS4_120ng_8260800	03/06/08 21:17	02/28/08	
03060808.D	VSTD200	CS5_200ng_8260800	03/06/08 21:56	02/28/08	
03060809.D	VSTD300	CS6_300ng_8260800	03/06/08 22:35	02/28/08	
03060810.D	VSTD500	CS7_500ng_8260800	03/06/08 23:14	02/28/08	
03110801.D	VSTD	CCAL_82608003C04	03/11/08 07:45	02/28/08	
03110802.D	MBLK2	INS._BLANK 3/11/08	03/11/08 10:04	02/28/08	
03110803.D	1316059	0208030-20 100uL	03/11/08 11:04	02/28/08	
03110804.D	057	0208030-2 1.0uL	03/11/08 11:53	02/28/08	
~~03110805.D~~	~~1316057MS~~	~~0208030-2 1.0uL MS~~	~~03/11/08 12:35~~	~~02/28/08~~	
03110806.D	057MSD	0208030-2 1.0uL MS	03/11/08 13:29	02/28/08	
03110807.D	BSPK	0208030-LS	03/11/08 14:05	02/28/08	
03110808.D	057MS	0208030-2 1.0uL MS	03/11/08 16:04	02/28/08	

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Method name is different	Fraction	Abbreviation	Type	CAS #	Surrogate Amount Water	Surrogate Amount Soil	Surrogate Limits Water Low	Surrogate Limits Water High	Surrogate Limits Soil Low	Surrogate Limits Soil High	Matrix Spike Amount Water	Matrix Spike Limits Water Low	Matrix Spike Limits Water High	Matrix Spike Limits Water RPD	Matrix Spike Amount Soil	Matrix Spike Limits Soil Low	Matrix Spike Limits Soil High	Matrix Spike Limits Soil RPD	Response Factor Minimum	Response Factor Max RSD	Response Factor Max Dev	MDL On Column
1	Benzene, pentafluoro- (ins)		V1		I																0	0	0	0
2	Dichlorodifluoromethane		V1		M	75-71-8							120	70	80	30	120				0.1	20	20	2.74
3	Chloromethane		V1		M	74-87-3							120	70	130	20	120				0.1	10	20	4.29
4	Vinyl chloride		V1		M	75-01-4							120	70	130	20	120				0.1	20	20	1.04
5	Bromomethane		V1		M	74-83-9							120	70	130	20	120				0.1	20	20	3.68
6	Chloroethane		V1		M	75-00-3							120	70	130	20	120				0.1	20	20	1.17
7	Trichlorofluoromethane		V1		M	75-69-4							120	70	130	20	120				0.1	20	20	2.1
8	1,1-Dichloroethene		V1		M	75-35-4							120	70	130	20	120				0.1	20	20	2.23
9	Acetone		V1		M	67-64-1							120	70	130	20	120				0.1	20	20	14.48
10	Methyl Acetate		V1		M	79-20-9							120	70	130	20	120	70	130	20	0.1	20	20	4.66
11	Carbon disulfide		V1		M	75-15-0							120	70	130	20	120	50	150	20	0.1	20	20	0.52
12	Methyl Tert-butyl ether	*	V1		M	1634-04-4							120	70	130	20	120	50	150	20	0.1	20	20	1.37
13	Methylene Chloride		V1		M	75-09-2							120	70	130	20	120	50	150	20	0.1	20	20	3.6
14	Trans-1,2-dichloroethene		V1		M	156-60-5							120	70	130	20	120	50	150	20	0.1	20	20	0.8
15	1,1-Dichloroethane		V1		M	75-34-3							120	70	130	20	120	50	150	20	0.2	20	20	0.72
16	2-Butanone		V1		M	78-93-3							120	70	130	20	120				0.1	20	20	5.07
17	Propane, 2,2-dichloro-		V1		M	594-20-7							120	70	130	20	120	50	150	20	0.1	20	20	1.8
18	cis-1,2-Dichloroethene		V1		M	540-59-0							120	70	130	20	120	50	150	20	0.1	20	20	1.01
19	Chloroform		V1		M	67-66-3							120	70	130	20	120	50	150	20	0.2	20	20	1.1
20	Bromochloromethane	*	V1		M	74-97-5							120	70	130	20	120	50	150	20	0.1	20	20	1.79
21	Cyclohexane		V1		M	110-82-7							120	70	130	20	120				0.1	20	20	1.33
22	1,1,1,-Trichloroethane		V1		M	71-55-6							120	70	130	20	120	50	50	20	0.1	20	20	1.22
23	Dibromofluoromethane(surr)		V1		S		200	200													0	0	0	0
24	Carbon tetrachloride		V1		M	56-23-5							120	70	130	20	120	50	150	20	0.1	20	20	0.93
25	1,1-Dichloropropene		V1		M	563-58-6							120	70	130	20	120	50	150	20	0.1	20	20	1.29
26	Benzene		V1		M	71-43-2							120	70	130	20	120	50	150	20	0.5	20	20	0.93
27	1,2-Dichloroethane		V1		M	75-34-3							120	70	130	20	120	50	150	20	0.1	20	20	0.94
28	1,2-Difluorobenzene (ins)		V1		I																0	0	0	0
29	Methylcyclohexane	*	V1		M	108-87-2							120	70	130	20	120				0.1	20	20	2.05
30	Trichloroethene		V1		M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	3.188
31	1,2-Dichloropropane		V1		M	78-87-5							120	70	130	20	120	50	150	20	0.1	20	20	0.68

Units Possibly ng-on-column

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Method name is different	Fraction	Abbreviation	Type	CAS #	Surrogate Amount Water	Surrogate Amount Soil	Surrogate Limits Water Low	Surrogate Limits Water High	Surrogate Limits Soil Low	Surrogate Limits Soil High	Matrix Spike Amount Water	Matrix Spike Limits Water Low	Matrix Spike Limits Water High	Matrix Spike Limits Water RPD	Matrix Spike Amount Soil	Matrix Spike Limits Soil Low	Matrix Spike Limits Soil High	Matrix Spike Limits Soil RPD	Response Factor Minimum	Response Factor Max RSD	Response Factor Max Dev	MDL On Column
32	4-Methyl-2-pentanone	*	V1		M	108-10-1							120	70	130	20	120				0.1	20	20	4.4
33	Dibromomethane		V1		M	74-95-3							120	70	130	20	120	50	150	20	0.1	20	20	2.38
34	Bromodichloromethane		V1		M	75-27-4							120	70	130	20	120	50	150	20	0.2	20	20	0.98
35	Toluene-d8(surr)		V1		S		200	200													0	0	0	0
36	2-Hexanone		V1		M	591-78-6							120	70	130	20	120				0.1	20	20	3.74
37	Toluene		V1		M	108-88-3							120	70	130	20	120	50	150	20	0.1	20	20	2.54
38	1,1,2-Trichloroethane		V1		M	71-55-6							120	70	130	20	120				0.1	20	20	1.82
39	Tetrachloroethylene		V1		M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	1.88
40	1,3-Dichloropropane		V1		M	142-28-9							120	70	130	20	120				0.1	20	20	2.266
41	Dibromochloromethane		V1		M	124-48-1							120	70	130	20	120				0.1	20	20	1.12
42	1,2-Dibromoethane		V1		M	106-93-4							120	70	130	20	120				0.1	20	20	2.816
43	Chlorobenzene-d5 (ins)		V1		I																0	0	0	0
44	Chlorobenzene		V1		M	108-90-7							120	70	130	20	120				0.5	20	20	1.157
45	Ethylbenzene		V1		M	100-41-4							120	70	130	20	120				0.1	20	20	1.36
46	1,1,1,2-Tetrachloroethane		V1		M	630-20-6							120	70	130	20	120				0.1	20	20	0.918
47	m/p-Xylene		V1		M	106-42-3							120	70	130	20	120				0.1	20	20	1.07
48	o-Xylene		V1		M	95-47-6							120	70	130	20	120				0.3	20	20	2
49	Styrene		V1		M	100-42-5							120	70	130	20	120				0.3	20	20	1.357
50	Bromoform		V1		M	75-25-2							120	70	130	20	120				0.1	20	20	1.45
51	Isopropylbenzene		V1		M	98-82-8							120	70	130	20	120				0.1	20	20	1.818
52	BFB(surr)		V1		S		200	200													0	0	0	0
53	Bromobenzene		V1		M	108-86-1							120	70	130	20	120				0.1	20	20	0.867
54	1,1,2,2-Tetrachloroethane		V1		M	79-34-5							120	70	130	20	120				0.3	20	20	2.31
55	n-Propylbenzene		V1		M	103-65-1							120	70	130	20	120				0.1	20	20	1.94
56	1,2,3-Trichloropropane		V1		M	96-18-4							120	70	130	20	120				0.1	20	20	2.9
57	2-Chlorotoluene		V1		M	95-49-8							120	70	130	20	120				0.1	20	20	4.44
58	1,3,5-Trimethylbenzene		V1		M	108-67-8							120	70	130	20	120				0.1	20	20	1.448
59	4-Chlorotoluene		V1		M	106-43-4							120	70	130	20	120				0.1	20	20	1.245
60	sec-Butylbenzene		V1		M	135-98-8							120	70	130	20	120				0.1	20	20	5.785
61	1,2,4-Trimethylbenzene		V1		M	95-63-6							120	70	130	20	120				0.1	20	20	2.089
62	tert-Butylbenzene		V1		M	98-06-6							120	70	130	20	120				0.1	20	20	2.945

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Fraction				Surrogate						Matrix Spike								Response Factor			MDL
			Abbreviation			Amount						Amount Water				Amount Soil				Minimum			
	Method name is different			Type	CAS #	Water	Soil	Limits Water Low	Limits Water High	Soil Low	Soil High		Limits Water Low	Limits Water High	RPD		Soil Low	Soil High	RPD		Max RSD	Max Dev	On Column
63	1,3-Dichlorobenzene	V1		M	541-73-1							120	70	130	20	120				0.6	20	20	1.972
64	p-Isopropyltoluene	V1		M	49-87-6							120	70	130	20	120				0.1	20	20	5.219
65	1,4-Dichlorobenzene-d4 (ins)	V1		I																0	0	0	0
66	n-Butylbenzene	V1		M	105-51-8							120	70	130	20	120				0.1	20	20	6.609
67	1,4-Dichlorobenzene	V1		M	106-46-7							120	70	130	20	120				0.5	20	20	2.57
68	1,2-Dichlorobenzene	V1		M	95-50-1							120	70	130	20	120				0.4	20	20	1.699
69	1,2-Dibromo-3-chloropropane	V1		M	96-12-8							120	70	130	20	120				0.05	20	20	5.327
70	1,2,4-Trichlorobenzene	V1		M	120-82-1							120	70	130	20	120				0.2	20	20	3.996
71	Hexachlorobutadiene	V1		M	87-68-3							120	70	130	20	120				0.1	20	20	7.14
72	Naphthalene	V1		M	91-20-3							120	70	130	20	120				0.1	20	20	3.33
73	1,2,3-Trichlorobenzene	V1		M	87-61-6							120	70	130	20	120				0.1	20	20	2.79

Header Information Summary for Sample List : VOA_Apr_3_2008_2

Lab Name: DAT Laboratory
Contract: Loureiro Engineerin
Lab Code:
Case No.: Centredale Manor
SAS No.:
Column Ident: RTX-502.2
Column Dia.: 0.53 mm
Instrument: F4500

	Production Run Information			Contract Information							Sample Information										GPC Cleanup	Sulfur Cleanup	
	Lab File ID	Data Path	Date Acquired	Sample No.	Sample ID	Sam. Type	Reference Blank	M	L	F	% Moist	Decanted	Dilution Factor	Ng-Mult Factor	pH	Sampl wt/vol	Heated Purge	Extract Volume	Inj Vol	Date Extracted			Extract Type
1	03060804.D	C:\GALWIN98\DATA\826	03/06/08	VSTD20	CS1_20ng_82	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
2	03060805.D	C:\GALWIN98\DATA\826	03/06/08	VSTD60	CS2_60ng_82	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
3	03060806.D	C:\GALWIN98\DATA\826	03/06/08	VSTD80	CS3_80ng_82	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
4	03060807.D	C:\GALWIN98\DATA\826	03/06/08	VSTD120	CS4_120ng_8	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
5	03060808.D	C:\GALWIN98\DATA\826	03/06/08	VSTD200	CS5_200ng_8	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
6	03060809.D	C:\GALWIN98\DATA\826	03/06/08	VSTD300	CS6_300ng_8	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
7	03060810.D	C:\GALWIN98\DATA\826	03/06/08	VSTD500	CS7_500ng_8	STD		W	L	V	100	N	1	1		1	N	1	1		N	N	
8	03110801.D	C:\GALWIN98\DATA\020	03/11/08	VSTD	CCAL_82608	CCAL		W	L	V	100	N	1	1		1	N	1	1		N	N	
9	03110802.D	C:\GALWIN98\DATA\020	03/11/08	MBLK2	INS._BLANK	MBLK		W	L	V	100	N	1	1		1	N	1	1		N	N	
10	03110803.D	C:\GALWIN98\DATA\020	03/11/08	1316059	0208030-20 1	SMP	03110802.D	W	L	V	100	N	1	1		0.1	N	1	1		N	N	
11	03110804.D	C:\GALWIN98\DATA\020	03/11/08	057	0208030-2 1.0	SMP	03110802.D	W	L	V	100	N	1	1		0.001	N	1	1		N	N	
12	03110805.D	C:\GALWIN98\DATA\020	03/11/08	1316057MS	0208030-2 1.0	SMP	03110802.D	W	L	V	100	N	1	1		1	N	1	1		N	N	
13	03110806.D	C:\GALWIN98\DATA\020	03/11/08	057MSD	0208030-2 1.0	MSD	03110802.D	W	L	V	100	N	1	1		1	N	1	1		N	N	
14	03110807.D	C:\GALWIN98\DATA\020	03/11/08	BSPK	0208030-LS	SMP	03110802.D	W	L	V	100	N	1	1		1	N	1	1		N	N	
15	03110808.D	C:\GALWIN98\DATA\020	03/11/08	057MS	0208030-2 1.0	MS	03110802.D	W	L	V	100	N	1	1		1	N	1	1		N	N	

Does not match
Header as reported
forms – Does not match
actual Dfs and purge volumes

SDG Sequence Summary

Instrument Name: F4500

Sample List Name: VOA_Apr_3_2008_2

	Continuing Calibration/Tune			Calibration	Sample	Ref. Blank	Misc.	Acquisition	
	Date	Time	File Name	File Name	File Name	File Name		Date	Time
1				03060804.D			STD	3/6/08	19:20
2				03060805.D			STD	3/6/08	19:59
3				03060806.D			STD	3/6/08	20:38
4				03060807.D			STD	3/6/08	21:17
5				03060808.D			STD	3/6/08	21:56
6				03060809.D			STD	3/6/08	22:35
7				03060810.D			STD	3/6/08	23:14
8	3/11/08	7:45	03110801.D				CCAL	3/11/08	7:45
9					03110802.D		MBLK	3/11/08	10:04
10					03110803.D	03110802.D	SMP	3/11/08	11:04
11					03110804.D	03110802.D	SMP	3/11/08	11:53
12					03110805.D	03110802.D	SMP	3/11/08	12:35
13					03110806.D	03110802.D	MSD	3/11/08	13:29
14					03110807.D	03110802.D	SMP	3/11/08	14:05
15					03110808.D	03110802.D	MS	3/11/08	16:04

t - Sample acquisition time exceeds 12 hours since last Continuing Calibration

Sample List for Group VOA_Apr_3_2008

Printing Date 4/7/2008 4:41:23 PM

Lab File ID	SAMPLE NO.	Lab Sample ID	Date Acq.	Date Rec.	Date Due
03060804.D	VSTD	CS1_20ng_82608003	03/06/08 19:20	02/28/08	
03060805.D	VSTD	CS2_60ng_82608003	03/06/08 19:59	02/28/08	
03060806.D	VSTD	CS3_80ng_82608003	03/06/08 20:38	02/28/08	
03060807.D	VSTD	CS4_120ng_8260800	03/06/08 21:17	02/28/08	
03060808.D	VSTD	CS5_200ng_8260800	03/06/08 21:56	02/28/08	
03060809.D	VSTD	CS6_300ng_8260800	03/06/08 22:35	02/28/08	
03060810.D	VSTD	CS7_500ng_8260800	03/06/08 23:14	02/28/08	
03100814.D	VSTD	CCAL._82608003C03	03/10/08 19:52	02/28/08	
03100815.D	IBLK2	INS._BLANK	03/10/08 20:31	02/28/08	
03100816.D	1316074	0208030-7 10uL	03/10/08 21:01	02/28/08	
03100817.D	1316060	0208030-18 10uL	03/10/08 21:33	02/28/08	
03100818.D	057	0208030-2 10uL	03/10/08 22:08	02/28/08	
03100820.D	1316058	0208030-5 10uL	03/10/08 23:06	02/28/08	
03100821.D	057MS	0208030-2 ms 1.0uL	03/10/08 23:44	02/28/08	
03100822.D	1316057MSD	0208030-2 msd 1.0uL	03/11/08 00:20	02/28/08	
03100823.D	057MSD	0208030-2 msd 1.0uL	03/11/08 00:55	02/28/08	
03100824.D	BSPK1	0208030-LS	03/11/08 01:30	02/28/08	

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Fraction				Surrogate						Matrix Spike								Response Factor			MDL
			Abbreviation			Amount						Amount Water				Amount Soil							
	Method name is different			Type	CAS #	Water	Soil	Limits Water Low	Limits Water High	Limits Soil Low	Limits Soil High		Limits Water Low	Limits Water High	Limits Water RPD		Limits Soil Low	Limits Soil High	Limits Soil RPD	Minimum	Max RSD	Max Dev	On Column
1	Benzene, pentafluoro- (ins)	V1		I																0	0	0	0
2	Dichlorodifluoromethane	V1		M	75-71-8							120	70	80	30	120				0.1	20	20	2.74
3	Chloromethane	V1		M	74-87-3							120	70	130	20	120				0.1	10	20	4.29
4	Vinyl chloride	V1		M	75-01-4							120	70	130	20	120				0.1	20	20	1.04
5	Bromomethane	V1		M	74-83-9							120	70	130	20	120				0.1	20	20	3.68
6	Chloroethane	V1		M	75-00-3							120	70	130	20	120				0.1	20	20	1.17
7	Trichlorofluoromethane	V1		M	75-69-4							120	70	130	20	120				0.1	20	20	2.1
8	1,1-Dichloroethene	V1		M	75-35-4							120	70	130	20	120				0.1	20	20	2.23
9	Acetone	V1		M	67-64-1							120	70	130	20	120				0.1	20	20	14.48
10	Methyl Acetate	V1		M	79-20-9							120	70	130	20	120	70	130	20	0.1	20	20	4.66
11	Carbon disulfide	V1		M	75-15-0							120	70	130	20	120	50	150	20	0.1	20	20	0.52
12	Methyl Tert-butyl ether *	V1		M	1634-04-4							120	70	130	20	120	50	150	20	0.1	20	20	1.37
13	Methylene Chloride	V1		M	75-09-2							120	70	130	20	120	50	150	20	0.1	20	20	3.6
14	Trans-1,2-dichloroethene	V1		M	156-60-5							120	70	130	20	120	50	150	20	0.1	20	20	0.8
15	1,1-Dichloroethane	V1		M	75-34-3							120	70	130	20	120	50	150	20	0.2	20	20	0.72
16	2-Butanone	V1		M	78-93-3							120	70	130	20	120				0.1	20	20	5.07
17	Propane, 2,2-dichloro-	V1		M	594-20-7							120	70	130	20	120	50	150	20	0.1	20	20	1.8
18	cis-1,2-Dichloroethene	V1		M	540-59-0							120	70	130	20	120	50	150	20	0.1	20	20	1.01
19	Chloroform	V1		M	67-66-3							120	70	130	20	120	50	150	20	0.2	20	20	1.1
20	Bromochloromethane *	V1		M	74-97-5							120	70	130	20	120	50	150	20	0.1	20	20	1.79
21	Cyclohexane	V1		M	110-82-7							120	70	130	20	120				0.1	20	20	1.33
22	1,1,1,-Trichloroethane	V1		M	71-55-6							120	70	130	20	120	50	50	20	0.1	20	20	1.22
23	Dibromofluoromethane(surr)	V1		S		200	200													0	0	0	0
24	Carbon tetrachloride	V1		M	56-23-5							120	70	130	20	120	50	150	20	0.1	20	20	0.93
25	1,1-Dichloropropene	V1		M	563-58-6							120	70	130	20	120	50	150	20	0.1	20	20	1.29
26	Benzene	V1		M	71-43-2							120	70	130	20	120	50	150	20	0.5	20	20	0.93
27	1,2-Dichloroethane	V1		M	75-34-3							120	70	130	20	120	50	150	20	0.1	20	20	0.94
28	1,2-Difluorobenzene (ins)	V1		I																0	0	0	0
29	Methylcyclohexane *	V1		M	108-87-2							120	70	130	20	120				0.1	20	20	2.05
30	Trichloroethene	V1		M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	3.188
31	1,2-Dichloropropane	V1		M	78-87-5							120	70	130	20	120	50	150	20	0.1	20	20	0.68

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Method name is different	Fraction Abbreviation	Type	CAS #	Surrogate Amount Water	Surrogate Amount Soil	Surrogate Limits Water Low	Surrogate Limits Water High	Surrogate Limits Soil Low	Surrogate Limits Soil High	Matrix Spike Amount Water	Matrix Spike Limits Water Low	Matrix Spike Limits Water High	Matrix Spike Limits Water RPD	Matrix Spike Amount Soil	Matrix Spike Limits Soil Low	Matrix Spike Limits Soil High	Matrix Spike Limits Soil RPD	Response Factor Minimum	Response Factor Max RSD Max Dev		MDL On Column
32	4-Methyl-2-pentanone	*	V1	M	108-10-1							120	70	130	20	120				0.1	20	20	4.4
33	Dibromomethane		V1	M	74-95-3							120	70	130	20	120	50	150	20	0.1	20	20	2.38
34	Bromodichloromethane		V1	M	75-27-4							120	70	130	20	120	50	150	20	0.2	20	20	0.98
35	Toluene-d8(surr)		V1	S		200	200													0	0	0	0
36	2-Hexanone		V1	M	591-78-6							120	70	130	20	120				0.1	20	20	3.74
37	Toluene		V1	M	108-88-3							120	70	130	20	120	50	150	20	0.1	20	20	2.54
38	1,1,2-Trichloroethane		V1	M	71-55-6							120	70	130	20	120				0.1	20	20	1.82
39	Tetrachloroethylene		V1	M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	1.88
40	1,3-Dichloropropane		V1	M	142-28-9							120	70	130	20	120				0.1	20	20	2.266
41	Dibromochloromethane		V1	M	124-48-1							120	70	130	20	120				0.1	20	20	1.12
42	1,2-Dibromoethane		V1	M	106-93-4							120	70	130	20	120				0.1	20	20	2.816
43	Chlorobenzene-d5 (ins)		V1	I																0	0	0	0
44	Chlorobenzene		V1	M	108-90-7							120	70	130	20	120				0.5	20	20	1.157
45	Ethylbenzene		V1	M	100-41-4							120	70	130	20	120				0.1	20	20	1.36
46	1,1,1,2-Tetrachloroethane		V1	M	630-20-6							120	70	130	20	120				0.1	20	20	0.918
47	m/p-Xylene		V1	M	106-42-3							120	70	130	20	120				0.1	20	20	1.07
48	o-Xylene		V1	M	95-47-6							120	70	130	20	120				0.3	20	20	2
49	Styrene		V1	M	100-42-5							120	70	130	20	120				0.3	20	20	1.357
50	Bromoform		V1	M	75-25-2							120	70	130	20	120				0.1	20	20	1.45
51	Isopropylbenzene		V1	M	98-82-8							120	70	130	20	120				0.1	20	20	1.818
52	BFB(surr)		V1	S		200	200													0	0	0	0
53	Bromobenzene		V1	M	108-86-1							120	70	130	20	120				0.1	20	20	0.867
54	1,1,2,2-Tetrachloroethane		V1	M	79-34-5							120	70	130	20	120				0.3	20	20	2.31
55	n-Propylbenzene		V1	M	103-65-1							120	70	130	20	120				0.1	20	20	1.94
56	1,2,3-Trichloropropane		V1	M	96-18-4							120	70	130	20	120				0.1	20	20	2.9
57	2-Chlorotoluene		V1	M	95-49-8							120	70	130	20	120				0.1	20	20	4.44
58	1,3,5-Trimethylbenzene		V1	M	108-67-8							120	70	130	20	120				0.1	20	20	1.448
59	4-Chlorotoluene		V1	M	106-43-4							120	70	130	20	120				0.1	20	20	1.245
60	sec-Butylbenzene		V1	M	135-98-8							120	70	130	20	120				0.1	20	20	5.785
61	1,2,4-Trimethylbenzene		V1	M	95-63-6							120	70	130	20	120				0.1	20	20	2.089
62	tert-Butylbenzene		V1	M	98-06-6							120	70	130	20	120				0.1	20	20	2.945

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Fraction				Surrogate						Matrix Spike								Response Factor			MDL
			Abbreviation			Amount						Amount Water				Amount Soil							
	Method name is different			Type	CAS #	Water	Soil	Limits Water Low	Limits Water High	Limits Soil Low	Limits Soil High		Limits Water Low	Limits Water High	RPD		Limits Soil Low	Limits Soil High	RPD	Minimum	Max RSD	Max Dev	On Column
63	1,3-Dichlorobenzene	V1		M	541-73-1							120	70	130	20	120				0.6	20	20	1.972
64	p-Isopropyltoluene	V1		M	49-87-6							120	70	130	20	120				0.1	20	20	5.219
65	1,4-Dichlorobenzene-d4 (ins)	V1		I																0	0	0	0
66	n-Butylbenzene	V1		M	105-51-8							120	70	130	20	120				0.1	20	20	6.609
67	1,4-Dichlorobenzene	V1		M	106-46-7							120	70	130	20	120				0.5	20	20	2.57
68	1,2-Dichlorobenzene	V1		M	95-50-1							120	70	130	20	120				0.4	20	20	1.699
69	1,2-Dibromo-3-chloropropane	V1		M	96-12-8							120	70	130	20	120				0.05	20	20	5.327
70	1,2,4-Trichlorobenzene	V1		M	120-82-1							120	70	130	20	120				0.2	20	20	3.996
71	Hexachlorobutadiene	V1		M	87-68-3							120	70	130	20	120				0.1	20	20	7.14
72	Naphthalene	V1		M	91-20-3							120	70	130	20	120				0.1	20	20	3.33
73	1,2,3-Trichlorobenzene	V1		M	87-61-6							120	70	130	20	120				0.1	20	20	2.79

Header Information Summary for Sample List : VOA_Apr_3_2008

Lab Name: DAT Laboratory
Contract: Loureiro Engineerin
Lab Code:
Case No.: Centredale Manor
SAS No.:
Column Ident: RTX-502.2
Column Dia.: 0.53 mm
Instrument: F4500

	Production Run Information			Contract Information							Sample Information										GPC Cleanup	Sulfur Cleanup	
	Lab File ID	Data Path	Date Acquired	Sample No.	Sample ID	Sam. Type	Reference Blank	M	L	F	% Moist	Decanted	Dilution Factor	Ng-Mult Factor	pH	Sampl wt/vol	Heated Purge	Extract Volume	Inj Vol	Date Extracted			Extract Type
1	03060804.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS1_20ng_82	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
2	03060805.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS2_60ng_82	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
3	03060806.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS3_80ng_82	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
4	03060807.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS4_120ng_8	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
5	03060808.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS5_200ng_8	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
6	03060809.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS6_300ng_8	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
7	03060810.D	C:\GALWIN98\DATA\826	03/06/08	VSTD	CS7_500ng_8	STD		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
8	03100814.D	C:\GALWIN98\DATA\020	03/10/08	VSTD	CCAL._82608	CCAL		W	L	V	100	N	1	1		1	N	1	1		N	N	
9	03100815.D	C:\GALWIN98\DATA\020	03/10/08	IBLK2	INS._BLANK	MBLK		W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
10	03100816.D	C:\GALWIN98\DATA\020	03/10/08	1316074	0208030-7 10	SMP	03100815.D	W	L	V	100	N	1	1		0.01	N	1	1	3/10/2008	N	N	
11	03100817.D	C:\GALWIN98\DATA\020	03/10/08	1316060	0208030-18 1	SMP	03100815.D	W	L	V	100	N	1	1		0.01	N	1	1	3/10/2008	N	N	
12	03100818.D	C:\GALWIN98\DATA\020	03/10/08	057	0208030-2 10	SMP	03100815.D	W	L	V	100	N	1	1		0.01	N	1	1	3/10/2008	N	N	
13	03100820.D	C:\GALWIN98\DATA\020	03/10/08	1316058	0208030-5 10	SMP	03100815.D	W	L	V	100	N	1	1		0.01	N	1	1	3/10/2008	N	N	
14	03100821.D	C:\GALWIN98\DATA\020	03/10/08	057MS	0208030-2 ms	MS	03100815.D	W	L	V	100	N	1	1		1	N	1	1	3/10/2008	N	N	
15	03100822.D	C:\GALWIN98\DATA\020	03/11/08	1316057MSD	0208030-2 ms	SMP	03100815.D	W	L	V	100	N	1	1		1	N	1	1	3/11/2008	N	N	
16	03100823.D	C:\GALWIN98\DATA\020	03/11/08	057MSD	0208030-2 ms	MSD	03100815.D	W	L	V	100	N	1	1		1	N	1	1	3/11/2008	N	N	
17	03100824.D	C:\GALWIN98\DATA\020	03/11/08	BSPK1	0208030-LS	SMP	03100815.D	W	L	V	100	N	1	1		1	N	1	1	3/11/2008	N	N	

SDG Sequence Summary

Instrument Name: F4500

Sample List Name: VOA_Apr_3_2008

	Continuing Calibration/Tune			Calibration	Sample	Ref. Blank	Misc.	Acquisition	
	Date	Time	File Name	File Name	File Name	File Name		Date	Time
1				03060804.D			STD	3/6/08	19:20
2				03060805.D			STD	3/6/08	19:59
3				03060806.D			STD	3/6/08	20:38
4				03060807.D			STD	3/6/08	21:17
5				03060808.D			STD	3/6/08	21:56
6				03060809.D			STD	3/6/08	22:35
7				03060810.D			STD	3/6/08	23:14
8	3/10/08	19:52	03100814.D				CCAL	3/10/08	19:52
9					03100815.D		MBLK	3/10/08	20:31
10					03100816.D	03100815.D	SMP	3/10/08	21:01
11					03100817.D	03100815.D	SMP	3/10/08	21:33
12					03100818.D	03100815.D	SMP	3/10/08	22:08
13					03100820.D	03100815.D	SMP	3/10/08	23:06
14					03100821.D	03100815.D	MS	3/10/08	23:44
15					03100822.D	03100815.D	SMP	3/11/08	0:20
16					03100823.D	03100815.D	MSD	3/11/08	0:55
17					03100824.D	03100815.D	SMP	3/11/08	1:30

t - Sample acquisition time exceeds 12 hours since last Continuing Calibration

Sample List for Group VOA_Apr_1_2008

Printing Date 4/7/2008 4:31:04 PM

Lab File ID	SAMPLE NO.	Lab Sample ID	Date Acq.	Date Rec.	Date Due
03060804.D	VSTD	CS1_20ng_82608003	03/06/08 19:20		
03060805.D	VSTD	CS2_60ng_82608003	03/06/08 19:59		
03060806.D	VSTD	CS3_80ng_82608003	03/06/08 20:38		
03060807.D	VSTD	CS4_120ng_8260800	03/06/08 21:17		
03060808.D	VSTD	CS5_200ng_8260800	03/06/08 21:56		
03060809.D	VSTD	CS6_300ng_8260800	03/06/08 22:35		
03060810.D	VSTD	CS7_500ng_8260800	03/06/08 23:14		
03100801.D	VTUN	CCAL_82608003C02	03/10/08 08:22		
03100802.D	CVER1	CCAL_82608003C02	03/10/08 09:28	02/28/08	
03100808.D	IBLK1	INS._BLANK 3/10/08	03/10/08 15:52		
03100809.D	1316063	0208030-4a 5.0mL	03/10/08 16:58	02/28/08	
03100810.D	1316075	0208030-16a 5.0mL	03/10/08 17:33	02/28/08	
03100811.D	1316059	0208030-20 5.0mL	03/10/08 18:09	02/28/08	
03100812.D	1316058	0208030-5 100uL	03/10/08 18:44	02/28/08	
03100813.D	1316061	0208030-6 10uL	03/10/08 19:19	02/28/08	

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Method name is different	Fraction Abbreviation	Fraction Type	CAS #	Surrogate Amount Water	Surrogate Amount Soil	Surrogate Limits Water Low	Surrogate Limits Water High	Surrogate Limits Soil Low	Surrogate Limits Soil High	Matrix Spike Amount Water	Matrix Spike Limits Water Low	Matrix Spike Limits Water High	Matrix Spike Limits Water RPD	Matrix Spike Amount Soil	Matrix Spike Limits Soil Low	Matrix Spike Limits Soil High	Matrix Spike Limits Soil RPD	Response Factor Minimum	Response Factor Max RSD	Response Factor Max Dev	MDL On Column
1	Benzene, pentafluoro- (ins)		V1	I																0	0	0	0
2	Dichlorodifluoromethane		V1	M	75-71-8							120	70	80	30	120				0.1	20	20	2.74
3	Chloromethane		V1	M	74-87-3							120	70	130	20	120				0.1	10	20	4.29
4	Vinyl chloride		V1	M	75-01-4							120	70	130	20	120				0.1	20	20	1.04
5	Bromomethane		V1	M	74-83-9							120	70	130	20	120				0.1	20	20	3.68
6	Chloroethane		V1	M	75-00-3							120	70	130	20	120				0.1	20	20	1.17
7	Trichlorofluoromethane		V1	M	75-69-4							120	70	130	20	120				0.1	20	20	2.1
8	1,1-Dichloroethene		V1	M	75-35-4							120	70	130	20	120				0.1	20	20	2.23
9	Acetone		V1	M	67-64-1							120	70	130	20	120				0.1	20	20	14.48
10	Methyl Acetate		V1	M	79-20-9							120	70	130	20	120	70	130	20	0.1	20	20	4.66
11	Carbon disulfide		V1	M	75-15-0							120	70	130	20	120	50	150	20	0.1	20	20	0.52
12	Methyl Tert-butyl ether	*	V1	M	1634-04-4							120	70	130	20	120	50	150	20	0.1	20	20	1.37
13	Methylene Chloride		V1	M	75-09-2							120	70	130	20	120	50	150	20	0.1	20	20	3.6
14	Trans-1,2-dichloroethene		V1	M	156-60-5							120	70	130	20	120	50	150	20	0.1	20	20	0.8
15	1,1-Dichloroethane		V1	M	75-34-3							120	70	130	20	120	50	150	20	0.2	20	20	0.72
16	2-Butanone		V1	M	78-93-3							120	70	130	20	120				0.1	20	20	5.07
17	Propane, 2,2-dichloro-		V1	M	594-20-7							120	70	130	20	120	50	150	20	0.1	20	20	1.8
18	cis-1,2-Dichloroethene		V1	M	540-59-0							120	70	130	20	120	50	150	20	0.1	20	20	1.01
19	Chloroform		V1	M	67-66-3							120	70	130	20	120	50	150	20	0.2	20	20	1.1
20	Bromochloromethane	*	V1	M	74-97-5							120	70	130	20	120	50	150	20	0.1	20	20	1.79
21	Cyclohexane		V1	M	110-82-7							120	70	130	20	120				0.1	20	20	1.33
22	1,1,1,-Trichloroethane		V1	M	71-55-6							120	70	130	20	120	50	50	20	0.1	20	20	1.22
23	Dibromofluoromethane(surr)		V1	S		200	200													0	0	0	0
24	Carbon tetrachloride		V1	M	56-23-5							120	70	130	20	120	50	150	20	0.1	20	20	0.93
25	1,1-Dichloropropene		V1	M	563-58-6							120	70	130	20	120	50	150	20	0.1	20	20	1.29
26	Benzene		V1	M	71-43-2							120	70	130	20	120	50	150	20	0.5	20	20	0.93
27	1,2-Dichloroethane		V1	M	75-34-3							120	70	130	20	120	50	150	20	0.1	20	20	0.94
28	1,2-Difluorobenzene (ins)		V1	I																0	0	0	0
29	Methylcyclohexane	*	V1	M	108-87-2							120	70	130	20	120				0.1	20	20	2.05
30	Trichloroethene		V1	M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	3.188
31	1,2-Dichloropropane		V1	M	78-87-5							120	70	130	20	120	50	150	20	0.1	20	20	0.68

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Method name is different	Fraction Abbreviation	Type	CAS #	Surrogate Amount Water	Surrogate Amount Soil	Surrogate Limits Water Low	Surrogate Limits Water High	Surrogate Limits Soil Low	Surrogate Limits Soil High	Matrix Spike Amount Water	Matrix Spike Limits Water Low	Matrix Spike Limits Water High	Matrix Spike Limits Water RPD	Matrix Spike Amount Soil	Matrix Spike Limits Soil Low	Matrix Spike Limits Soil High	Matrix Spike Limits Soil RPD	Response Factor Minimum	Response Factor Max RSD	Response Factor Max Dev	MDL On Column
32	4-Methyl-2-pentanone	*	V1	M	108-10-1							120	70	130	20	120				0.1	20	20	4.4
33	Dibromomethane		V1	M	74-95-3							120	70	130	20	120	50	150	20	0.1	20	20	2.38
34	Bromodichloromethane		V1	M	75-27-4							120	70	130	20	120	50	150	20	0.2	20	20	0.98
35	Toluene-d8(surr)		V1	S		200	200													0	0	0	0
36	2-Hexanone		V1	M	591-78-6							120	70	130	20	120				0.1	20	20	3.74
37	Toluene		V1	M	108-88-3							120	70	130	20	120	50	150	20	0.1	20	20	2.54
38	1,1,2-Trichloroethane		V1	M	71-55-6							120	70	130	20	120				0.1	20	20	1.82
39	Tetrachloroethylene		V1	M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	1.88
40	1,3-Dichloropropane		V1	M	142-28-9							120	70	130	20	120				0.1	20	20	2.266
41	Dibromochloromethane		V1	M	124-48-1							120	70	130	20	120				0.1	20	20	1.12
42	1,2-Dibromoethane		V1	M	106-93-4							120	70	130	20	120				0.1	20	20	2.816
43	Chlorobenzene-d5 (ins)		V1	I																0	0	0	0
44	Chlorobenzene		V1	M	108-90-7							120	70	130	20	120				0.5	20	20	1.157
45	Ethylbenzene		V1	M	100-41-4							120	70	130	20	120				0.1	20	20	1.36
46	1,1,1,2-Tetrachloroethane		V1	M	630-20-6							120	70	130	20	120				0.1	20	20	0.918
47	m/p-Xylene		V1	M	106-42-3							120	70	130	20	120				0.1	20	20	1.07
48	o-Xylene		V1	M	95-47-6							120	70	130	20	120				0.3	20	20	2
49	Styrene		V1	M	100-42-5							120	70	130	20	120				0.3	20	20	1.357
50	Bromoform		V1	M	75-25-2							120	70	130	20	120				0.1	20	20	1.45
51	Isopropylbenzene		V1	M	98-82-8							120	70	130	20	120				0.1	20	20	1.818
52	BFB(surr)		V1	S		200	200													0	0	0	0
53	Bromobenzene		V1	M	108-86-1							120	70	130	20	120				0.1	20	20	0.867
54	1,1,2,2-Tetrachloroethane		V1	M	79-34-5							120	70	130	20	120				0.3	20	20	2.31
55	n-Propylbenzene		V1	M	103-65-1							120	70	130	20	120				0.1	20	20	1.94
56	1,2,3-Trichloropropane		V1	M	96-18-4							120	70	130	20	120				0.1	20	20	2.9
57	2-Chlorotoluene		V1	M	95-49-8							120	70	130	20	120				0.1	20	20	4.44
58	1,3,5-Trimethylbenzene		V1	M	108-67-8							120	70	130	20	120				0.1	20	20	1.448
59	4-Chlorotoluene		V1	M	106-43-4							120	70	130	20	120				0.1	20	20	1.245
60	sec-Butylbenzene		V1	M	135-98-8							120	70	130	20	120				0.1	20	20	5.785
61	1,2,4-Trimethylbenzene		V1	M	95-63-6							120	70	130	20	120				0.1	20	20	2.089
62	tert-Butylbenzene		V1	M	98-06-6							120	70	130	20	120				0.1	20	20	2.945

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Fraction				Surrogate						Matrix Spike								Response Factor			MDL
	Method name is different		Abbreviation	Type	CAS #	Amount Water	Amount Soil	Limits Water Low	Limits Water High	Limits Soil Low	Limits Soil High	Amount Water	Limits Water Low	Limits Water High	Limits Water RPD	Amount Soil	Limits Soil Low	Limits Soil High	Limits Soil RPD	Minimum	Max RSD Max Dev		On Column
63	1,3-Dichlorobenzene	V1		M	541-73-1							120	70	130	20	120				0.6	20	20	1.972
64	p-Isopropyltoluene	V1		M	49-87-6							120	70	130	20	120				0.1	20	20	5.219
65	1,4-Dichlorobenzene-d4 (ins)	V1		I																0	0	0	0
66	n-Butylbenzene	V1		M	105-51-8							120	70	130	20	120				0.1	20	20	6.609
67	1,4-Dichlorobenzene	V1		M	106-46-7							120	70	130	20	120				0.5	20	20	2.57
68	1,2-Dichlorobenzene	V1		M	95-50-1							120	70	130	20	120				0.4	20	20	1.699
69	1,2-Dibromo-3-chloropropane	V1		M	96-12-8							120	70	130	20	120				0.05	20	20	5.327
70	1,2,4-Trichlorobenzene	V1		M	120-82-1							120	70	130	20	120				0.2	20	20	3.996
71	Hexachlorobutadiene	V1		M	87-68-3							120	70	130	20	120				0.1	20	20	7.14
72	Naphthalene	V1		M	91-20-3							120	70	130	20	120				0.1	20	20	3.33
73	1,2,3-Trichlorobenzene	V1		M	87-61-6							120	70	130	20	120				0.1	20	20	2.79

Sample List for Group VOA_Apr_1_2008

Printing Date 4/7/2008 4:31:04 PM

Lab File ID	SAMPLE NO.	Lab Sample ID	Date Acq.	Date Rec.	Date Due
03060804.D	VSTD	CS1_20ng_82608003	03/06/08 19:20		
03060805.D	VSTD	CS2_60ng_82608003	03/06/08 19:59		
03060806.D	VSTD	CS3_80ng_82608003	03/06/08 20:38		
03060807.D	VSTD	CS4_120ng_8260800	03/06/08 21:17		
03060808.D	VSTD	CS5_200ng_8260800	03/06/08 21:56		
03060809.D	VSTD	CS6_300ng_8260800	03/06/08 22:35		
03060810.D	VSTD	CS7_500ng_8260800	03/06/08 23:14		
03100801.D	VTUN	CCAL_82608003C02	03/10/08 08:22		
03100802.D	CVER1	CCAL_82608003C02	03/10/08 09:28	02/28/08	
03100808.D	IBLK1	INS._BLANK 3/10/08	03/10/08 15:52		
03100809.D	1316063	0208030-4a 5.0mL	03/10/08 16:58	02/28/08	
03100810.D	1316075	0208030-16a 5.0mL	03/10/08 17:33	02/28/08	
03100811.D	1316059	0208030-20 5.0mL	03/10/08 18:09	02/28/08	
03100812.D	1316058	0208030-5 100uL	03/10/08 18:44	02/28/08	
03100813.D	1316061	0208030-6 10uL	03/10/08 19:19	02/28/08	

Actual purge volume

RUN LOG

lab (6)

Resubmitted

Tekmar ALS 2016

Log showing Check of PH < 2

Purge Method: 7

Analyst	Run #	Sample	Date	Vol.	Position	Notes
CST	1	CCal 8260800302	3/10/08	5.0mL	5	
CST	6	Ins. Blank	3/10/08	5.0mL	2	#6 of 6 Blanks Run after CCal. due to prev. Run ↑ level Sample
CST	7	0208030-4B CST	3/10/08	5.0mL	6	pH<1
CST	8	0208030-16	3/10/08	5.0mL	7	pH<1
CST	9	0208030-~~B~~20	3/10/08	5.0mL	8	↑ level Tetrachloroethylene @ 3.6ng Trichloroethene @ 2.3ng pH<1
CST	10	0208030-5A	3/10/08	100µL	9	50X D.I. ↑ level Trichloroethene 2.3ng pH<1
CST	~~6~~ 11	0208030-6	3/10/08	10µL	10	500X D.I cis-Dichloroethene LOT @ 15ng pH<1
CST	~~12~~ 12	~~0208~~ CCal 8260800303	3/10/08	5.0mL	5	
CST	13	Ins. Blank	3/10/08	5.0mL	2	
CST	14	0208030-7	3/10/08	10µL	11	500X D.I pH<1
CST	15	0208030-18	3/10/08	10µL	12	500X D.I pH<1
CST	16	0208030-2	3/10/08	10µL	13	500X D.I pH<1 Tetrachloroethylene @ 2.3ng
CST	17	0208030-20	3/10/08	100µL	14	Miss Injection Grabed pH<1

CS

DATFRM1077

000009 00100

lab ①

RUN LOG

Tekmar ALS 2016

Purge Method: 1

Analyst	Run #	Sample	Date	Vol.	Position	Notes
BST	1	CCal. 8260803C01	3/7/08	5.0mL	13 ~~1~~	
"	2	Ins. Blank	3/7/08	5.0	1	
"	3	Ins. Blank	3/7/08	5.0	2	
"	4	0208030-4A	3/7/08	5.0	~~4~~ 5	pH<1
"	5	0208030-16A	3/7/08	5.0	~~10~~ 6	pH<1
"	6	0208030-5A	3/7/08	5.0	~~11~~ 7	pH<1
"	7	0208030-~~16~~6A	3/7/08	5.0	~~12~~ 8	pH<1
"	8	0208030-~~16~~7A	3/7/08	5.0	~~13~~ ~~14~~ 9	pH<1
"	9	0208030-18A	3/7/08	5.0	~~14~~ ~~15~~ 10	pH<1
"	10	0208030-20A	3/7/08	5.0	~~15~~ ~~16~~ 11	pH<1
"	11	0208030-~~2~~S2A	3/7/08	5.0	12	12 pH<1
"	12	0208030-2mS	3/7/08	5.0	14	5.2 @ 6µL SL-29-74 (20%)
"	13	0208030-2mSD	3/7/08	5.0	15	↓
"	14	0208030-LS	3/7/08	5.0	16	

(8)

DATFRM1077

EPA – 8260C

NARRATIVE

VOC Analysis for
Samples #1316057, 1316060, ~~1316068~~ 1316058d1, 1316074

not labeled as 68 in package

April 8, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

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SECTION 4

PROJECT CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD

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"Analytical Laboratories and Consultants"

SERIAL № 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cranbrook Manor	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wisbane, Jerry Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lorraine Engineering Assoc.	David Sirotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER), SOLID OR SEMISOLID, AIR, NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: VOCs (8260B), Dissolved Gases (RSK 175)

PAGE 1 OF

☑ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/08	1305		1316057	✓				(3) 1 L Ambers, (9) VOAs	Matrix Spike/MSD/pl.
2/25/08	1305		1316057 uf	✓				(3) 1 L Ambers	
2/25/08	1120		1316063	✓				(1) VOA	
2/25/08	1340		1316058	✓				(3) VOA	
2/25/08	1340		1316061	✓				(3) VOA	
2/25/08	1255		1316059	✓				(3) VOA	
2/25/08	1125		1316062	✓				(1) 1 L	
2/25/08	1125		1316062 uf	✓				(1) 1 L	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Wisbane (under custody seal)	2/25/08	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
J. Clevenger	2/26/08	0900	☐ YES ☐ NO		02080030	6.9°C 1316057 VOA - 1 cracked in bottom

3

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"Analytical Laboratories and Consultants"

SERIAL № 27724

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cutler's Mill	15RF601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Winbourne / Jason Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lenzo Engineering Assoc.	David Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 Northwest Dr., Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC.)

REQUIRED ANALYSIS: Diesel Range (8290) / VOCs (8260B)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ETC.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/20/08	1340		1316058	✓				(1) 1L Amber					
	1340		1316058uf	✓				(1) 1L Amber					
	1340		1316061	✓				(1) 1L Amber					
	1340		1316061uf	✓				(1) 1L Amber					
	1255		1316074	✓				(1) 1L Amber					
	1255		1316074uf	✓				(1) 1L Amber					
	1500		1316075	✓				(1) VOA					
	1540		1316060	✓				(3) VOAs, (1) 1L Amber					
	1540		1316060uf	✓				(1) 1L Amber					
2/25/08	1615		1316059	✓				(3) VOAs					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
(under custody seal)	2/26/08	1600						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
J. Clement	2/26/08	0900	☐ YES ☐ NO		0208050	6.9°C 1316057 VOA 1 cracked on bottom

Page 10 of 105

2

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Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL № 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centredale Manor	15RPG01	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wilbur / Jean Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Loureiro Engineering	Dave Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS WATER / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC.)

REQUIRED ANALYSIS: Dioxins (1613B)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS WATER	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/25/08	1540		1316060	✓				(1) 1L Amber					
↓	1540		1316060uf	✓				(1) 1L Amber					
	1615		1316059	✓				(1) 1L Amber					
2/25/08	1615		1316059uf	✓				(1) 1L Amber					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Wilbur (with custody seal)	2/25/08	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
J. Clement	2/26/08	0900	☐ YES ☐ NO		020030	6.9°C 1316059 VOA 1 cracked on bottom

Page 11 of 103

DAT®

Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL NO. 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE / FAX
[illegible]	[illegible]	[illegible] / [illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible] / PRESERVATIVE

PAGE 1 OF

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
[illegible]	[illegible]		[illegible]	✓				HOLD (9) VOAs					[illegible]
[illegible]	[illegible]		[illegible]	✓				(2) [illegible]					TIER III
[illegible]	[illegible]		[illegible]	✓				(3) VOA					LABORATORY
[illegible]	[illegible]		[illegible]	✓				(3) VOA					DATA PACKAGE
[illegible]	[illegible]		[illegible]	✓				(3) VOA					
[illegible]	[illegible]		[illegible]	✓				(3) VOA					Hard Copy
[illegible]	[illegible]		[illegible]	✓				(1) EC HOLD					+ EDD Per
[illegible]	[illegible]		[illegible]	✓				(1) TL					SUB AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	[illegible]						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

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"Analytical Laboratories and Consultants"

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE
RI	[illegible]	[illegible]
		FAX [illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	REQUIRED ANALYSIS / NUMBER OF CONTAINERS SUBMITTED					REMARKS
9/1-8	1340		1316058	✓				(1) 1 L Amber	Hold				TIER III
	1340		1316058.F	✓				(1) 1 L Amber					LABORATORY
	1340		1316061	✓				(1) 1 L Amber	Hold				DATA PACKAGE
	1340		1316061.F	✓				(1) 1 L Amber					
	1255		1316074	✓				(1) 1 L Amber	Hold				HARD COPY
	1255		1316074.F	✓				(1) 1 L Amber					+ EDD PER
	15[illegible]		1316075	✓				(3) VOA					SUB AGREEMENT
	1540		1316060	✓				(3) VOAs	~~[illegible]~~				
	~~1340~~		~~1316063.F~~	✓				~~[illegible]~~					
9/1-8	1615		1316059	✓				(3) VOAs					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	9/1-8	1650						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

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Data/Analysis Technologies, Inc.

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SERIAL NO. 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
[illegible]	1540		13160					(1) 1L Amber Hold					TIER III
	1540		13160 F					(1) 1L Amber					LABORATORY
	1615		13 1605					(1) 1L Amber Hold					DATA PACKAGE
[illegible]	1615		13160 5					(1) 1L Amber					HARD COPY +
													EDD PER
													SUB
													AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

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"Analytical Laboratories and Consultants"

SERIAL 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS

PAGE 1 OF

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
[illegible]	1305	[illegible]	[illegible]	✓				(2) [illegible]	(9) [illegible]	* Release for Hold and Analyze for Dioxin/Furans			[illegible]
[illegible]	1305	[illegible]	[illegible]	✓				(1) [illegible]					TIER III
[illegible]	[illegible]	[illegible]	[illegible]	✓				(1) [illegible]					LABORATORY
[illegible]	[illegible]	[illegible]	[illegible]	✓				(1) [illegible]					DATA PACKAGE
[illegible]	[illegible]	[illegible]	[illegible]	✓				(1) [illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	✓				(1) [illegible]					Hard Copy
[illegible]	1125	[illegible]	[illegible]	✓				(1) [illegible] ~~Hold Dup~~	* Release from Hold and Analyze for Dioxin/Furans				+ EDD per
[illegible]	1125	[illegible]	[illegible]	✓				(1) [illegible]					SUB AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible]

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED	REMARKS
[illegible]-8	1340	[redacted]	1316-58	✓				[illegible] ~~Hold~~ * Release from Hold and ANALYZE for D.[illegible]/Forms	TEFR III
	1340	[redacted]	1316-58-F	✓				[illegible]	LABORATORY
	1340	[redacted]	1316-61	✓				[illegible] ~~Hold~~ * Release from Hold and ANALYZE for D.[illegible]/Forms	DATA PACKAGE
	1340	[redacted]	1316-61-F	✓				[illegible]	
	1255	[redacted]	1316-74	✓				[illegible] ~~Hold~~ * Release from Hold and ANALYZE for D.[illegible]/Forms	HARD COPY
	1255	[redacted]	1316-74-F	✓				[illegible]	+ EDD PER
	[illegible]	[redacted]	1316-75	✓				(1) V-A9	SUB AGREEMENT
	1540	[redacted]	1316-60	✓				(2) V-A5, ~~[illegible] Hold~~ DW	
	~~1540~~	~~[redacted]~~	~~1316-60-F~~	~~✓~~				~~(1) [illegible]~~ DW	
9/24/-8	1615	[redacted]	1316-59	✓				(3) V-A5	
		[redacted]							
		[redacted]							
		[redacted]							

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	9/24/-8	1600						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS
[redacted]	[redacted]	[redacted]	☒ YES ☐ NO	[redacted]	[redacted]	[redacted]

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Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL NO. 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible] 7822

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] 16062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
[illegible]-8	154[illegible]	[redacted]	[illegible]	✓				[illegible] ~~Hold~~	* Release for Hand ANALYSE	[illegible]	[illegible]		TIER III
	[illegible]	[redacted]	[illegible]	✓				[illegible]					LABORATORY
✓	1615	[redacted]	13160[illegible]	✓				( ) 1 L Amber	~~Hold~~ * Release for Hand ANALYSE	[illegible]	[illegible]		DATA PACKAGE
[illegible]-8	1615	[redacted]	13160[illegible]	✓				( ) 1 L Amber					HARD COPY +
[illegible]		[redacted]											RDD PER
		[redacted]											SUB
		[redacted]											AGREEMENT
		[redacted]											
		[redacted]											
		[redacted]											
		[redacted]											
		[redacted]											
		[redacted]											

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]-8	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS
[redacted]	[redacted]	[redacted]	☐ YES ☐ NO	[redacted]	[redacted]	[redacted]

TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**Ron Mitchum**	FAX NUMBER:	**614.873.0810**
COMPANY:	**DAT, Inc.**	DATE:	**3/20/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**4**
RE:	**REQUEST for ADDITIONAL ANALYSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (COC) documentation (COC Nos. 27723, 27724, and 27725). Copies of the COC forms are attached for clarification of the analyses that we are requesting for the samples.

Please release from "HOLD" and analyze the following 7 samples for dioxins/furans by USEPA Method 8290:

1316057 1316062 1316058 1316061 1316074 1316060 1316059

Subsequent to analysis, please hold all parts of samples for potential, future re-analysis. Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

The information contained in this facsimile message may be information protected by attorney-client and/or the attorney/work product privilege. It is intended only for the use of the individual named above and the privileges are not waived by virtue of this having been sent by facsimile. If the person actually receiving this facsimile or any other reader of the facsimile is not the named recipient or the employee or agent responsible to deliver it to the named recipient, any use, dissemination, distribution, or copying of the communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone and return the original message to us at the below address via U.S. Postal Service.

100 Northwest Drive, Plainville, CT 06062 860-747-6181 Fax 860-747-8822

An Employee Owned Company

FedEx Express US Airbill 8580 3269 9851 0200 Form ID No. FedEx Retrieval Copy

1 From
Date ~~1/31/2008~~ 2/25/08 Sender's FedEx Account Number 102160223
Sender's Name Mark Winbourne Phone 860 410-2936
Company Loureiro ENGINEERING ASSOCIATES? INC.
Address 100 Northwest Drive Dept./Floor/Suite/Room
City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To
Recipient's Name DAT Inc. Phone
Company DAT Inc,
Recipient's Address 7715 Corporate Blvd
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room
Address
To request a package be held at a specific FedEx location, print FedEx address here.
City Plain City State OH ZIP 43064

4a Express Package Service — Packages up to 150 lbs.
1 [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
5 [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
6 [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
3 [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
20 [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.
FedEx Envelope rate not available. Minimum charge: One-pound rate.
* To most locations.

4b Express Freight Service — Packages over 150 lbs.
7 [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
8 [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
83 [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.
* Call for Confirmation: ** To most locations.

5 Packaging
6 [ ] FedEx Envelope*
2 [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.
3 [ ] FedEx Box
4 [ ] FedEx Tube
1 [X] Other
* Declared value limit $500.

6 Special Handling — Include FedEx address in Section 3.
3 [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.
1 [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight.
31 [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.
[X] No
4 [ ] Yes — As per attached Shipper's Declaration
[ ] Yes — Shipper's Declaration not required.
6 [ ] Dry Ice — Dry ice, 9, UN 1845 ____ x ____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.
[ ] Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No. [ ]
1 [X] Sender — Acct. No. in Section 1 will be billed.
2 [ ] Recipient
3 [ ] Third Party
4 [ ] Credit Card
5 [ ] Cash/Check

Total Packages 1 Total Weight Total Charges
Credit Card Auth.
[1] Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 NEW Residential Delivery Signature Options — If you require a signature, check Direct or Indirect
[ ] No Signature Required — Package may be left without obtaining a signature for delivery.
10 [ ] Direct Signature — Anyone at recipient's address may sign for delivery. Fee applies.
34 [ ] Indirect Signature — If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. Fee applies.

520

Rev. Date 8/09-Part #158281-©1994-2005 FedEx-PRINTED IN U.S.A. SRY

fedex.com 1.800.GoFedEx 1.800.463.3339

L

8580 3269 9851

FedEx TRK# 0200 8580 3269 9851

TUE 26 FEB A2

PRIORITY OVERNIGHT

NS-CMHA

LCK
OH-US
43064

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL

Collecting Sample Mark Winbourne (signature) Sample No.

Collected 2/25/08 Time Collected

FedEx Express US Airbill 8580 3269 9748 0200 Form ID No. **FedEx Retrieval Copy**

1 From
Date 2/25/08 Sender's FedEx Account Number 102160223
Sender's Name Mark Winbourne Phone 860 410-2936
Company Loureiro Engineeering Associates, Inc.
Address 100 Northwest Drive Dept./Floor/Suite/Room
City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To
Recipient's Name Phone
Company DAT, Inc.
Recipient's Address 7715 Corporate Blvd Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
To request a package be held at a specific FedEx location, print FedEx address here.
City Plain City State OH ZIP 43064

8580 3269 9748

4a Express Package Service *Packages up to 150 lbs.*
1 [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected
5 [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
6 [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
3 [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
20 [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.
FedEx Envelope rate not available. Minimum charge: One-pound rate.
* To most locations.

4b Express Freight Service *Packages over 150 lbs.*
7 [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
8 [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
83 [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.
* Call for Confirmation:
** To most locations.

5 Packaging
6 [ ] FedEx Envelope* 2 [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. 3 [ ] FedEx Box 4 [ ] FedEx Tube 1 [X] Other
* Declared value limit $500.

6 Special Handling Include FedEx address in Section 3.
3 [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.
1 [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight.
31 [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.
[X] No 4 [ ] Yes — As per attached Shipper's Declaration. [ ] Yes — Shipper's Declaration not required. 6 [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging. [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No. [ ]
1 [X] Sender — Acct. No. in Section 1 will be billed. 2 [ ] Recipient 3 [ ] Third Party 4 [ ] Credit Card 5 [ ] Cash/Check

Total Packages 1 Total Weight 5 lbs Total Charges
Credit Card Auth.

[1]Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 *NEW* Residential Delivery Signature Options If you require a signature, check Direct or Indirect.
[ ] No Signature Required — Package may be left without obtaining a signature for delivery.
10 [ ] Direct Signature — Anyone at recipient's address may sign for delivery. *Fee applies.*
34 [ ] Indirect Signature — If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. *Fee applies.*

520

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fedex.com 1.800.GoFedEx 1.800.463.3339

FedEx TRK# 0200 8580 3269 9748
TUE - 26 FEB A2
PRIORITY OVERNIGHT

NS-CMHA
LCK
OH-US
43064

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL
Person Collecting Sample Mark Winbourne (signature) Sample No.
Date Collected 2/25/08 Time Collected

FedEx Express US Airbill

8580 3269 9634

0200 Form ID No.

FedEx Retrieval Copy

1 From

Date 2/25/08 Sender's FedEx Account Number 16 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro Engineering Associates, Inc.

Address 100 Northwest Drive

Dept./Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name Phone

Company DAT? Inc.

Recipient's Address 7715 Corporate Blvd

We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City PlainCity State OH ZIP 43064

8580 3269 9634

4a Express Package Service *Packages up to 150 lbs.*

1 [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

5 [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

6 [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

20 [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service *Packages over 150 lbs.*

7 [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

8 [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected

83 [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available

* Call for Confirmation: ** To most locations.

5 Packaging

6 [ ] FedEx Envelope* 2 [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. 3 [ ] FedEx Box 4 [ ] FedEx Tube 1 [X] Other

* Declared value limit $500.

6 Special Handling — Include FedEx address in Section 3.

3 [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight

1 [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight.

31 [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

[X] No 4 [ ] Yes — As per attached Shipper's Declaration. [ ] Yes — Shipper's Declaration not required. 6 [ ] Dry Ice — Dry ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging. [ ] Cargo Aircraft Only

7 Payment *Bill to:* — Enter FedEx Acct. No. or Credit Card No. below.

1 [X] Sender — Acct. No. in Section 1 will be billed. 2 [ ] Recipient 3 [ ] Third Party 4 [ ] Credit Card 5 [ ] Cash/Check

Obtain Recip. Acct. No. [ ]

Total Packages 1 Total Weight 39 Total Charges

Credit Card Auth

†Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 *NEW* Residential Delivery Signature Options If you require a signature, check Direct or Indirect.

[ ] No Signature Required — Package may be left without obtaining a signature for delivery.

10 [ ] Direct Signature — Anyone at recipient's address may sign for delivery. *Fee applies.*

34 [ ] Indirect Signature — If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. *Fee applies.*

520

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fedex.com 1.800.GoFedEx 1.800.463.3339

FedEx TRK# 0200 8580 3269 9634

TUE - 26 FEB A2
PRIORITY OVERNIGHT

LCK
OH-US
43064

NS-CMHA

Emp# 021898 25FEB08 PVDA

CUSTODY SEAL

Person Collecting Sample Mark Winbourne (signature) Sample No. ____

Date Collected 2/25/08 Time Collected ____

DAT Labs Inc.
Sample Receipt Report

Client: ~~Camp Dresser McKee~~ Louveiro Eng. PCC 2-26-08

Custodian Initial: JP Date: 2/26/08

Secondary Review: Initials: Date:

The client has been contacted.

_____ Yes _____ No

Upon receipt of samples, check if any of the following discrepancies have been noted.

Check	Discrepancy Type	Specify applicable client ID or "all"
	COC and samples do not match	
	No unique sample identifications	
	Samples received outside of the required temp criteria. Receipt Temp: 5.2 C	
	No preservation type was noted Correction Factor: 1.7 C	
	No date of collection stated Corrected Temp: 6.9 C	
	No time of collection stated	
	The sample collector was not named	
	Sample containers were not appropriate	
	Sample labels were destroyed or unreadable	
	Samples were received outside of holding time	
	There was not enough sample to perform the requested analysis.	
	Samples showed sign of damage or contamination.	
	Aqueous samples for volatile analysis: Headspace? Y N If Yes, list sample ID(s) in details:	
	Sample pH acidic basic (neutral) Check pH of aqueous samples if no preservation is noted on COC.	

Details: _____

Sample pH for nonvolatile aqueous samples and presence or absence of headspace (Y or N) for VOA aqueous samples shall be recorded at time of sample log-in.
Under no circumstances shall VOA vials be opened at time of sample receipt.

Other Discrepancies:

Sample ID	Discrepancy
1316057 VOA	VOA Bottle cracked on bottom

☐ ***Upon receipt, the samples met all of DAT's acceptance criteria.*** ***DAT Project #*** 0208030

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Date Received:	2/26/2008	**Carrier:**	Fed Ex
Client Name:	Loureiro Eng. Assoc.	**Analysis:**	voc,dioxins,furans
Tracking number:	8580 3269 9634	**Package Temp:**	6.9 C.
Custody Seals ?:	Yes	**COC:**	☑ check if COC from client

Sample Information

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316057	0208030-1A/B/C	2/25/2008	aq	amber bottle	samples archived
1316057	0208030-2A/B/C/D/E/F/G/H/I	2/25/2008	aq	voa vial	one voa vial cracked
1316057 uf	0208030-3A/B/C	2/25/2008	aq	amber bottle	
1316063	0208030-4	2/25/2008	aq	voa vial	
1316058	0208030-5A/B/C	2/25/2008	aq	voa vial	
1316061	0208030-6A/B/C	2/25/2008	aq	voa vial	
1316074	0208030-7A/B/C	2/25/2008	aq	voa vial	
1316062	0208030-8	2/25/2008	aq	amber bottle	sample archieved

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316062 uf	0208030-9	2/25/2008	aq	amber bottle	
1316058	0208030-10	2/25/2008	aq	amber bottle	sample archieved
1316058 uf	0208030-11	2/25/2008	aq	amber bottle	
1316061	0208030-12	2/25/2008	aq	amber bottle	sample archieved
1316061 uf	0208030-13	2/25/2008	aq	amber bottle	
1316074	0208030-14	2/25/2008	aq	amber bottle	sample archived
1316074 uf	0208030-15	2/25/2008	aq	amber bottle	
1316075	0208030-16	2/25/2008	aq	voa vial	
1316060	0208030-17	2/25/2008	aq	amber bottle	sample archived
1316060	0208030-18A/B/C	2/25/2008	aq	voa vial	
1316060 uf	0208030-19	2/25/2008	aq	amber bottle	
1316059	0208030-20A/B/C	2/25/2008	aq	voa vial	

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316059	0208030-21	2/25/2008	aq	amber bottle	sample archived
1316059 uf	0208030-22	2/25/2008	aq	amber bottle	

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

SDG Narrative

Laboratory name:	Data/Analysis Technologies, Inc.
Case Number:	Centredale Manor
Sample Numbers:	# 1316058, 1316059, 1316061, 1316063, 1316075
SDG #	1316057
Contract Number	Loureio Engineering
Task Order Number	NA
Cooler Temperature:	6.9°C

Project Specific Comments: High levels of analytes were present. Dilutions were made into the calibration range. All results that are over the highest calibration point are flagged "E" on the associated Form 1A. Matrix spike analysis was performed on the diluted sample.

Quality Control:

CRQL: The DL was reported

The surrogate recoveries met the QC guidelines in EPA 8260C and are reported on Form 2A.

Matrix spikes: A matrix spike and matrix spike duplicate were performed on 1316057 and the results are reported on Form 3A.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8260C and are reported on Form 8A.

Report reviewed and prepared by

R.K. Mitchum, PhD.
President

SDG Narrative

Laboratory name:	Data/Analysis Technologies, Inc.
Case Number:	Centredale Manor
Sample Numbers:	1316057, 1316060, 1316068, 1316074
SDG #	1316057
Contract Number	Loureio Engineering
Task Order Number	NA
Cooler Temperature:	6.9°C

Project Specific Comments: High levels of analytes were present. Dilutions were made into the calibration range. All results that are over the highest calibration point are flagged "E" on the associated Form 1A. Matrix spike analysis was performed on the diluted sample.

Quality Control:

CRQL: The DL was reported

The surrogate recoveries met the QC guidelines in EPA 8260C and are reported on Form 2A.

Matrix spikes: A matrix spike and matrix spike duplicate were performed on 1316057 and the results are reported on Form 3A.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8260C and are reported on Form 8A.

Report reviewed and prepared by

R.K. Mitchum, PhD.
President

SDG Narrative

Laboratory name:	Data/Analysis Technologies, Inc.
Case Number:	Centredale Manor
Sample Numbers:	#1316057, 1316059
SDG #	1316057
Contract Number	Loureio Engineering
Task Order Number	NA
Cooler Temperature:	6.9°C

Project Specific Comments: High levels of analytes were present. Dilutions were made into the calibration range. All results that are over the highest calibration point are flagged "E" on the associated Form 1A. Matrix spike analysis was performed on the diluted sample.

Quality Control:

CRQL: The DL was reported

The surrogate recoveries met the QC guidelines in EPA 8260C and are reported on Form 2A.

Matrix spikes: A matrix spike and matrix spike duplicate were performed on 1316057 and the results are reported on Form 3A.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8260C and are reported on Form 8A.

Report reviewed and prepared by

R.K. Mitchum, PhD.
President

Deb Johnson

From: "Mark A. Winbourne" <mawinbourne@loureiro.com>
To: <deborahjohnson@core.com>; "'Ronald Mitchum'" <ronaldmitchum@core.com>
Cc: "David Scotti" <dnscotti@loureiro.com>
Sent: Thursday, March 20, 2008 2:12 PM
Attach: filtered_sample_dioxin_analysis_request.pdf
Subject: 15RP601: Request for Additional Dioxin Analyses

Dear Ron and Deborah,

Relative to groundwater samples you have for LEA's Centredale Manor project in North Providence, Rhode Island, please refer to the attached request to remove samples from "Hold" and analyze them for dioxins / furans by EPA Method 8290.

Please call me or Dave Scotti at 860.747.6181 if you have any questions.

Thank you,

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
860.747.8822 Fax
mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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Deb Johnson

From: "Mark A. Winbourne" <mawinbourne@loureiro.com>
To: <deborahjohnson@core.com>; "'Ronald Mitchum'" <ronaldmitchum@core.com>
Cc: "David Scotti" <dnscotti@loureiro.com>
Sent: Thursday, March 20, 2008 2:12 PM
Attach: filtered_sample_dioxin_analysis_request.pdf
Subject: 15RP601: Request for Additional Dioxin Analyses

Dear Ron and Deborah,

Relative to groundwater samples you have for LEA's Centredale Manor project in North Providence, Rhode Island, please refer to the attached request to remove samples from "Hold" and analyze them for dioxins / furans by EPA Method 8290.

Please call me or Dave Scotti at 860.747.6181 if you have any questions.

Thank you,

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
860.747.8822 Fax
mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Date Received:	2/26/2008	**Carrier:**	Fed Ex
Client Name:	Loureiro Eng. Assoc.	**Analysis:**	voc,dioxins,furans
Tracking number:	8580 3269 9634	**Package Temp:**	6.9 C.
Custody Seals ?:	Yes	**COC:**	☑ check if COC from client

Sample Information

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316057	0208030-1A/B/C	2/25/2008	aq	amber bottle	samples archived
1316057	0208030-2A/B/C/D/E/F/G/H/I	2/25/2008	aq	voa vial	one voa vial cracked
1316057 uf	0208030-3A/B/C	2/25/2008	aq	amber bottle	
1316063	0208030-4	2/25/2008	aq	voa vial	
1316058	0208030-5A/B/C	2/25/2008	aq	voa vial	
1316061	0208030-6A/B/C	2/25/2008	aq	voa vial	
1316074	0208030-7A/B/C	2/25/2008	aq	voa vial	
1316062	0208030-8	2/25/2008	aq	amber bottle	sample archieved

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316062 uf	0208030-9	2/25/2008	aq	amber bottle	
1316058	0208030-10	2/25/2008	aq	amber bottle	sample archieved
1316058 uf	0208030-11	2/25/2008	aq	amber bottle	
1316061	0208030-12	2/25/2008	aq	amber bottle	sample archieved
1316061 uf	0208030-13	2/25/2008	aq	amber bottle	
1316074	0208030-14	2/25/2008	aq	amber bottle	sample archived
1316074 uf	0208030-15	2/25/2008	aq	amber bottle	
1316075	0208030-16	2/25/2008	aq	voa vial	
1316060	0208030-17	2/25/2008	aq	amber bottle	sample archived
1316060	0208030-18A/B/C	2/25/2008	aq	voa vial	
1316060 uf	0208030-19	2/25/2008	aq	amber bottle	
1316059	0208030-20A/B/C	2/25/2008	aq	voa vial	

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316059	0208030-21	2/25/2008	aq	amber bottle	sample archived
1316059 uf	0208030-22	2/25/2008	aq	amber bottle	

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

SECTION 5

PROJECT CORRESPONDENCE

Kyle Clay

From: Kyle Clay
Sent: Thursday, May 08, 2008 11:29 AM
To: 'David Scotti'
Cc: Pat Conlon
Subject: Questions on DAT VOCs

We had a couple of clarification questions in the VOCs.

In SDG # 1316057, As an example, for Sample number 1316074:

Is the lab purging 0.01 ml of sample in 1 ml of water? The Form I indicates a dilution of 1, but it looks like reported values are 100x the MDL and the "digestion" logbook indicates the 0.01ml/1ml purge. What are the purge volumes and what are actual dilutions reported on the Form I's? Can the lab verify that they are actually purging 1ml.
Also, is the reporting limit used on the Form I's, actually the MDL. What would their actual RL be?

Also the COCs included in the packages were borderline illegible due to copy quality. Some of the times and dates of collection will not be verified to the legal document unless a better copy is provided.

Kyle R. Clay
Chemistry Department
Environmental Standards, Inc.
1140 Valley Forge Road • P.O. Box 810 • Valley Forge, PA 19482
610.935.5577 • Fax: 610.935.5583 • www.envstd.com • kclay@envstd.com

Environmental Standards was named to the inaugural Inc. 5000 list of the Fastest Growing Private Companies in America.

Inc. 500

Kyle Clay

From: Mark A. Winbourne [mawinbourne@loureiro.com]
Sent: Thursday, May 08, 2008 1:42 PM
To: Kyle Clay
Cc: David Scotti
Subject: 15RP601: Chains-of-Custody
Attachments: chains_of_custody_aqueous.pdf; chains_of_custody_aqueous_amended.pdf

Kyle,

Attached please find two sets of chains-of-custody. The two sets of chains document the groundwater samples obtained by LEA on Feb. 25, 2008 that were submitted to DAT. The first set (colored white) are the original chains as recorded in the field and then accepted by DAT. The second set (colored pink) are carbon copies of the first set that have a correction on chain 27724 deleting sample containers that were not in the cooler associated with this chain (1 liter amber bottles for LEA sample IDs 1316060 and 1316060uf). Samples 1316060 and 1316060uf are correctly listed on chain 27725 on both sets of chains.

Please let me know if you have any questions.

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
860.747.8822 Fax
mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL № 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cranbrook Manor	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wiebarne, Jim Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lorraine Engineering Assoc.	David Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 New Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER), SOLID OR SEMISOLID, AIR, NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: VOCs (Tab 26), Dioxins/Furans (Tab 29)

PAGE 1 OF

☑ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED				REMARKS
2/25/08	1305		1316057	✓				(3) 1 L Ambers, (9) VOAs				Matrix Spike/MSDupl.
2/25/08	1305		1316057 uf	✓				(3) 1 L Ambers				
2/25/08	1120		1316063	✓				(1) VOA				
2/25/08	1340		1316058	✓				(3) VOA				
2/25/08	1340		1316061	✓				(3) VOA				
2/25/08	1255		1316074	✓				(3) VOA				
2/25/08	1125		1316062	✓				(1) 1 L				
2/25/08	1125		1316062 uf	✓				(1) 1 L				

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Wiebarne (under custody seal)	2/25/08	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
J. Clevenger	2/26/08	0900	☐ YES ☐ NO		02080330	6.9°C 1316057 VOA - 1 cracked on bottom

Page 10 of 10

3

DAT®
Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL № 27724

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centerbrook Manor	15RF601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Winbourn / Tara Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lenaro Engineering Assoc.	David Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 Northwest Dr., Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Drinking (8260) / VOCs (8260B)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/20/08	1340		1316058	✓				(1) 1L Amber	
	1340		1316058uf	✓				(1) 1L Amber	
	1340		1316061	✓				(1) 1L Amber	
	1340		1316061uf	✓				(1) 1L Amber	
	1255		1316074	✓				(1) 1L Amber	
	1255		1316074uf	✓				(1) 1L Amber	
	1500		1316075	✓				(1) VOA	
	1540		1316060	✓				(3) VOAs, (1) 1L Amber	
	1540		1316060uf	✓				(1) 1L Amber	
2/21/08	1615		1316059	✓				(3) VOAs	

(Paul)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
(Under custody seal)	2/21/08	1600						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
J. Chesson	2/21/08	0900	☐ YES ☐ NO		0208050	6.9°C 1316057 not checked on bottom

Page 10 of 103

2-

DAT®
Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL № 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centerdale Manor	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Winbourne / Jim Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Lawrence Engineering	Dave Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Dioxins (8290)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/25/08	1540		1316060	✓				(1) 1L Amber					
↓	1540		1316060 ult	✓				(1) 1L Amber					
↓	1615		1316059	✓				(1) 1L Amber					
2/25/08	1615		1316059 ult	✓				(1) 1L Amber					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Winbourne (via custody seal)	2/25/08	1630						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
J. Clevenger	2/26/08	0900	☐ YES ☐ NO		0208080	6.9°C 1316057 VOA 1 cracked on bottom

Page 11 of 103

DAT®

Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL NO. 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible]

PAGE 1 OF

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	RESERVATIVE: HCLD	NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/25/08	1325		1316-59						(3) LL Aroclors (9) VOAs					[illegible]
2/25/08	1305		1316-57 UF						(3) LL Aroclors					TIER III
2/25/08	1320		1316-63						(4) VOA					LABORATORY
2/25/08	1345		1316-58						(3) VOA					DATA PACKAGE
2/25/08	1340		1316-61						(3) VOA					
2/25/08	1255		[illegible]						(3) VOA					Hard Copy
2/25/08	1325		[illegible]						(1) LL HOLD					+ EDD per
2/25/08	1325		1316-62 UF						(1) LL					SUB AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	2/27/08	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

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"Analytical Laboratories and Consultants"

SERIAL NO. 2772

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cottrell Mar	15[illegible]6.01	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
CT	[illegible] / Jim Reddy	860 7[illegible] 6181	860 777 8832

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible] Agency	Dan [illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] Dr., [illegible], CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible] (8260) / [illegible] (8260)

PRESERVATIVE

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
11/6/-8	1340		1316058	✓				(1) 1 L Amber	Hold				TIER III
	1340		1316058.F	✓				(1) 1 L Amber					LABORATORY
	1340		1316061	✓				(1) 1 L Amber	Hold				DATA PACKAGE
	1340		1316061.F	✓				(1) 1 L Amber					
	1355		1316074	✓				(1) 1 L Amber	Hold				HARD COPY
	1355		1316074.F	✓				(1) 1 L Amber					+ EDD PER
			1316075	✓				(1) VOA					SUB AGREEMENT
	1540		1316060	✓				(3) VOAs, ~~[illegible]~~	~~Hold~~				
	~~1540~~		~~1316060.F~~	✓				~~(1) 1 L Amber~~					
11/6/-8	1615		1316059	✓				(3) VOAs					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	11/6/-8	1600						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

DAT®

Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL NO. 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible]

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
[illegible]	1540		1316060					(1) 1 L A-bu Hold					TIER III
	1540		1316060 .f					(1) 1 L A-bu					LABORATORY
	1615		1316059					(1) 1 L A-bu Hold					DATA PACKAGE
[illegible]	1615		1316059 .f					(1) 1 L A-bu					HARD COPY +
													EDD PER
													SUB
													AGREEMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	[illegible]						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

Kyle Clay

From: Kyle Clay
Sent: Thursday, May 08, 2008 2:11 PM
To: 'Mark A. Winbourne'
Cc: David Scotti; Pat Conlon
Subject: RE: 15RP601: Chains-of-Custody

Were the VOCs preserved in the field? i.e. preserved containers? There's no indicatation in the data package other than a general statement in the sample reciept documentation that samples weren't preserved which may or may not have refferred to the VOCs, Dioxins, or both. No other documentation is available to verify.

Kyle R. Clay
Chemistry Department
Environmental Standards, Inc.
1140 Valley Forge Road • P.O. Box 810 • Valley Forge, PA 19482
610.935.5577 • Fax: 610.935.5583 • www.envstd.com • kclay@envstd.com

Environmental Standards was named to the inaugural Inc. 5000 list of the Fastest Growing Private Companies in America.
Inc. 5 0

From: Mark A. Winbourne [mailto:mawinbourne@loureiro.com]
Sent: Thursday, May 08, 2008 1:42 PM
To: Kyle Clay
Cc: David Scotti
Subject: 15RP601: Chains-of-Custody

Kyle,

Attached please find two sets of chains-of-custody. The two sets of chains document the groundwater samples obtained by LEA on Feb. 25, 2008 that were submitted to DAT. The first set (colored white) are the original chains as recorded in the field and then accepted by DAT. The second set (colored pink) are carbon copies of the first set that have a correction on chain 27724 deleting sample containers that were not in the cooler associated with this chain (1 liter amber bottles for LEA sample IDs 1316060 and 1316060uf). Samples 1316060 and 1316060uf are correctly listed on chain 27725 on both sets of chains.

Please let me know if you have any questions.

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
860.747.8822 Fax
mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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Kyle Clay

From: Mark A. Winbourne [mawinbourne@loureiro.com]
Sent: Thursday, May 08, 2008 2:24 PM
To: Kyle Clay
Cc: David Scotti
Subject: RE: 15RP601: Chains-of-Custody

Kyle,

All of the VOC samples were containerized into HCl-preserved VOA vials, then placed on ice for shipment to DAT.

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
860.747.8822 Fax
mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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-----Original Message-----
From: Kyle Clay [mailto:kclay@envstd.com]
Sent: Thursday, May 08, 2008 2:11 PM
To: Mark A. Winbourne
Cc: David Scotti; Pat Conlon
Subject: RE: 15RP601: Chains-of-Custody

Were the VOCs preserved in the field? i.e. preserved containers? There's no indicatation in the data package other than a general statement in the sample reciept documentation that samples weren't preserved which may or may not have refferred to the VOCs, Dioxins, or both. No other documentation is available to verify.

Kyle R. Clay
Chemistry Department
Environmental Standards, Inc.
1140 Valley Forge Road • P.O. Box 810 • Valley Forge, PA 19482
610.935.5577 • Fax: 610.935.5583 • www.envstd.com • kclay@envstd.com

Environmental Standards was named to the inaugural Inc. 5000 list of the Fastest Growing Private Companies in America.

Inc. 500

From: Mark A. Winbourne [mailto:mawinbourne@loureiro.com]

Sent: Thursday, May 08, 2008 1:42 PM
To: Kyle Clay
Cc: David Scotti
Subject: 15RP601: Chains-of-Custody

Kyle,

Attached please find two sets of chains-of-custody. The two sets of chains document the groundwater samples obtained by LEA on Feb. 25, 2008 that were submitted to DAT. The first set (colored white) are the original chains as recorded in the field and then accepted by DAT. The second set (colored pink) are carbon copies of the first set that have a correction on chain 27724 deleting sample containers that were not in the cooler associated with this chain (1 liter amber bottles for LEA sample IDs 1316060 and 1316060uf). Samples 1316060 and 1316060uf are correctly listed on chain 27725 on both sets of chains.

Please let me know if you have any questions.

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
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mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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Kyle Clay

From: David Scotti [dnscotti@loureiro.com]
Sent: Friday, May 16, 2008 1:50 PM
To: Kyle Clay
Subject: FW: Reply to 5/8/2008 review questions
Attachments: Centredale Manor Res___00001.pdf

Kyle - I am forwarding DAT, Inc.'s response to the questions that you posed in your May 8, 2008 email correspondence. Please let me know if you have any questions.

David N. Scotti, P.G.
Loureiro Engineering Associates, Inc.
An Employee Owned Company
100 Northwest Drive
Plainville, Connecticut 06062
860.747.6181
860.410.2976 direct
860.410.2965 fax
dnscotti@loureiro.com
Visit us on the web: www.loureiroengineering.com

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-----Original Message-----
From: Ronald K. Mitchum [mailto:rkmitchum@midohio.twcbc.com]
Sent: Friday, May 16, 2008 10:52 AM
To: David Scotti
Subject: Reply to 5/8/2008 review questions

I have included a reply to the questions you forwarded on 5/8/2008.
Thank you.

Ron

Resopnse to questions submitted 5/8/2008-Centredale manor

SDG# 1316057
Page 18 of 424

Question 1: "Is the Lab purging"

The laboratory diluted 10 ul of sample into 5 ml of water. The sample wt/vol was used to calculate the results not the dilution factor. In this case 0.0 is 0.01 was not displayed on the Form I due to limitations in the forms package. Page 423 of 424 lists the sample wt/vol used in the data reduction.

Q2: "the "digestion" logbook"

The laboratory does not understand the term "digestion " logbook it relates to this project. Refer to Page 423 of 424 which lists the sample wt/vol used in the data reduction.

Q3: "What are the purge volumes"

The purge volumes are 5 ml for an undiluted sample. For a diluted sample it is irrelevant, however, the purged volume was still 5 ml.

Q4: "Also, is the reporting limit"

The reporting limit on the Form I is the MDL. The data is parsed at an RL of 2 ng total. There was no required RL for this project.

Q5: "The COCs included"

The original COC was provided to Loureio Engineering. The laboratory does retain a carbon of the original signed field documentation, therefore, a better reproduction is provided.

Page #: _____

GC/MS APPLICATION SHEET

Client: N/A
Project # 82608003
Method/Analysis: 8260B

Archived: _____

FILES:

Method: 8260 Sequence: 82608003 Data Files: 82608003

GC/MS

Columns:	Length	Diameter	Phase	Film Thickness	Lot#
1	60m	0.53mm	RTX-502.2	3.0	55599H
2					

RUN CONDITIONS

Carrier Gas He Detect Temp 150 Injector Temp N/A
Injector Vol N/A Flow 2.0 Solvent delay 1.6 min

Mass Range
Time: ~~35~~ 1.6min Low ~~500~~ 35 High 500
Time: _____ Low _____ High _____
Time: _____ Low _____ High _____

TEMPERATURE RAMP

Initial			Program Rate	Final		
40 C	3 min		8 C/min	240 C	3 min	
_____ C	_____ min		_____ C/min	_____ C	_____ min	
_____ C	_____ min		_____ C/min	_____ C	_____ min	

Notes:

Analyst CSP
Date 3/5/08

DATFRM1021

0010

RUN LOG

Tekmar ALS 2016

Purge Method: 7

Analyst	Run #	Sample	Date	Vol.	Position	Notes
167	1	Blank	3/6/08	5.0mL	1	
"	2	Blank	"	"	2	
"	3	SPCC 030608	3/6/08	"	17 ~~4~~ 9	
"	4	CS1_20ng 82608003	3/6/08	"	10	
"	5	CS2_60ng 82608003	"	"	11	
"	6	CS3_80ng 82608003	"	"	12	
"	7	CS4_120ng 82608003	"	"	13	
"	8	CS5_200ng 82608003	"	"	14	
"	9	CS6_300ng 82608003	"	"	15	
"	10	CS7_500ng 82608003	"	"	16	
"	11	Blank	"	"	1	

DATFRM1077

GC/MS APPLICATION SHEET

Client:
Project # 02080030
Method/Analysis: 8260B

Archived: _____

FILES:

Method: 8260 Sequence: 02080030 Data Files: 02080301

GC/MS

Columns:	Length	Diameter	Phase	Film Thickness	Lot#
1	60m	0.53mm	3.0	RTX-502.2	55594A
2					

RUN CONDITIONS

Carrier Gas He Detect Temp 150°C Injector Temp n/a
Injector Vol n/a Flow 20 Solvent delay 1.6 min

Mass Range
Time: 1.6 min Low 35 High 220
Time: _____ Low _____ High _____
Time: _____ Low _____ High _____

TEMPERATURE RAMP

Initial			Program Rate	Final		
40 C	3 min		8 C/min	240 C	3 min	
_____ C	_____ min		_____ C/min	_____ C	_____ min	
_____ C	_____ min		_____ C/min	_____ C	_____ min	

Notes:
Curve: 82608003

Analyst CSJ
Date 3/7/08

DATFRM1021

RUN LOG

Tekmar ALS 2016

Purge Method: 1

Analyst	Run #	Sample	Date	Vol.	Position	Notes
BST	1	CCal. 8260B003C01	3/7/08	5.0mL	13 ~~135~~	
"	2	Ins. Blank	3/7/08	5.0	1	
"	3	Ins. Blank	3/7/08	5.0	2	
"	94	0208030-4A	3/7/08	5.0	~~9~~ 5	
"	5 ~~10~~	0208030-16A	3/7/08	5.0	~~10~~ 6	
"	6	0208030-5A	3/7/08	5.0	~~11~~ 7	
"	7	0208030-~~7A~~ 6A	3/7/08	5.0	~~12~~ 8	
"	8	0208030-~~16~~ 7A	3/7/08	5.0	~~13 14~~	9
"	9	0208030-18A	3/7/08	5.0	~~14 15~~	10
"	10	0208030-20A	3/7/08	5.0	~~15 16~~	11
"	10	0208030-~~2~~ 52A	3/7/08	5.0	12	12
"	12	0208030-2ms	3/7/08	5.0	14	1,2 @ 6,c SL-29-74 12:05
"	13	0208030-2msd	3/7/08	5.0	15	↓
"	14	0208030-LS	3/7/08	5.0	16	

BS

DATFRM1077

00104

GC/MS APPLICATION SHEET

Client: 02080030 Loureiro Eng.
Project # 02080030
Method/Analysis: 8260

Archived: _____

FILES:

Method: 8260 Sequence: 02080030B Data Files: 02080030A#13

GC/MS

Columns:		Length	Diameter	Phase	Film Thickness	Lot#
1	RTX-502.2	60m	0.53mm	3.0	3.0	55599A
2				RTX-502.2		

RUN CONDITIONS

Carrier Gas H_2 Detect Temp 150°C Injector Temp N/A
Injector Vol N/A Flow 2.0 mL/min Solvent delay 1.6 min

Mass Range
Time: 1.6 Low 35 High 500
Time: _____ Low _____ High _____
Time: _____ Low _____ High _____

TEMPERATURE RAMP

Initial				Program Rate	Final			
40	C	3	min	8 C/min	200	C		min
	C		min	C/min		C		min
	C		min	C/min		C		min

Notes:
File: Cam : 82608003

Analyst CS
Date 8/10/08

DATFRM1021

RUN LOG

Tekmar ALS 2016

Purge Method: 7

Analyst	Run #	Sample	Date	Vol.	Position	Notes
CST	1	CCal 8260803C02	3/10/08	5.0mL	5	
CST	6	Ins. Blank	3/10/08	5.0mL	2	#6 of 6 Blanks Run after CCal due to gross. Run ↑ level Surr
CST	7	0208030-4B CST	3/10/08	5.0mL	6	
CST	8	0208030-16	3/10/08	5.0mL	7	
CST	9	0208030-~~B~~20	3/10/08	5.0mL	8	↑ level ~~Trichloroethene~~ Tetrachloroethylene @ 3.6ng/5
CST	10	0208030-51	3/10/08	100µL	9	50X D.I. ↑ level Trichloroethene 2.3ng/5
CST	~~16~~ 11	0208030-6	3/10/08	10µL	10	500X D.I cis-Dichloroethene ↓ CS1 @ 15ng
CST	~~12~~ 12	~~0208~~ CCal 8260803C03	3/10/08	5.0mL	5	
CST	13	Ins. Blank	3/10/08	5.0mL	2	
CST	14	0208030-7	3/10/08	10µL	11	500X D.I
CST	15	0208030-18	3/10/08	10µL	12	500X D.I
CST	16	0208030-2	3/10/08	10µL	13	500X D.I Tetrachloroethylene @ 2.3ng
CST	17	0208030-20	3/10/08	100µL	14	Miss Injection Grabed

CST

DATFRM1077

00106

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"Analytical Laboratories and Consultants"

SERIAL № 2772

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE: Centerbrook Manor	PROJECT NO.: 15RP601	P.O. NUMBER:	PAGE 1 OF
PROJECT LOC. (State): RI	SAMPLER(S) NAME: Mark Lindsay, Jason Purdy	PHONE: 860.747.6181 / FAX: 860.747.8822	
CLIENT NAME: Loureiro Engineering Assoc.	CLIENT PROJECT MANAGER: David Scott		
CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062			

☑ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)
DATE DUE:

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	VOCs (8260B)	Diesel/Fuel (8290)				REMARKS
				MATRIX TYPE				REQUIRED ANALYSIS					
				PRESERVATIVE									
				NUMBER OF CONTAINERS SUBMITTED									
2/25/08	1305		1316057	✓				(3) 1 L Ambers, (9) VOAs					Matrix Spike/MSDpl
2/25/08	1305		1316057 uf	✓				(3) 1 L Ambers					
2/25/08	1120		1316063	✓				(1) VOA					
2/25/08	1340		1316058	✓				(3) VOA					
2/25/08	1340		1316061	✓				(3) VOA					
2/25/08	1255		1316074	✓				(3) VOA					
2/25/08	1125		1316062	✓				(1) 1 L					
2/25/08	1125		1316062 uf	✓				(1) 1 L					

(Pb)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Lindsay (under custody seal)	2/25/08	1415						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**
						021030		

LABORATORY USE ONLY

RECEIVED BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT JOB NO.	LABORATORY REMARKS

DAT®
Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL Nº 2722

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE: Centredale Manor	PROJECT NO.: 15RP601	P.O. NUMBER:	PAGE 1 OF 1
PROJECT LOC. (State): RI	SAMPLER(S) NAME: Mark Winbourne / Jason Purdy	PHONE: 860.747.6181	
		FAX: 860.747.8822	
CLIENT NAME: Lucero Engineering Assoc.	CLIENT PROJECT MANAGER: David Scotti		
CLIENT ADDRESS (CITY, STATE, ZIP): 100 Northwest Dr., Plainville, CT 06062			

MATRIX TYPE: AQUEOUS (WATER), SOLID OR SEMISOLID, AIR, NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Dry-Ash/Fuel (8290), VOCs (8260B)

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/25/08	1340		1316058	✓				(1) 1 L Amber					
	1340		1316058uf	✓				(1) 1 L Amber					
	1340		1316061	✓				(1) 1L Amber					
	1340		1316061uf	✓				(1) 1 L Amber					
	1255		1316074	✓				(1) 1 L Amber					
	1255		1316074uf	✓				(1) 1 L Amber					
	1500		1316075	✓				(1) VOA					
	1540		1316060	✓				(3) VOAs, (1) 1L Amber					
	1540		1316060uf	✓				(1) 1L Amber					
2/25/08	1615		1316059	✓				(3) VOAs					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[signature] (Under Custody Seal)	2/25/08	1600						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED BY (SIGNATURE)	DATE	TIME	LABORATORY NO.	CUSTODY SEAL NO.	LABORATORY REMARKS

DAT®
Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL № 2772

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE: Centredale Manor	PROJECT NO.: 15RP601	P.O. NUMBER:	PAGE 1 OF 1
PROJECT LOC. (State): RI	SAMPLER(S) NAME: Mark Winbourne / Jason Purdy	PHONE: 860.747.6181	
		FAX: 860.747.8822	
CLIENT NAME: Cardno Engineering	CLIENT PROJECT MANAGER: Dave Sutti		
CLIENT ADDRESS (CITY, STATE, ZIP): 400 NW Drive, Plainville, CT 06062			

REQUIRED ANALYSIS: Dioxins/Furans (8290)

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	MATRIX TYPE: AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED					REMARKS
2/05/08	1540		1316060	✓				(1) 1L Amber					
	1540		1316060 uf	✓				(1) 1L Amber					
	1615		1316059	✓				(1) 1L Amber					
2/25/08	1615		1316059 uf	✓				(1) 1L Amber					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
(water custody seal)	2/25/08	1630						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL	STATION NO.	LABORATORY REMARKS

Kyle Clay

From: Kyle Clay
Sent: Tuesday, May 20, 2008 3:58 PM
To: 'ronaldmitchum@core.com'; Ronald Mitchum (rkmitchum@midohio.twcbc.com)
Cc: 'David Scotti'; David Blye; Pat Conlon
Subject: Loureiro Engineering VOCs Data package
Attachments: DAT Letter.pdf

Dr. Mitchum,

Environmental Standards was contracted to perform a US EPA Region I validation on a data set produced by DAT, Inc. We had a number of issues, which are detailed in the attached letter.

Please review the letter and provide a timeframe for DAT, Inc. to respond. As I am sure you are aware, Loureiro has looming project deadlines and is looking for quick resolution. Please feel free to contact me at the numbers listed below for clarification. Also, It would be apreciated if you would send me a reply all e-mail to acknowledge reciept of this to verify our contact information.

Thank you for your consideration,

Kyle R. Clay
Chemistry Department
Environmental Standards, Inc.
1140 Valley Forge Road • P.O. Box 810 • Valley Forge, PA 19482
610.935.5577 • Fax: 610.935.5583 • www.envstd.com • kclay@envstd.com

Environmental Standards was named to the inaugural Inc. 5000 list of the Fastest Growing Private Companies in America.

Inc. 500

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

Inc. 500

May 20, 2008

Dr. Ronald Mitchum
Data/Analysis Technologies, Inc.
7715 Corporate Boulevard
Plain City, OH 43064

RE: Loureiro Engineering, Volatile Organic Compound Analysis (DAT Project #0208030)

Dear Dr. Mitchum:

Loureiro Engineering Associates, Inc. (Loureiro) requested Environmental Standards, Inc. (Environmental Standards) to perform a quality assurance (QA) review of the volatile organic compound (VOC) data for the Centredale Manor Restoration Project Superfund Site in North Providence, Rhode Island – DAT Project #0208030. The investigative samples, which were collected on February 25, 2008, were grouped into three separate data packages, all identified as sample delivery group (SDG) 1316057.

Environmental Standards was requested to perform a US EPA Region I Tier III (full) validation of the data. A number of questions/issues arose during the course of the review of the data set and additional input from the laboratory is required before the Tier III validation can be completed. The issues/questions are detailed below and are separated into reporting issues that require laboratory confirmation or submittal/resubmittal of required information and method compliance and data usability issues that require explanation/clarification from the laboratory.

Reporting Issues

- Provide documentation in writing that the volatile samples were properly preserved and that preservation was verified for each sample upon analysis.
- Per your e-mail of May 16, 2008, to David Scotti, please confirm that the actual purge volume for all standards, QC samples, samples, and dilutions is 5 mL. Also, please confirm that the volume that appears to the right of the sample name on the Form ***is*** the sample volume that ***is*** diluted to 5 mL before purging.
- Standards are reported as "ng" only. It was not possible to determine the lower limit of reporting (*i.e.,* the reporting limit [RL]) or calibration range without confirmation of the purge volume. Assuming a purge volume of 5 mL, the low standard appears to be 20ng/5mL or 4 µg/L. Is this correct? In your previous response to questions, what is meant by "data is parsed at an RL of 2 ng total?"
- It was not possible to clearly identify the upper range of the calibration curve. The response factors for six standards are presented on the Form 6A ICAL for SW-846 Method 8260A. There is a seventh standard in the package at 500 ng. There was no

1140 Valley Forge Road P.O. Box 810 Valley Forge, PA 19482 Tel: 610.935.5577 Fax: 610.935.5583 Web: www.envstd.com

explanation for how the 500 ng standard was used or evaluated was provided. Please clarify the purpose of this standard.

- On all reports, results for detected compounds appear to be the results from the quantitation report in ng divided by the sample volume in mL, effectively µg/L. The following observations for reporting of non-detects were made.
    - On some reports (*e.g.,* 1316058), the reporting level provided for non-detects appears to be the number referred to as the "MDL" on the 0208030.ERM table divided by the sample volume. The MDL provided is unit-less, and therefore, it is not possible to verify what it being done. Please confirm that the units listed on the 0208030.ERM table under the column "MDL On Column" are ng.
    - On other reports (*e.g.,* 1316063), the reporting level provided for non-detects is "0." There are also cases when we observed "0 J" being reported.
    - The normal SW-846 reporting convention is to report positive results below the RL (the concentration equal to the low calibration standard) down to the method detection limit (MDL) as a quantitative estimate, "J." Assuming that the number reported as an MDL on the 0208030.ERM table ***is*** actually an MDL, neither of the example reports appears to use conventional reporting practices. Please explain the reporting conventions being used for these data sets.
- MS/MSD forms are incorrectly calculating and reporting spike recoveries for compounds found in the samples. The laboratory is taking the sample volume adjusted for dilution and is subtracting it from the MS/MSD on column amount. The result is effectively a negative number reported as zero. The expected on column amount attributable to the sample should be subtracted. The laboratory narrative indicates that the MS/MSD samples are diluted to bring the values in range, but the data are flagged as over range on the MS forms which is ***not*** correct when looking at the ***raw*** data for the MS/MSDs. The MS/MSD forms require correction and resubmittal.
- The data are to be validated according to US EPA Region I guidelines. According to Region I guidelines, the MDL data should be reviewed for compliance. Therefore, please supply the tabulated study replicate data used to calculate the MDLs so the information on the 0208030.ERM table can be verified.
- At least one sample was clearly mis-labeled on the cover page of the report package, which contained 424 pages. The cover page lists the sample as "1316068"; however, only data for a dilution analysis of 1316058 is included. Please confirm that this is a typographical error on the cover page.
- Some of the QC forms have an incomplete compound list. In addition, an inconsistent compound list is used on the sample Form I's. In other words, the compound list is different for some samples compared to others. What compound list was intended to be reported? Please resubmit the sample Form I analysis reports and QC summary forms with the correct and consistent target compound list.
- Form I VOA-TIC reports are provided for each sample. Please confirm if library searches were actually performed for these samples.

Compliance/Usability Issues

- The BFB tune appears to be 200 ng on column. SW-846 Method 8260C requires 50 ng or less. Please explain why the concentration of BFB is different than stipulated in the

method. In addition, SW-846 Method 8260C indicates that ***the default practice*** for selection of scans for a tune is to average the peak apex with the scan preceding and following the apex with background subtraction. The tunes provided in the data package included a manual integration of the tune peak that was not centered around the apex. Please explain the BFB tuning procedure used for these data sets.

- A number of manual integrations in calibration standards were reviewed and there was no apparent consistency in the approaches used for these manual integrations. A number of the manual integrations were clearly not consistent with typical automatic software integrations. Some integrations added extended baseline area to the peak, others cut off sloping areas from the peak both fore and aft of the apex, others appeared to be incorrect use of the baseline, and yet others appeared to be integrations of heavily splitting peaks (a symptom indicating possible column capacity issues with the high standards). Please explain the manual integration policy and procedures employed at the laboratory.
- There are negative values on the quantitation report for apparent positive hits on chromatograms (*e.g.*, $MeCl_2$ in 13160057). Please investigate and explain this apparent error.
- The response factors quantitated against the internal standard chlorobenzene-d_5 appear to be abnormally high and high relative to other target compounds. This is particularly obvious for chlorobenzene. Please investigate and explain this issue.

Loureiro has requested an expedited response so that project schedules are not compromised. Please contact the undersigned and provide a date by which you expect to be able to respond to these issues. We can be reached at 610 935-5577 to discuss any of the items on this list or if you need clarification.

If you have any questions/comments, please do not hesitate to call.

Sincerely,

Concurred by:

Patrick Conlon
Senior Quality Assurance Chemist

Kyle R. Clay,
Senior Quality Assurance Chemist/
Project Manager

cc: David Scotti - Loureiro Engineering Associates, Inc.
David R. Blye - Environmental Standards, Inc.

KRC/DRB:hm
Enc.

I have reviewed your questions and have provided a detailed response. If you have further questions please provide the sample group and the specific pages and this will assist in the inquiry.

Thank you.

Ronald K. Mitchum, Ph.D.
5/27/08

Reporting

1a. "provide documentation"
The appropriate run logs are included.

1b. Per your e-mail"
The run logs contain this information and are included.

1c. "Standards are reported as"
The data are in nanograms total on column. We parse, meaning report to, 2 ng total on column. This can be considered a reporting limit. Data which falls below that value will be reported at that value.

1d. "it was not possible"
A different calibration is provided. The seven file points are listed and used. The high calibration point was 500 ng total on column.
The form package has a limitation which does not display the full calibration if more than 6 points are used.

1e. "On all reports"
The raw data units are in ng total. The factors used in the calculation are found in the ERM report.

1f. "On other reports"
This is a significant figure issue. The data reporting package reports to 1 significant figure for data having a value of 10 or less leading the decimal and to 2 significant figures if the data is greater than 10. This corresponds to CLP reporting. The data which exhibit a zero do not meet the reporting criteria. The data which has a 0J does not meet the reporting criteria, however, there was a value below the MDL value.

1g. "The normal"

There is not a normal reporting format for SW-846 methods, reporting has not been formalized and promugulated. This is a reporting package issue. It was our understanding that the client required a CLP deliverable. The package is incompatible with your requirement. Where a "J" appears in the Form I, it is below the MDL, not below the lowest calibration point. If the latter convention is used the reported MDL will be the lowest calibration point. I do not have a resolution except to manually enter the "J" Flag.

1h. " MS/MSD"

The corrected MS/MSD forms are included. Pages 96-99 of 276.

1i. "The data are to be"

The tabulated MDL studies are provided. Note that the MDL study was ran after the instrument was contaminated with high levels of analytes found in the samples. The MDL for those analytes were taken from a prior MDL study, both are included. A new MDL study was performed for this study due to the analytes which were not on the prior MDL study list.

1j. "At least one sample"

That is correct, it was mislabeled on the cover page, this was a typographical error.

1k. "Some of the QC forms have"

The corrected copies have been included. The compound list for sample "057" on page 96 of 424 was reported using another compound list. However, the supporting documentation immediately following uses the correct compound list.
The Initial Calibration Data compound list did not contain all the compounds. The updated list is supplied, replace pages 221 and 222 of 276 and 256 and 257 of 560.
The MS/MSD list contains all the list compounds except the order is different. These have not been changed.

1l. "Form I VOA-TIC"

These forms were provided for completeness. The client did not require TIC reports.

Compliance/Usability

2a. "The BFB tune"

There were two BFB tunes supplied. The levels were 120 ng on column and 24ng at the instrument. Since this is an instrument tune it meets the criteria. We use an open split interface with a nominal column flow rate of 10 ml/min and an instrument interface flow rate of <2 ml/min.

The specific window of determination for the BFB tune has been supplied. In addition the window used was delineated. In addition the BFB for each was determined automatically and provided.

2b. "There appears to be"

The manual integration package is provided as a separate PDF. The processed peak will be first followed by the analyst manual integration.

2c. "There are negative values"

Negative values are the result of a linear calibration curve that is not forced through the origin. This is not an error. It is a function of processing. Supplied are three processing options.

2d. The response factors are the result of mixed mode quantification. The internal standard, chlorobenzene-d5 was quantified by heights, while compounds which this internal applies were quantified as areas. This results in a high RF, however, there would be no data effects since all were quantified in the same manner. The documentation is enclosed.

lab ① LA

Page #: _____

GC/MS APPLICATION SHEET

Client: N/A
Project # 82608003
Method/Analysis: 8260B

Archived: _____

FILES:

Method: 8260 Sequence: 82608003 Data Files: 82608003

GC/MS

Columns:	Length	Diameter	Phase	Film Thickness	Lot#
1	60m	0.53mm	RTX-502.2	3.0	53599A
2					

RUN CONDITIONS

Carrier Gas He Detect Temp 150 Injector Temp N/A
Injector Vol N/A Flow 2.0 Solvent delay 1.6 min

Mass Range
Time: ~~35~~ 1.6min Low ~~500~~ 35 High 500
Time: _____ Low _____ High _____
Time: _____ Low _____ High _____

TEMPERATURE RAMP

Initial		Program Rate	Final	
40 C	3 min	8 C/min	240 C	3 min
C	min	C/min	C	min
C	min	C/min	C	min

Notes:

Analyst [illegible]
Date 3/5/08

DATFRM1021

000004 00101

1a-b ②

RUN LOG

Tekmar ALS 2016

Purge Method: 7

Analyst	Run #	Sample	Date	Vol.	Position	Notes
157	1	Blank	3/6/08	5.0mL	1	
"	2	Blank	"	"	2	
"	3	SPCC 030608	3/6/08	"	17 ~~9~~	
"	4	CS1_20ng 82608003	3/6/08	"	10	
"	5	CS2_60ng 82608003	"	"	11	
"	6	CS3_80ng 82608003	"	"	12	
"	7	CS4_120ng 82608003	"	"	13	
"	8	CS5_200ng 82608003	"	"	14	
"	9	CS6_300ng 82608003	"	"	15	
"	10	CS7_500ng 82608003	"	"	16	
"	11	Blank	"	"	1	

DATFRM1077

000005

00102

03

lab ③

Page #: 1 of 2

GC/MS APPLICATION SHEET

Client:
Project # 02080030
Method/Analysis: 8260B

Archived:

FILES:

Method: 8260 Sequence: 02080030 Data Files: 02080301

GC/MS

Columns:	Length	Diameter	Phase	Film Thickness	Lot#
1	60m	0.57mm	3.0 μm	RTX-502.2	55594A
2					

RUN CONDITIONS

Carrier Gas He Detect Temp 150°C Injector Temp N/A
Injector Vol N/A Flow 2.0 Solvent delay 1.6 min

Mass Range
Time: 1.6 min Low 35 High 220
Time: Low High
Time: Low High

TEMPERATURE RAMP

Initial			Program Rate	Final		
40	C 3	min	8 C/min	240	C 3	min
	C	min	C/min		C	min
	C	min	C/min		C	min

Notes:
Curve: 82608003

Analyst CJ
Date 3/7/08

DATFRM1021
0000006 00103

lab ④

RUN LOG

Tekmar ALS 2016

Purge Method: 1

Analyst	Run #	Sample	Date	Vol.	Position	Notes
BST	1	CCal. 8260B003C01	3/7/08	5.0mL	13 ~~1~~	
"	2	Ins. Blank	3/7/08	5.0	1	
"	3	Ins. Blank	3/7/08	5.0	2	
"	4	0208030-4A	3/7/08	5.0	~~4~~ 5	pH<1
"	5	0208030-16A	3/7/08	5.0	~~10~~ 6	pH<1
"	6	0208030-5A	3/7/08	5.0	~~11~~ 7	pH<1
"	7	0208030-~~17A~~ 6A	3/7/08	5.0	~~12~~ 8	pH<1
"	8	0208030-~~16~~ 7A	3/7/08	5.0	~~13~~ ~~14~~ 9	pH<1
"	9	0208030-18A	3/7/08	5.0	~~14~~ ~~15~~ 10	pH<1
"	10	0208030-20A	3/7/08	5.0	~~15~~ ~~16~~ 11	pH<1
"	11	0208030-~~2~~S2A	3/7/08	5.0	12	12 pH<1
"	12	0208030-2MS	3/7/08	5.0	14	5.2 @ 6µL SL-29-74 120ppl
"	13	0208030-2MSD	3/7/08	5.0	15	↓
"	14	0208030-LS	3/7/08	5.0	16	

BST

DATFRM1077

1a-b ⑤

Page #: 2/2

GC/MS APPLICATION SHEET

Client: 0208030 Loureiro Eng.
Project # 0208030
Method/Analysis: 8260

Archived: _____

FILES:

Method: 8260 Sequence: 0208030B Data Files: 0208030A-B

GC/MS

Columns:		Length	Diameter	Phase	Film Thickness	Lot#
1	RTX-502.2	60m	0.53mm	30	3.0	55599A
2				RTX-502.2		

RUN CONDITIONS

Carrier Gas He Detect Temp 180C Injector Temp N/A
Injector Vol N/A Flow 2.0 ml/min Solvent delay 1.6 min

Mass Range
Time: 1.6 Low 35 High 500
Time: _____ Low _____ High _____
Time: _____ Low _____ High _____

TEMPERATURE RAMP

Initial			Program Rate	Final		
40	C	3 min	8 C/min	200	C	min
	C	min	C/min		C	min
	C	min	C/min		C	min

Notes:
File: Cam; 82608003

Analyst CS
Date 8/10/08

DATFRM1021

000008 00105

RUN LOG

lab (6)

Tekmar ALS 2016

Purge Method: 7

Analyst	Run #	Sample	Date	Vol.	Position	Notes
CST	1	CCal 8260803C02	3/10/08	5.0mL	5	
CST	6	Ins. Blank	3/10/08	5.0mL	2	#6 of 6 Blanks Run after CCal. due to prev. Run ↑ level Samples
CST	7	0208030-4B CST	3/10/08	5.0mL	6	pH<1
CST	8	0208030-16	3/10/08	5.0mL	7	pH<1
CST	9	0208030-~~B~~20	3/10/08	5.0mL	8	↑ level Tetrachloroethylene @ 3.6ng Trichloroethene pH<1
CST	10	0208030-5A	3/10/08	100µL	9	500X D.I. ↑ level Trichloroethene 2.3ng pH<1
CST	~~16~~ 11	0208030-6	3/10/08	10µL	10	500X D.I. cis-Dichloroethene LOT @ 15ng pH<1
CST	~~12~~ 12	~~0208~~ CCal 8260803C03	3/10/08	5.0mL	5	
CST	13	Ins. Blank	3/10/08	5.0mL	2	
CST	14	0208030-7	3/10/08	10µL	11	500X D.I. pH<1
CST	15	0208030-18	3/10/08	10µL	12	500X D.I. pH<1
CST	16	0208030-2	3/10/08	10µL	13	500X D.I. pH<1 Tetrachloroethylene @ 2.3ng
CST	17	0208030-20	3/10/08	100µL	14	Miss Injection Grafted pH<1

CST

DATFRM1077

000009 00106

Calibration Report

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstati Integrator)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration

Calibration Files
1 =03060804 2 =03060805 3 =03060806 4 =0306080 5 =03060808
6 =03060809 7 =03060810

		Compound	Fit	Constant	Linear	ad	RSD/Cf
1)	I	Benzene, pentafluoro					
2)	M	Dichlorodifluorometh	LinF	-----	ISTD		
3)	M	Chloromethane	QuadF	-----	0.4665	--	0.9997
4)	M	Vinyl chloride	LinF	-----	1.1761	-0.868	0.9987
5)	M	Bromomethane	LinF	-----	1.0762	--	0.9994
6)	M	Chloroethane	LinF	-----	0.3889	--	0.9982
7)	M	Trichlorofluoromethane	LinF	-----	0.7351	--	0.9938
8)	M	1,1-Dichloroethene	LinF	-----	0.7267	--	0.9996
9)	M	Acetone	LinF	-----	0.7746	--	0.9960
10)	M	Methyl Acetate	LinF	-----	0.1421	--	0.9912
11)	M	Carbon disulfide	LinF	-----	0.3910	--	0.9985
12)	M	Methyl tert-butyl et	LinF	-----	3.1058	--	0.9992
13)	M	Methylene Chloride	LinF	-----	2.5951	--	0.9995
14)	M	1,2-dichloroe	LinF	-----	0.9523	--	0.9997
15)	M	1,1-Dichloroethane	LinF	-----	0.8959	--	0.9991
16)	M	2-Butanone	LinF	-----	1.6345	--	0.9998
17)	M	Propane, 2,2-dichlor	LinF	-----	0.1552	--	0.9944
18)	M	cis-1,2-Dichloroethe	LinF	-----	0.7725	--	0.9954
19)	M	Chloroform	LinF	-----	0.9261	--	0.9995
20)	M	Methane, bromochloro	LinF	-----	1.2017	--	0.9994
21)	M	Cyclohexane	LinF	-----	0.3085	--	0.9978
22)	M	1,1,1,-Trichloroethane	LinF	-----	2.1896	--	0.9997
23)	S	Dibromofluoromethane	LinF	-----	0.7686	--	0.9994
24)	M	Carbon tetrachloride	LinF	-----	0.0980	--	0.9964
25)	M	1,1-Dichloropropene	LinF	-----	0.5691	--	0.9993
26)	M	Benzene	LinF	-----	1.1001	--	0.9999
27)	M	1,2-Dichloroethane	LinF	-----	3.6507	--	0.9995
28)	I	1,2-Difluorobenz			ISTD		
29)	M	Cyclohexane, methyl	LinF	-----	0.7[illegible]	--	0.9997
30)	M	Trichloroethene	LinF	-----	0.3315	--	0.9998
31)	M	1,2-Dichloropropane	LinF	-----	0.4567	--	0.9998
32)	M	Methyl Isobutyl Keto	LinF	-----	0.0770	--	0.9975
33)	M	Dibromomethane	LinF	-----	0.2073	--	0.9991
34)	M	Bromodichloromethane	LinF	-----	0.3955	--	0.9990
35)	S	Toluene-d8 (surr)	LinF	-----	1.0972	--	0.9990
36)	M	2-Hexanone	LinF	-----	0.4179	--	0.9988
37)	M	Toluene	LinF	-----	0.9787	--	0.9991
38)	M	1,1,2-Trichloroethan	LinF	-----	0.2878	--	0.9997
39)	M	Tetrachloroethylene	LinF	-----	0.2092	--	0.9998
40)	M	1,3-Dichloropropane	LinF	-----	0.6562	--	0.9998
41)	M	Dibromochloromethane	LinF	-----	0.2751	--	0.9994
42)	M	1,2-Dibromoethane	LinF	-----	0.3318	--	0.9998
43)	I	Chlorobenzene-d5 (in			ISTD		

000010

1d ②

Calibration Report

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration

Calibration Files
1 =03060804 2 =03060805 3 =03060806 4 =03060807 5 =03060808
6 =03060809 7 =03060810

		Compound	Fit	Constant	Linear	Quad	RSD/Cf
44)	M	Chlorobenzene	LinF	-----	4.6224 e1	-----	0.9974
45)	M	Ethylbenzene	LinF	-----	8.4079 e1	-----	0.9981
46)	M	1,1,1,2-Tetrachloroe	LinF	-----	1.2862 e1	-----	0.9960
47)	M	m/p-Xylene	LinF	-----	3.6140 e1	-----	0.9963
48)	M	o-Xylene	LinF	-----	3.0705 e1	-----	0.9971
49)	M	Styrene	LinF	-----	5.8091 e1	-----	0.9957
50)	M	Bromoform	LinF	-----	8.0982	-----	0.9992
51)	M	Isopropylbenzene	LinF	-----	7.4287 e1	-----	0.9963
52)	S	BFB(surr)	LinF	-----	1.2504 e1	-----	0.9984
53)	M	Bromobenzene	LinF	-----	1.4905 e1	-----	0.9981
54)	M	1,1,2,2-Tetrachloroe	LinF	-----	2.4550 e1	-----	0.9998
55)	M	n-Propylbenzene	LinF	-----	9.5337 e1	-----	0.9970
56)	M	1,2,3-Trichloropropa	LinF	-----	0.4216	-----	0.9998
57)	M	2-Chlorotoluene	LinF	-----	1.3597	-----	0.9938
58)	M	1,3,5-Trimethylbenze	LinF	-----	5.9395 e1	-----	0.9961
59)	M	4-Chlorotoluene	LinF	-----	1.3893	-----	0.9934
60)	M	sec-Butylbenzene	LinF	-----	8.3021 e1	-----	0.9977
61)	M	1,2,4-Trimethylbenze	LinF	-----	5.7616 e1	-----	0.9963
62)	M	tert-Butylbenzene	LinF	-----	5.5533 e1	-----	0.9984
63)	M	1,3-Dichlorobenzene	LinF	-----	2.8678 e1	-----	0.9977
64)	M	p-Isopropyltoluene	LinF	-----	6.6408 e1	-----	0.9985
65)	I	1,4-Dichlorobenzene-		----------ISTD----------			
66)	M	n-Butylbenzene	LinF	-----	3.6857	-----	0.9999
67)	M	1,4-Dichlorobenzene	LinF	-----	1.7057	-----	0.9996
68)	M	1,2-Dichlorobenzene	LinF	-----	1.5330	-----	0.9995
69)	M	1,2-Dibromo-3-chloro	LinF	-----	0.2126	-----	0.9936
70)	M	1,2,4-Trichlorobenze	LinF	-----	0.8907	-----	0.9988
71)	M	Hexachlorobutadiene	LinF	-----	0.3181	-----	0.9857
72)	M	Naphthalene	QuadF	-----	3.0598	-0.0596	0.9890
73)	M	1,2,3-Trichlorobenze	QuadF	-----	0.8944	-0.0350	0.9984

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120	0.0	160	133 *	70 - 80
Chloromethane	120	0.0	190	158 *	70 - 130
Vinyl chloride	120	0.0	170	142 *	70 - 130
Bromomethane	120	0.0	160	133 *	70 - 130
Chloroethane	120	0.0	160	133 *	70 - 130
Trichlorofluoromethane	120	0.0	140	117	70 - 130
1,1-Dichloroethene	120	0.0	140	117	70 - 130
Methylene Chloride	120	0.0	170	142 *	70 - 130
Trans-1,2-dichloroethene	120	0.0	130	108	70 - 130
1,1-Dichloroethane	120	0.0	140	117	70 - 130
Propane, 2,2-dichloro-	120	0.0	160	133 *	70 - 130
cis-1,2-Dichloroethene	120	16	150	108	70 - 130
Chloroform	120	0.0	130	108	70 - 130
Bromochloromethane	120	0.0	150	125	70 - 130
1,1,1,-Trichloroethane	120	0.0	130	108	70 - 130
Carbon tetrachloride	120	0.0	130	108	70 - 130
1,1-Dichloropropene	120	0.0	140	117	70 - 130
Benzene	120	0.0	130	108	70 - 130
1,2-Dichloroethane	120	0.0	140	117	70 - 130
Trichloroethene	120	27	150	100	70 - 130
1,2-Dichloropropane	120	0.0	140	117	70 - 130
Dibromomethane	120	0.0	140	117	70 - 130
Bromodichloromethane	120	0.0	130	108	70 - 130
Toluene	120	0.0	130	108	70 - 130
1,1,2-Trichloroethane	120	0.0	130	108	70 - 130
Tetrachloroethylene	120	160	250	73	70 - 130
1,3-Dichloropropane	120	0.0	120	100	70 - 130
Dibromochloromethane	120	0.0	120	100	70 - 130
1,2-Dibromoethane	120	0.0	120	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 32 outside limits

Spike Recovery: 11 out of 64 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120	0.0	140	117	70 - 130
Ethylbenzene	120	0.0	130	108	70 - 130
1,1,1,2-Tetrachloroethane	120	0.0	130	108	70 - 130
m/p-Xylene	120	0.0	260	217 *	70 - 130
o-Xylene	120	0.0	140	117	70 - 130
Styrene	120	0.0	130	108	70 - 130
Bromoform	120	0.0	120	100	70 - 130
Isopropylbenzene	120	0.0	140	117	70 - 130
Bromobenzene	120	0.0	150	125	70 - 130
1,1,2,2-Tetrachloroethane	120	0.0	130	108	70 - 130
n-Propylbenzene	120	0.0	140	117	70 - 130
1,2,3-Trichloropropane	120	0.0	130	108	70 - 130
2-Chlorotoluene	120	0.0	140	117	70 - 130
1,3,5-Trimethylbenzene	120	0.0	140	117	70 - 130
4-Chlorotoluene	120	0.0	150	125	70 - 130
sec-Butylbenzene	120	0.0	100	83	70 - 130
1,2,4-Trimethylbenzene	120	0.0	140	117	70 - 130
tert-Butylbenzene	120	0.0	150	125	70 - 130
1,3-Dichlorobenzene	120	0.0	150	125	70 - 130
p-Isopropyltoluene	120	0.0	140	117	70 - 130
n-Butylbenzene	120	0.0	130	108	70 - 130
1,4-Dichlorobenzene	120	0.0	140	117	70 - 130
1,2-Dichlorobenzene	120	0.0	130	108	70 - 130
1,2-Dibromo-3-chloropropane	120	0.0	100	83	70 - 130
1,2,4-Trichlorobenzene	120	0.0	140	117	70 - 130
Hexachlorobutadiene	120	0.0	140	117	70 - 130
Naphthalene	120	0.0	120	100	70 - 130
1,2,3-Trichlorobenzene	120	0.0	130	108	70 - 130
Acetone	120	0.0	110	92	70 - 130
Methyl Acetate	120	0.0	110	92	70 - 130
Carbon disulfide	120	0.0	130	108	70 - 130
2-Butanone	120	0.0	110	92	70 - 130
Cyclohexane	120	0.0	120	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 34 outside limits

Spike Recovery: 4 out of 67 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120	0.0	120	100	70 - 130
4-Methyl-2-pentanone	120	0.0	110	92	70 - 130
2-Hexanone	120	0.0	110	92	70 - 130
Methyl Tert-butyl ether	120	0.0	110	92	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	120	160	133 *	0	30	70 - 80
Chloromethane	120	190	158 *	0	20	70 - 130
Vinyl chloride	120	160	133 *	7	20	70 - 130
Bromomethane	120	140	117	13	20	70 - 130
Chloroethane	120	160	133 *	0	20	70 - 130
Trichlorofluoromethane	120	140	117	0	20	70 - 130
1,1-Dichloroethene	120	130	108	8	20	70 - 130
Methylene Chloride	120	130	108	27 *	20	70 - 130
Trans-1,2-dichloroethene	120	130	108	0	20	70 - 130
1,1-Dichloroethane	120	140	117	0	20	70 - 130
Propane, 2,2-dichloro-	120	160	133 *	0	20	70 - 130
cis-1,2-Dichloroethene	120	150	108	0	20	70 - 130
Chloroform	120	140	117	8	20	70 - 130
Bromochloromethane	120	150	125	0	20	70 - 130
1,1,1,-Trichloroethane	120	140	117	8	20	70 - 130
Carbon tetrachloride	120	140	117	8	20	70 - 130
1,1-Dichloropropene	120	130	108	8	20	70 - 130
Benzene	120	130	108	0	20	70 - 130
1,2-Dichloroethane	120	130	108	8	20	70 - 130
Trichloroethene	120	140	92	8	20	70 - 130
1,2-Dichloropropane	120	140	117	0	20	70 - 130
Dibromomethane	120	140	117	0	20	70 - 130
Bromodichloromethane	120	130	108	0	20	70 - 130
Toluene	120	130	108	0	20	70 - 130
1,1,2-Trichloroethane	120	130	108	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 4 outside limits

Spike Recovery: 6 out of 7 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120	290	108	36 *	20	70 - 130
1,3-Dichloropropane	120	130	108	8	20	70 - 130
Dibromochloromethane	120	130	108	8	20	70 - 130
1,2-Dibromoethane	120	120	100	0	20	70 - 130
Chlorobenzene	120	140	117	0	20	70 - 130
Ethylbenzene	120	130	108	0	20	70 - 130
1,1,1,2-Tetrachloroethane	120	140	117	8	20	70 - 130
m/p-Xylene	120	280	233 *	7	20	70 - 130
o-Xylene	120	150	125	7	20	70 - 130
Styrene	120	140	117	8	20	70 - 130
Bromoform	120	130	108	8	20	70 - 130
Isopropylbenzene	120	150	125	7	20	70 - 130
Bromobenzene	120	140	117	7	20	70 - 130
1,1,2,2-Tetrachloroethane	120	130	108	0	20	70 - 130
n-Propylbenzene	120	140	117	0	20	70 - 130
1,2,3-Trichloropropane	120	130	108	0	20	70 - 130
2-Chlorotoluene	120	150	125	7	20	70 - 130
1,3,5-Trimethylbenzene	120	140	117	0	20	70 - 130
4-Chlorotoluene	120	150	125	0	20	70 - 130
sec-Butylbenzene	120	100	83	0	20	70 - 130
1,2,4-Trimethylbenzene	120	150	125	7	20	70 - 130
tert-Butylbenzene	120	140	117	7	20	70 - 130
1,3-Dichlorobenzene	120	150	125	0	20	70 - 130
p-Isopropyltoluene	120	140	117	0	20	70 - 130
n-Butylbenzene	120	120	100	8	20	70 - 130
1,4-Dichlorobenzene	120	130	108	8	20	70 - 130
1,2-Dichlorobenzene	120	130	108	0	20	70 - 130
1,2-Dibromo-3-chloropropane	120	100	83	0	20	70 - 130
1,2,4-Trichlorobenzene	120	130	108	8	20	70 - 130
Hexachlorobutadiene	120	130	108	8	20	70 - 130
Naphthalene	120	120	100	0	20	70 - 130
1,2,3-Trichlorobenzene	120	120	100	8	20	70 - 130
Acetone	120	98	82	11	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 0 outside limits

Spike Recovery: 1 out of 0 outside limits

COMMENTS:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120	94	78	16	20	70 - 130
Carbon disulfide	120	120	100	8	20	70 - 130
2-Butanone	120	96	80	14	20	70 - 130
Cyclohexane	120	110	92	8	20	70 - 130
Methylcyclohexane	120	120	100	0	20	70 - 130
4-Methyl-2-pentanone	120	110	92	0	20	70 - 130
2-Hexanone	120	110	92	0	20	70 - 130
Methyl Tert-butyl ether	120	110	92	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 0 outside limits

COMMENTS:

Method Detection Limit Study
Method 8260B
Date: 12/17/07
t @ 0.99%
2.887*STDEV

Study includes analytes requested by project 1207015.

Name	Amount #1	Amount #2	Amount #3	Amount #4	Amount #5	Amount #6	Amount #7	Amount #8	DL ng
Ethylene oxide	12.77	10.36	23.02	4.17	11.25	7.51	11.21	9.55	15.811
Dichlorodifluoromethane	8.61	7.83	9.05	7.97	9.44	8.71	8.70	8.70	1.519
Chloromethane	11.26	11.39	8.81	12.91	10.64	10.88	10.10	13.74	4.480
Vinyl chloride	9.28	7.26	10.93	8.30	9.04	9.54	9.27	9.63	3.074
Bromomethane	12.42	6.46	1.25	3.98	4.51	6.35	0.35	1.58	11.294
Chloroethane	7.75	9.48	7.99	7.77	9.55	8.00	8.22	9.01	2.189
Trichlorofluoromethane	9.76	8.84	9.40	8.72	10.57	9.82	10.59	10.88	2.355
Acetone	8.60	8.93	17.00	7.25	11.36	8.25	10.53	9.88	8.789
1,1-Dichloroethene	10.89	8.70	8.07	7.14	9.67	10.30	8.94	7.67	3.768
Carbon disulfide	8.32	9.53	8.66	8.95	10.49	10.58	9.55	9.13	2.350
Cyclopentene	10.49	9.84	8.20	8.83	10.05	9.93	10.66	9.88	2.391
Methylene Chloride	13.58	14.72	15.13	13.11	13.37	14.18	15.46	12.85	2.818
trans-1,2-Dichloroethene	11.94	10.50	11.06	9.51	9.89	10.92	10.72	10.76	2.140
1,1-Dichloroethane	13.13	10.41	10.47	10.28	11.26	10.57	10.59	10.13	2.832
2-Butanone	8.37	5.01	3.13	1.78	9.81	5.19	1.83	1.93	8.945
Propane, 2,2-dichloro-	14.00	11.17	10.67	9.86	12.47	12.76	10.30	9.75	4.465
cis-1,2-Dichloroethene	10.86	10.86	10.26	10.64	10.61	10.69	10.20	9.88	1.014
Chloroform	11.62	9.97	10.36	10.12	10.09	10.80	10.45	10.32	1.541
Methane, bromochloro-	10.11	7.72	9.75	8.72	9.91	9.89	7.53	6.63	3.875
Cyclopentene, 1-methyl-	11.64	8.81	9.81	9.28	10.78	10.63	10.15	9.28	2.723
1,1,1,-Trichloroethane	10.68	9.98	10.55	9.74	11.16	11.92	10.95	10.22	2.029
Dibromofluoromethane(surr)	8.67	4.25	7.44	5.19	6.86	8.06	6.69	5.06	4.518
Carbon tetrachloride	9.76	10.84	9.40	8.92	10.18	11.33	11.47	10.28	2.622
1,1-Dichloropropene	13.84	10.06	9.50	10.84	12.91	10.91	10.82	10.46	4.237
Benzene	14.32	10.68	10.46	9.27	14.06	9.95	10.89	9.88	5.566
1,2-Dichloroethane	15.51	10.62	10.12	9.77	13.87	10.94	9.82	10.73	6.099
Trichloroethene	9.19	10.25	9.44	9.83	10.56	12.02	10.76	12.16	3.188
1,2-Dichloropropane	8.87	9.51	8.59	9.13	8.37	8.97	9.25	9.99	1.487
Dibromomethane	8.33	7.63	8.66	9.33	9.19	8.73	8.46	9.55	1.796
Bromodichloromethane	8.73	9.36	8.61	8.55	7.90	8.95	9.25	8.88	1.320
1-Propene, 1,3-dichloro-, (E)-	8.00	8.22	6.94	8.55	7.81	7.49	7.51	8.14	1.473
Toluene-d8(surr)	9.04	8.39	7.19	8.57	8.36	8.13	8.33	8.22	1.508
Toluene	8.56	8.42	8.14	8.31	8.55	8.43	8.27	9.20	0.931
1,1,2-Trichloroethane	8.52	8.80	7.02	7.98	8.35	8.16	8.11	9.93	2.380
Tetrachloroethylene	8.55	8.32	8.18	8.97	9.21	10.08	8.98	9.64	1.883
1,3-Dichloropropane	7.54	8.21	7.01	9.17	7.89	8.34	8.41	9.36	2.266
Dibromochloromethane	8.04	7.95	7.05	8.11	7.81	7.94	8.33	8.16	1.120
1,2-Dibromoethane	7.87	7.70	6.41	9.26	8.38	7.27	8.76	9.10	2.816
Chlorobenzene	10.60	10.40	9.94	10.72	10.44	10.70	11.28	10.97	1.157
Ethylbenzene	9.43	9.49	9.63	9.86	9.47	10.02	9.99	10.85	1.361
1,1,1,2-Tetrachloroethane	9.64	9.75	9.92	9.33	9.70	10.35	9.40	9.65	0.918
m/p-Xylene	10.05	10.03	9.94	10.62	9.94	10.06	10.65	10.84	1.072
o-Xylene	9.71	8.73	9.26	9.56	10.59	10.05	9.86	10.88	2.004
Styrene	9.36	9.44	8.57	9.39	9.56	9.49	9.57	10.30	1.357
Bromoform	9.47	10.15	9.23	8.89	10.47	9.77	9.86	9.63	1.452
Isopropylbenzene	10.28	9.88	9.96	11.17	10.66	11.00	10.98	11.70	1.818
BFB(surr)	11.76	10.31	9.99	10.40	11.04	11.16	10.83	10.92	1.616
Bromobenzene	11.01	10.27	10.62	10.90	10.18	10.32	10.67	10.66	0.867
1,1,2,2-Tetrachloroethane	9.23	10.46	9.96	11.14	11.28	10.38	11.65	11.12	2.311
n-Propylbenzene	10.15	9.58	9.98	10.41	10.78	10.37	10.55	11.85	1.944
1,2,3-Trichloropropane	11.32	10.50	11.27	11.92	10.80	8.60	11.10	10.24	2.901
2-Chlorotoluene	9.33	10.94	9.25	13.13	11.81	9.91	10.52	13.01	4.447
1,3,5-Trimethylbenzene	10.00	10.06	10.59	11.18	10.71	10.65	10.94	11.44	1.448
4-Chlorotoluene	10.95	10.21	10.67	11.59	11.00	10.73	10.31	10.79	1.245
sec-Butylbenzene	10.54	9.81	9.93	11.27	10.48	11.21	11.16	16.05	5.785
.alpha.-Methylstyrene	9.18	8.85	9.03	8.94	8.89	9.69	9.48	10.22	1.392
1,2,4-Trimethylbenzene	9.99	9.96	9.79	10.73	9.95	10.16	10.51	11.99	2.089
tert-Butylbenzene	10.45	9.68	9.88	11.07	10.20	10.74	10.97	12.94	2.945
1,3-Dichlorobenzene	10.96	9.94	10.28	11.65	10.65	10.54	11.41	11.86	1.972
p-Isopropyltoluene	9.90	9.16	9.54	11.11	10.56	11.16	11.50	14.94	5.219
n-Butylbenzene	9.10	8.86	9.09	9.00	10.02	9.62	10.44	15.71	6.609
1,4-Dichlorobenzene	10.98	9.11	9.96	9.90	10.17	9.31	10.60	11.82	2.570
1,2-Dichlorobenzene	10.27	9.50	10.61	8.94	10.11	9.49	10.20	10.54	1.699
1,2-Dibromo-3-chloropropane	7.20	8.10	2.90	7.98	4.53	7.03	5.99	7.56	5.327
1,2,4-Trichlorobenzene	11.63	9.66	10.74	9.99	11.81	11.19	12.57	13.90	3.996
Hexachlorobutadiene	9.13	9.40	9.94	9.86	11.33	12.55	17.41	41.95	32.269
Naphthalene	23.76	14.38	12.28	14.02	30.01	17.42	15.91	15.83	17.254
Hexachlorobutadiene	13.29	9.88	13.82	12.12	12.95	12.28	15.58	16.75	6.154

1i ②

Method Detection Limit Study
Date: 03/21/08
t @ 0.99%
2.887*STDEV
Study includes analytes requested by project 0208030.

Name	Run1 ng	Run2 ng	Run3 ng	Run4 ng	Run5 ng	Run6 ng	Run7 ng	Run8 ng	DL ng
Dichlorodifluoromethane	8.18	7.89	7.07	8.44	8.60	8.95	10.01	9.52	2.74
Chloromethane	16.05	14.44	11.58	12.97	13.08	12.50	15.07	12.79	4.29
Vinyl chloride	11.51	11.39	11.38	11.51	10.55	11.27	11.79	11.46	1.04
Bromomethane	12.33	9.24	9.02	8.48	8.50	9.15	8.60	8.77	3.68
Chloroethane	12.12	12.06	12.08	12.57	11.42	12.25	12.57	11.63	1.17
Trichlorofluoromethane	10.08	9.52	9.09	9.21	10.46	10.52	11.23	10.10	2.10
1,1-Dichloroethene	11.14	9.90	10.30	10.92	9.72	11.07	12.00	11.35	2.23
Acetone	13.07	11.91	14.43	11.82	18.36	16.06	21.02	26.15	14.48
Methyl Acetate	7.09	7.66	6.66	8.85	8.31	8.66	11.94	9.45	4.66
Carbon disulfide	9.85	9.65	9.73	9.59	9.53	9.72	9.48	9.27	0.52
Methyl-tert-butyl-ether	9.05	9.27	8.76	9.07	9.14	9.01	10.33	9.38	1.37
Methylene Chloride	18.85	16.61	16.51	16.99	15.74	15.26	15.40	18.20	3.60
trans-1,2-Dichloroethene	11.08	11.13	10.92	11.43	10.97	11.04	11.38	10.53	0.80
1,1-Dichloroethane	10.63	10.38	10.56	10.54	10.52	11.22	10.62	10.61	0.72
2-Butanone 540-20-7	5.98	7.86	8.59	9.54	8.05	7.42	11.96	8.12	5.07
Propane, 2,2-dichloro-	12.10	10.92	12.14	10.49	11.28	11.20	10.56	11.05	1.60 need CAS
cis-1,2-Dichloroethene 540-59-0	10.79	11.53	10.88	23.44	10.50	29.85	33.42	11.19	27.91 ** CAS use 1217107 stdt
Chloroform	10.91	10.40	9.97	10.98	10.62	11.10	10.87	10.97	1.10
Methane, bromochloro-	11.40	12.84	11.97	12.07	12.39	11.61	13.05	11.47	1.79
Cyclohexane	10.00	9.57	9.54	9.48	9.76	10.68	10.53	10.19	1.33
1,1,1,-Trichloroethane	10.59	11.14	10.48	10.42	10.37	10.65	10.11	9.68	1.22
Carbon tetrachloride	9.41	9.84	9.49	10.07	9.47	10.31	9.98	9.90	0.93
1,1-Dichloropropene	10.06	10.75	10.22	10.30	10.86	11.28	11.19	10.57	1.29 CAS 563-58-6
Benzene	9.50	9.10	9.75	9.42	10.06	10.01	9.81	9.52	0.93
1,2-Dichloroethane	11.07	10.26	10.81	10.24	10.63	10.88	10.84	10.29	0.94
Cyclohexane, methyl-	9.75	10.08	9.34	9.72	10.56	10.54	11.49	9.52	2.05
Trichloroethene	11.62	14.50	10.83	33.36	11.43	31.90	41.12	11.82	35.95 **
1,2-Dichloropropane	11.09	10.68	10.85	10.84	10.70	10.70	10.76	11.35	0.68
Methyl Isobutyl Ketone	6.23	5.38	5.94	5.77	6.40	6.66	10.26	6.35	4.40
Dibromomethane	10.30	10.04	9.65	11.29	10.05	11.43	12.03	10.65	2.38
Bromodichloromethane	9.93	9.29	9.63	9.96	9.50	10.02	10.24	10.21	0.98
2-Hexanone	7.76	8.46	7.40	7.30	8.08	7.55	11.26	7.69	3.74
Toluene	12.11	9.66	9.92	10.05	9.88	10.60	10.56	10.05	2.54
1,1,2-Trichloroethane	9.04	10.40	9.75	9.02	10.29	9.83	10.64	10.45	1.82
Tetrachloroethylene	12.94	114.48	18.69	491.16	29.39	563.30	927.22	32.17	996.89 **
1,3-Dichloropropane 142-28-9	8.52	8.65	8.65	9.22	8.80	9.20	9.83	9.04	1.24 CAS
Dibromochloromethane	8.84	10.21	8.41	12.91	8.44	14.36	16.15	9.61	8.58
1,2-Dibromoethane	8.12	8.47	8.62	8.88	8.63	8.53	10.28	9.01	1.87
Chlorobenzene	10.15	10.11	10.07	10.38	10.26	10.86	10.66	10.09	0.85
Ethylbenzene	9.02	6.78	8.93	8.65	8.70	9.74	9.59	8.81	1.19
1,1,1,2-Tetrachloroethane	10.60	9.61	9.98	9.63	9.68	10.67	10.79	10.20	1.43
m/p-Xylene	19.45	18.09	17.92	19.81	18.21	19.82	20.20	18.87	2.58
o-Xylene	9.85	10.44	9.80	9.93	9.41	11.38	11.01	9.76	1.98
Styrene	8.68	9.07	8.71	8.41	9.33	9.43	9.60	8.97	1.19
Bromoform	8.16	7.60	7.14	8.61	9.04	9.25	9.88	8.22	2.59
Isopropylbenzene	8.97	8.89	8.60	8.95	9.10	9.83	10.08	8.71	1.53
Bromobenzene	10.36	9.84	10.49	11.39	10.63	11.95	10.63	10.37	1.91 CAS-108-86-1
1,1,2,2-Tetrachloroethane	9.17	8.98	8.42	8.53	8.97	9.59	11.56	9.15	2.85 CAS ~~74296-31-4~~ 103-65-1
n-Propylbenzene	9.11	9.02	8.73	9.05	8.89	9.81	9.81	9.01	1.17
1,2,3-Trichloropropane	8.64	8.50	7.32	8.94	8.63	8.72	2.04	8.68	6.74
2-Chlorotoluene 95-49-8	8.71	8.81	8.55	8.93	8.96	9.57	9.21	8.47	1.04 CAS
1,3,5-Trimethylbenzene 108-67-8	9.56	9.47	9.25	9.44	9.76	9.98	10.08	9.04	1.02 CAS
106-43-4 4-Chlorotoluene 95-49-8	8.67	8.48	8.67	8.46	8.84	9.23	9.63	8.79	1.15 CAS
sec-Butylbenzene 135-98-8	9.28	8.72	8.89	9.52	9.39	10.13	10.20	9.32	1.51 CAS
1,2,4-Trimethylbenzene 95-63-6	9.78	9.69	9.21	9.55	9.71	10.23	9.44	9.59	0.85 CAS
tert-Butylbenzene 98-06-6	9.74	9.42	9.51	9.38	9.90	10.53	10.20	9.21	1.30 CAS
1,3-Dichlorobenzene 541-73-1	10.87	11.30	10.15	11.07	11.12	11.53	12.11	11.17	1.61 CAS
p-Isopropyltoluene 99-87-6	9.25	8.99	9.11	9.41	9.73	9.97	10.29	9.12	1.35 CAS
n-Butylbenzene 104-51-8	8.91	8.94	9.31	9.21	9.42	10.34	11.04	8.59	2.36
1,4-Dichlorobenzene	10.76	10.20	10.81	10.78	9.89	10.21	11.86	10.74	1.73
1,2-Dichlorobenzene	9.94	9.74	10.03	10.18	10.58	10.98	10.76	10.21	1.24
1,2-Dibromo-3-chloropropane	8.96	7.60	6.20	7.81	6.74	8.57	10.02	4.72	4.84
1,2,4-Trichlorobenzene	11.47	11.01	11.75	11.17	11.64	12.70	13.47	10.61	2.70
Hexachlorobutadiene	11.13	11.30	12.55	12.43	13.63	13.87	18.87	12.14	7.14
Naphthalene	9.60	10.32	9.49	9.48	8.89	10.29	12.59	10.89	3.33
1,2,3-Trichlorobenzene 87-61-6	10.46	9.99	10.27	10.62	9.96	11.36	12.8	10.07	2.79 CAS

** High DL due to compound contamination project:0208030.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 0.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
75-71-8	Dichlorodifluoromethane	270	U
74-87-3	Chloromethane	430	U
75-01-4	Vinyl chloride	480	
74-83-9	Bromomethane	370	U
75-00-3	Chloroethane	120	U
75-69-4	Trichlorofluoromethane	210	U
75-35-4	1,1-Dichloroethene	220	U
67-64-1	Acetone	1400	U
79-20-9	Methyl Acetate	470	U
75-15-0	Carbon disulfide	52	U
1634-04-4	Methyl Tert-butyl ether	140	U
75-09-2	Methylene Chloride	360	U
156-60-5	Trans-1,2-dichloroethene	80	U
75-34-3	1,1-Dichloroethane	72	U
78-93-3	2-Butanone	510	U
594-20-7	Propane, 2,2-dichloro-	180	U
540-59-0	cis-1,2-Dichloroethene	21000	
67-66-3	Chloroform	110	U
74-97-5	Bromochloromethane	180	U
110-82-7	Cyclohexane	130	U
71-55-6	1,1,1,-Trichloroethane	120	U
56-23-5	Carbon tetrachloride	93	U
563-58-6	1,1-Dichloropropene	130	U
71-43-2	Benzene	93	U
75-34-3	1,2-Dichloroethane	94	U
108-87-2	Methylcyclohexane	200	U
127-18-4	Trichloroethene	10000	
78-87-5	1,2-Dichloropropane	68	U
108-10-1	4-Methyl-2-pentanone	440	U
74-95-3	Dibromomethane	240	U
75-27-4	Bromodichloromethane	98	U
591-78-6	2-Hexanone	370	U
108-88-3	Toluene	250	U
71-55-6	1,1,2-Trichloroethane	180	U
127-18-4	Tetrachloroethylene	220000	E
142-28-9	1,3-Dichloropropane	230	U
124-48-1	Dibromochloromethane	110	U
106-93-4	1,2-Dibromoethane	280	U
108-90-7	Chlorobenzene	120	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 0.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	140	U
630-20-6	1,1,1,2-Tetrachloroethane	92	U
106-42-3	m/p-Xylene	110	U
95-47-6	o-Xylene	200	U
100-42-5	Styrene	140	U
75-25-2	Bromoform	140	U
98-82-8	Isopropylbenzene	180	U
108-86-1	Bromobenzene	87	U
79-34-5	1,1,2,2-Tetrachloroethane	230	U
103-65-1	n-Propylbenzene	190	U
96-18-4	1,2,3-Trichloropropane	290	U
95-49-8	2-Chlorotoluene	440	U
108-67-8	1,3,5-Trimethylbenzene	140	U
106-43-4	4-Chlorotoluene	120	U
135-98-8	sec-Butylbenzene	580	U
95-63-6	1,2,4-Trimethylbenzene	210	U
98-06-6	tert-Butylbenzene	290	U
541-73-1	1,3-Dichlorobenzene	200	U
49-87-6	p-Isopropyltoluene	520	U
105-51-8	n-Butylbenzene	660	U
106-46-7	1,4-Dichlorobenzene	260	U
95-50-1	1,2-Dichlorobenzene	170	U
96-12-8	1,2-Dibromo-3-chloropropane	530	U
120-82-1	1,2,4-Trichlorobenzene	400	U
87-68-3	Hexachlorobutadiene	710	U
91-20-3	Naphthalene	330	U
87-61-6	1,2,3-Trichlorobenzene	280	U

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	0.162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	0.443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	3.086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	2.579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	0.178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	2.197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	0.771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	0.076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	0.395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	0.266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	0.329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	44.899	5.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06

Heated Purge (Y/N): N Calibration Times: 19:20 23

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 =

RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D 60809.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	RF	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	899	5.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

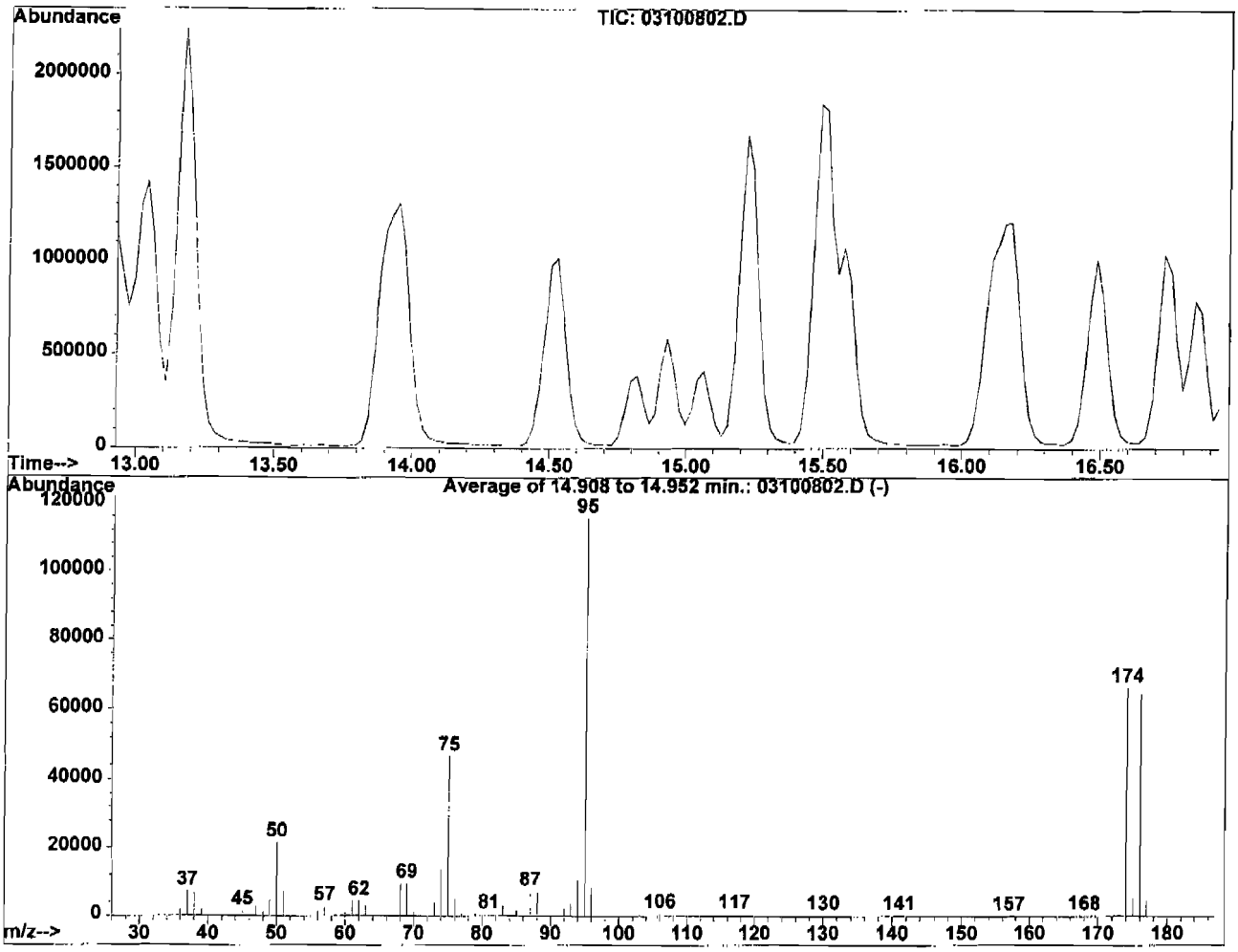
000024

2a (1)

BFB

Data File : C:\GALWIN98\DATA\0208030B\03100802.D
Acq On : 10 Mar 08 09:28
Sample : CCAL_82608003C02
Misc :
MS Integration Params: events.e
Method : C:\HPCHEM\1\methods\envdef.m (Chemstation Integrator)
Title :

Vial: 1
Operator: csm
Inst :
Multiplr: 1.00



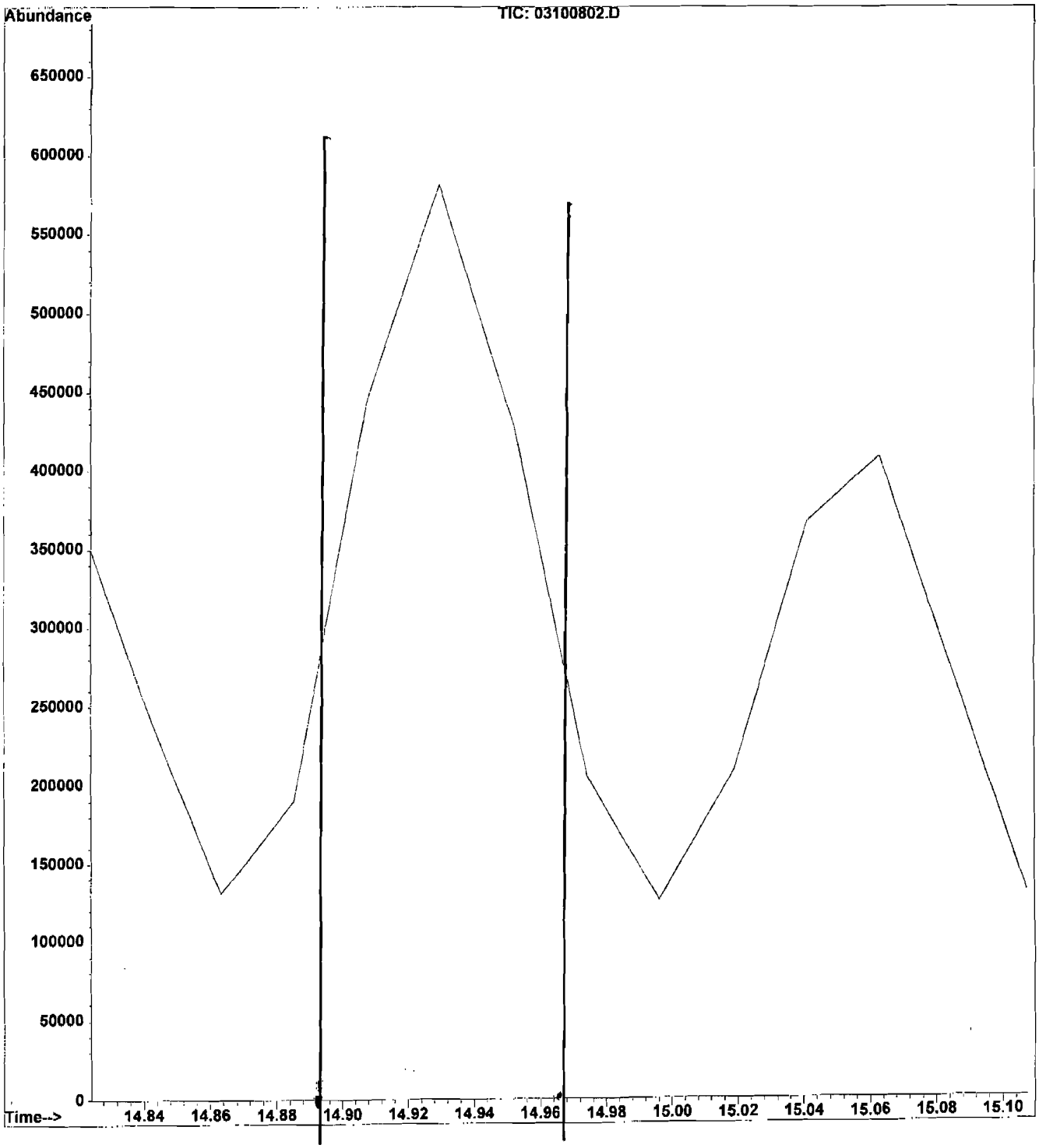
AutoFind: Scans 599, 600, 601; Background Corrected with Scan 590

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.6	21521	PASS
75	95	30	60	40.2	46491	PASS
95	95	100	100	100.0	115728	PASS
96	95	5	9	7.0	8157	PASS
173	174	0.00	2	0.7	469	PASS
174	95	50	100	57.5	66493	PASS
175	174	5	9	7.9	5250	PASS
176	174	95	101	97.2	64616	PASS
177	176	5	9	7.1	4566	PASS

03100802.D envdef.m Tue May 27 10:58:51 2008 FINNIGAN

2a (2)

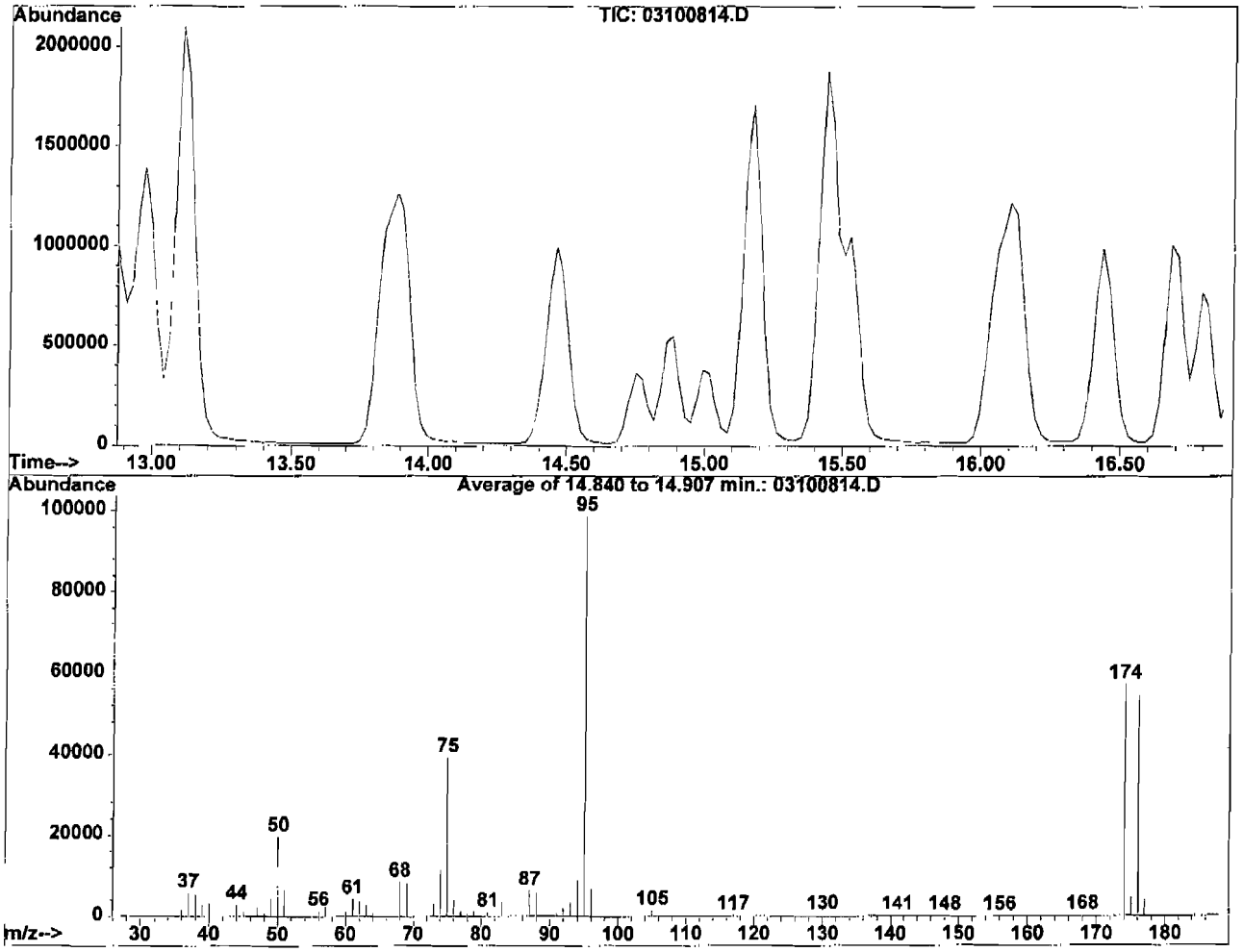
File : C:\GALWIN98\DATA\0208030B\03100802.D
Operator : csm
Acquired : 10 Mar 08 09:28 using AcqMethod 8260
Instrument :
Sample Name: CCAL_82608003C02
Misc Info :
Vial Number: 1



2c ③

BFB

Data File : C:\GALWIN98\DATA\0208030B\03100814.D Vial: 1
Acq On : 10 Mar 08 19:52 Operator: csm
Sample : CCAL._82608003C03 Inst :
Misc : Multiplr: 1.00
MS Integration Params: events.e
Method : C:\HPCHEM\1\methods\envdef.m (Chemstation Integrator)
Title :



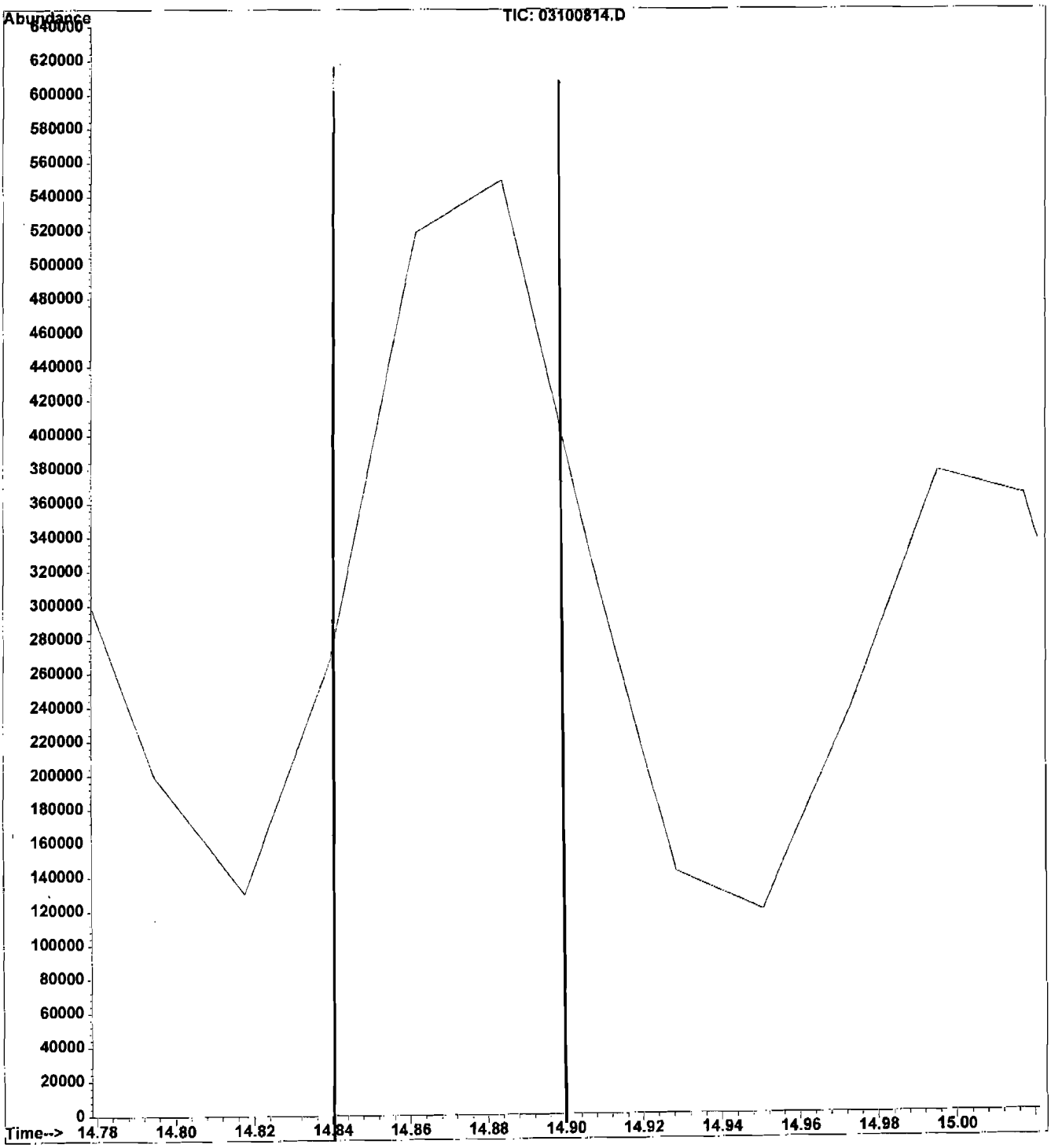
Spectrum Information: Average of 14.840 to 14.907 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.8	19529	PASS
75	95	30	60	39.7	39188	PASS
95	95	100	100	100.0	98750	PASS
96	95	5	9	7.0	6929	PASS
173	174	0.00	2	0.2	131	PASS
174	95	50	100	58.1	57404	PASS
175	174	5	9	8.1	4628	PASS
176	174	95	101	95.2	54674	PASS
177	176	5	9	7.2	3911	PASS

03100814.D envdef.m Tue May 27 11:08:27 2008 FINNIGAN

2a (4)

File : C:\GALWIN98\DATA\0208030B\03100814.D
Operator : csm
Acquired : 10 Mar 08 19:52 using AcqMethod 8260
Instrument :
Sample Name: CCAL._82608003C03
Misc Info :
Vial Number: 1



Quantitation Report (Not Reviewed) 2C-

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:27 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Tue May 27 14:27:16 2008
Response via : Initial Calibration
DataAcq Meth : 8260

linear not forced

1

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Benzene, pentafluoro- (ins	6.57	168	10769519	200.00 ng	-0.11
28) 1,2-Difluorobenzene (ins)	8.03	114	22381245	200.00 ng	-0.06
43) Chlorobenzene-d5 (ins)	12.82	117	404411	200.00 ng	0.01
65) 1,4-Dichlorobenzene-d4 (in	16.94	152	7446678	200.00 ng	0.04
System Monitoring Compounds					
23) Dibromofluoromethane(surr)	6.73	192	1039956	196.99 ng	-0.11
Spiked Amount 200.000			Recovery =	98.50%	
35) Toluene-d8(surr)	10.38	98	24025022	195.67 ng	-0.02
Spiked Amount 200.000			Recovery =	97.83%	
52) BFB(surr)	14.88	174	5112192	202.19 ng	0.02
Spiked Amount 200.000			Recovery =	101.10%	

Target Compounds					Qvalue
2) Dichlorodifluoromethane	0.00	85		N.D.	
3) Chloromethane	0.00	50		N.D.	
4) Vinyl chloride	0.00	62		N.D.	
5) Bromomethane	0.00	94		N.D.	
6) Chloroethane	0.00	64		N.D.	
7) Trichlorofluoromethane	0.00	101		N.D.	
8) 1,1-Dichloroethene	0.00	96		N.D.	
9) Acetone	0.00	58		N.D.	
10) Methyl Acetate	0.00	74		N.D.	
11) Carbon disulfide	0.00	76		N.D.	
12) Methyl Tert-butyl ether	0.00	73		N.D.	
13) Methylene Chloride	4.47	84	204013	-7.01 ng	96
14) Trans-1,2-dichloroethene	0.00	96		N.D.	
15) 1,1-Dichloroethane	0.00	63		N.D.	
16) 2-Butanone	0.00	72		N.D.	
17) Propane, 2,2-dichloro-	0.00	77		N.D.	
18) cis-1,2-Dichloroethene	6.21	96	962370	19.30 ng	93
19) Chloroform	0.00	83		N.D.	
20) Methane, bromochloro-	0.00	128		N.D.	
21) Cyclohexane	0.00	56		N.D.	
22) 1,1,1,-Trichloroethane	0.00	97		N.D.	
24) Carbon tetrachloride	0.00	117		N.D.	
25) 1,1-Dichloropropene	0.00	75		N.D.	
26) Benzene	0.00	78		N.D.	
27) 1,2-Dichloroethane	0.00	62		N.D.	
29) Cyclohexane, methyl-	0.00	83		N.D.	
30) Trichloroethene	8.52	95	1053996	28.41 ng	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03110804.D
Acq On : 11 Mar 08 11:53
Sample : 0208030-2 1.0uL
Misc : 1316057
MS Integration Params: LSCINT.E
Quant Time: May 27 14:27 19108

Vial: 1
Operator: csm
Inst :
Multiplr: 1.00

Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Tue May 27 14:27:16 2008
Response via : Initial Calibration
DataAcq Meth : 8260

2

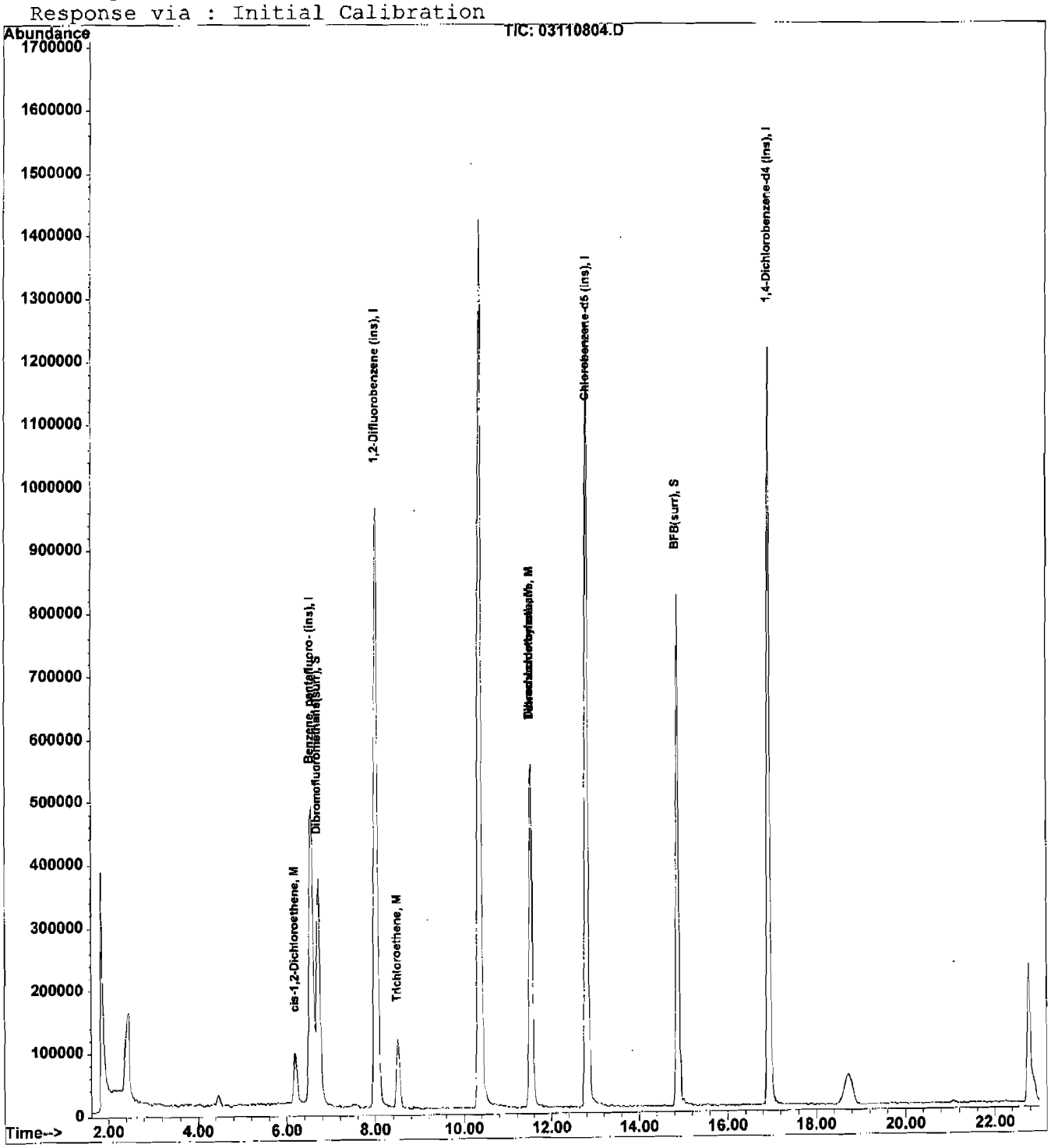
Compound	R.T.	QIon	Response	Conc Unit		Qvalue
31) 1,2-Dichloropropane	0.00	63		N.D.		
32) Methyl Isobutyl Ketone	0.00	100		N.D.		
33) Dibromomethane	0.00	93		N.D.		
34) Bromodichloromethane	0.00	83		N.D.		
36) 2-Hexanone	0.00	43		N.D.		
37) Toluene	0.00	92		N.D.		
38) 1,1,2-Trichloroethane	0.00	83		N.D.		
39) Tetrachloroethylene	11.54	164	3810936	162.78 ng		97
40) 1,3-Dichloropropane	0.00	76		N.D.		
41) Dibromochloromethane	11.55	129	3829204	124.38 ng	#	9
42) 1,2-Dibromoethane	0.00	107		N.D.		
44) Chlorobenzene	0.00	112		N.D.		
45) Ethylbenzene	0.00	91		N.D.		
46) 1,1,1,2-Tetrachloroethane	0.00	131		N.D.		
47) m/p-Xylene	0.00	106		N.D.		
48) o-Xylene	0.00	106		N.D.		
49) Styrene	0.00	104		N.D.		
50) Bromoform	0.00	173		N.D.		
51) Isopropylbenzene	0.00	105		N.D.		
53) Bromobenzene	0.00	156		N.D.		
54) 1,1,2,2-Tetrachloroethane	0.00	83		N.D.		
55) n-Propylbenzene	0.00	91		N.D.		
56) 1,2,3-Trichloropropane	0.00	75		N.D.		
57) 2-Chlorotoluene	0.00	91		N.D.		
58) 1,3,5-Trimethylbenzene	0.00	105		N.D.		
59) 4-Chlorotoluene	0.00	91		N.D.		
60) sec-Butylbenzene	0.00	105		N.D.		
61) 1,2,4-Trimethylbenzene	0.00	105		N.D.		
62) tert-Butylbenzene	0.00	119		N.D.		
63) 1,3-Dichlorobenzene	0.00	146		N.D.		
64) p-Isopropyltoluene	0.00	119		N.D.		
66) n-Butylbenzene	0.00	91		N.D.		
67) 1,4-Dichlorobenzene	0.00	146		N.D.		
68) 1,2-Dichlorobenzene	0.00	146		N.D.		
69) 1,2-Dibromo-3-chloropropan	0.00	75		N.D.		
70) 1,2,4-Trichlorobenzene	0.00	180		N.D.		
71) Hexachlorobutadiene	0.00	225		N.D.		
72) Naphthalene	0.00	128		N.D.		
73) 1,2,3-Trichlorobenzene	0.00	180		N.D.		

(#) = qualifier out of range (m) = manual integration

Quantitation Report

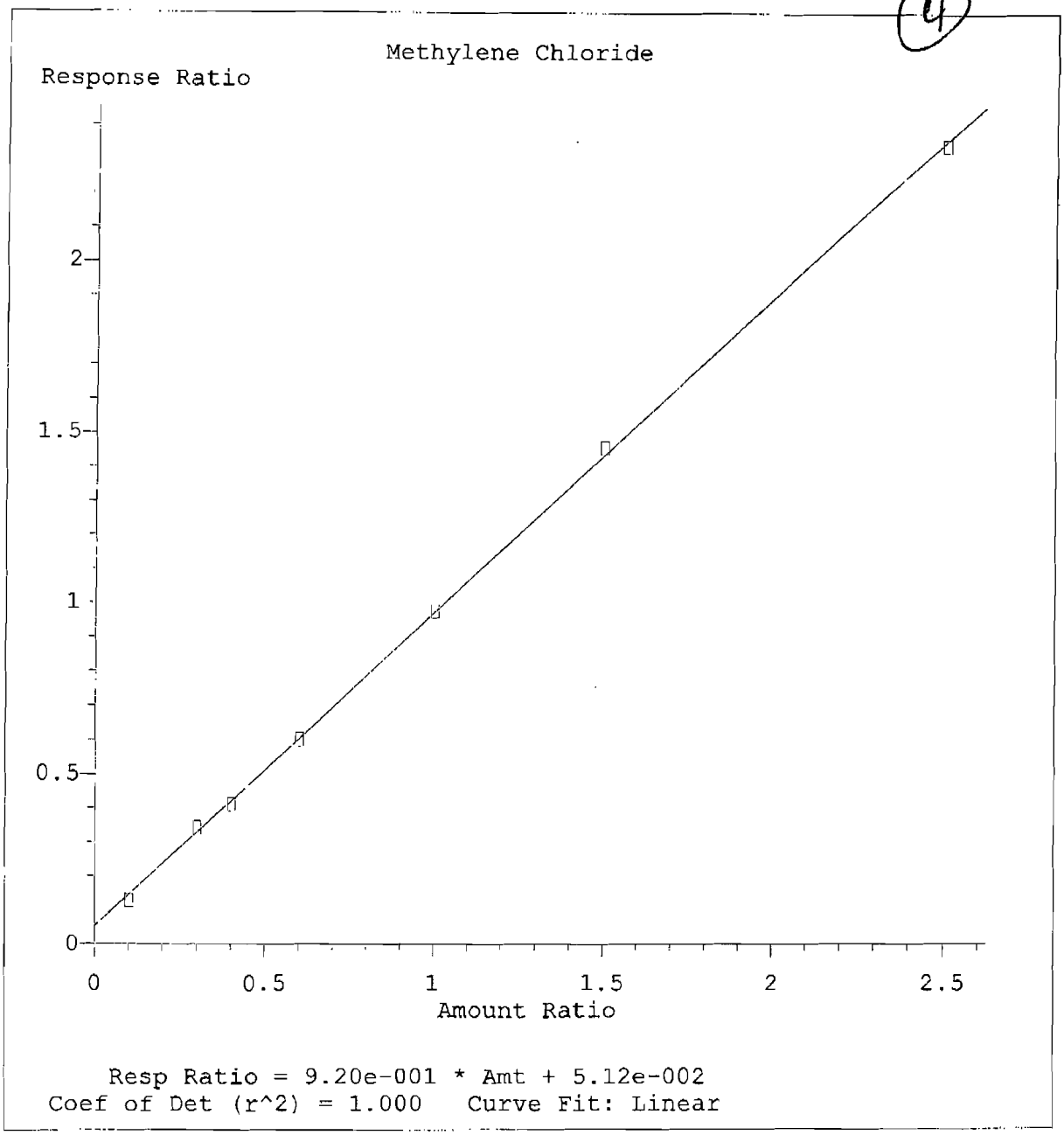
Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:27 19108 Quant Results File: 82608003.RES

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator) (3)
Title : 8260
Last Update : Tue May 27 14:27:16 2008
Response via : Initial Calibration



000031 (3)

(4)



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Tue May 27 14:27:16 2008

Quantitation Report (Not Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:26 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration
DataAcq Meth : 8260

Linear forced (1)

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Benzene, pentafluoro- (ins	6.57	168	10769519	200.00 ng	-0.11
28) 1,2-Difluorobenzene (ins)	8.03	114	22381245	200.00 ng	-0.06
43) Chlorobenzene-d5 (ins)	12.82	117	404411	200.00 ng	0.01
65) 1,4-Dichlorobenzene-d4 (in	16.94	152	7446678	200.00 ng	0.04
System Monitoring Compounds					
23) Dibromofluoromethane(surr)	6.73	192	1039956	196.99 ng	-0.11
Spiked Amount 200.000			Recovery =	98.50%	
35) Toluene-d8(surr)	10.38	98	24025022	195.67 ng	-0.02
Spiked Amount 200.000			Recovery =	97.83%	
52) BFB(surr)	14.88	174	5112192	202.19 ng	0.02
Spiked Amount 200.000			Recovery =	101.10%	

Target Compounds					Qvalue
2) Dichlorodifluoromethane	0.00	85		N.D.	
3) Chloromethane	0.00	50		N.D.	
4) Vinyl chloride	0.00	62		N.D.	
5) Bromomethane	0.00	94		N.D.	
6) Chloroethane	0.00	64		N.D.	
7) Trichlorofluoromethane	0.00	101		N.D.	
8) 1,1-Dichloroethene	0.00	96		N.D.	
9) Acetone	0.00	58		N.D.	
10) Methyl Acetate	0.00	74		N.D.	
11) Carbon disulfide	0.00	76		N.D.	
12) Methyl Tert-butyl ether	0.00	73		N.D.	
13) Methylene Chloride	4.47	84	204013	3.98 ng	96
14) Trans-1,2-dichloroethene	0.00	96		N.D.	
15) 1,1-Dichloroethane	0.00	63		N.D.	
16) 2-Butanone	0.00	72		N.D.	
17) Propane, 2,2-dichloro-	0.00	77		N.D.	
18) cis-1,2-Dichloroethene	6.21	96	962370	19.30 ng	93
19) Chloroform	0.00	83		N.D.	
20) Methane, bromochloro-	0.00	128		N.D.	
21) Cyclohexane	0.00	56		N.D.	
22) 1,1,1,-Trichloroethane	0.00	97		N.D.	
24) Carbon tetrachloride	0.00	117		N.D.	
25) 1,1-Dichloropropene	0.00	75		N.D.	
26) Benzene	0.00	78		N.D.	
27) 1,2-Dichloroethane	0.00	62		N.D.	
29) Cyclohexane, methyl-	0.00	83		N.D.	
30) Trichloroethene	8.52	95	1053996	28.41 ng	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:26 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator) (2)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration
DataAcq Meth : 8260

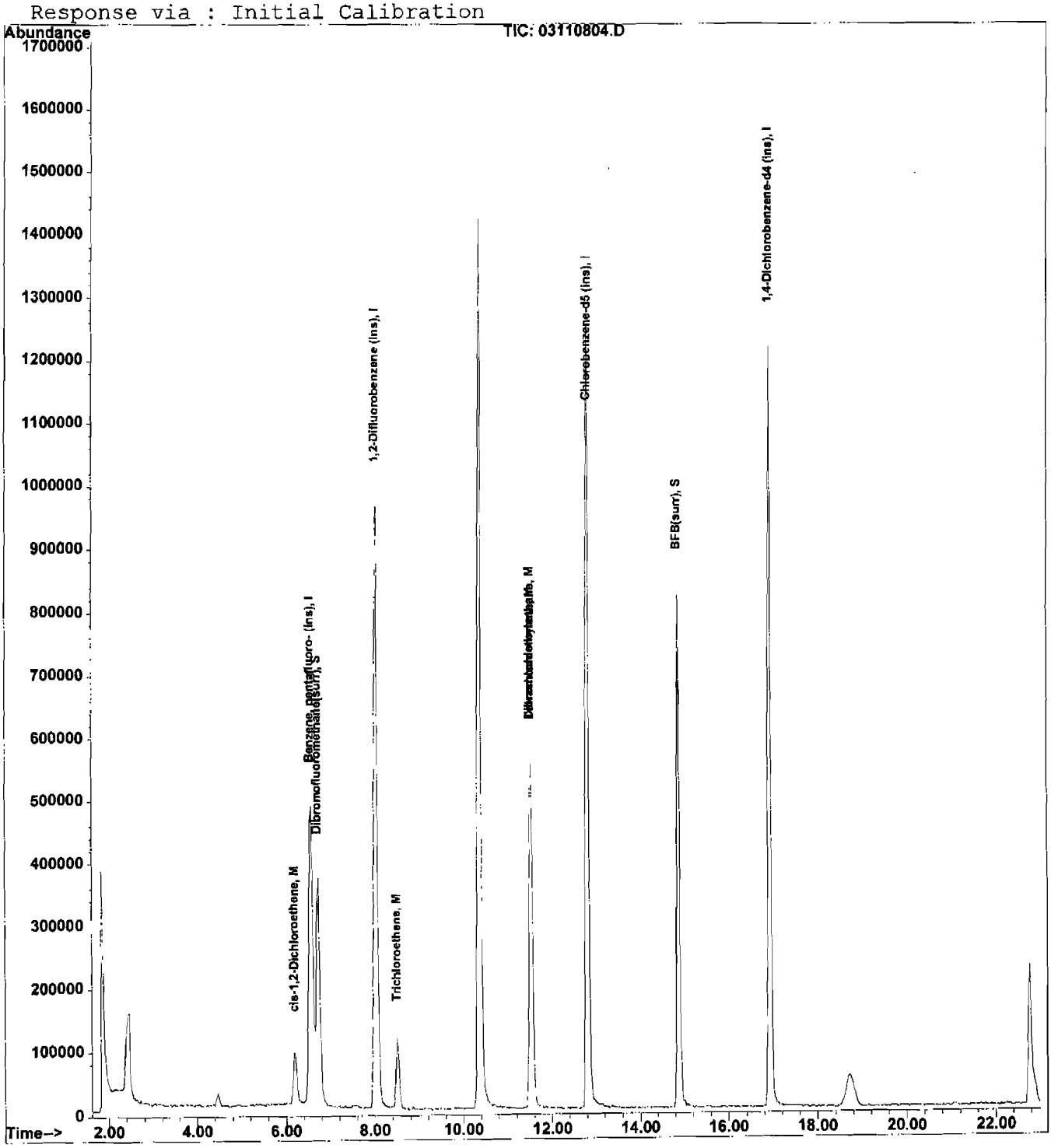
	Compound	R.T.	QIon	Response	Conc Unit		Qvalue
31)	1,2-Dichloropropane	0.00	63		N.D.		
32)	Methyl Isobutyl Ketone	0.00	100		N.D.		
33)	Dibromomethane	0.00	93		N.D.		
34)	Bromodichloromethane	0.00	83		N.D.		
36)	2-Hexanone	0.00	43		N.D.		
37)	Toluene	0.00	92		N.D.		
38)	1,1,2-Trichloroethane	0.00	83		N.D.		
39)	Tetrachloroethylene	11.54	164	3810936	162.78 ng		97
40)	1,3-Dichloropropane	0.00	76		N.D.		
41)	Dibromochloromethane	11.55	129	3829204	124.38 ng	#	9
42)	1,2-Dibromoethane	0.00	107		N.D.		
44)	Chlorobenzene	0.00	112		N.D.		
45)	Ethylbenzene	0.00	91		N.D.		
46)	1,1,1,2-Tetrachloroethane	0.00	131		N.D.		
47)	m/p-Xylene	0.00	106		N.D.		
48)	o-Xylene	0.00	106		N.D.		
49)	Styrene	0.00	104		N.D.		
50)	Bromoform	0.00	173		N.D.		
51)	Isopropylbenzene	0.00	105		N.D.		
53)	Bromobenzene	0.00	156		N.D.		
54)	1,1,2,2-Tetrachloroethane	0.00	83		N.D.		
55)	n-Propylbenzene	0.00	91		N.D.		
56)	1,2,3-Trichloropropane	0.00	75		N.D.		
57)	2-Chlorotoluene	0.00	91		N.D.		
58)	1,3,5-Trimethylbenzene	0.00	105		N.D.		
59)	4-Chlorotoluene	0.00	91		N.D.		
60)	sec-Butylbenzene	0.00	105		N.D.		
61)	1,2,4-Trimethylbenzene	0.00	105		N.D.		
62)	tert-Butylbenzene	0.00	119		N.D.		
63)	1,3-Dichlorobenzene	0.00	146		N.D.		
64)	p-Isopropyltoluene	0.00	119		N.D.		
66)	n-Butylbenzene	0.00	91		N.D.		
67)	1,4-Dichlorobenzene	0.00	146		N.D.		
68)	1,2-Dichlorobenzene	0.00	146		N.D.		
69)	1,2-Dibromo-3-chloropropan	0.00	75		N.D.		
70)	1,2,4-Trichlorobenzene	0.00	180		N.D.		
71)	Hexachlorobutadiene	0.00	225		N.D.		
72)	Naphthalene	0.00	128		N.D.		
73)	1,2,3-Trichlorobenzene	0.00	180		N.D.		

(#) = qualifier out of range (m) = manual integration

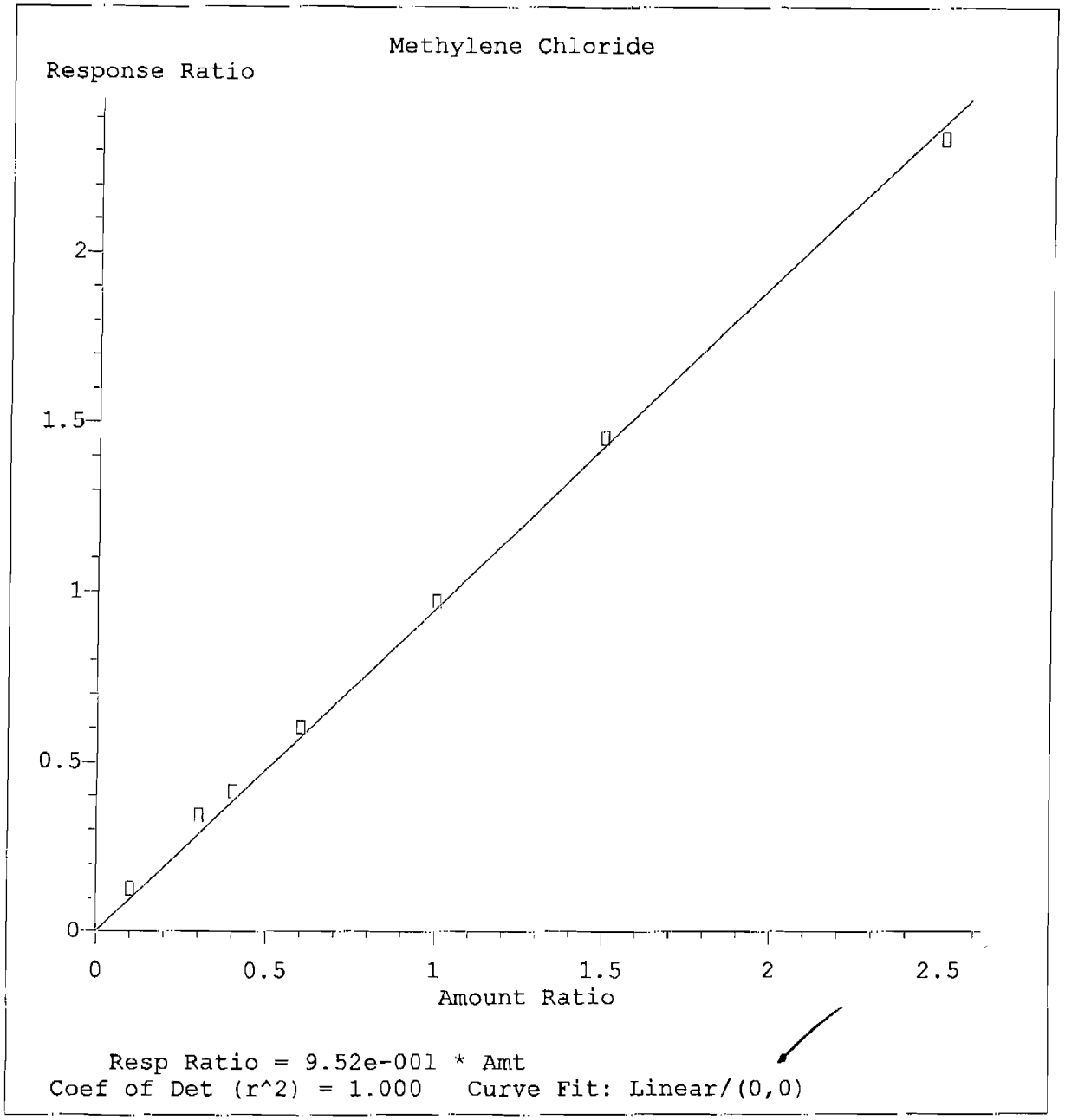
Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:26 19108 Quant Results File: 82608003.RES

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator) (3)
Title : 8260
Last Update : Mon Apr 07 10:19:12 2008
Response via : Initial Calibration



000035 (2)



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

Quantitation Report (Not Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:29 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Tue May 27 14:29:29 2008
Response via : Initial Calibration
DataAcq Meth : 8260

Average RF

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Benzene, pentafluoro- (ins	6.57	168	10769519	200.00 ng	-0.11
28) 1,2-Difluorobenzene (ins)	8.03	114	22381245	200.00 ng	-0.06
43) Chlorobenzene-d5 (ins)	12.82	117	404411	200.00 ng	0.01
65) 1,4-Dichlorobenzene-d4 (in	16.94	152	7446678	200.00 ng	0.04
System Monitoring Compounds					
23) Dibromofluoromethane(surr)	6.73	192	1039956	196.99 ng	-0.11
Spiked Amount 200.000			Recovery =	98.50%	
35) Toluene-d8(surr)	10.38	98	24025022	195.67 ng	-0.02
Spiked Amount 200.000			Recovery =	97.83%	
52) BFB(surr)	14.88	174	5112192	202.19 ng	0.02
Spiked Amount 200.000			Recovery =	101.10%	

Target Compounds					Qvalue
2) Dichlorodifluoromethane	0.00	85		N.D.	
3) Chloromethane	0.00	50		N.D.	
4) Vinyl chloride	0.00	62		N.D.	
5) Bromomethane	0.00	94		N.D.	
6) Chloroethane	0.00	64		N.D.	
7) Trichlorofluoromethane	0.00	101		N.D.	
8) 1,1-Dichloroethene	0.00	96		N.D.	
9) Acetone	0.00	58		N.D.	
10) Methyl Acetate	0.00	74		N.D.	
11) Carbon disulfide	0.00	76		N.D.	
12) Methyl Tert-butyl ether	0.00	73		N.D.	
13) Methylene Chloride	4.47	84	204013	3.62 ng	96
14) Trans-1,2-dichloroethene	0.00	96		N.D.	
15) 1,1-Dichloroethane	0.00	63		N.D.	
16) 2-Butanone	0.00	72		N.D.	
17) Propane, 2,2-dichloro-	0.00	77		N.D.	
18) cis-1,2-Dichloroethene	6.21	96	962370	19.30 ng	93
19) Chloroform	0.00	83		N.D.	
20) Methane, bromochloro-	0.00	128		N.D.	
21) Cyclohexane	0.00	56		N.D.	
22) 1,1,1,-Trichloroethane	0.00	97		N.D.	
24) Carbon tetrachloride	0.00	117		N.D.	
25) 1,1-Dichloropropene	0.00	75		N.D.	
26) Benzene	0.00	78		N.D.	
27) 1,2-Dichloroethane	0.00	62		N.D.	
29) Cyclohexane, methyl-	0.00	83		N.D.	
30) Trichloroethene	8.52	95	1053996	28.41 ng	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:29 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Tue May 27 14:29:29 2008
Response via : Initial Calibration
DataAcq Meth : 8260

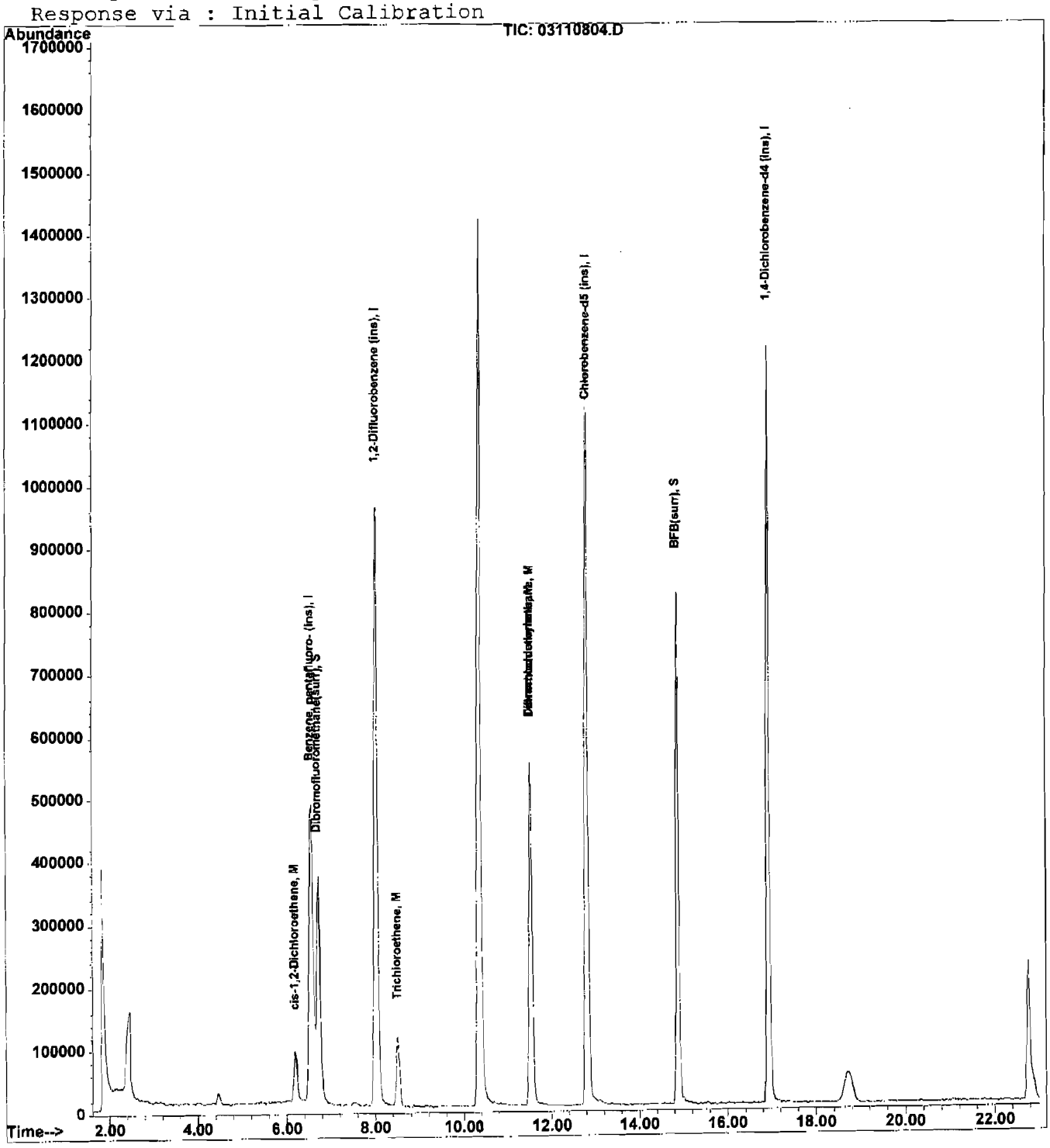
	Compound	R.T.	QIon	Response	Conc Unit		Qvalue
31)	1,2-Dichloropropane	0.00	63		N.D.		
32)	Methyl Isobutyl Ketone	0.00	100		N.D.		
33)	Dibromomethane	0.00	93		N.D.		
34)	Bromodichloromethane	0.00	83		N.D.		
36)	2-Hexanone	0.00	43		N.D.		
37)	Toluene	0.00	92		N.D.		
38)	1,1,2-Trichloroethane	0.00	83		N.D.		
39)	Tetrachloroethylene	11.54	164	3810936	162.78 ng		97
40)	1,3-Dichloropropane	0.00	76		N.D.		
41)	Dibromochloromethane	11.55	129	3829204	124.38 ng	#	9
42)	1,2-Dibromoethane	0.00	107		N.D.		
44)	Chlorobenzene	0.00	112		N.D.		
45)	Ethylbenzene	0.00	91		N.D.		
46)	1,1,1,2-Tetrachloroethane	0.00	131		N.D.		
47)	m/p-Xylene	0.00	106		N.D.		
48)	o-Xylene	0.00	106		N.D.		
49)	Styrene	0.00	104		N.D.		
50)	Bromoform	0.00	173		N.D.		
51)	Isopropylbenzene	0.00	105		N.D.		
53)	Bromobenzene	0.00	156		N.D.		
54)	1,1,2,2-Tetrachloroethane	0.00	83		N.D.		
55)	n-Propylbenzene	0.00	91		N.D.		
56)	1,2,3-Trichloropropane	0.00	75		N.D.		
57)	2-Chlorotoluene	0.00	91		N.D.		
58)	1,3,5-Trimethylbenzene	0.00	105		N.D.		
59)	4-Chlorotoluene	0.00	91		N.D.		
60)	sec-Butylbenzene	0.00	105		N.D.		
61)	1,2,4-Trimethylbenzene	0.00	105		N.D.		
62)	tert-Butylbenzene	0.00	119		N.D.		
63)	1,3-Dichlorobenzene	0.00	146		N.D.		
64)	p-Isopropyltoluene	0.00	119		N.D.		
66)	n-Butylbenzene	0.00	91		N.D.		
67)	1,4-Dichlorobenzene	0.00	146		N.D.		
68)	1,2-Dichlorobenzene	0.00	146		N.D.		
69)	1,2-Dibromo-3-chloropropan	0.00	75		N.D.		
70)	1,2,4-Trichlorobenzene	0.00	180		N.D.		
71)	Hexachlorobutadiene	0.00	225		N.D.		
72)	Naphthalene	0.00	128		N.D.		
73)	1,2,3-Trichlorobenzene	0.00	180		N.D.		

(#) = qualifier out of range (m) = manual integration

Quantitation Report

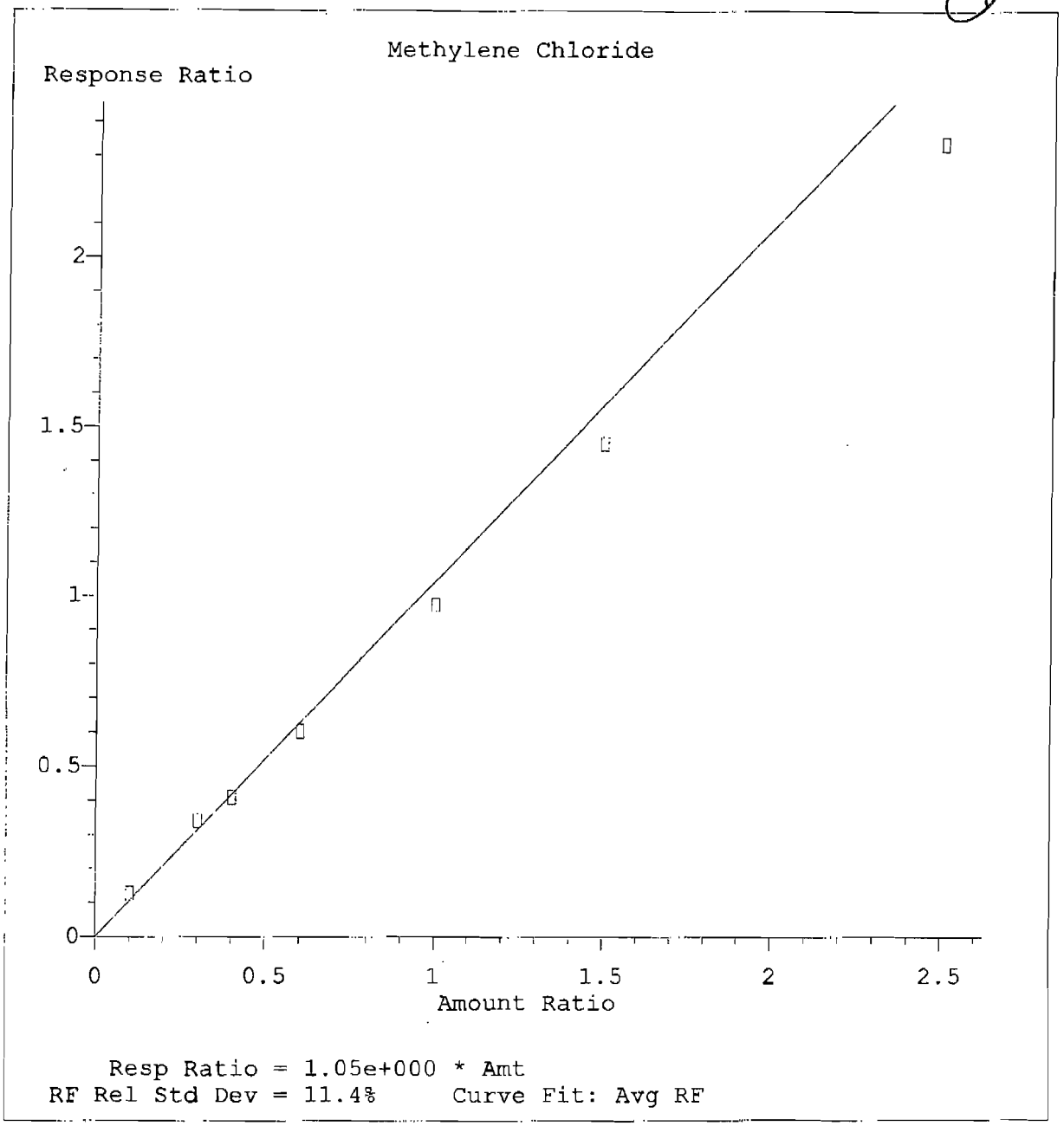
Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: May 27 14:29 19108 Quant Results File: 82608003.RES

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Tue May 27 14:29:29 2008
Response via : Initial Calibration



000039

(9)



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Tue May 27 14:27:16 2008

2d

Compound #43 -- Page 1

Name: Chlorobenzene-d5 (ins)

Concentration Units: ng

Retention Time Parameters

Ret. time: 12.807 RRT: 1.000

Extract signal from

0.500 0.500 Abs. %

This is 00:00:00 at 13.307 min

Ref Spectrum:

Signals to Be Used for Quantitation

Quant signal: Target Ion

	m/z	Relative Abundance	% Uncert Rel
Tgt	117.00	100.0	
Q1			
Q2			
Q3			

Quantitation Parameters

Quant type: ISTD, time reference

Sample Amount Concentration: 200.000

Measure response by: Height

Identify: Meets qualifiers, Best RT

Maximum number of hits: 9

Suppression: Extend Area Quant

Calibration Information

Curve Fit: Linear Regr, Force (0,0)

Weight: Equal weighting

Intercept: 1.00e+000

Coef. of Det. (r^2): 0.000

Prev | Next | Plot | Page 2 | Pageing | OK | Cancel | Help

0

000041

2d

Compound #44 -- Page 1

Name: Chlorobenzene

Concentration Units: ng

Retention Time Information

Rel Time: 12.873 RRT: 1.005

Extraction Window

0.500 0.500 Min %

Quantitation Parameters

Quantitation: Target compound

Measure Response by: Area

Qualifiers: Meets qualifiers, Best RT

Maximum number of hits: 9

Extraction: Extend Area Quant

Signal Ratio Used for Quantitation

Quant signal: Target Ion

	m/z	Relative Response	±2 Uncert Rel
Tgt	112.00	100.0	
Q1	77.00	79.90	20.00
Q2	114.00	31.40	20.00
Q3			

Calibration Information

Model: Linear Regr, Force (0,0)

Weight: Equal weighting

Intercept: 4.62e-[illegible]

Coeff. Det. (r^2): 0.999

Prev 2 | Next | Print | Page 2 | Page 9 | OK | Cancel | Help

2

000042

Page #:

GC/MS APPLICATION SHEET

Client: [illegible]
Project # [illegible]
Method/Analysis: [illegible]

Archived:

FILES:

Method: 8260 Sequence: [illegible] Data Files: [illegible]

GC/MS

Columns:	Length	Diameter	Phase	Film Thickness	Lot#
1					
2					

RUN CONDITIONS

Carrier Gas He Detect Temp 150 Injector Temp [illegible]
Injector Vol [illegible] Flow [illegible] Solvent delay [illegible]

Mass Range
Time: [illegible] Low [illegible] High [illegible]
Time: Low High
Time: Low High

TEMPERATURE RAMP

Initial		Program Rate	Final	
40 C	3 min	8 C/min	240 C	3 min
C	min	C/min	C	min
C	min	C/min	C	min

Notes:

Analyst [illegible]
Date 3/5/08

DATFRM1021

RUN LOG

Tekmar ALS 2016

Purge Method: 1

Analyst	Run #	Sample	Date	Vol.	Position	Notes
[illegible]	1	Bl.	[illegible]	5 ml	1	
"	2	Blank	"	"	2	
"	3	5ppb [illegible]	3/6/18	"	3/9	
"	4	CS1 20g [illegible]	3/6/18	"	10	
"	5	CS2 [illegible]	"	"	11	
"	6	CS3 [illegible]	"	"	12	
"	7	CS4 [illegible]	"		13	
"	8	CS5 [illegible]	"	"	14	
"	9	CS6 [illegible]	"	"	15	
"	10	CS7 [illegible]	"	"	16	
"	11	Blank	"	"	1	

DATFRM1077

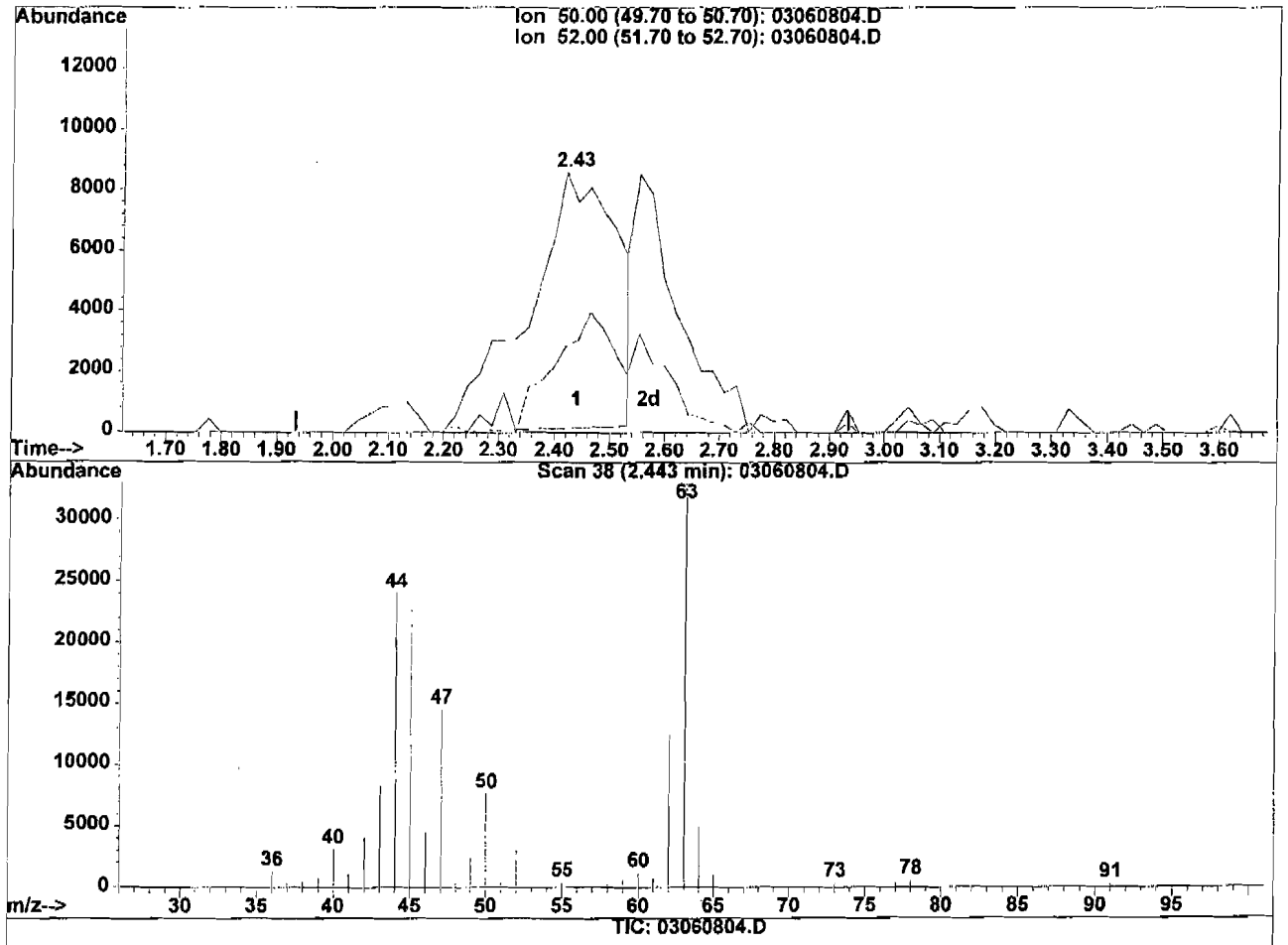
Manual
Int.

Curve 82608003

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:47 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(3) Chloromethane (P)

2.44min 8.73ng

response 864585

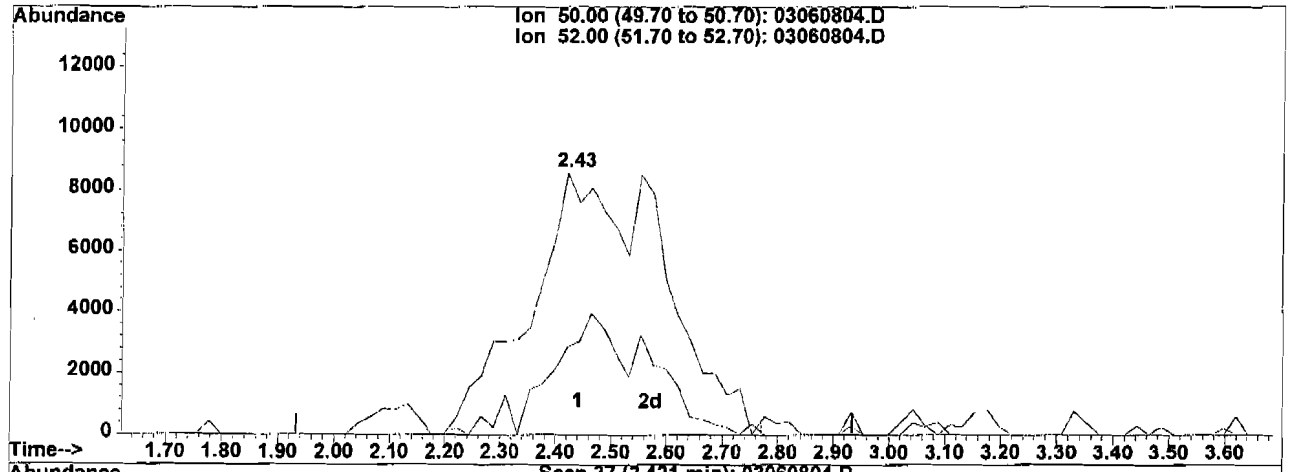
Ion	Exp%	Act%
50.00	100	100
52.00	35.30	32.91
0.00	0.00	0.00
0.00	0.00	0.00

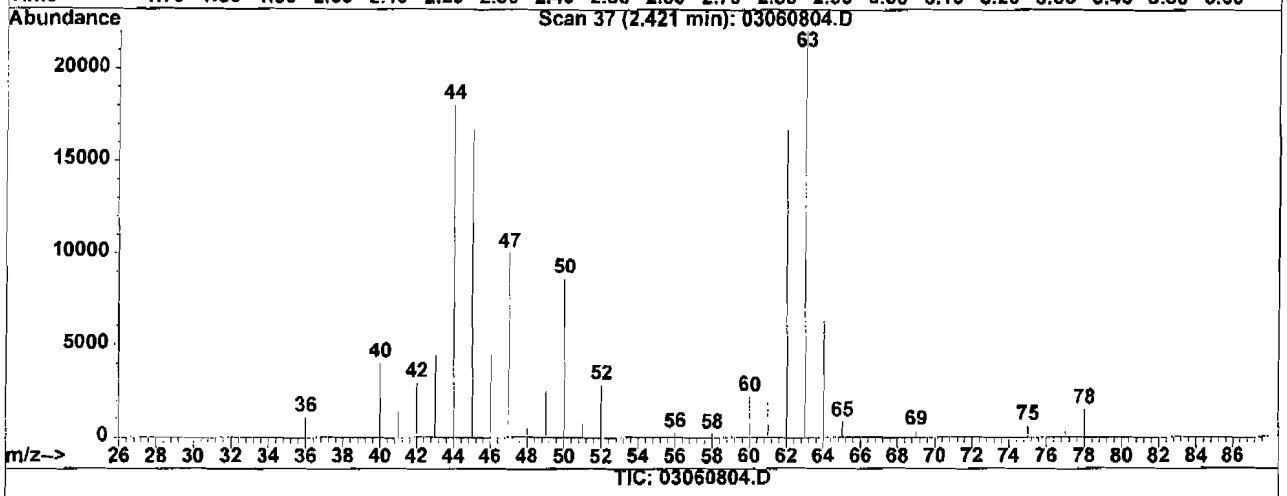
03060804.D 82608003.M Fri Mar 07 10:48:14 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:48 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(3) Chloromethane (P)

2.42min 21.66ng m

response 1430299

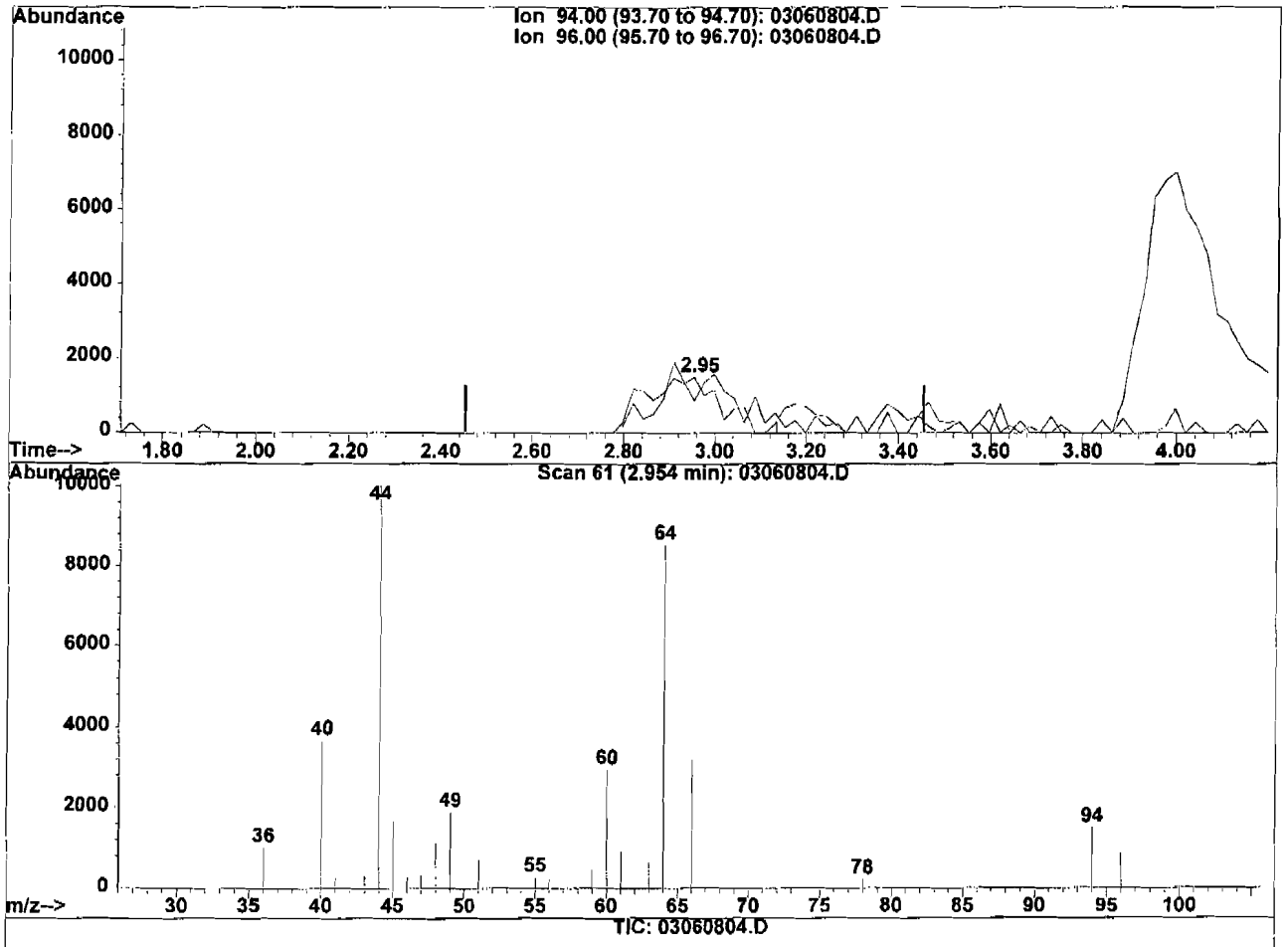
Ion	Exp%	Act%
50.00	100	100
52.00	35.30	19.89#
0.00	0.00	0.00
0.00	0.00	0.00

03060804.D 82608003.M Fri Mar 07 10:48:20 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:48 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(5) Bromomethane

2.95min 27.10ng m

response 173363

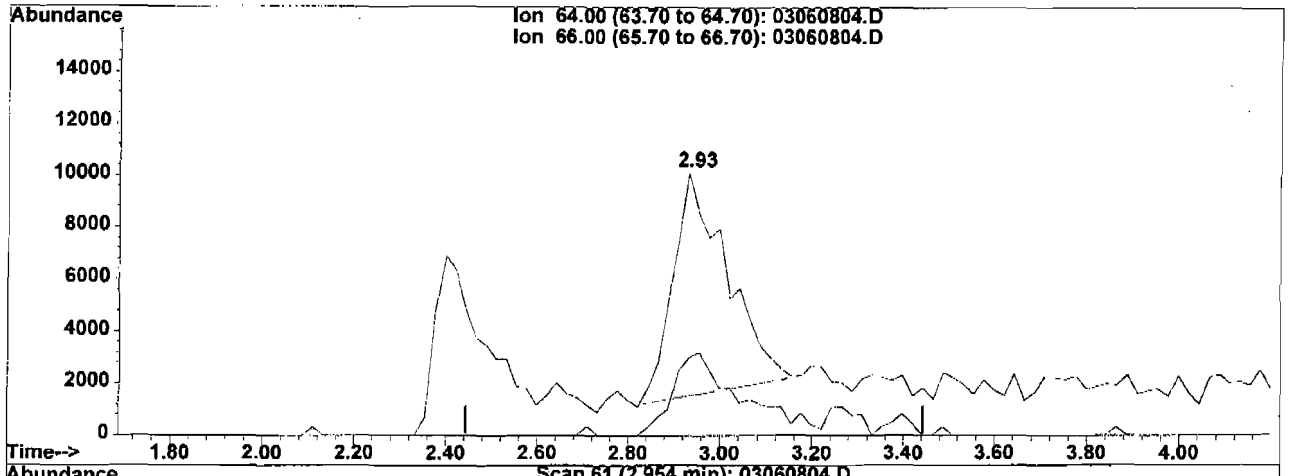
Ion	Exp%	Act%
94.00	100	100
96.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

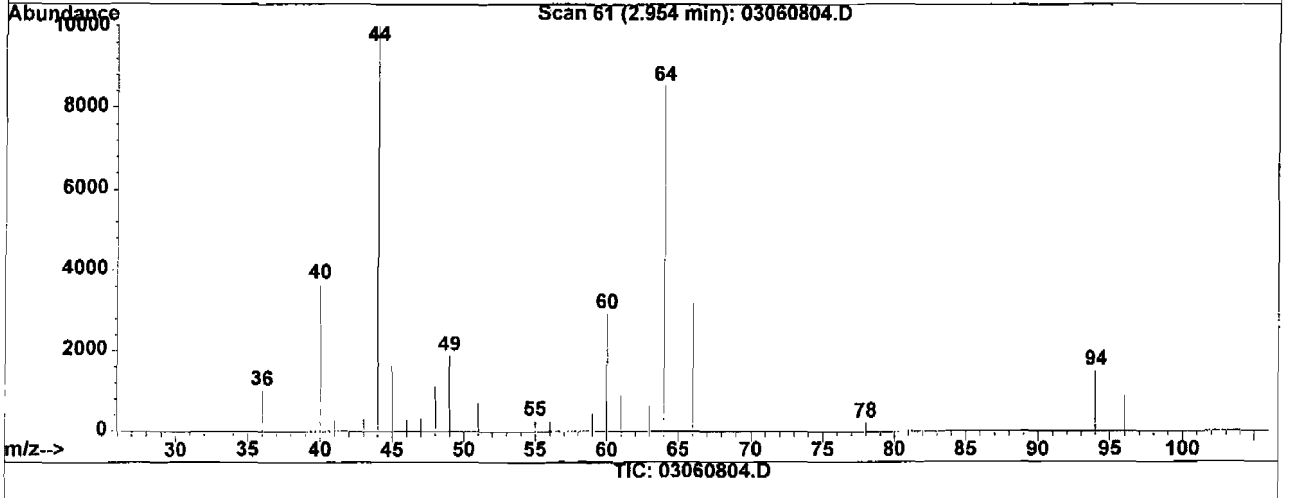
03060804.D 82608003.M Fri Mar 07 10:48:40 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:48 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(6) Chloroethane

2.95min 3.58ng

response 685008

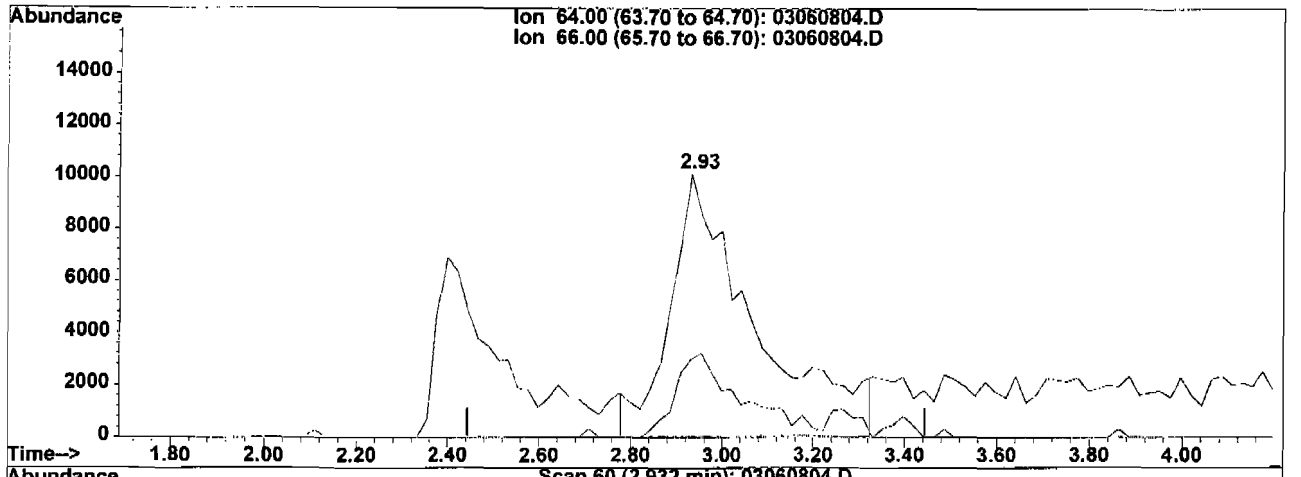
Ion	Exp%	Act%
64.00	100	100
66.00	43.00	42.82
0.00	0.00	0.00
0.00	0.00	0.00

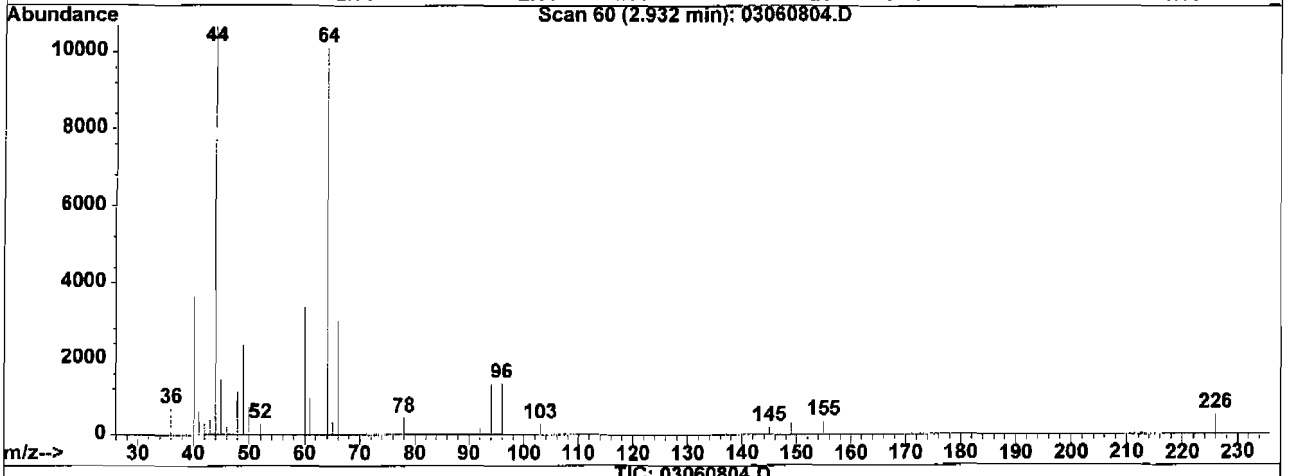
03060804.D 82608003.M Fri Mar 07 10:48:45 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:48 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(6) Chloroethane

2.93min 20.91ng m

response 1262848

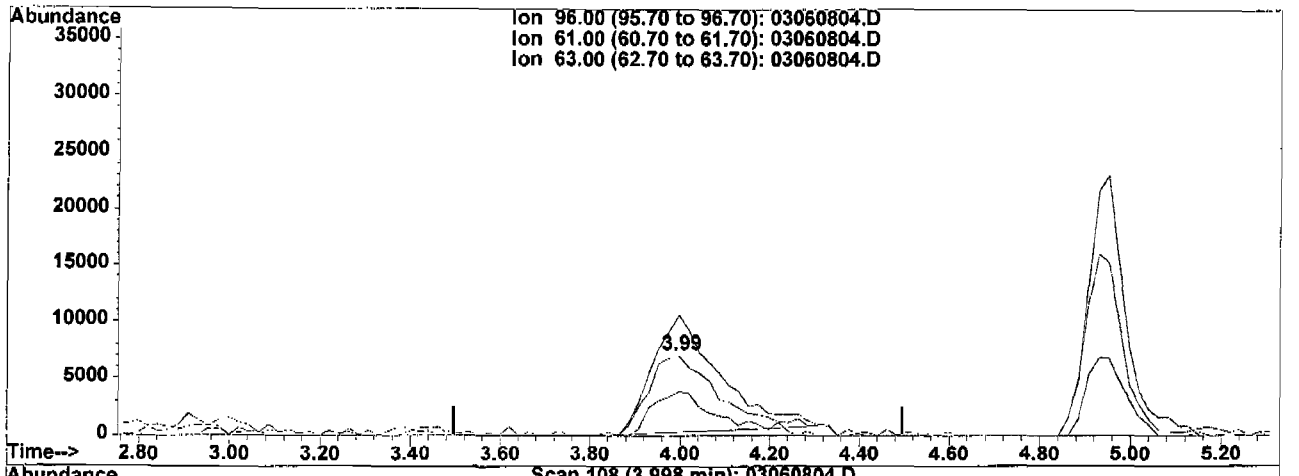
Ion	Exp%	Act%
64.00	100	100
66.00	43.00	23.22#
0.00	0.00	0.00
0.00	0.00	0.00

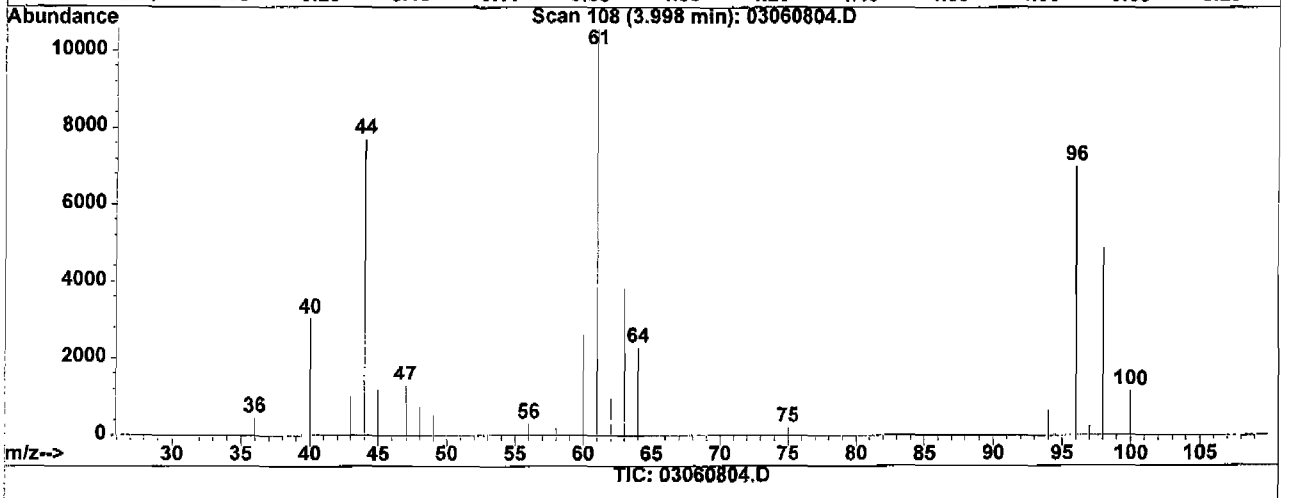
03060804.D 82608003.M Fri Mar 07 10:49:02 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:48 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(8) 1,1-Dichloroethene (C)

4.00min 18.17ng

response 713769

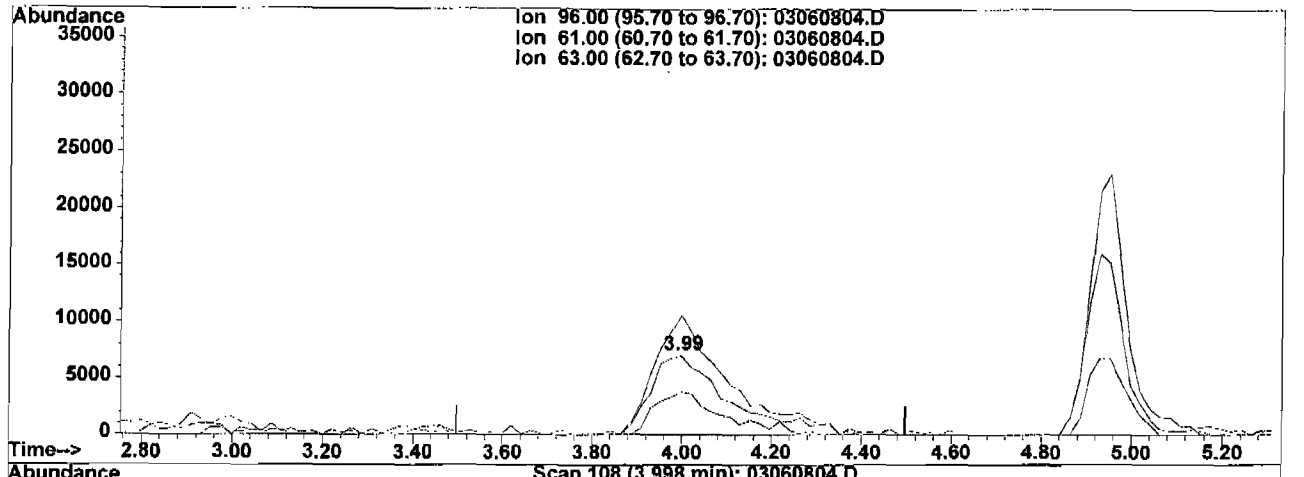
Ion	Exp%	Act%
96.00	100	100
61.00	120.10	167.30#
63.00	47.00	54.47
0.00	0.00	0.00

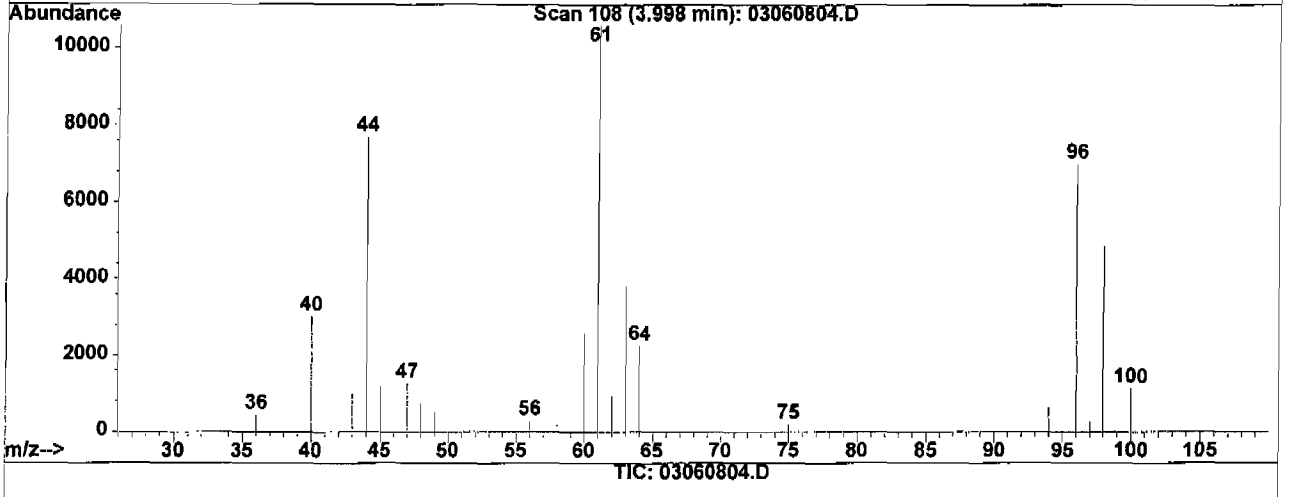
03060804.D 82608003.M Fri Mar 07 10:49:17 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:49 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(8) 1,1-Dichloroethene (C)

4.00min 22.02ng m

response 852923

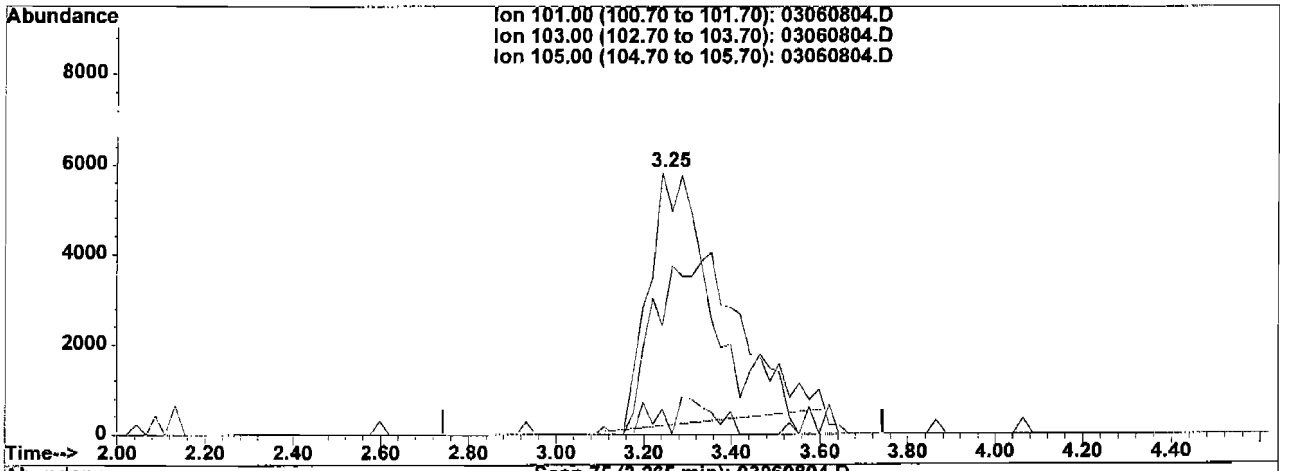
Ion	Exp%	Act%
96.00	100	100
61.00	120.10	140.00
63.00	47.00	45.58
0.00	0.00	0.00

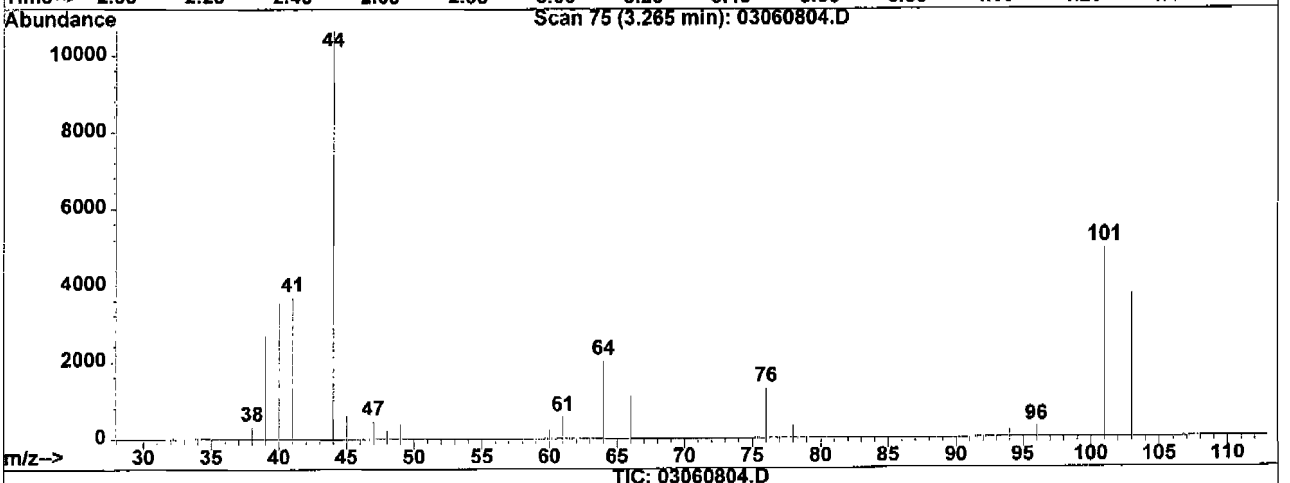
03060804.D 82608003.M Fri Mar 07 10:49:22 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:49 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(7) Trichlorofluoromethane

3.26min 21.47ng

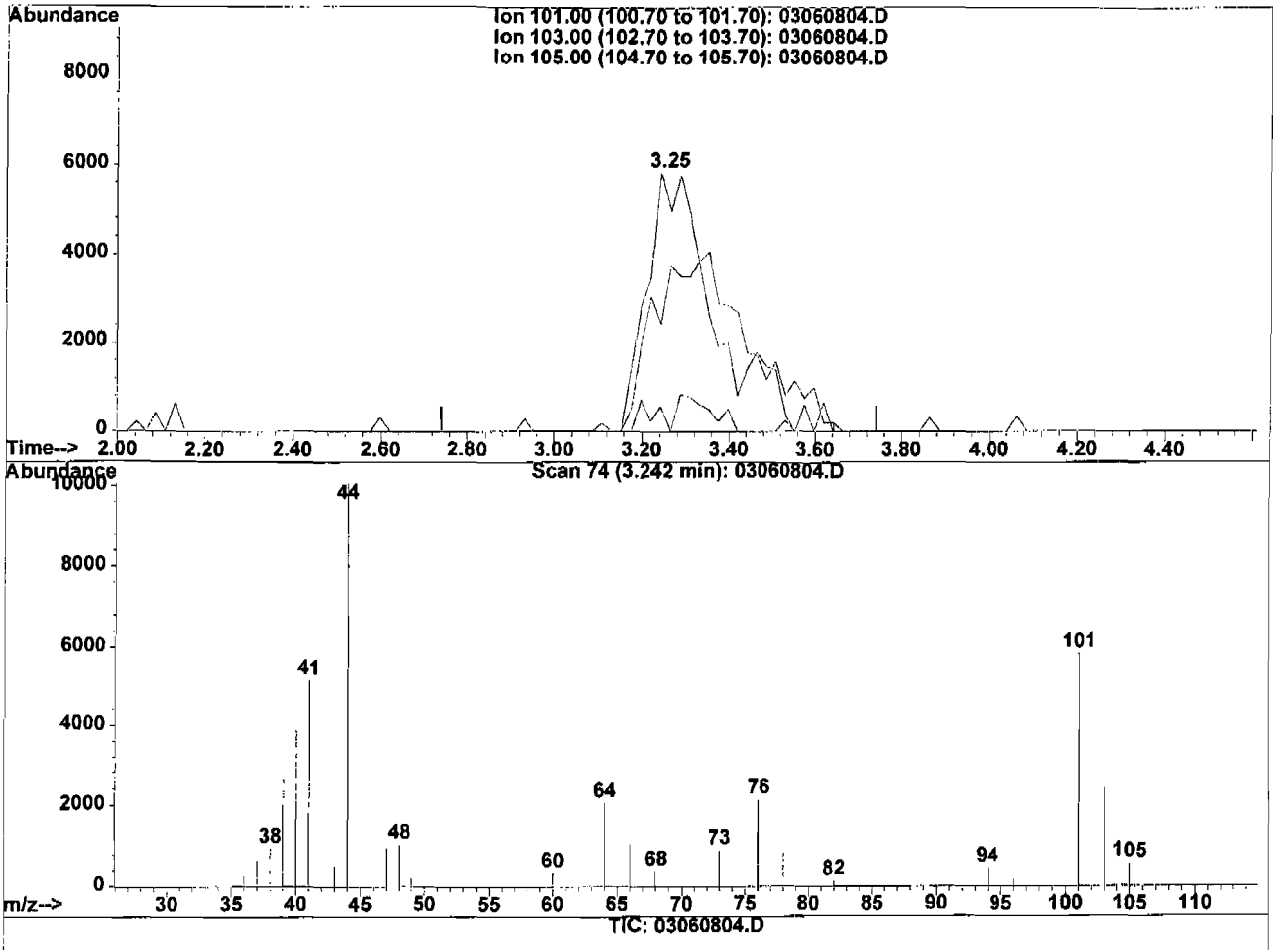
response 644511

Ion	Exp%	Act%
101.00	100	100
103.00	41.30	36.23
105.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:49 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.24min 24.32ng m

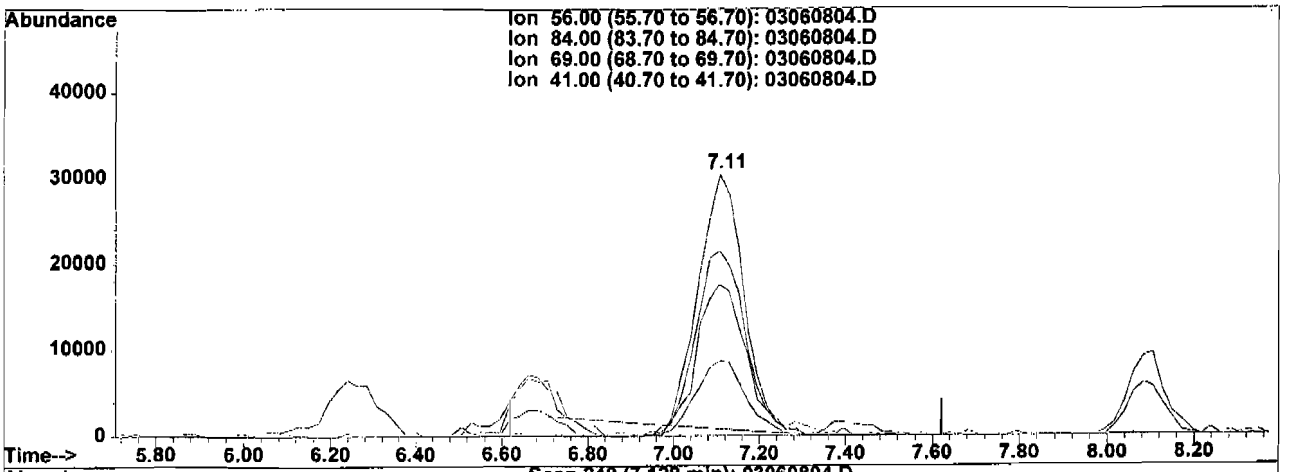
response 743525

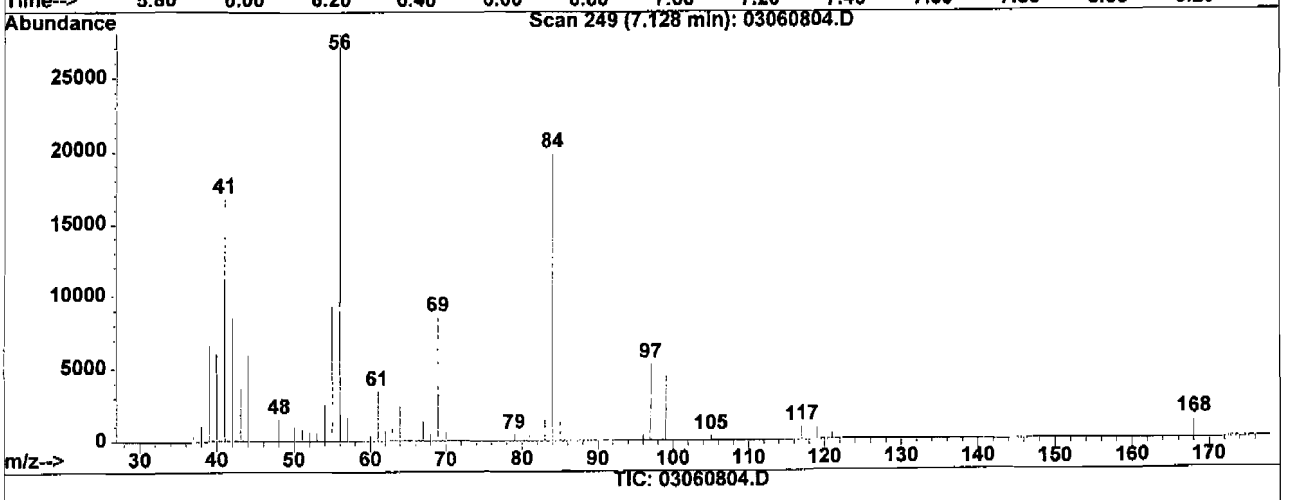
Ion	Exp%	Act%
101.00	100	100
103.00	41.30	31.41#
105.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:49 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(21) Cyclohexane

7.12min 20.33ng

response 1965249

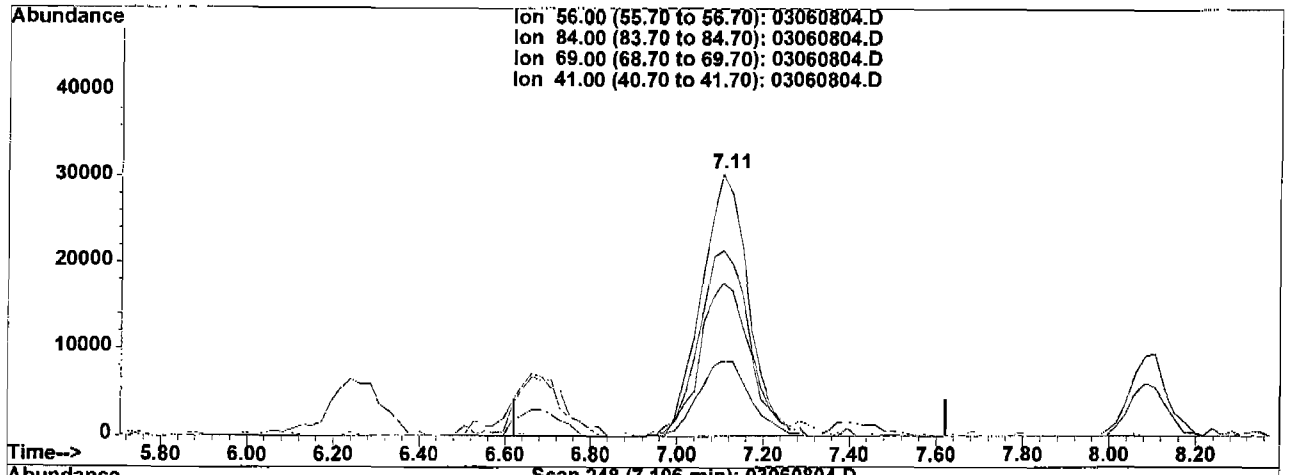
Ion	Exp%	Act%
56.00	100	100
84.00	68.60	82.66#
69.00	31.70	36.87
41.00	62.50	74.38

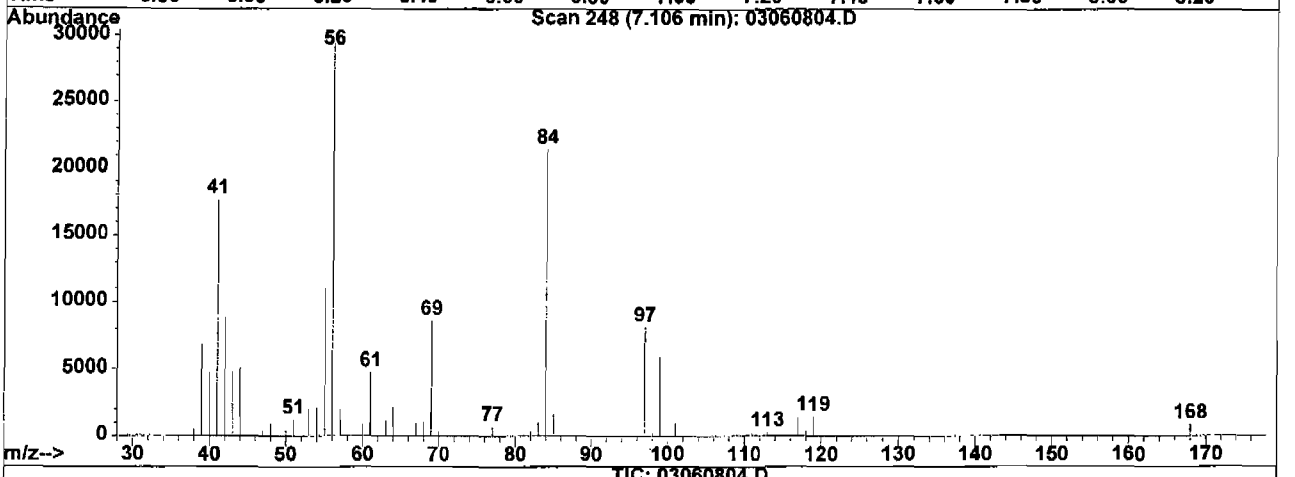
03060804.D 82608003.M Fri Mar 07 10:50:12 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:50 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(21) Cyclohexane

7.11min 23.41ng m

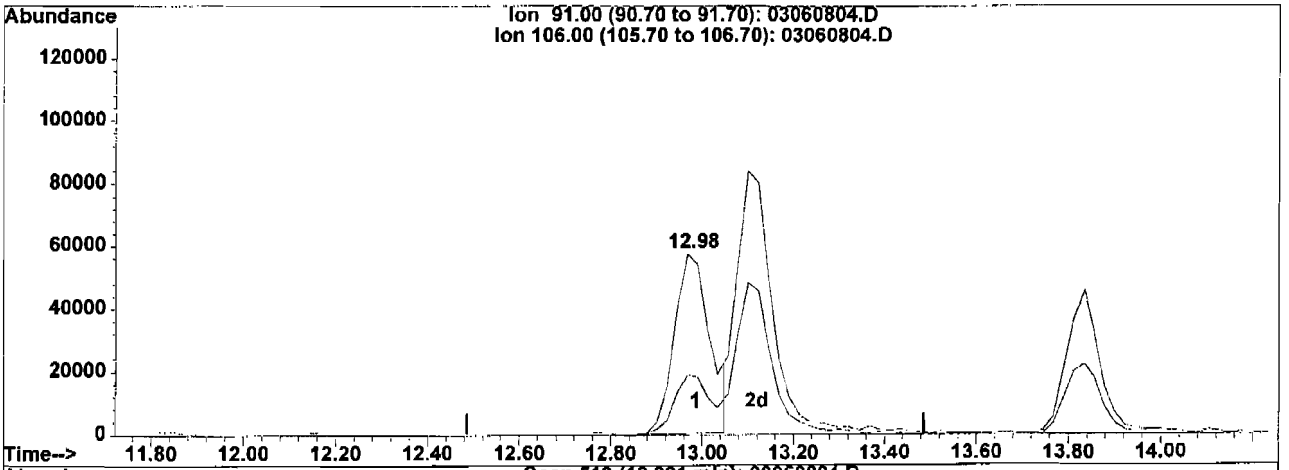
response 2285613

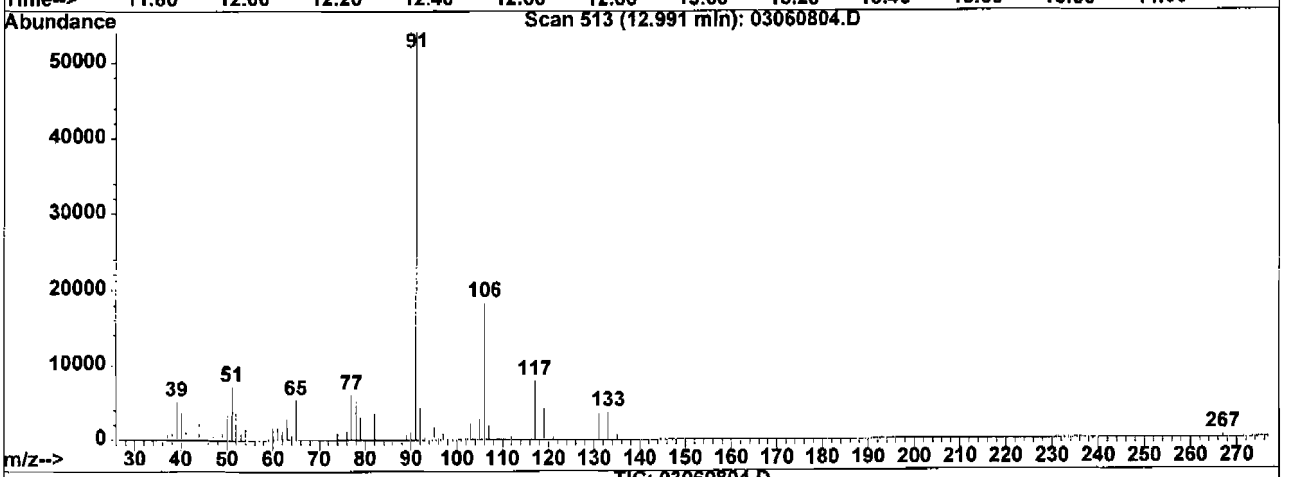
Ion	Exp%	Act%
56.00	100	100
84.00	68.60	71.07
69.00	31.70	31.70
41.00	62.50	63.96

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:50 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(45) Ethylbenzene (C)

12.99min 27.24ng

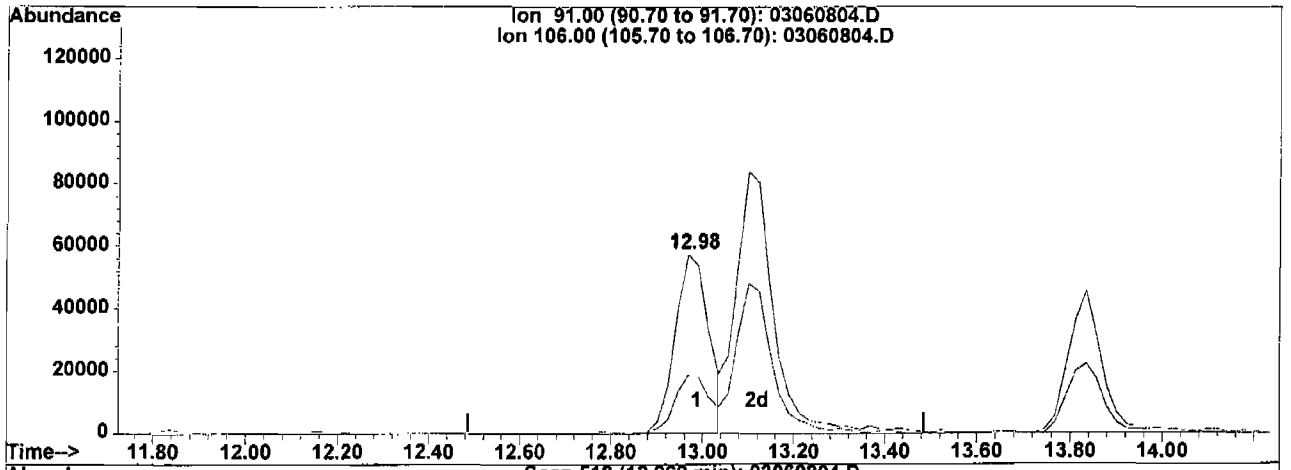
response 2860586

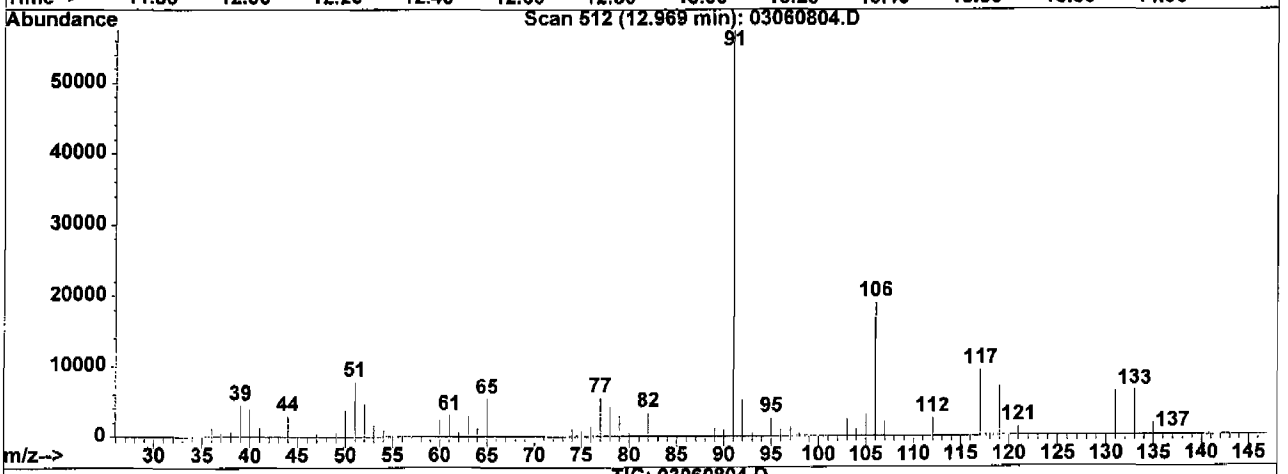
Ion	Exp%	Act%
91.00	100	100
106.00	33.40	33.39
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:51 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(45) Ethylbenzene (C)

12.97min 25.19ng m

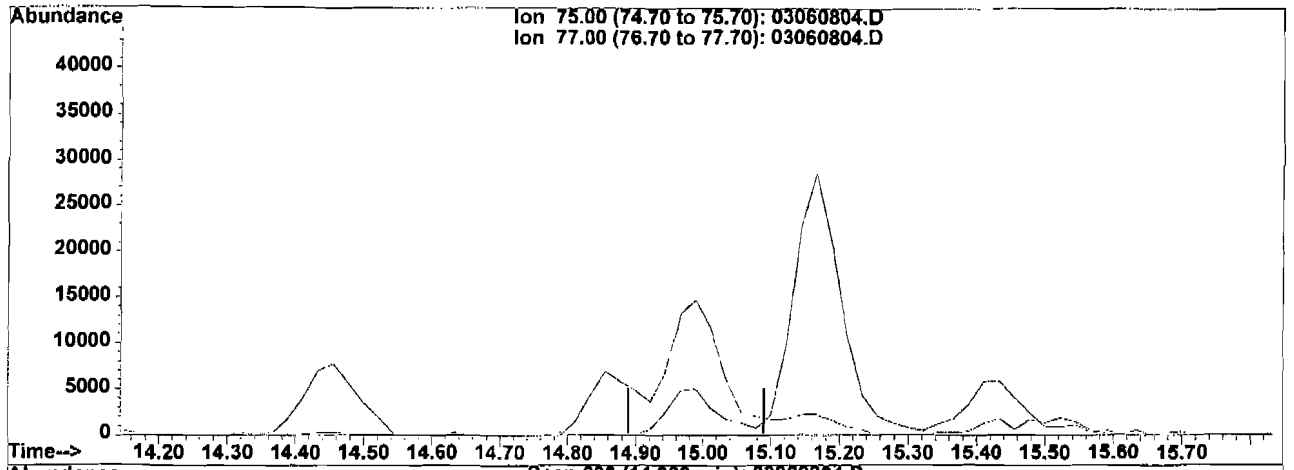
response 2540895

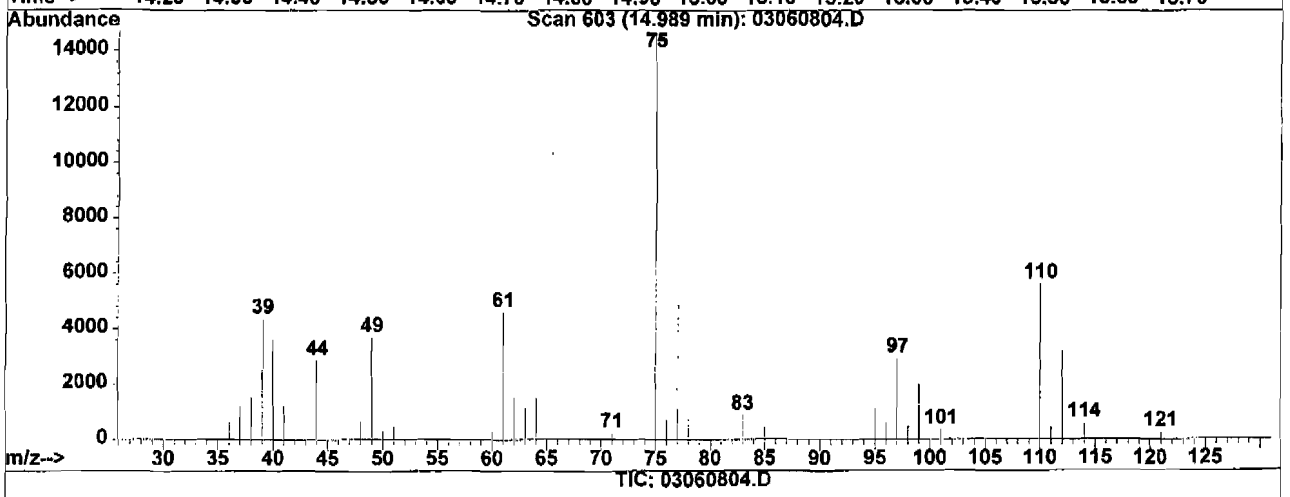
Ion	Exp%	Act%
91.00	100	100
106.00	33.40	37.59
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:51 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(56) 1,2,3-Trichloropropane

14.99min 0.00ng d

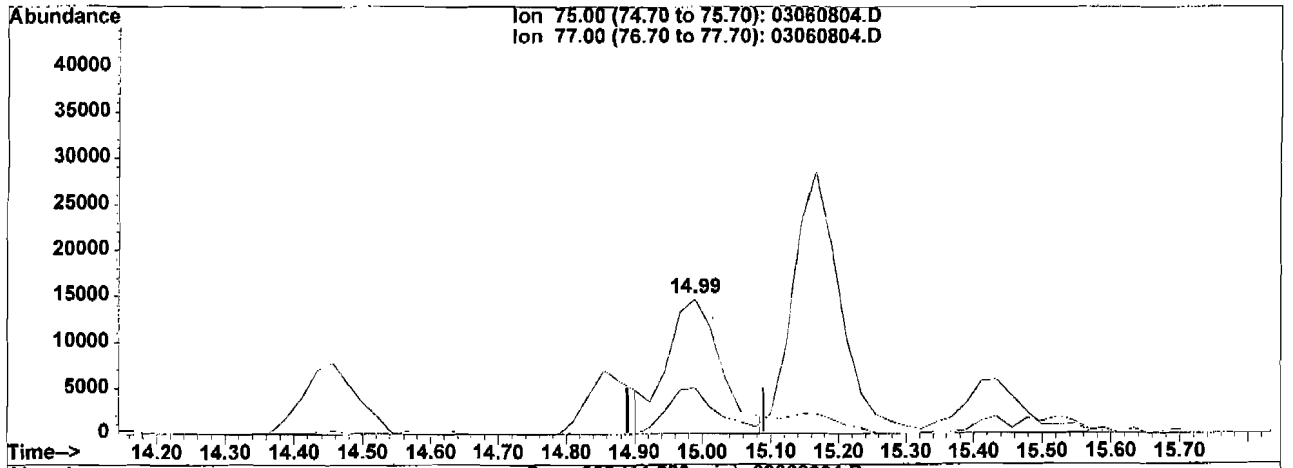
response 0

Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:51 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



TIC: 03060804.D

(56) 1,2,3-Trichloropropane

14.99min 15.53ng m

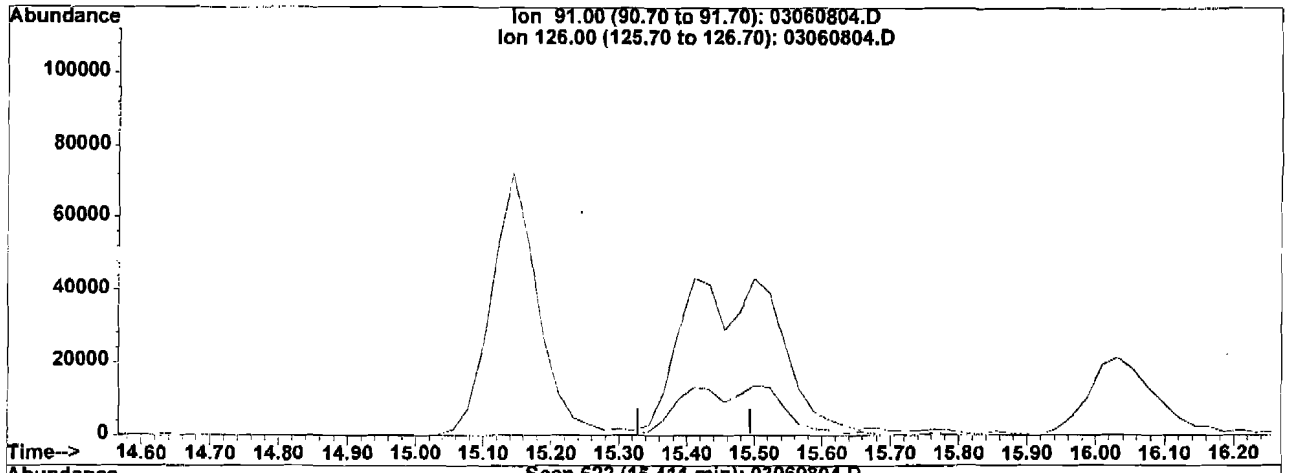
response 847563

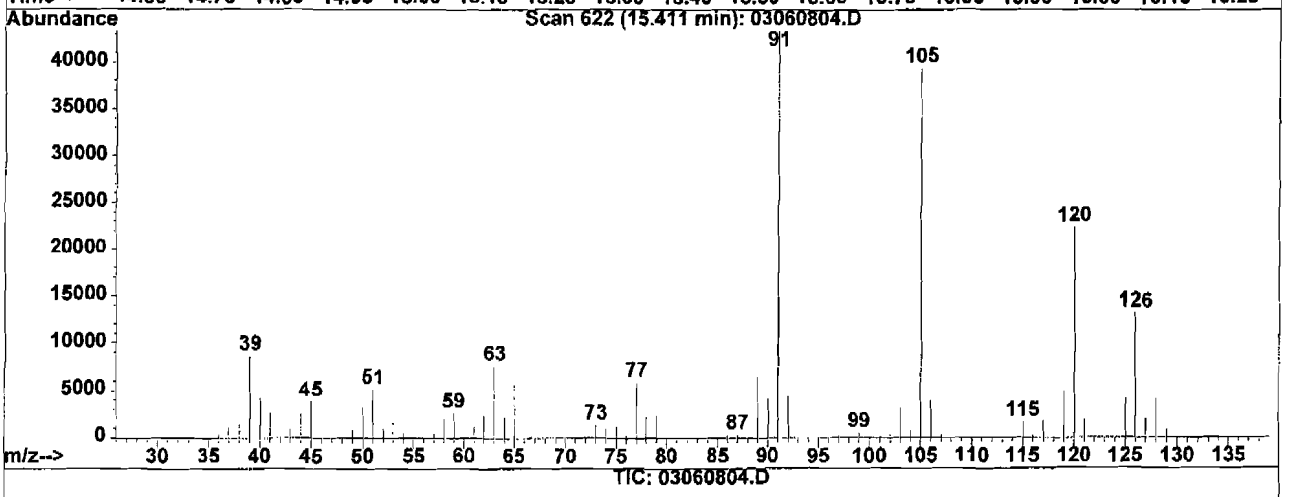
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:51 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.41min 0.00ng d

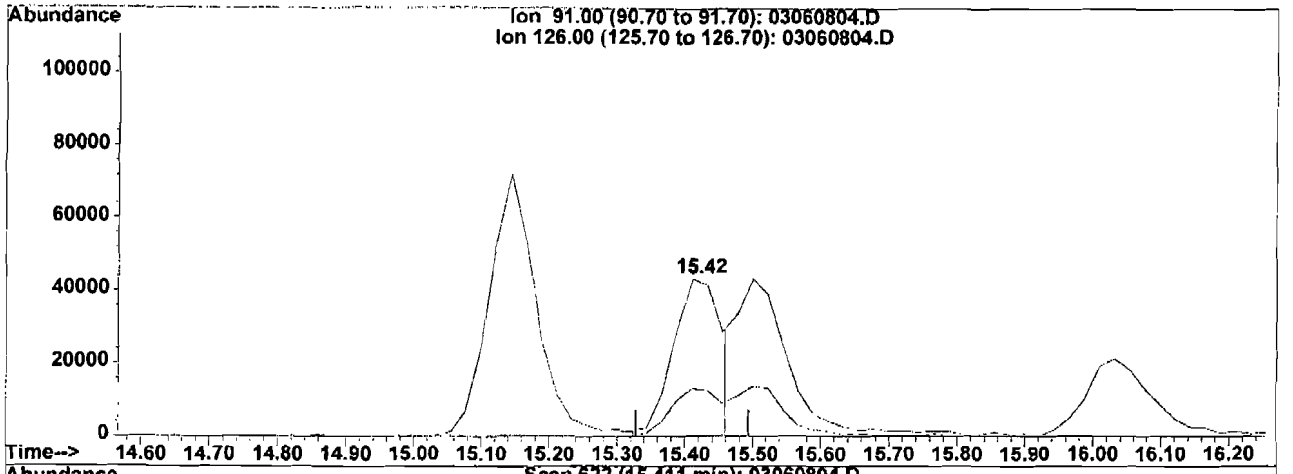
response 0

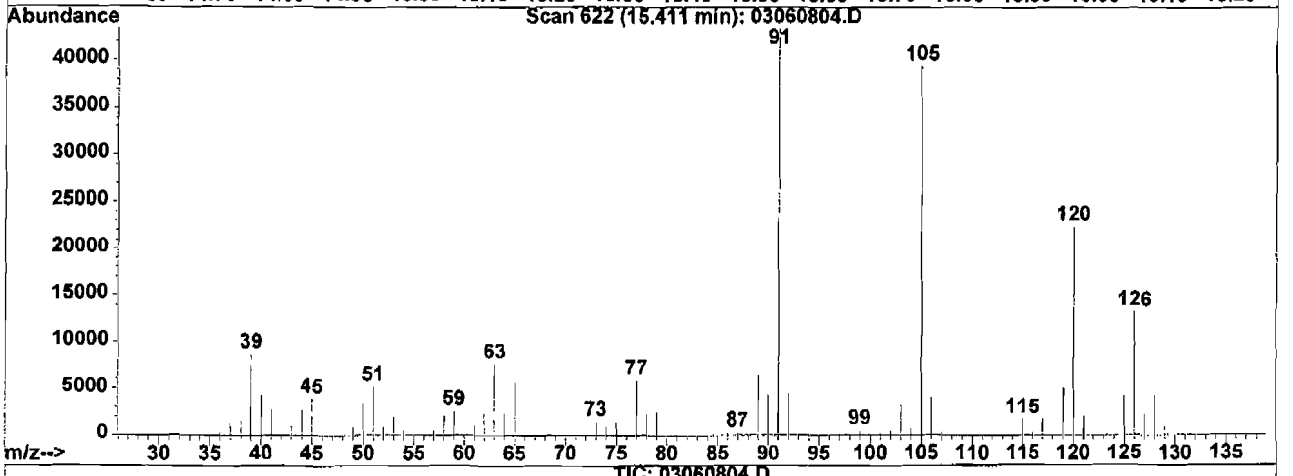
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:51 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060804.D

(57) 2-Chlorotoluene

15.41min 8.29ng m

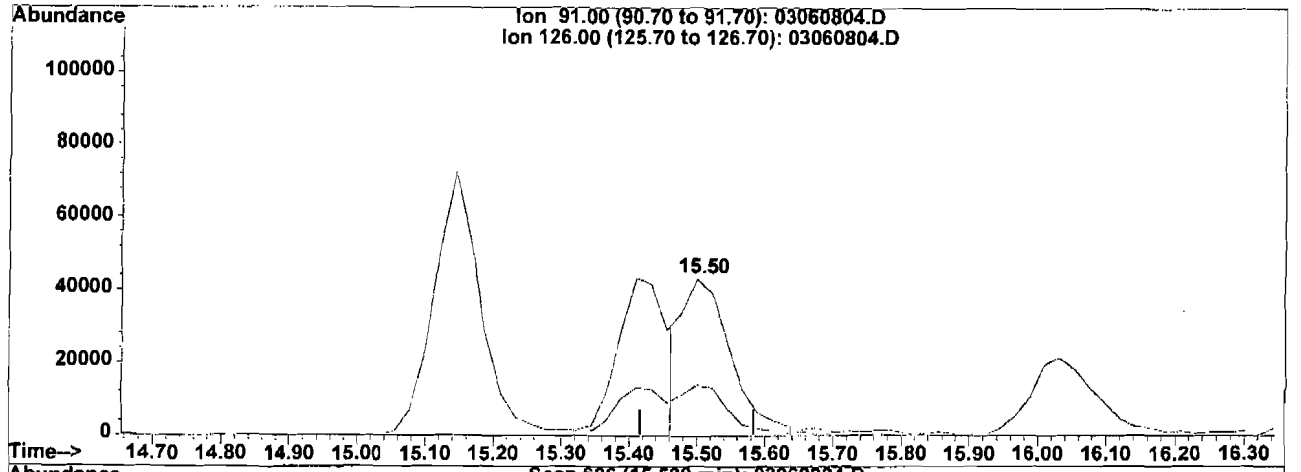
response 2243779

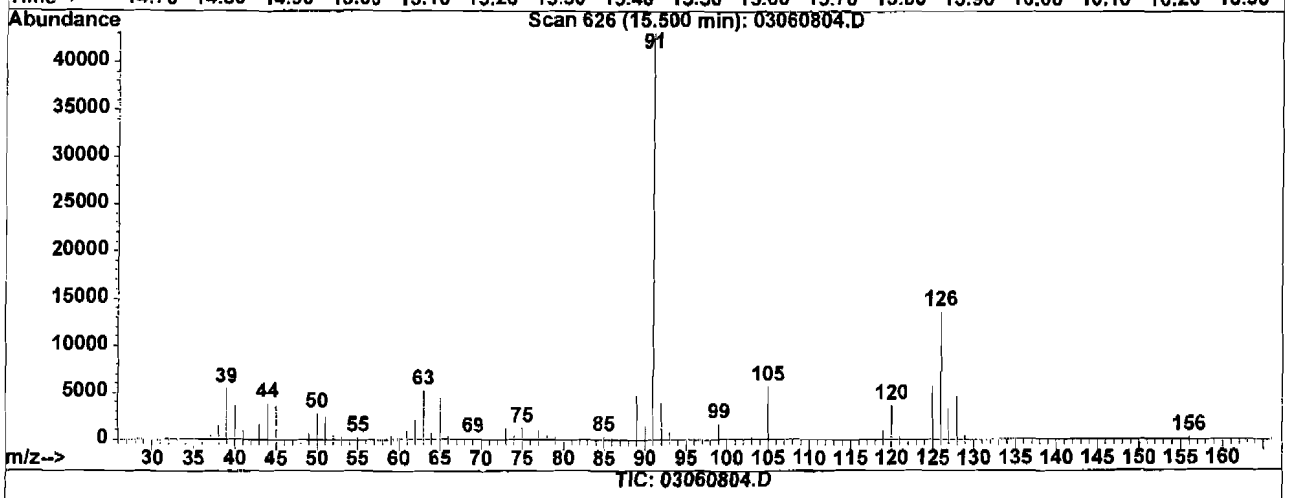
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060804.D Vial: 1
Acq On : 06 Mar 08 19:20 Operator:
Sample : CS1_20ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:52 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(59) 4-Chlorotoluene

15.50min 23.43ng m

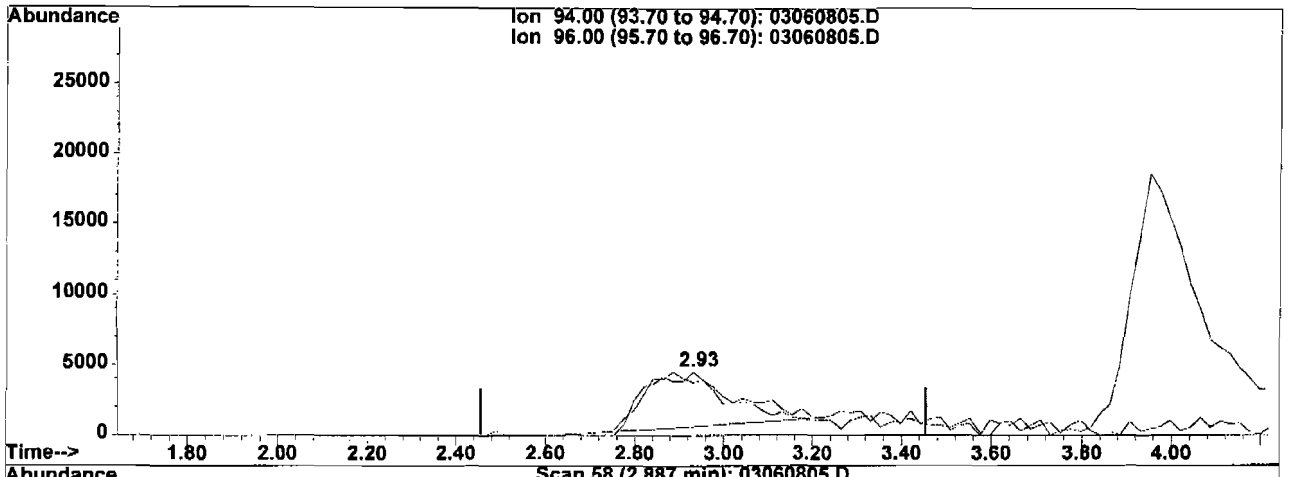
response 2327260

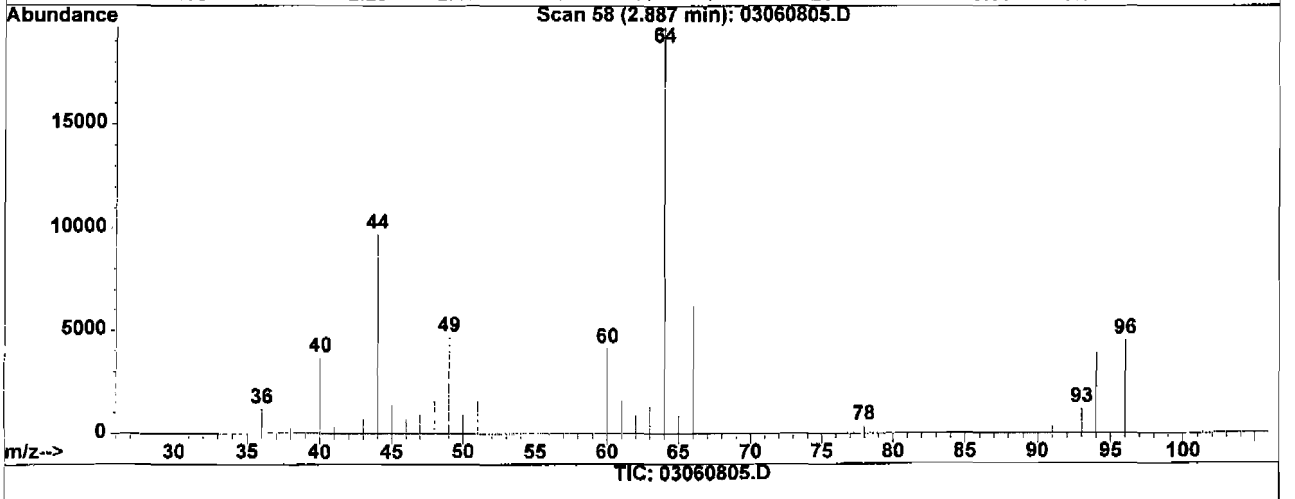
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060805.D

(5) Bromomethane

2.88min 48.80ng

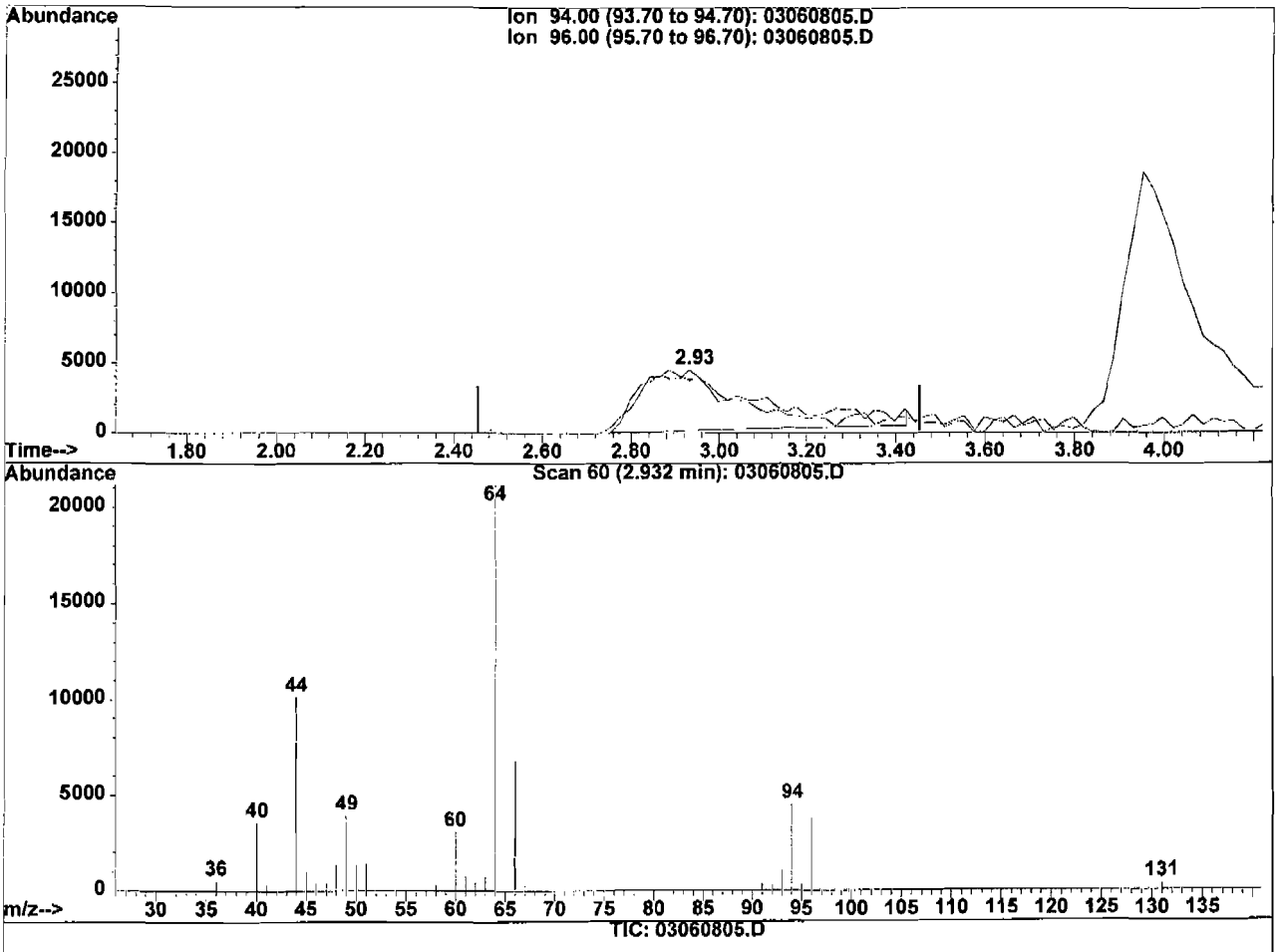
response 522204

Ion	Exp%	Act%
94.00	100	100
96.00	0.00	118.47#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(5) Bromomethane

2.93min 65.46ng m

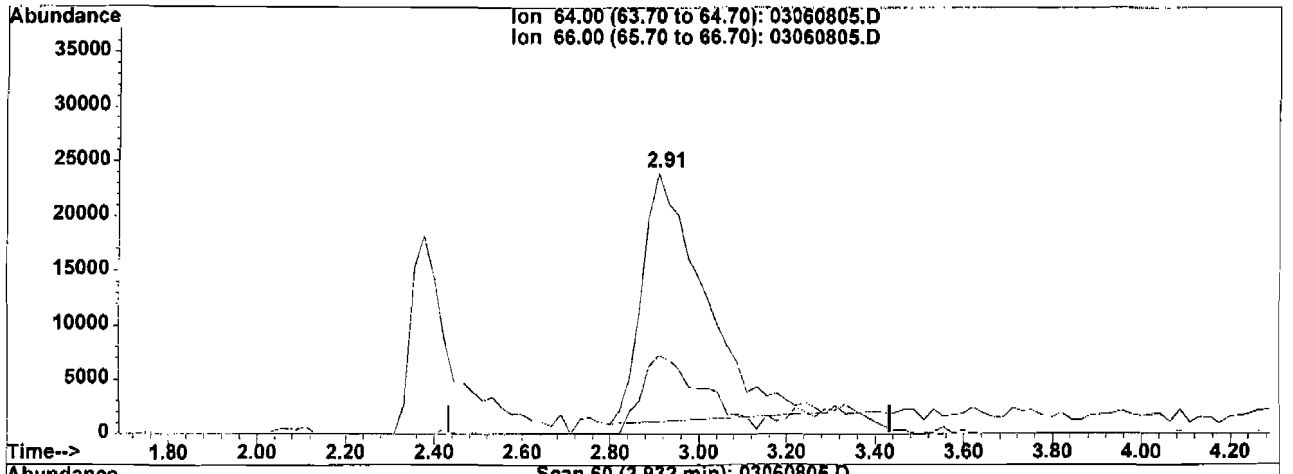
response 811860

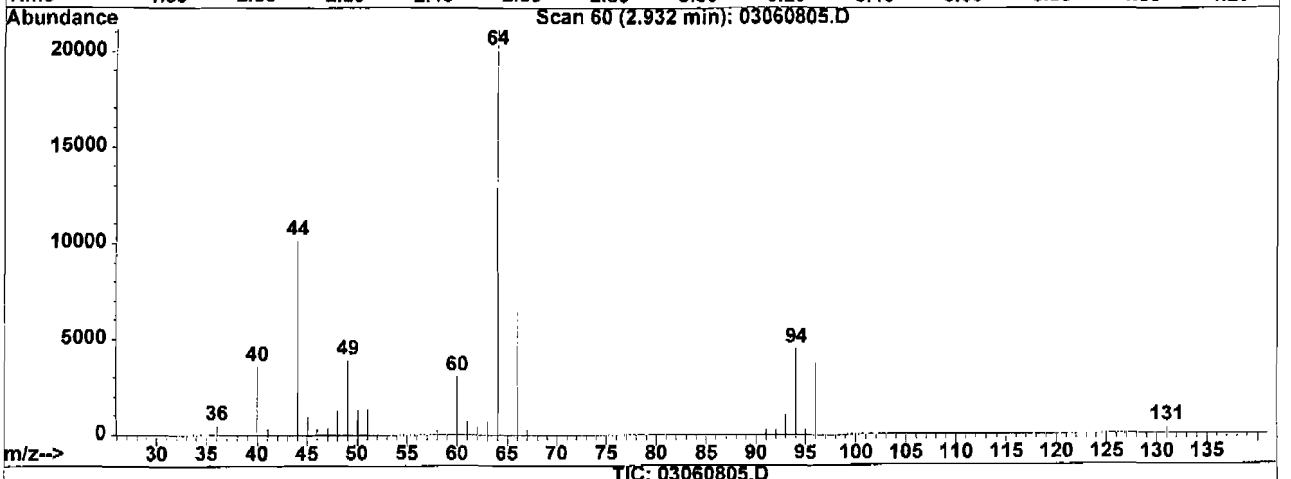
Ion	Exp%	Act%
94.00	100	100
96.00	0.00	76.20#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060805.D

(6) Chloroethane

2.92min 53.90ng

response 2218975

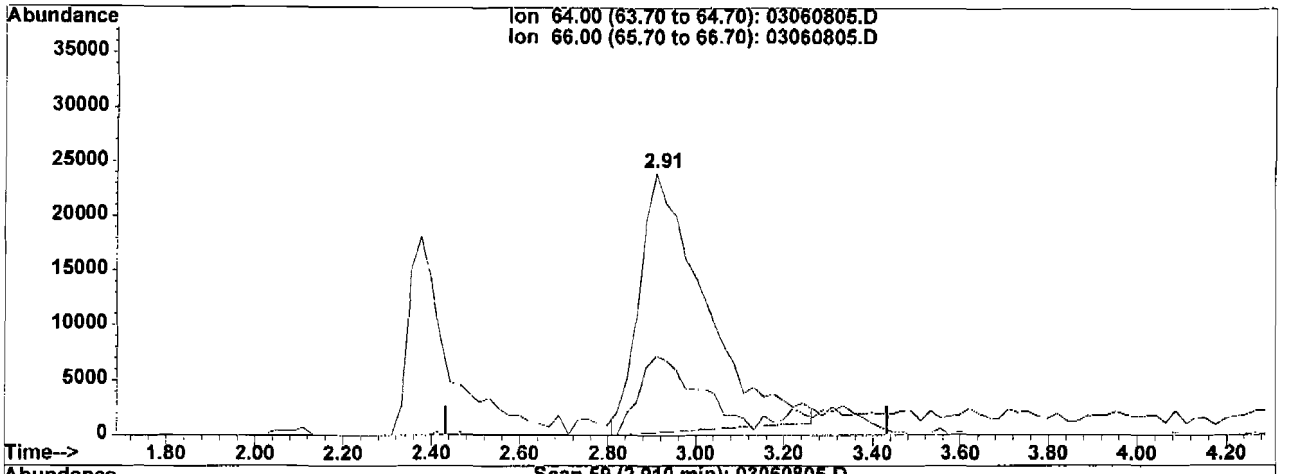
Ion	Exp%	Act%
64.00	100	100
66.00	23.20	25.89
0.00	0.00	0.00
0.00	0.00	0.00

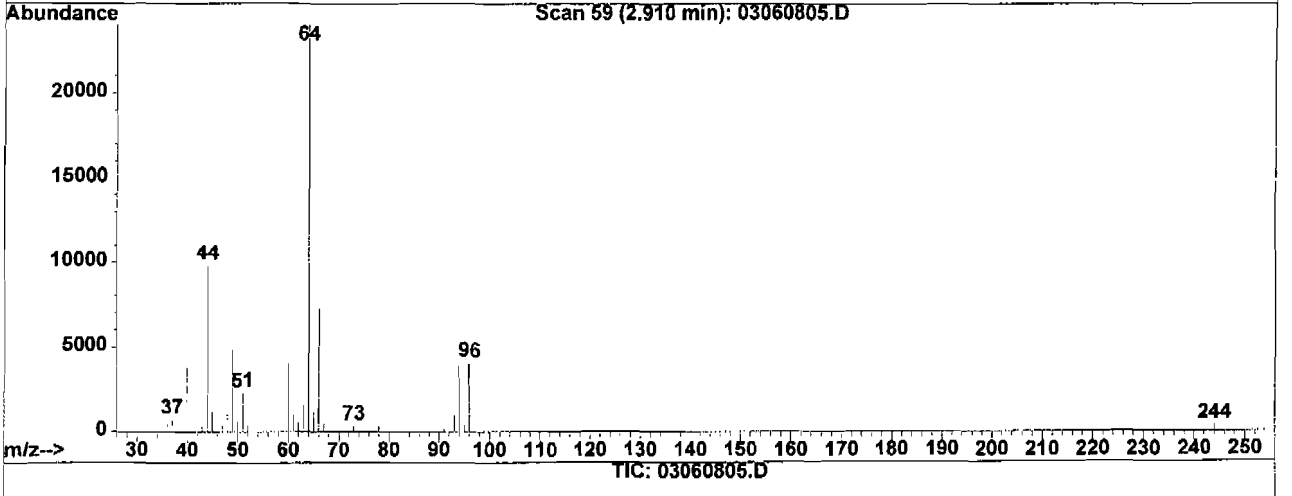
03060805.D 82608003.M Fri Mar 07 10:53:34 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(6) Chloroethane

2.91min 61.70ng m

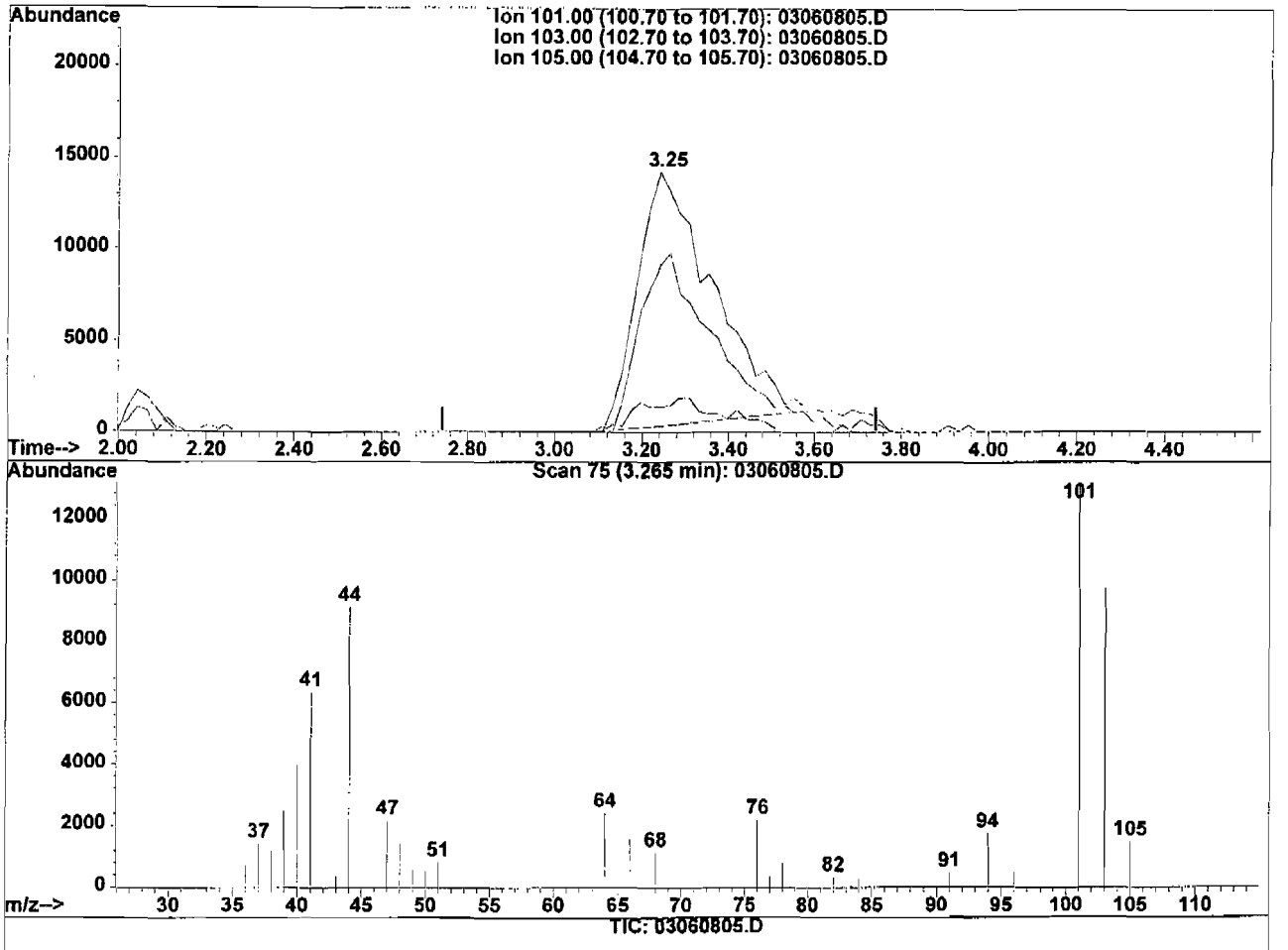
response 2444459

Ion	Exp%	Act%
64.00	100	100
66.00	23.20	23.51
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.26min 57.76ng

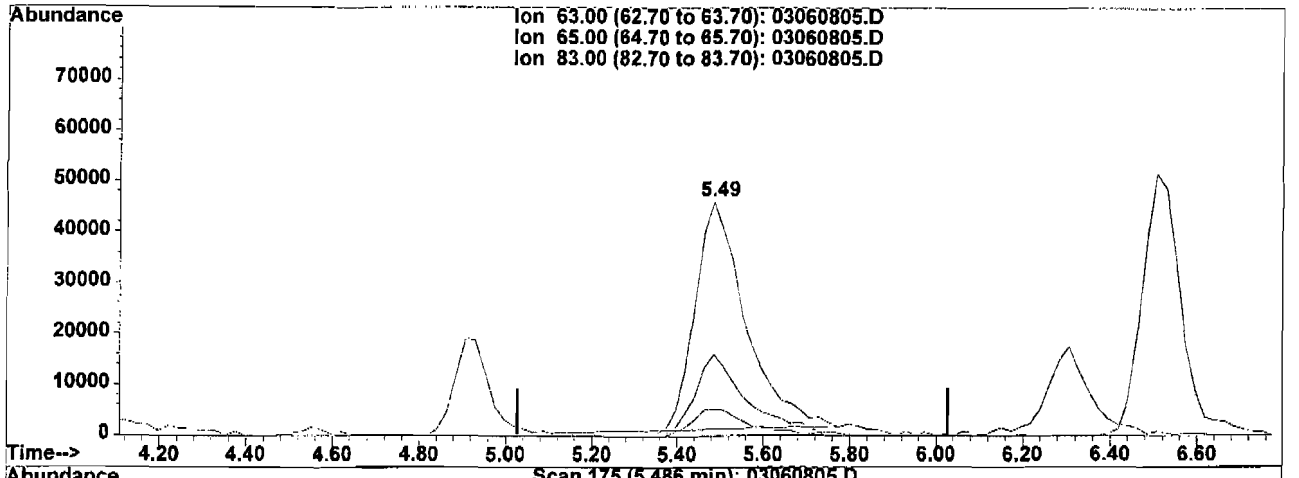
response 1681898

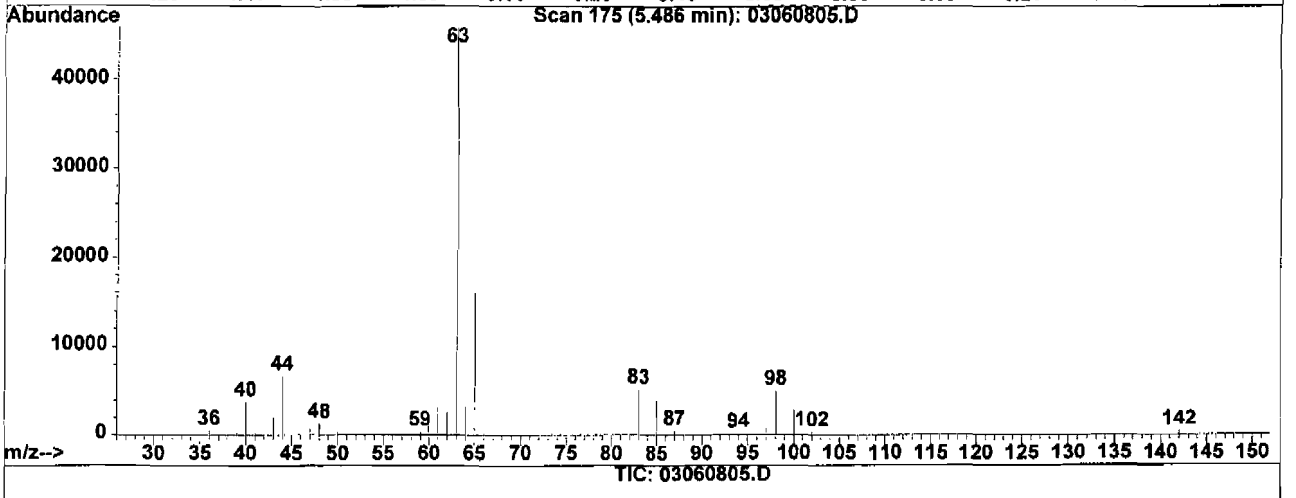
Ion	Exp%	Act%
101.00	100	100
103.00	31.40	65.80#
105.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(15) 1,1-Dichloroethane (P)

5.50min 1503.55ng

response 3521397

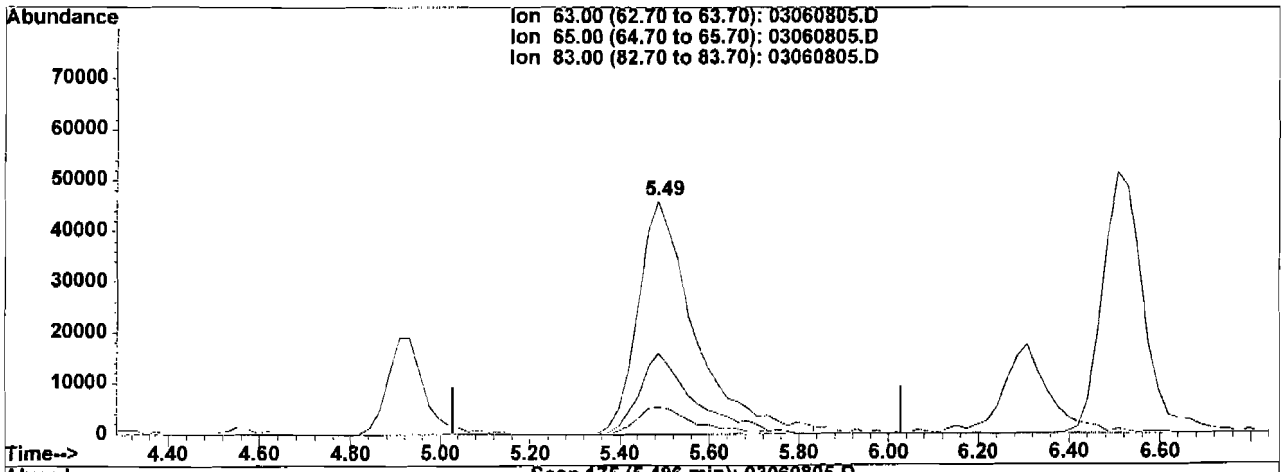
Ion	Exp%	Act%
63.00	100	100
65.00	36.90	38.32
83.00	12.10	12.06
0.00	0.00	0.00

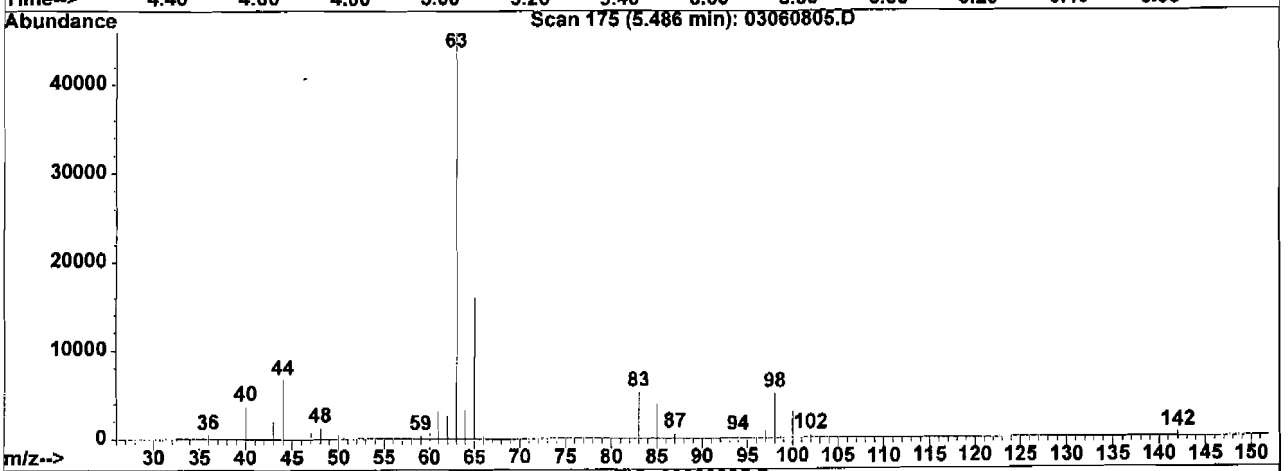
03060805.D 82608003.M Fri Mar 07 10:54:12 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060805.D

(15) 1,1-Dichloroethane (P)

5.49min 1748.03ng m

response 4027828

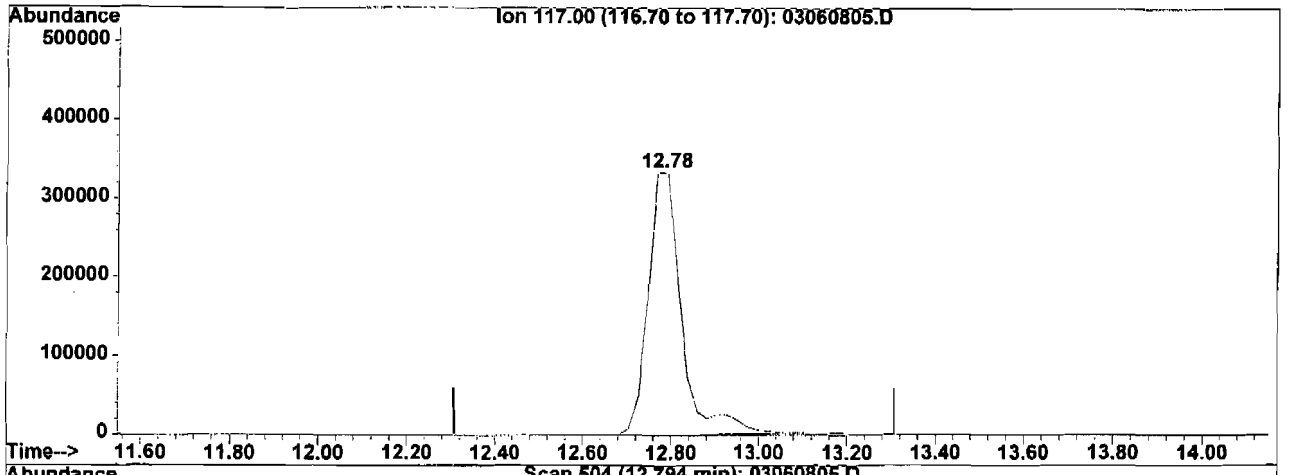
Ion	Exp%	Act%
63.00	100	100
65.00	36.90	33.50
83.00	12.10	10.54
0.00	0.00	0.00

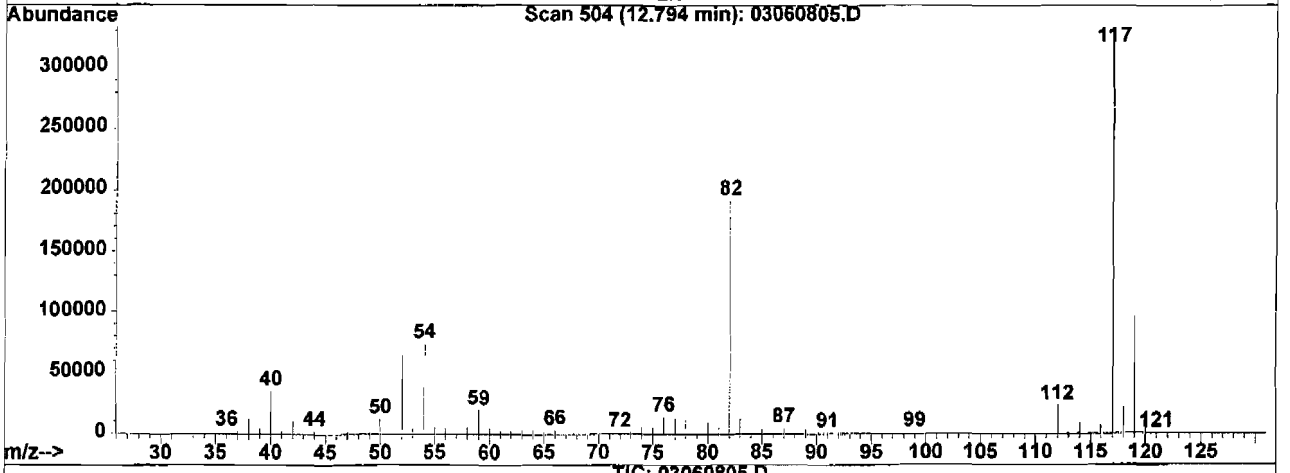
03060805.D 82608003.M Fri Mar 07 10:54:25 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(43) Chlorobenzene-d5 (ins) (I)

12.79min 200.00ng

response 337681

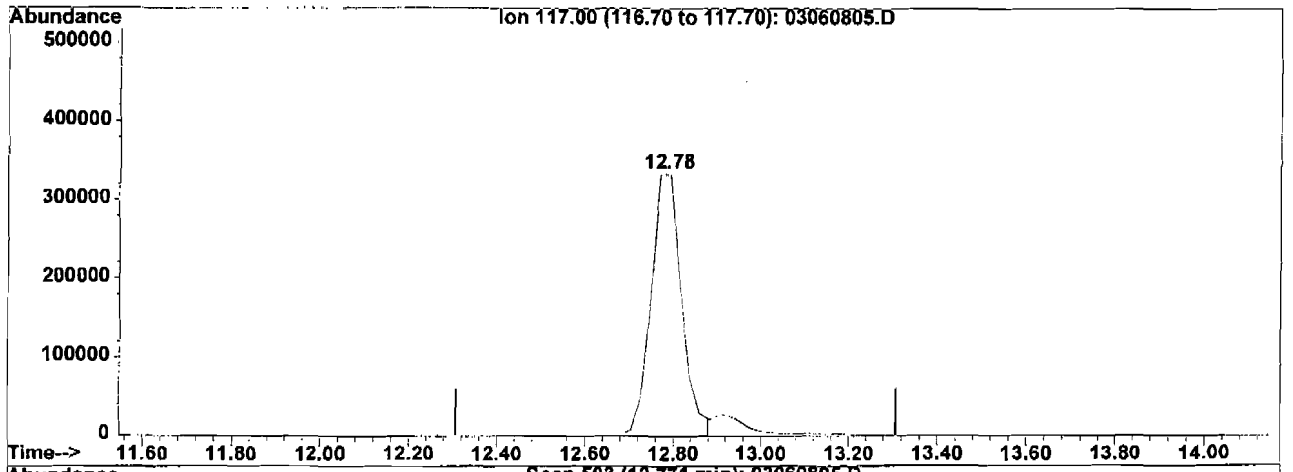
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

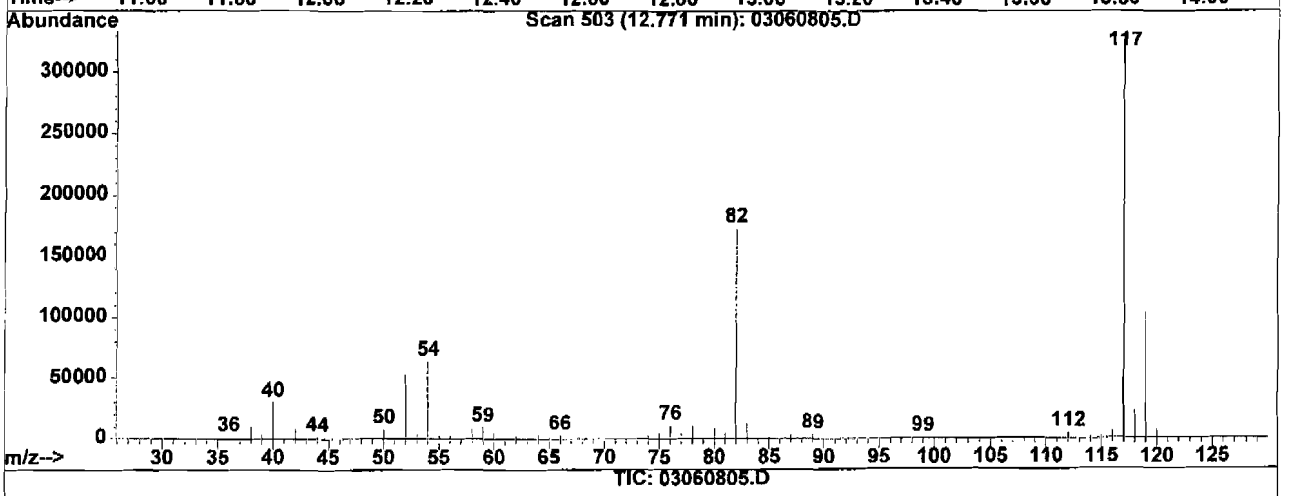
03060805.D 82608003.M Fri Mar 07 10:54:54 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(43) Chlorobenzene-d5 (ins) (I)

12.77min 200.00ng m

response 354762

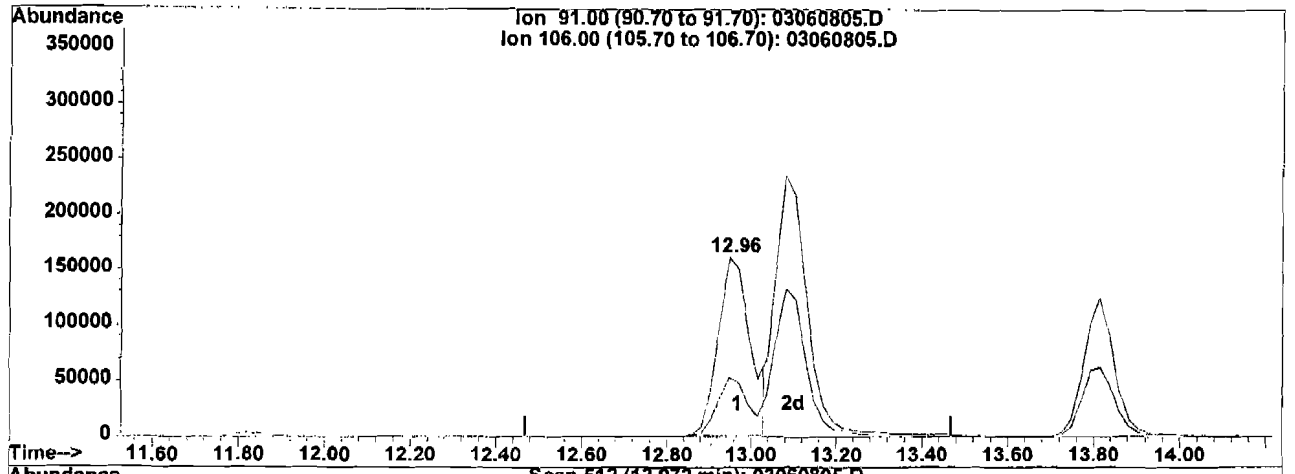
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

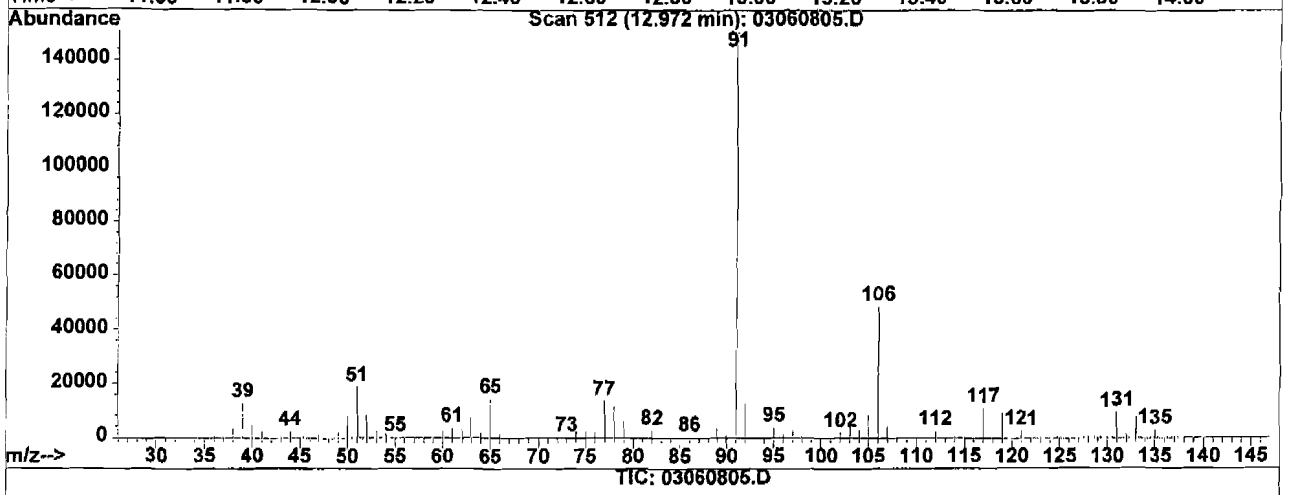
03060805.D 82608003.M Fri Mar 07 10:55:00 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060805.D

(45) Ethylbenzene (C)

12.97min 62.55ng

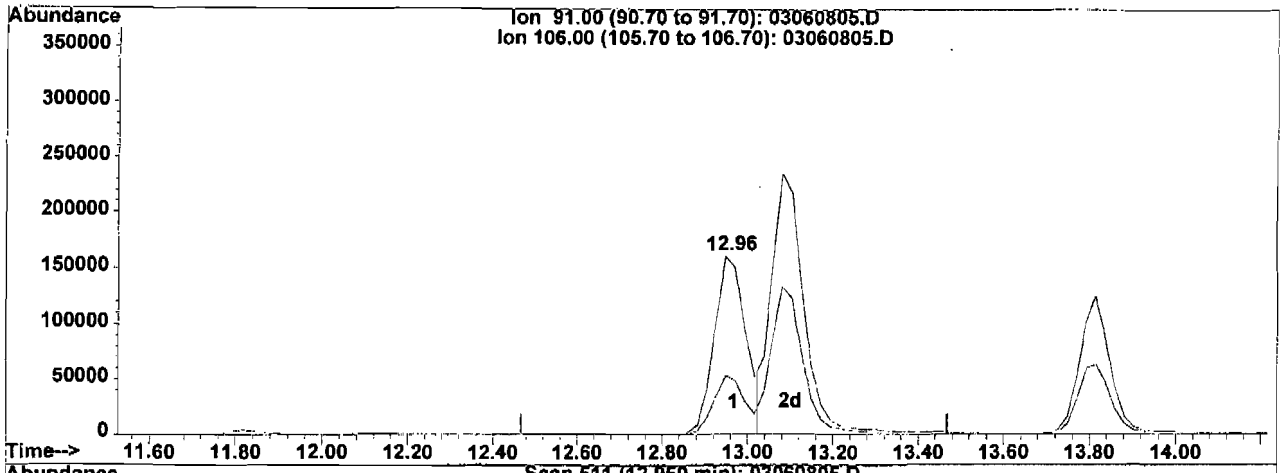
response 7756332

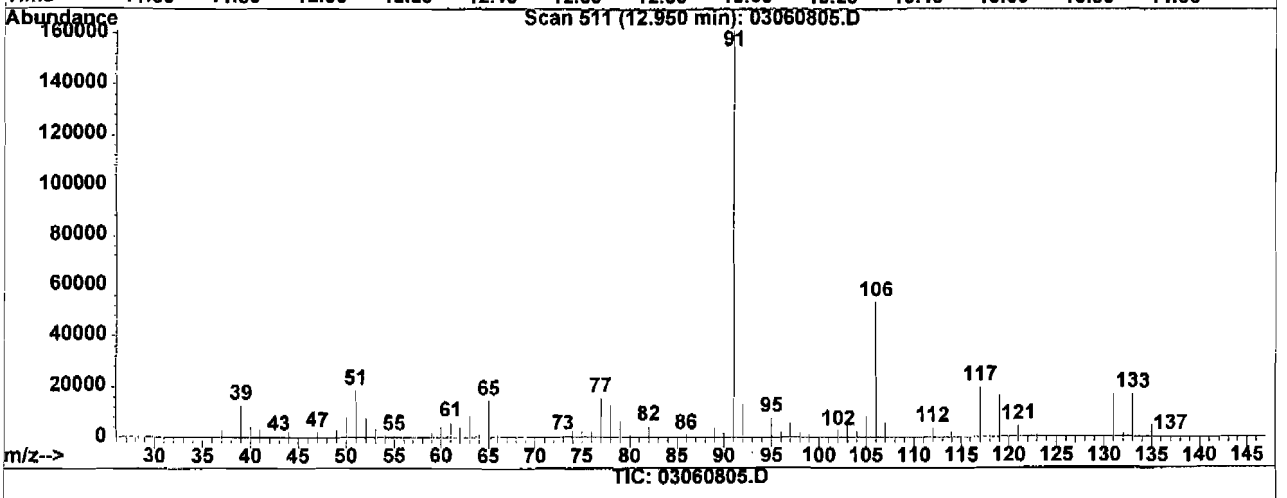
Ion	Exp%	Act%
91.00	100	100
106.00	37.60	32.28
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060805.D

(45) Ethylbenzene (C)

12.95min 67.45ng m

response 8472822

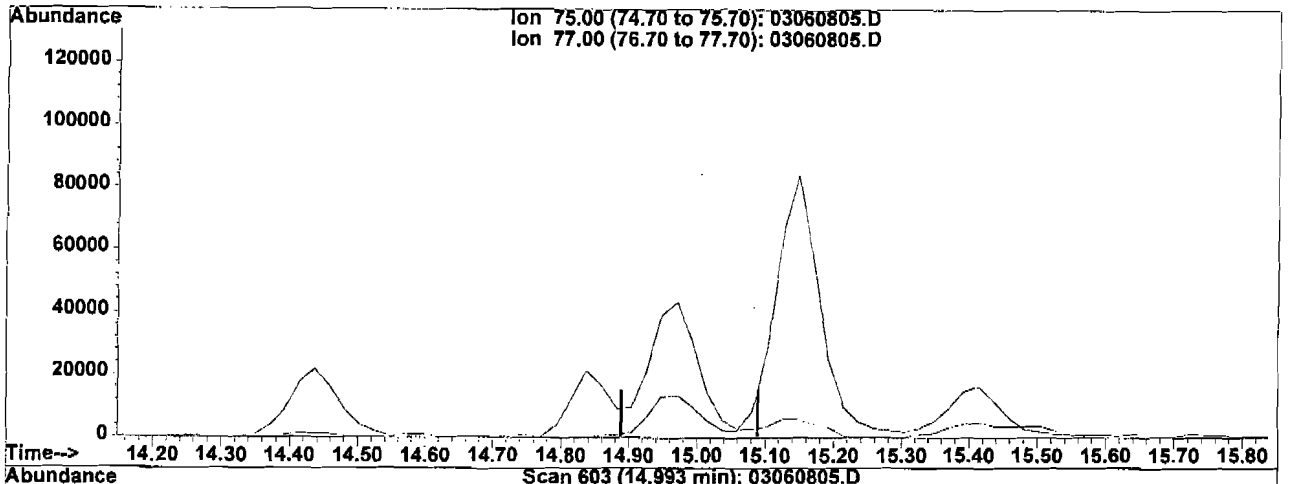
Ion	Exp%	Act%
91.00	100	100
106.00	37.60	29.55#
0.00	0.00	0.00
0.00	0.00	0.00

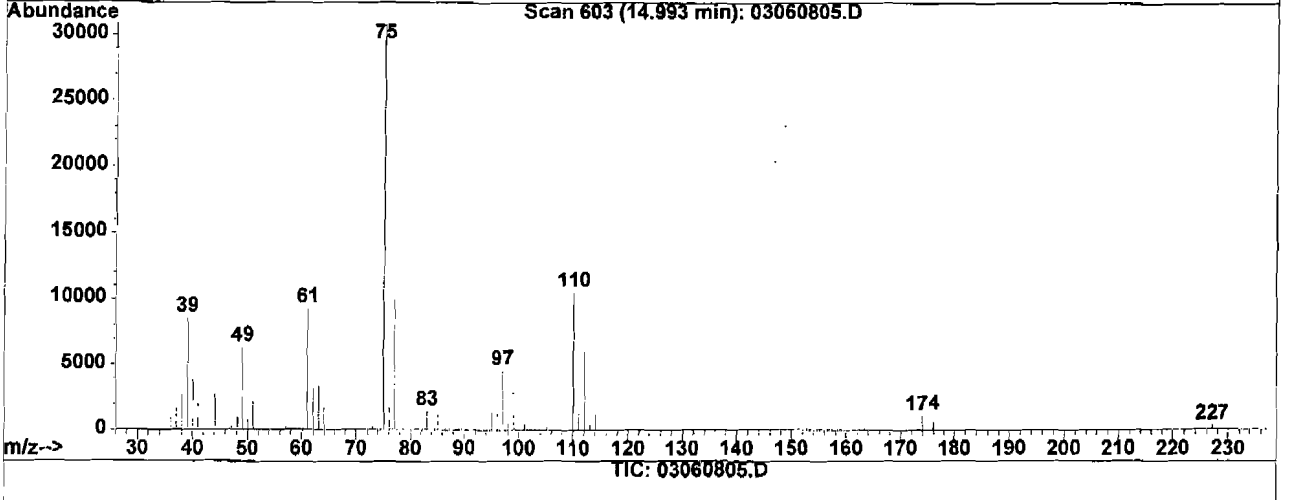
03060805.D 82608003.M Fri Mar 07 10:55:12 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.99min 0.00ng d

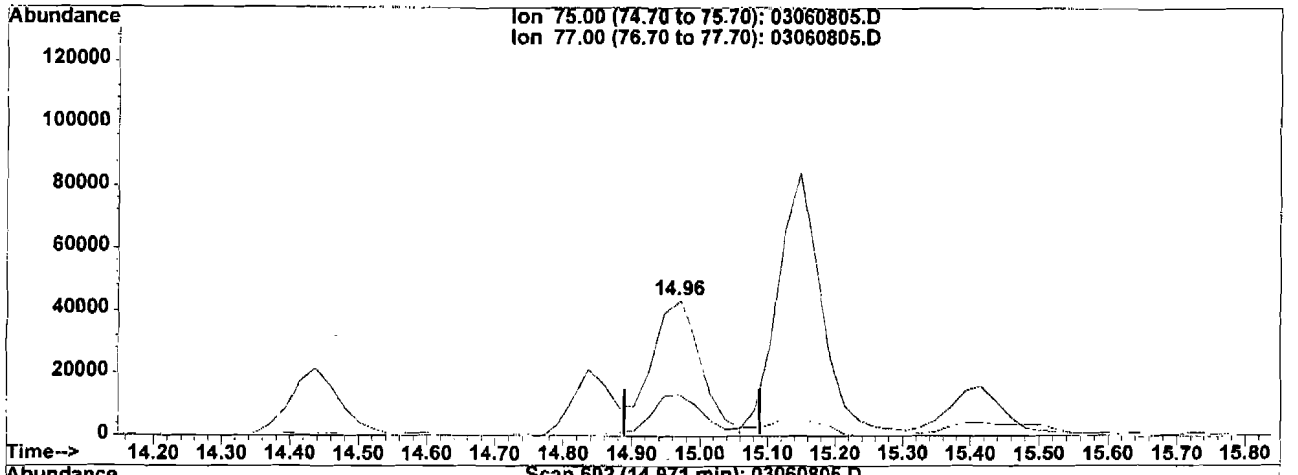
response 0

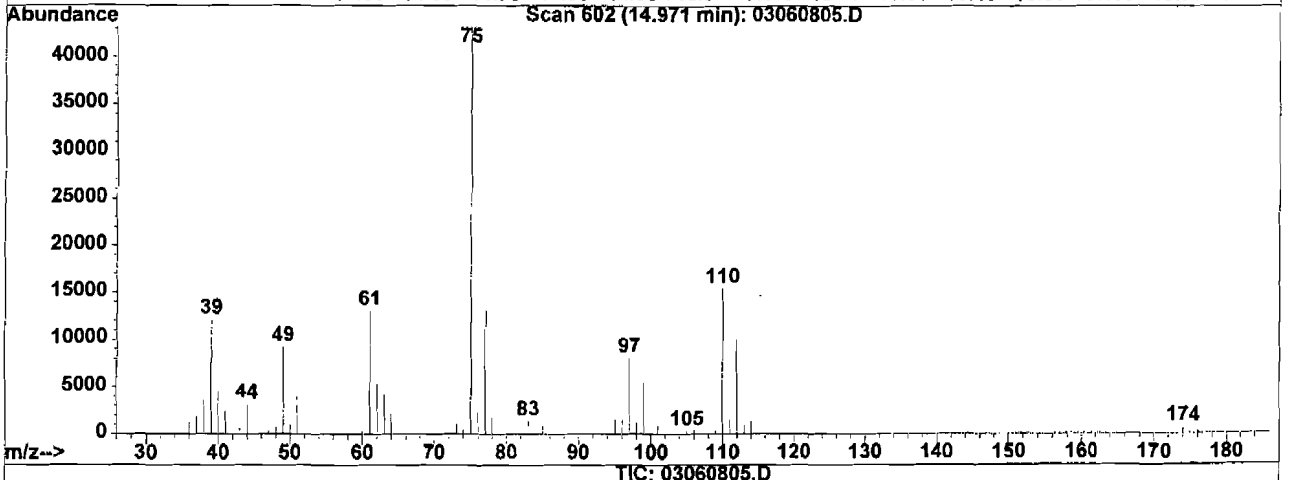
Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060805.D

(56) 1,2,3-Trichloropropane

14.97min 56.75ng m

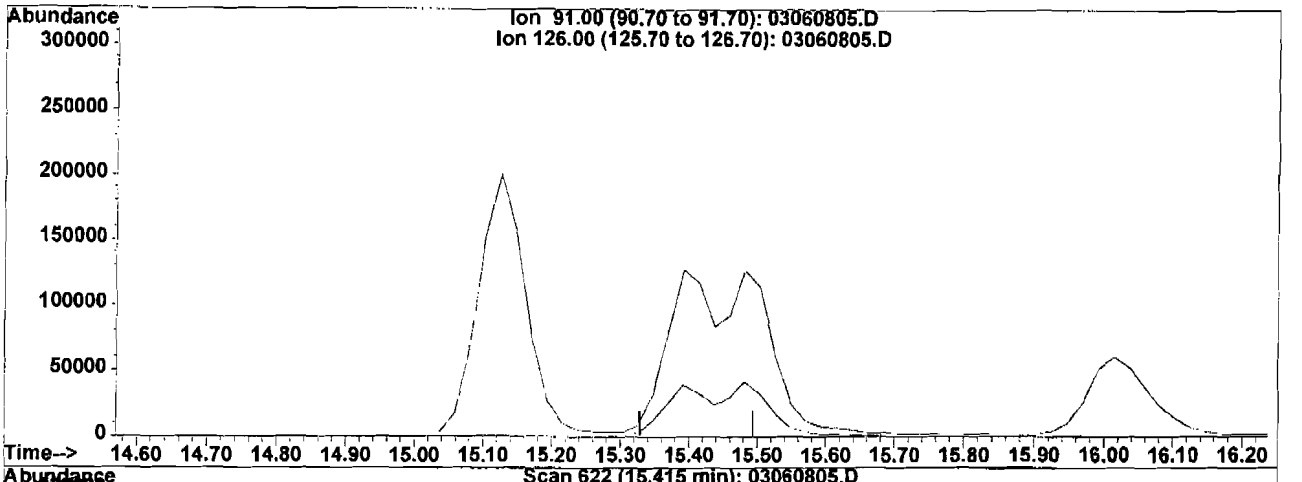
response 2173647

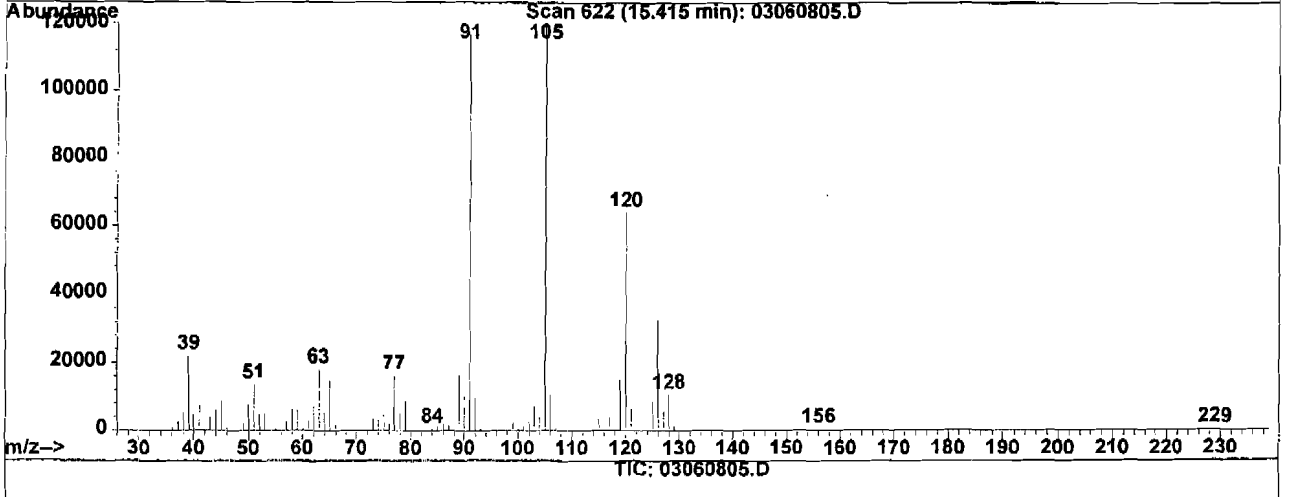
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.41min 0.00ng d

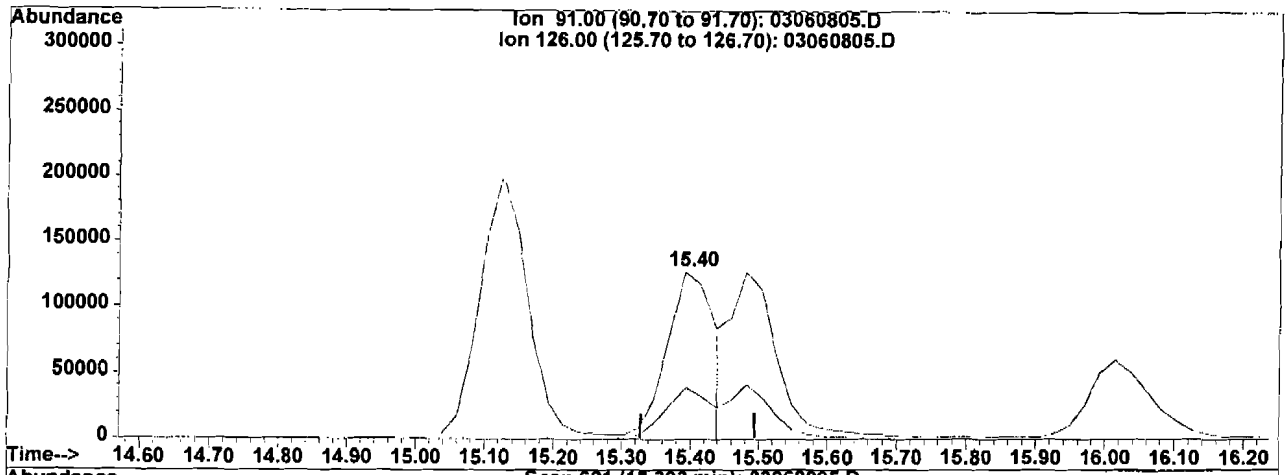
response 0

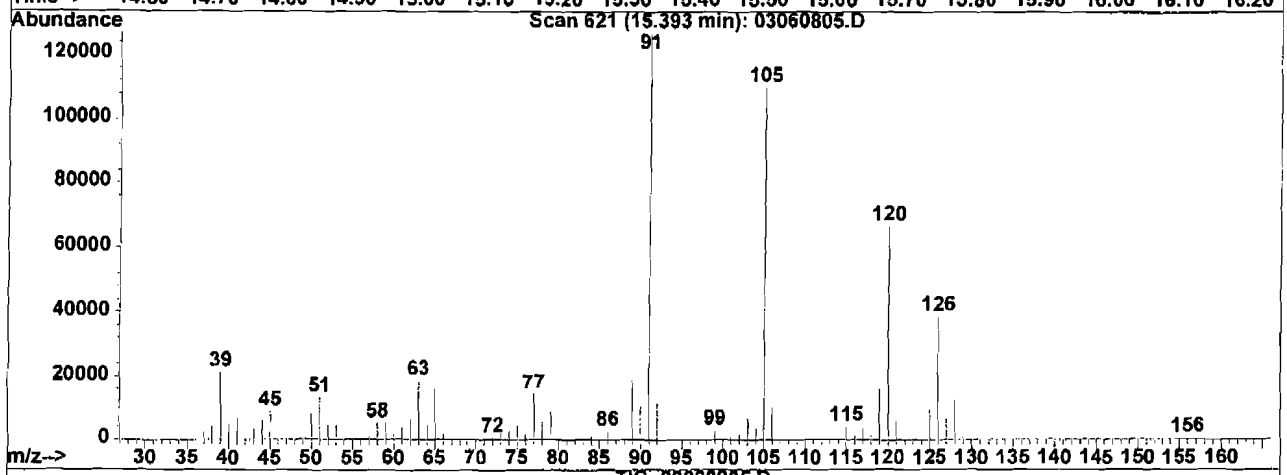
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.39min 61.06ng m

response 6498111

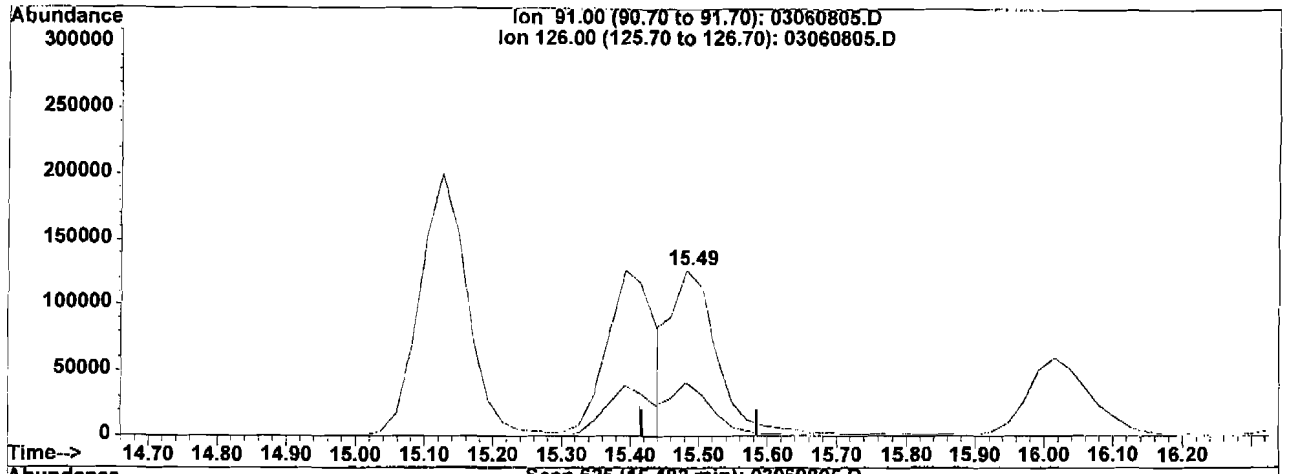
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

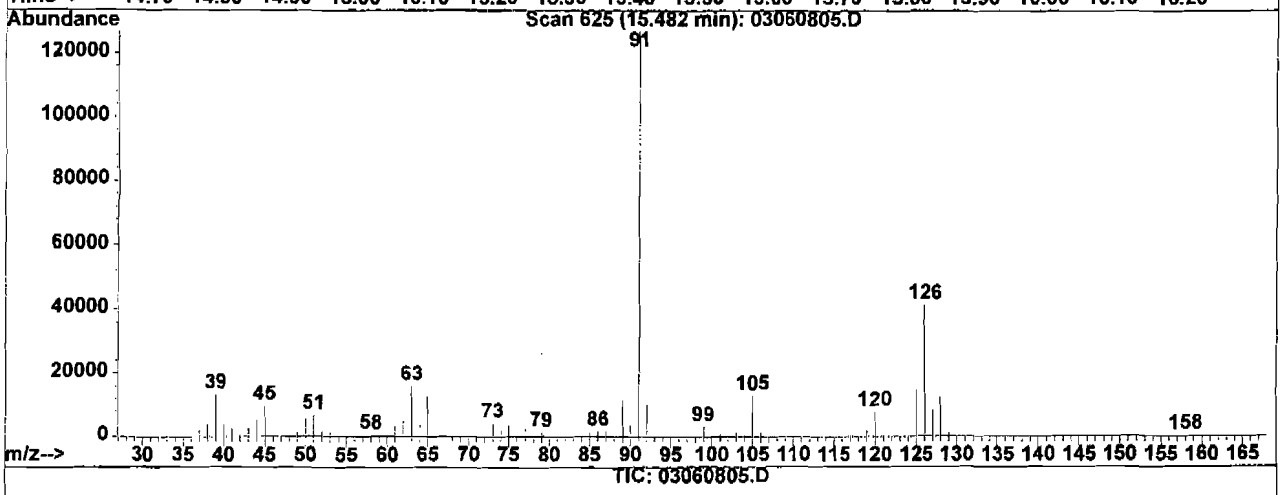
03060805.D 82608003.M Fri Mar 07 10:55:48 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060805.D Vial: 1
Acq On : 06 Mar 08 19:59 Operator:
Sample : CS2_60ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(59) 4-Chlorotoluene

15.48min 64.80ng m

response 6448520

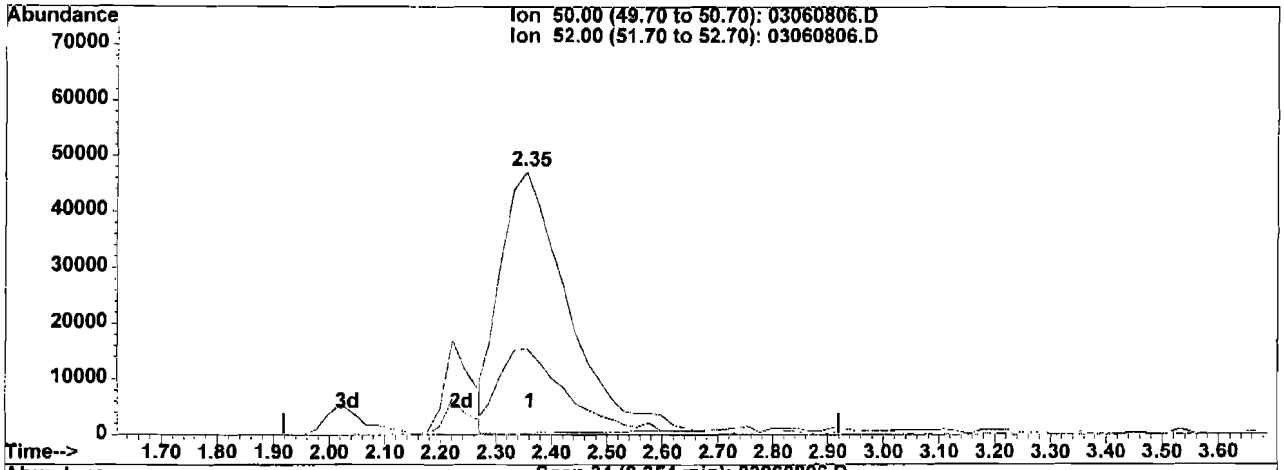
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

03060805.D 82608003.M Fri Mar 07 10:55:57 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:56 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(3) Chloromethane (P)

2.36min 67.82ng

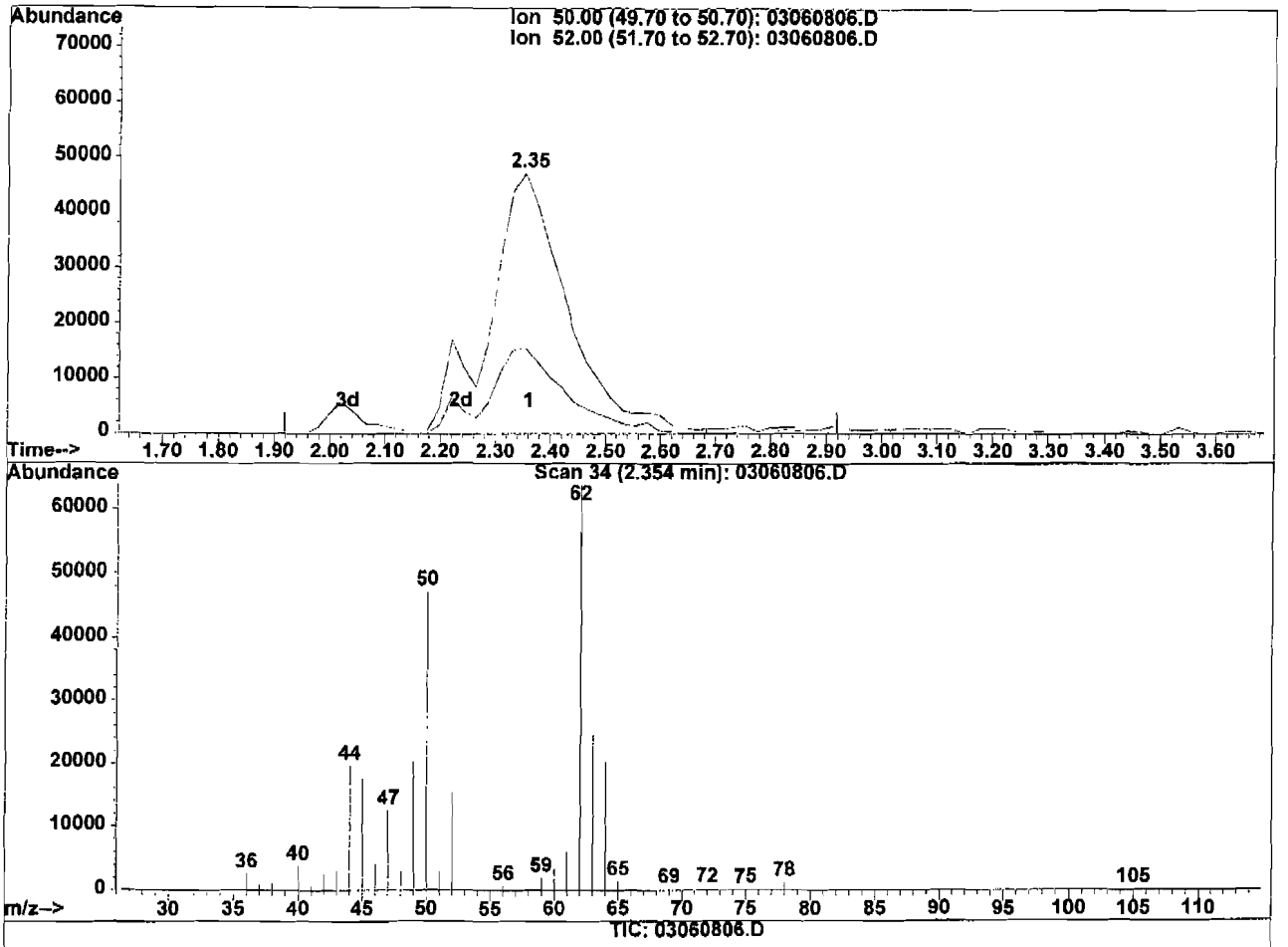
response 4064425

Ion	Exp%	Act%
50.00	100	100
52.00	34.10	34.04
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:56 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(3) Chloromethane (P)

2.35min 80.11ng m

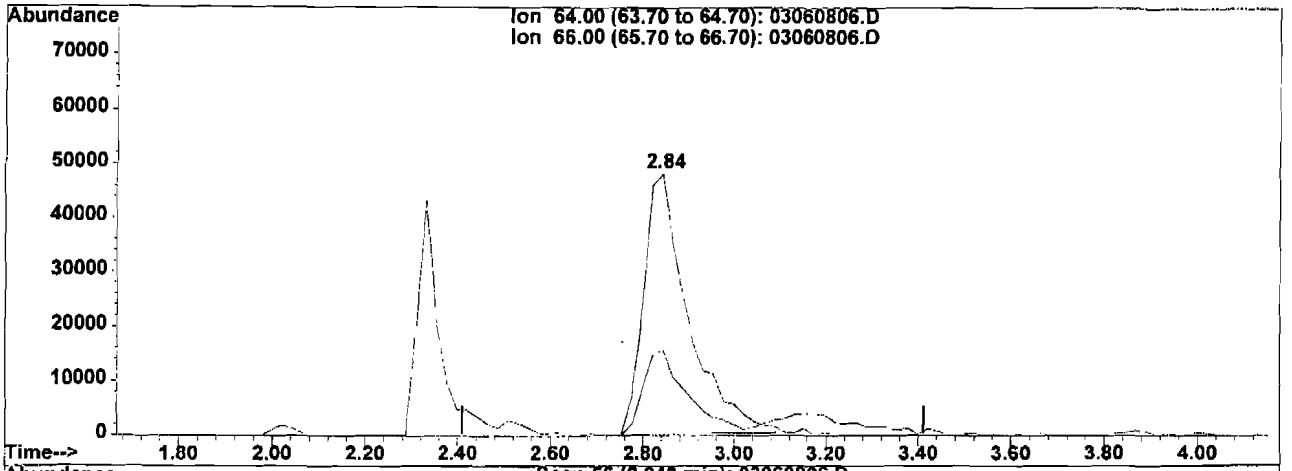
response 4619538

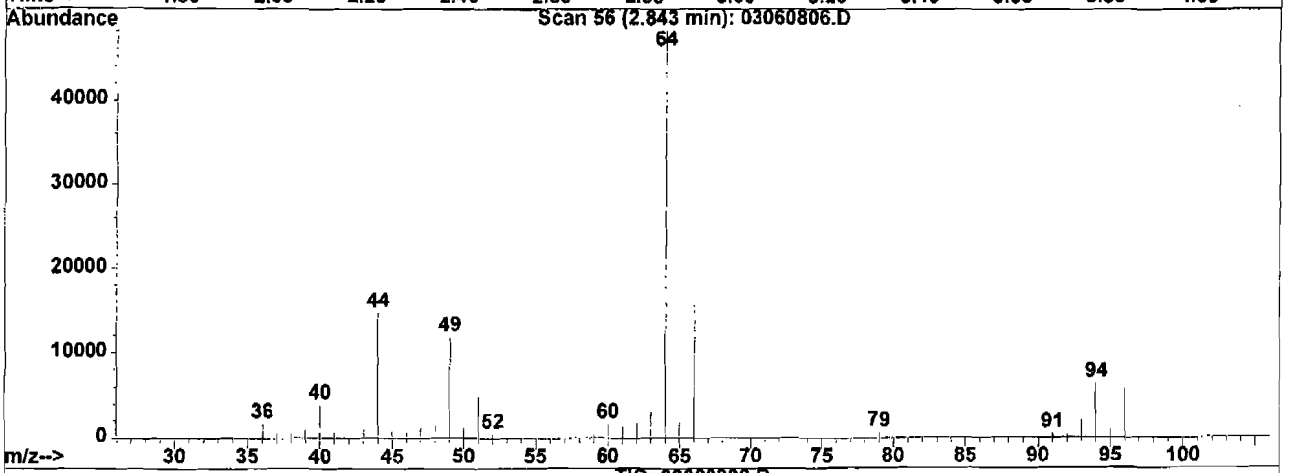
Ion	Exp%	Act%
50.00	100	100
52.00	34.10	29.95
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:56 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(6) Chloroethane

2.84min 69.59ng

response 3225069

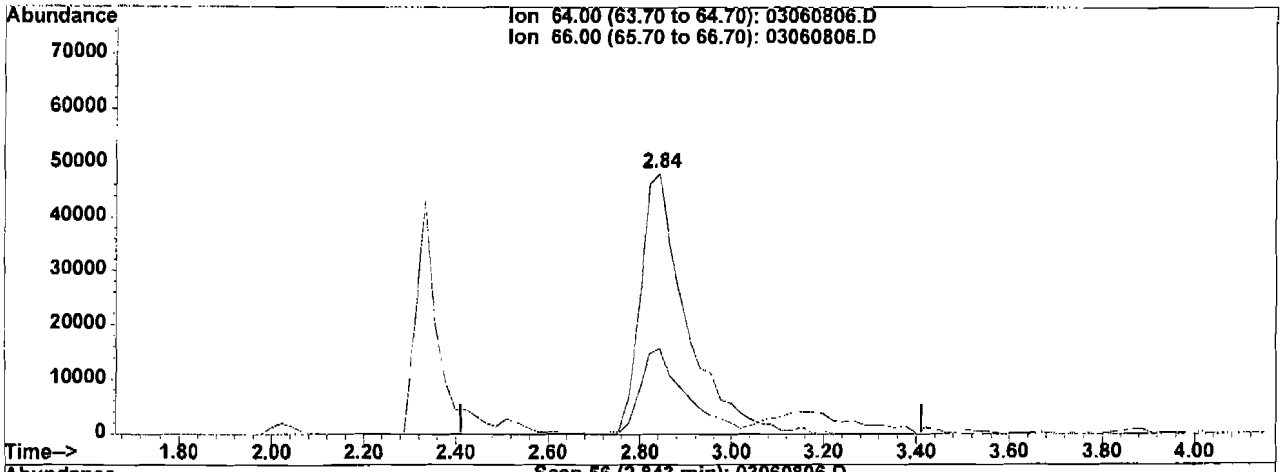
Ion	Exp%	Act%
64.00	100	100
66.00	23.50	30.08#
0.00	0.00	0.00
0.00	0.00	0.00

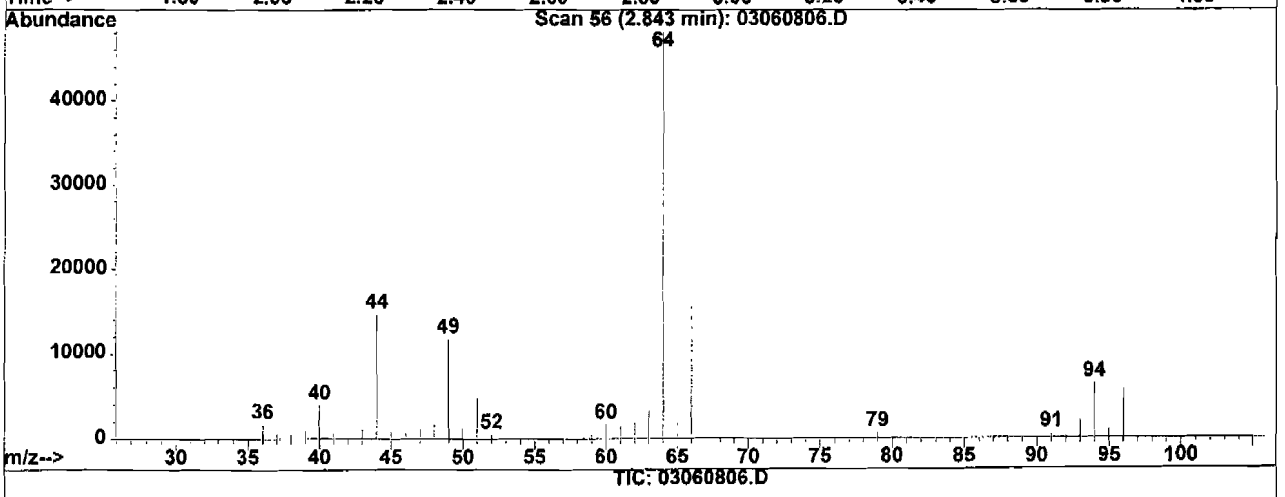
03060806.D 82608003.M Fri Mar 07 10:57:06 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:57 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(6) Chloroethane

2.84min 72.85ng m

response 3338575

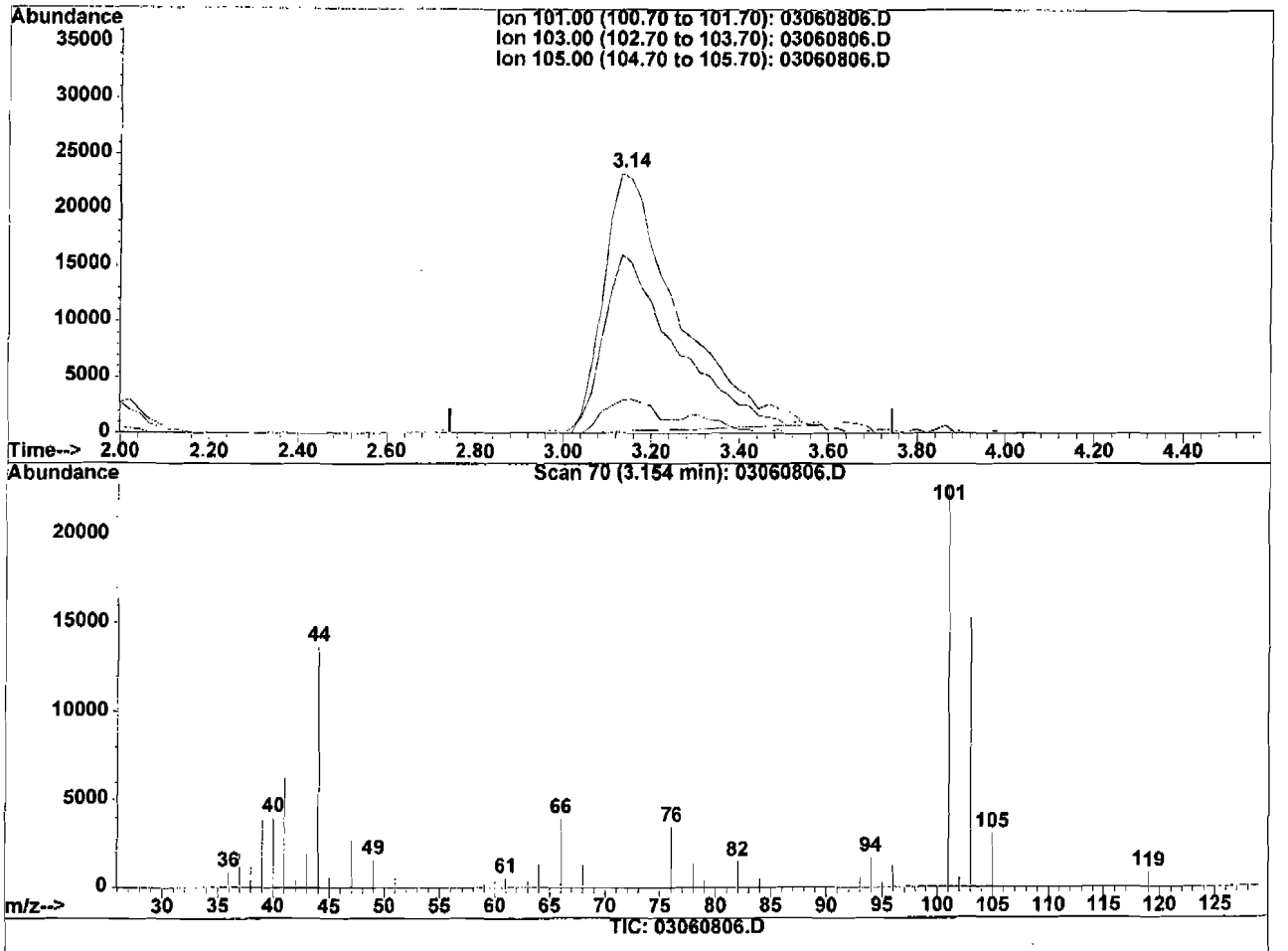
Ion	Exp%	Act%
64.00	100	100
66.00	23.50	29.06#
0.00	0.00	0.00
0.00	0.00	0.00

03060806.D 82608003.M Fri Mar 07 10:57:10 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:57 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.15min 74.09ng

response 2702588

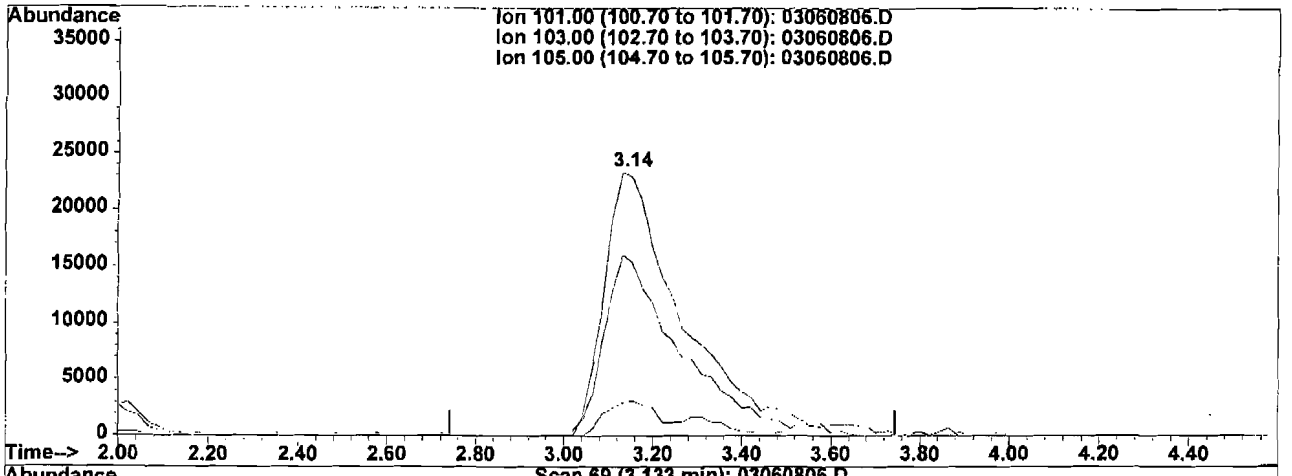
Ion	Exp%	Act%
101.00	100	100
103.00	57.00	65.63
105.00	0.00	6.17#
0.00	0.00	0.00

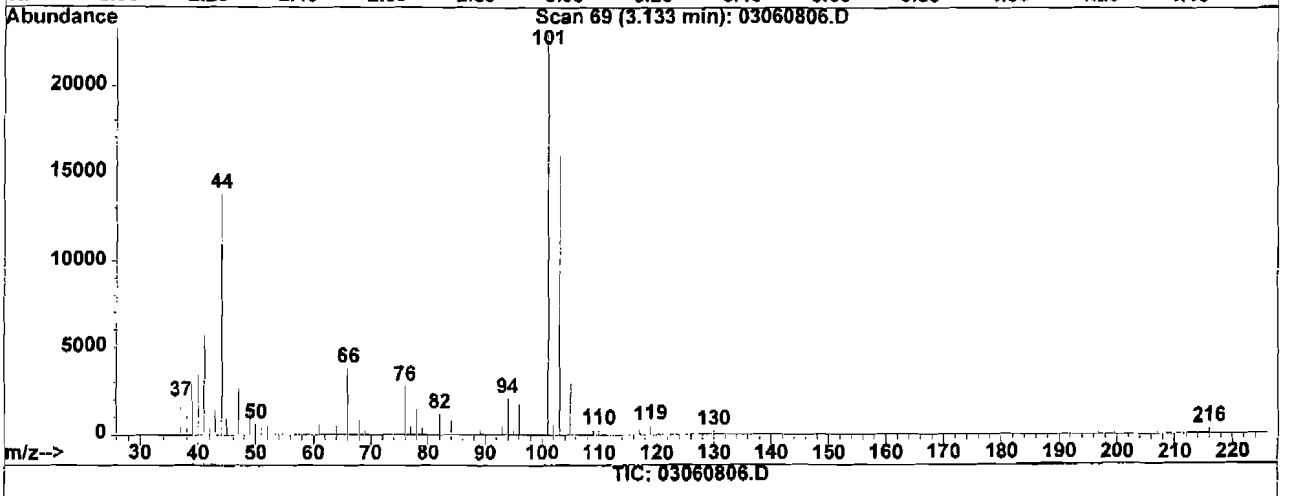
03060806.D 82608003.M Fri Mar 07 10:57:17 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:57 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(7) Trichlorofluoromethane

3.13min 79.40ng m

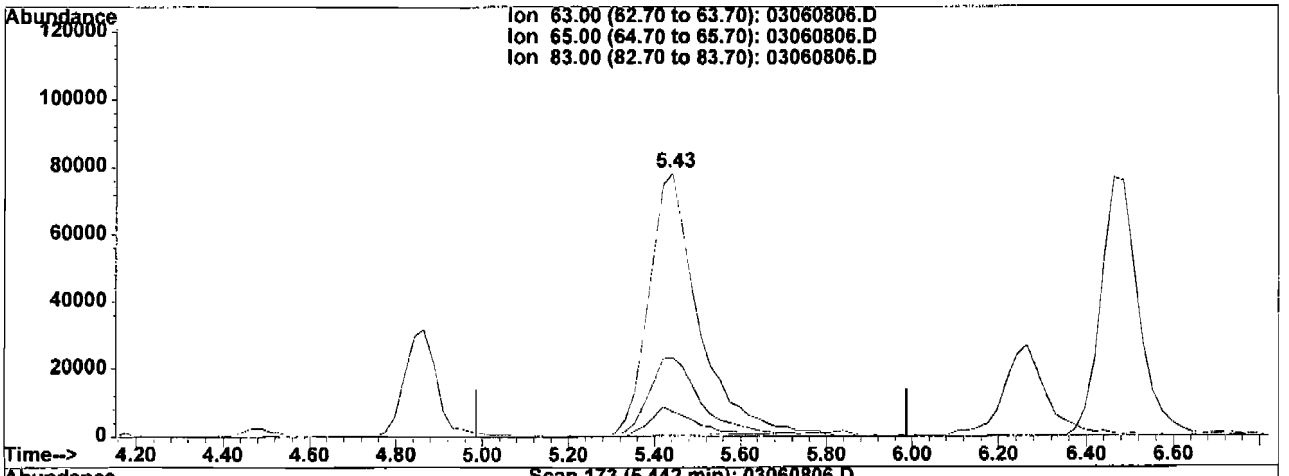
response 2897743

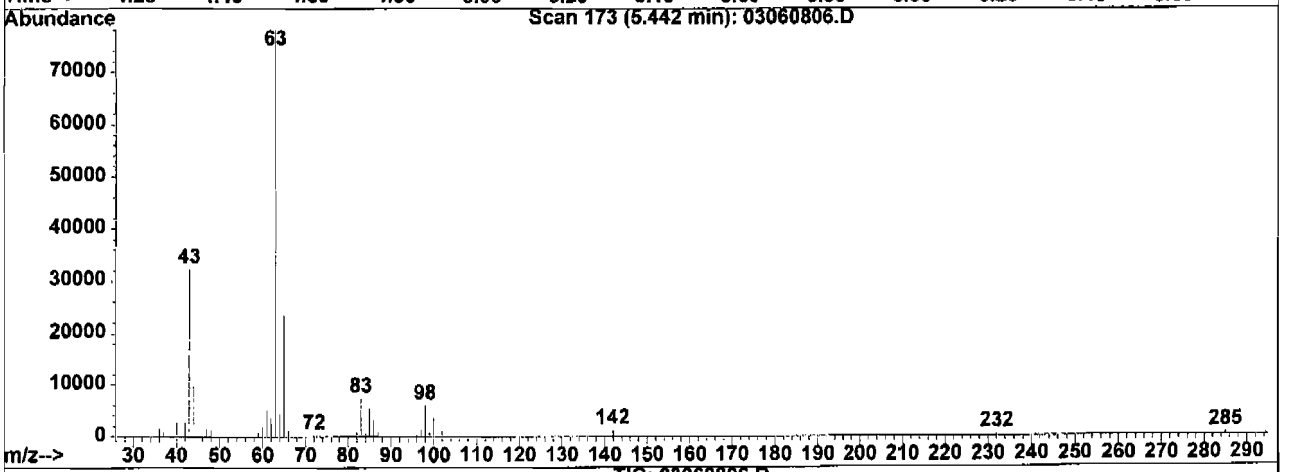
Ion	Exp%	Act%
101.00	100	100
103.00	57.00	61.21
105.00	0.00	5.75#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:57 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(15) 1,1-Dichloroethane (P)

5.44min -5278.09ng

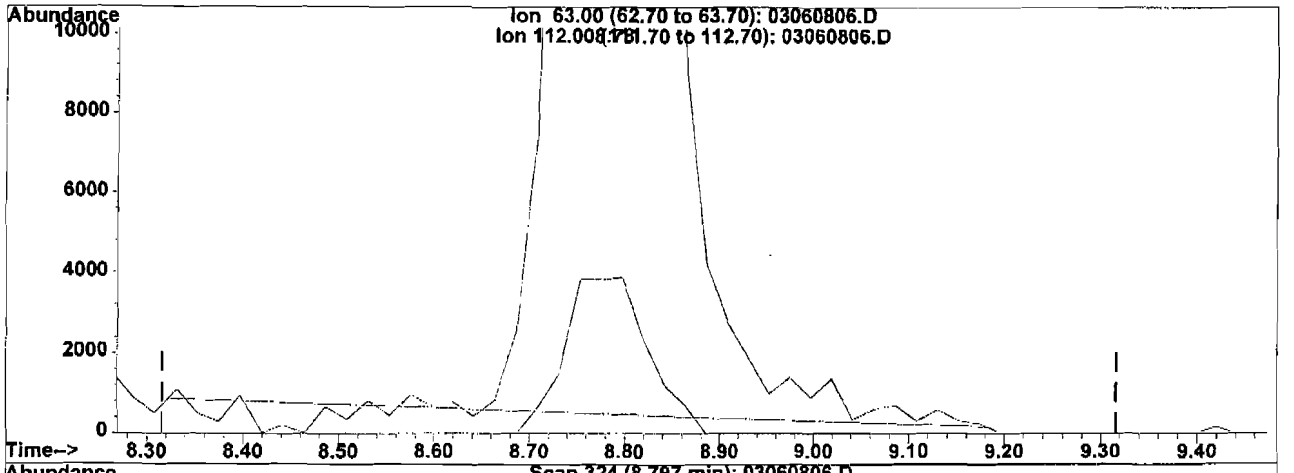
response 6124095

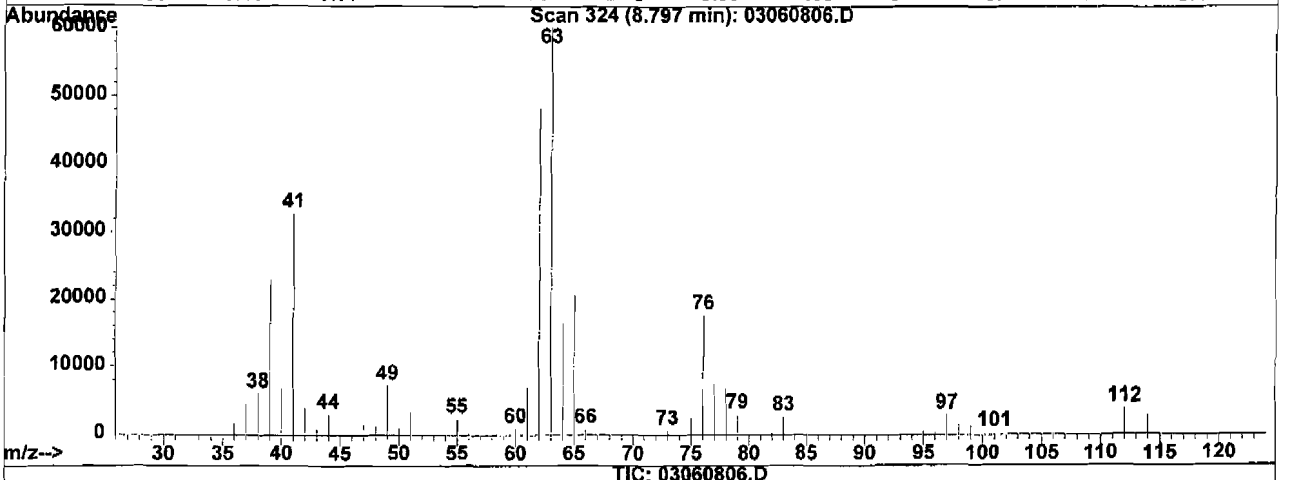
Ion	Exp%	Act%
63.00	100	100
65.00	33.50	32.70
83.00	10.50	10.77
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:57 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(31) 1,2-Dichloropropane (C)

8.79min 76.69ng

response 3740409

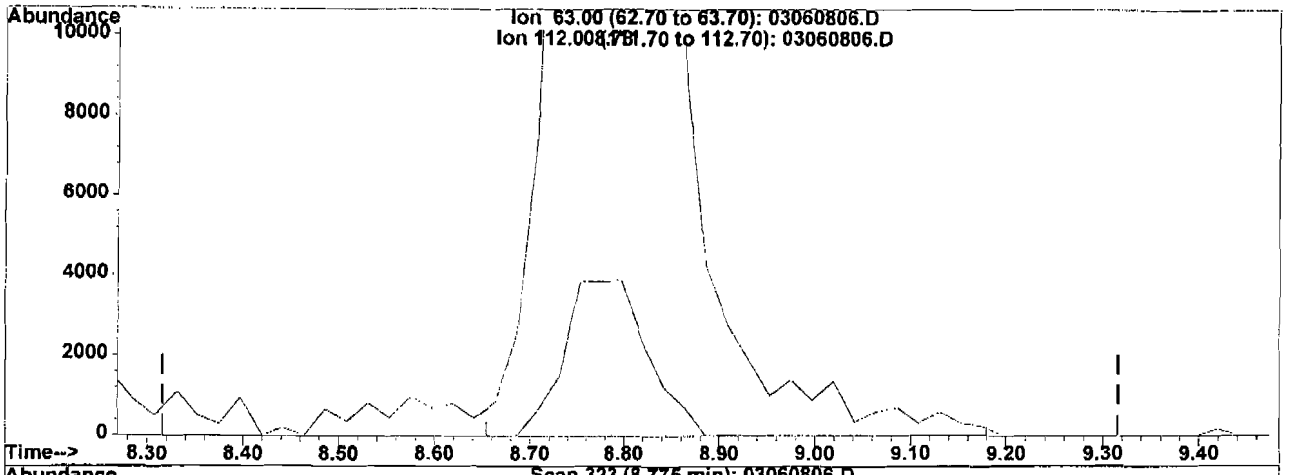
Ion	Exp%	Act%
63.00	100	100
112.00	5.70	6.37
0.00	0.00	0.00
0.00	0.00	0.00

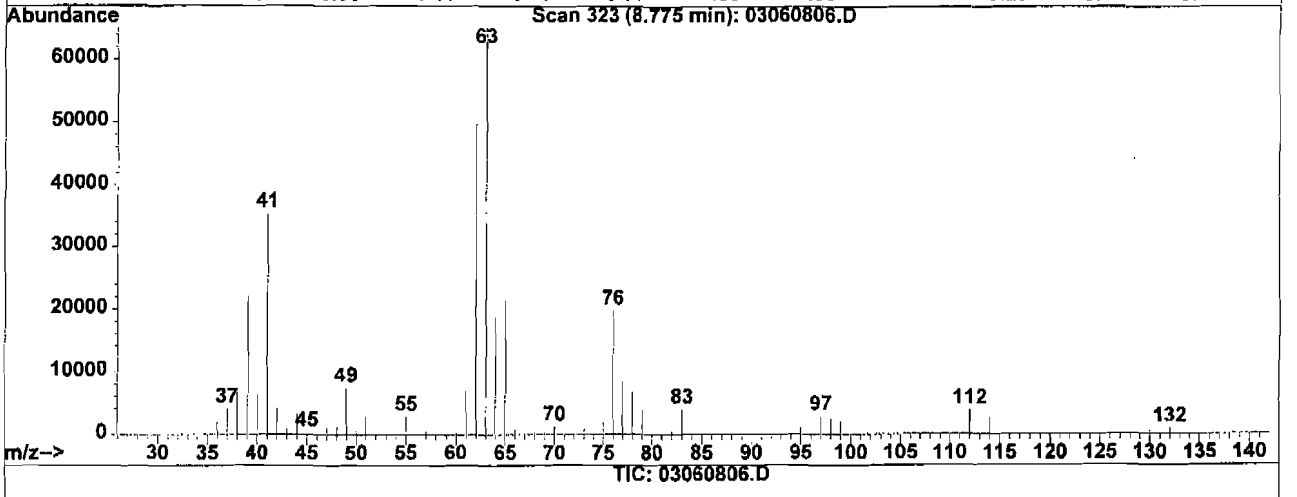
03060806.D 82608003.M Fri Mar 07 10:58:01 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:58 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(31) 1,2-Dichloropropane (C)

8.78min 79.89ng m

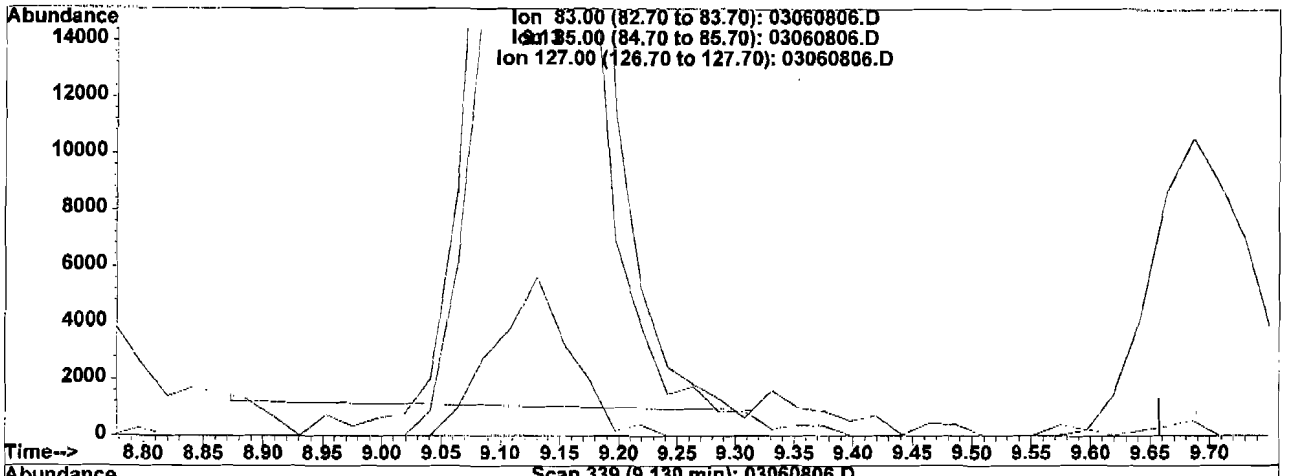
response 3901324

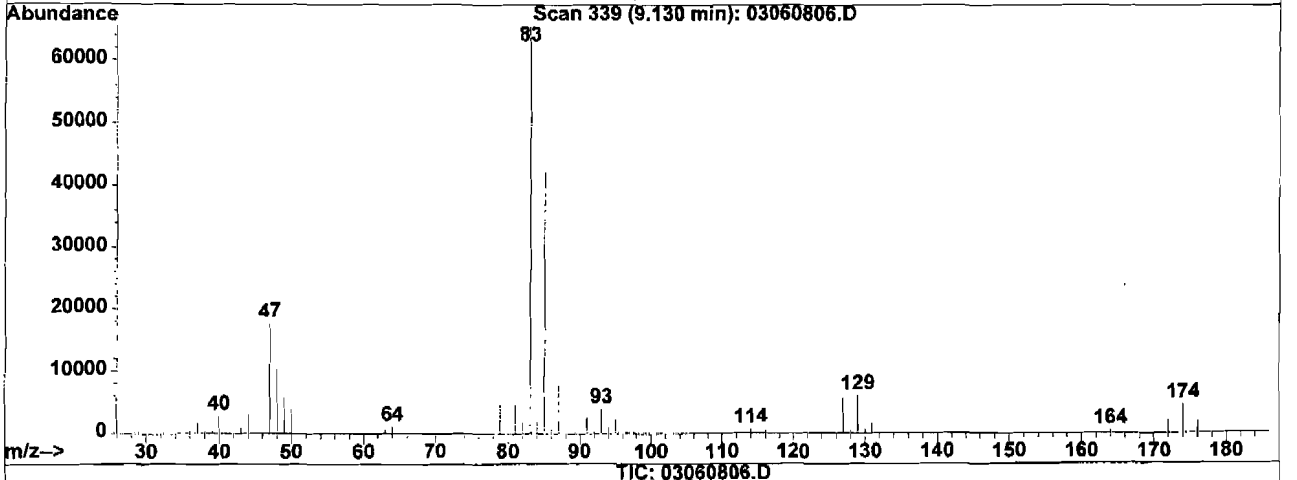
Ion	Exp%	Act%
63.00	100	100
112.00	5.70	6.11
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:58 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(34) Bromodichloromethane

9.14min 78.78ng

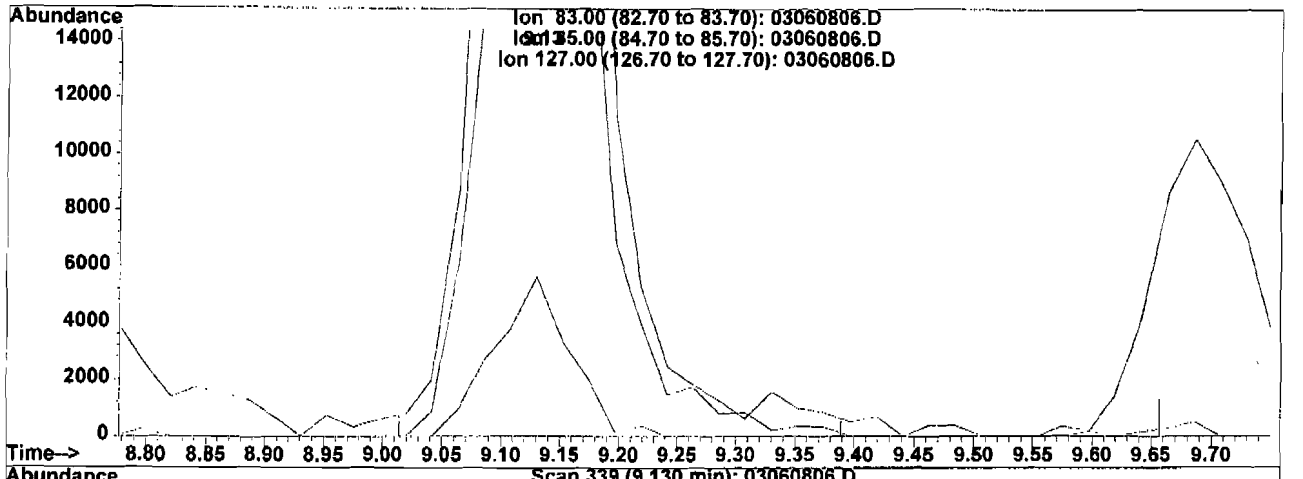
response 3274702

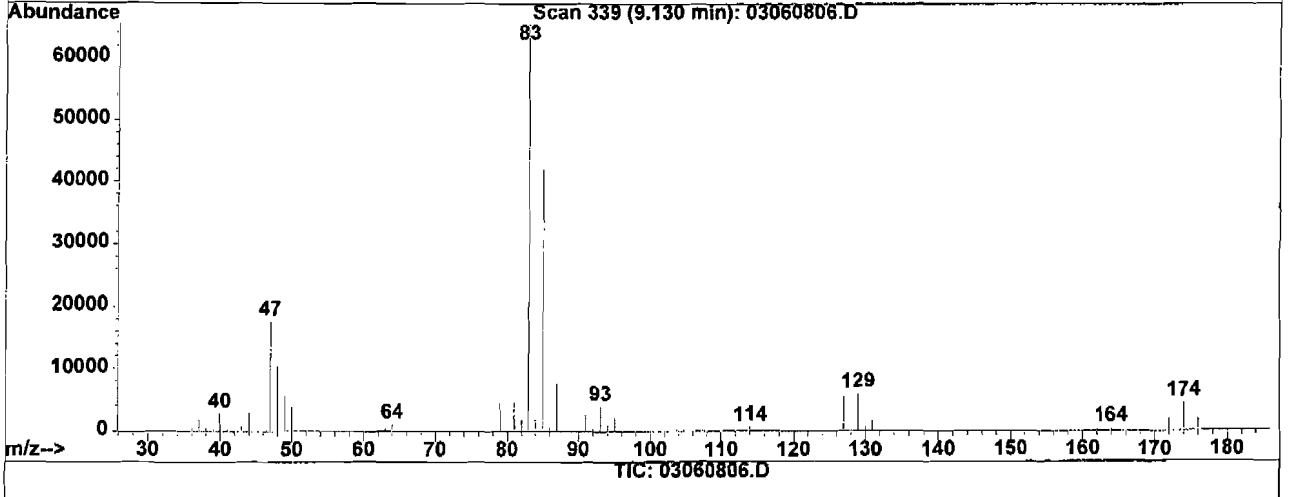
Ion	Exp%	Act%
83.00	100	100
85.00	67.40	66.13
127.00	7.80	7.72
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:58 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(34) Bromodichloromethane

9.13min 84.68ng m

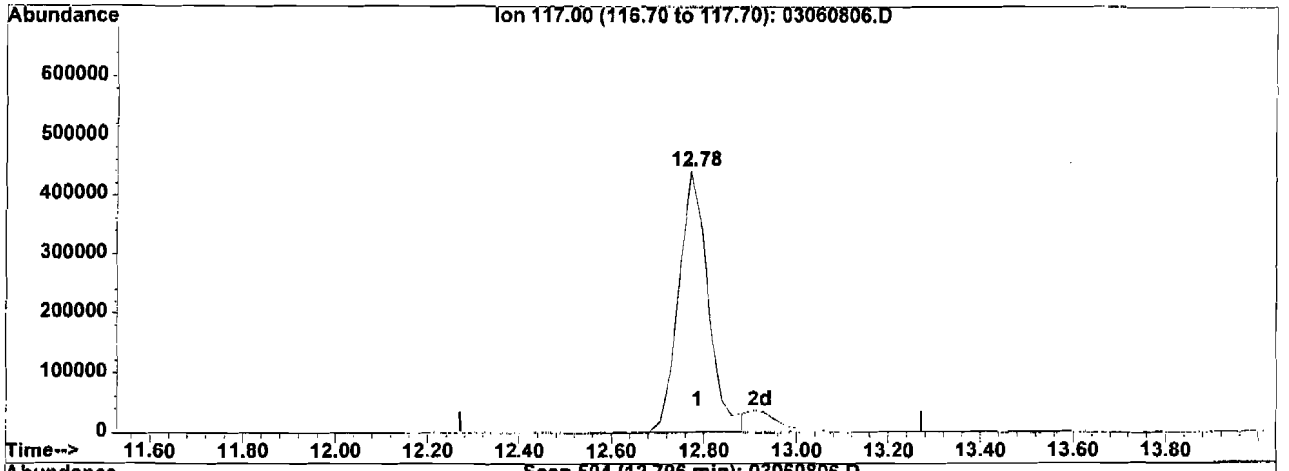
response 3532522

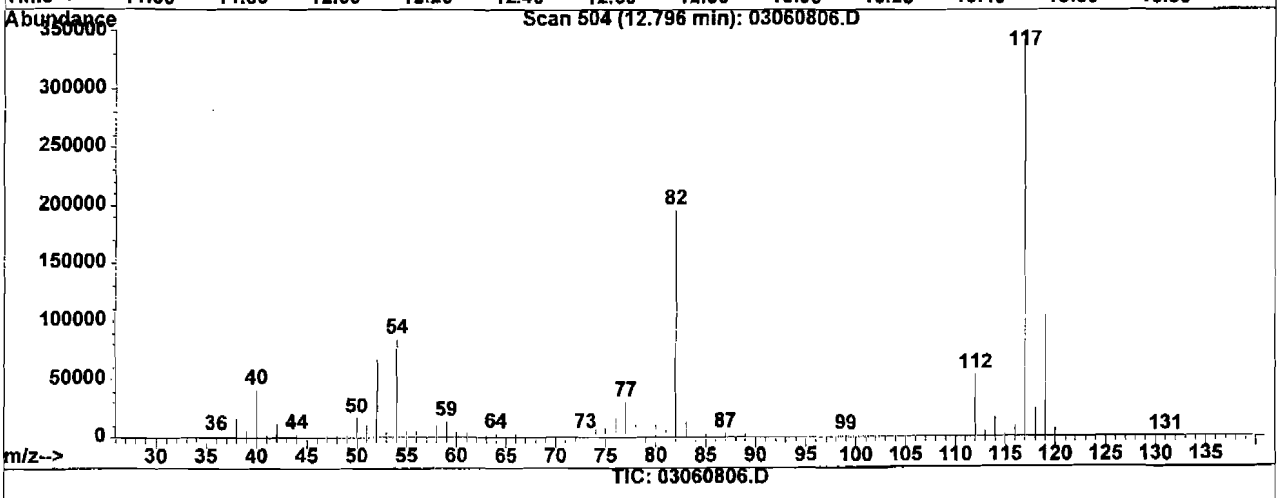
Ion	Exp%	Act%
83.00	100	100
85.00	67.40	61.30
127.00	7.80	7.16
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:58 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(43) Chlorobenzene-d5 (ins) (I)

12.79min 200.00ng

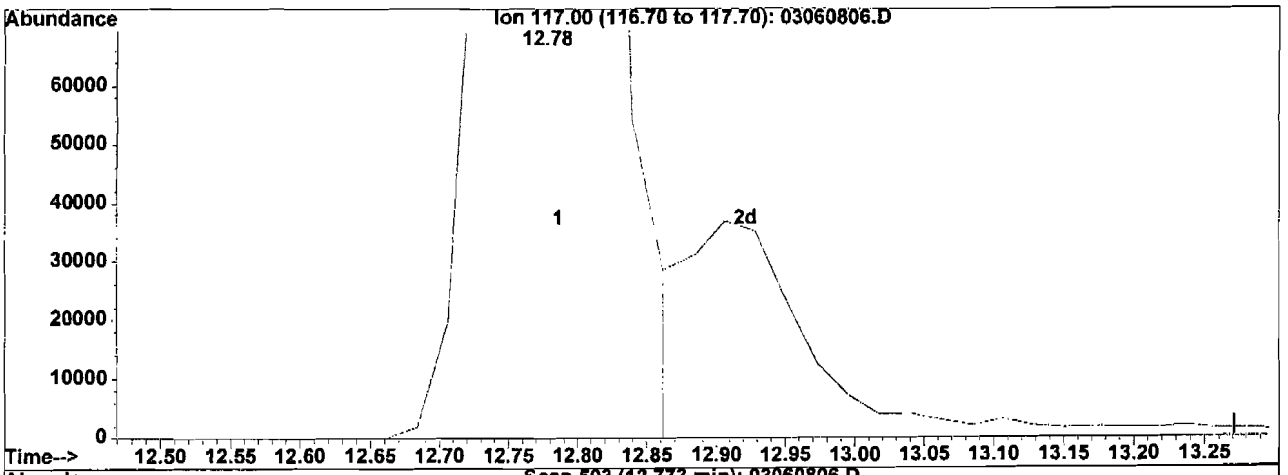
response 423862

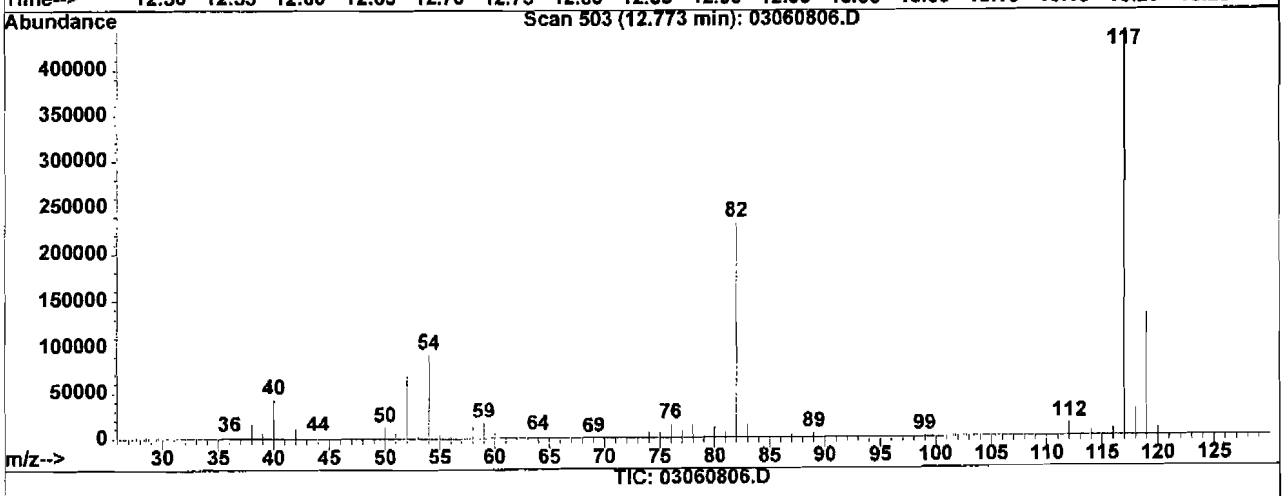
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:58 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(43) Chlorobenzene-d5 (Ins) (I)

12.77min 200.00ng m

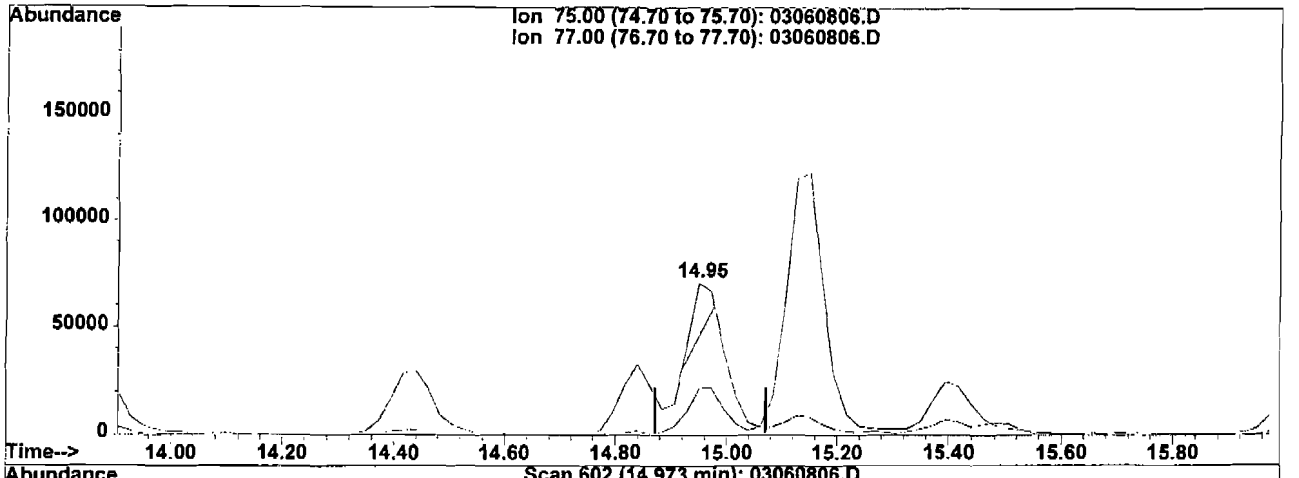
response 443349

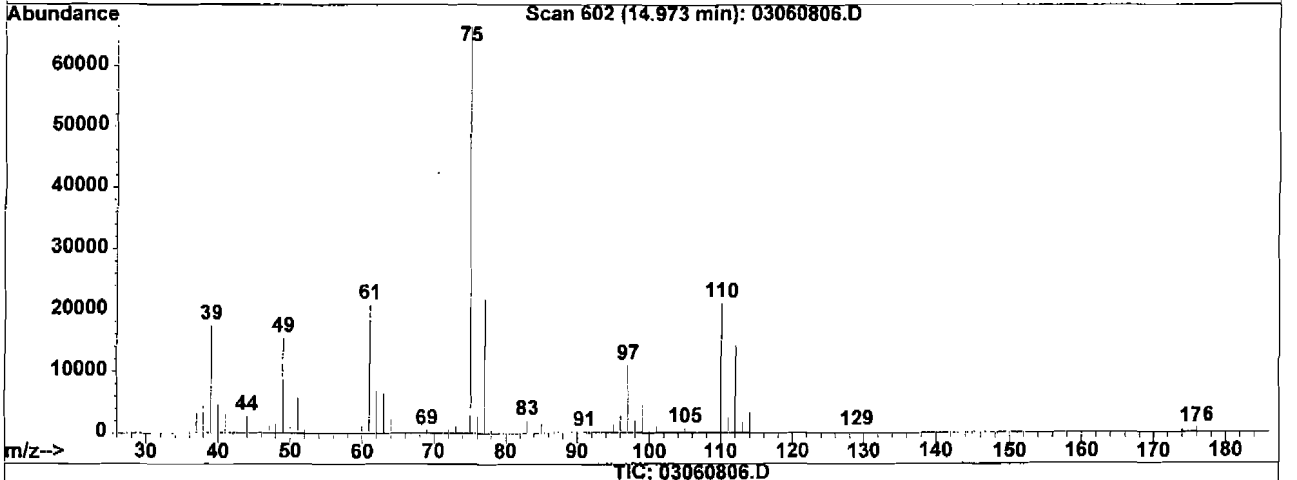
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:58 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(56) 1,2,3-Trichloropropane

14.97min 6.87ng

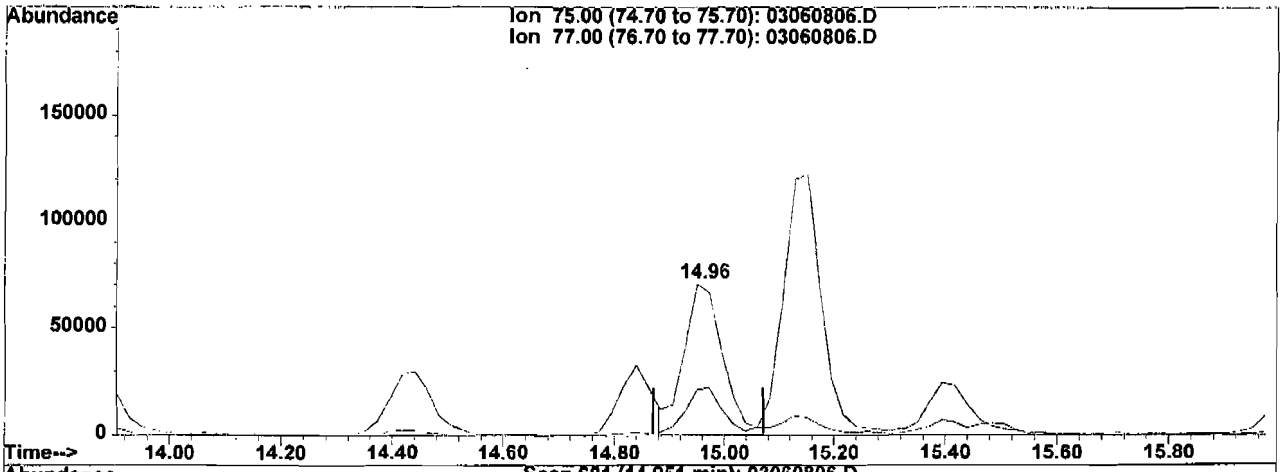
response 636686

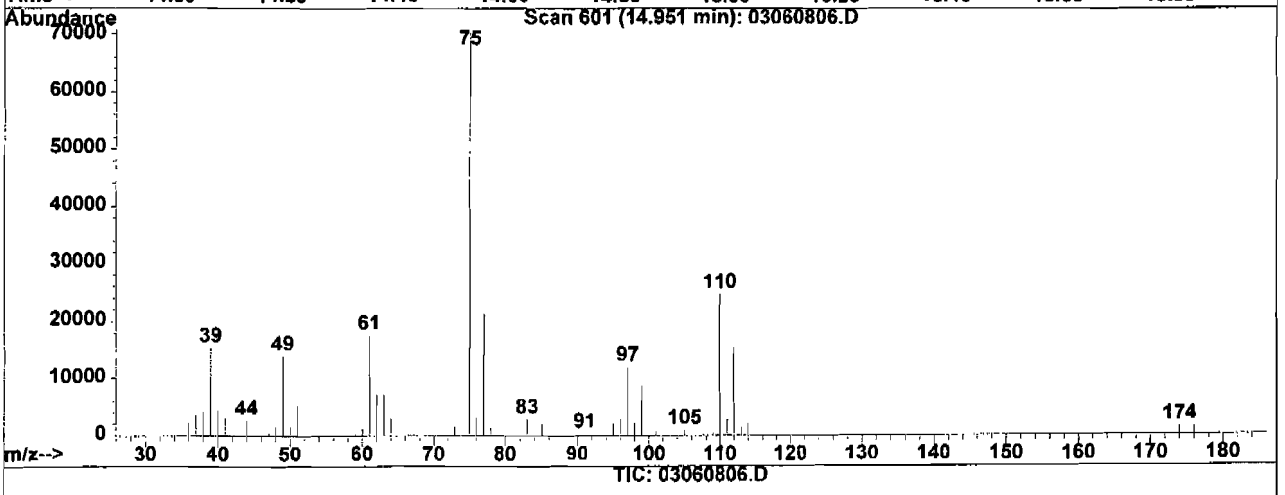
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	30.80#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:59 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.95min 76.56ng m

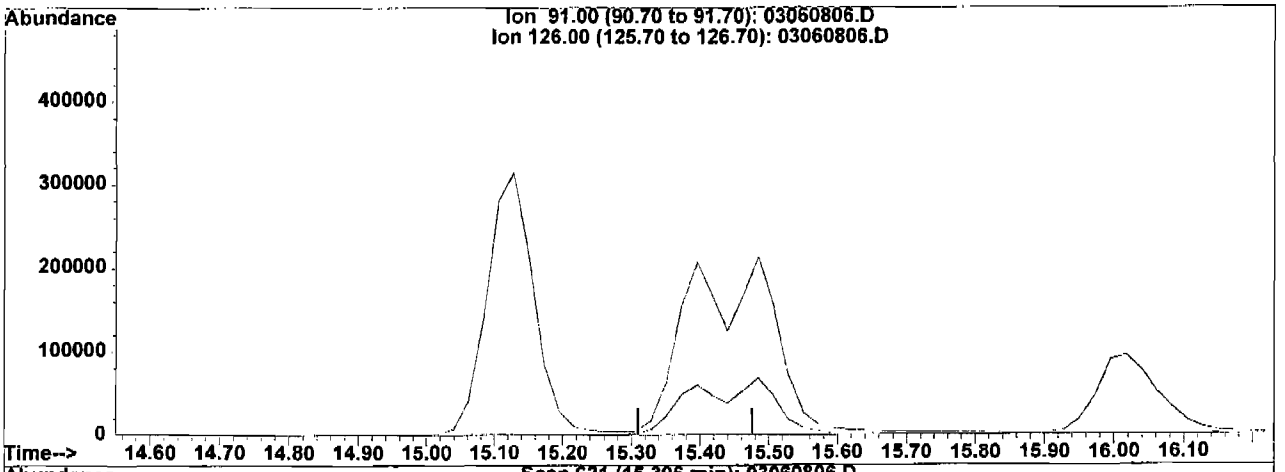
response 3514252

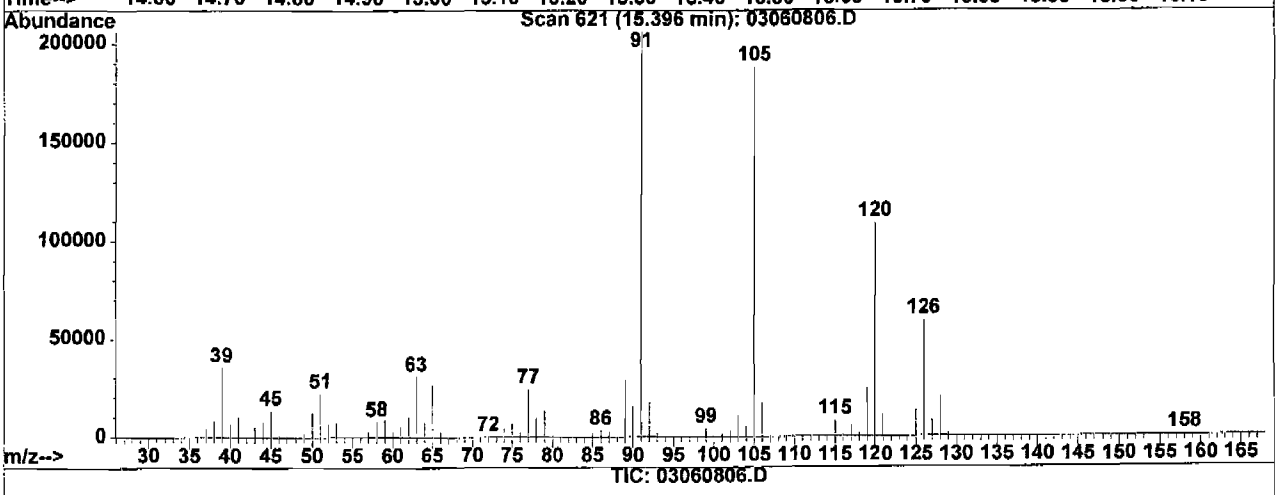
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	5.58
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:59 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.39min 0.00ng d

response 0

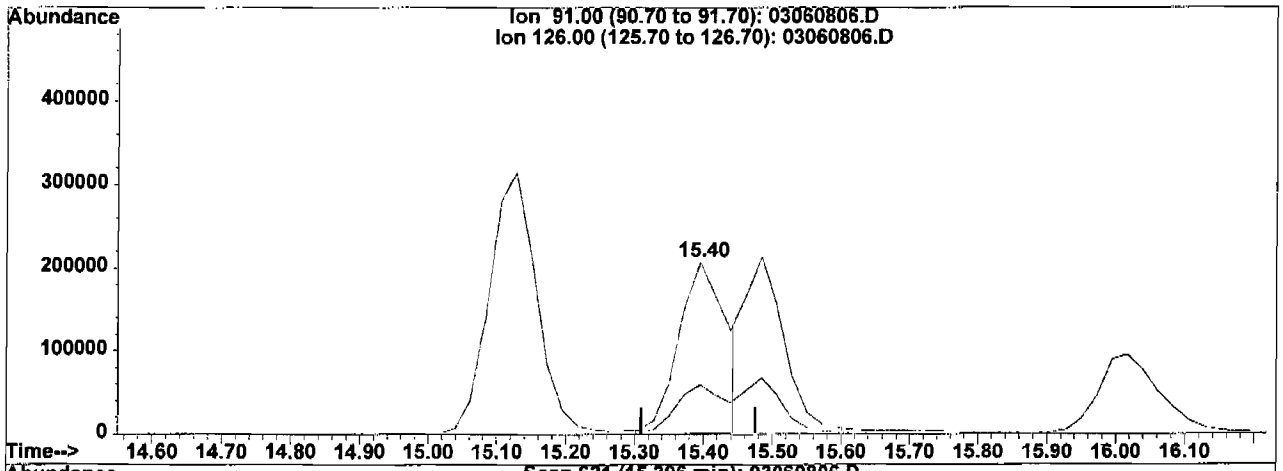
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

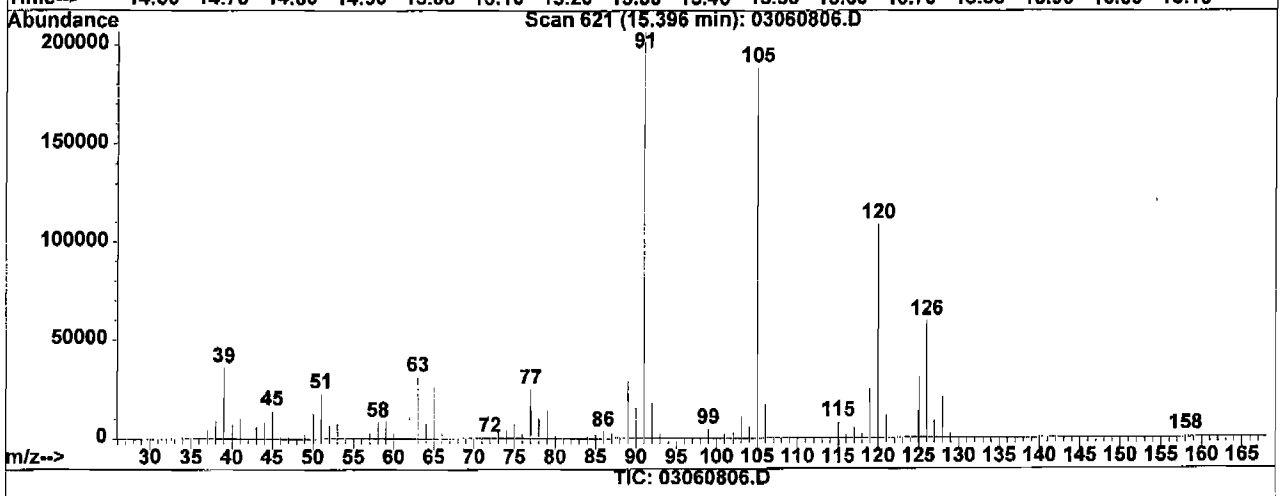
03060806.D 82608003.M Fri Mar 07 10:59:30 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:59 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.40min 85.03ng m

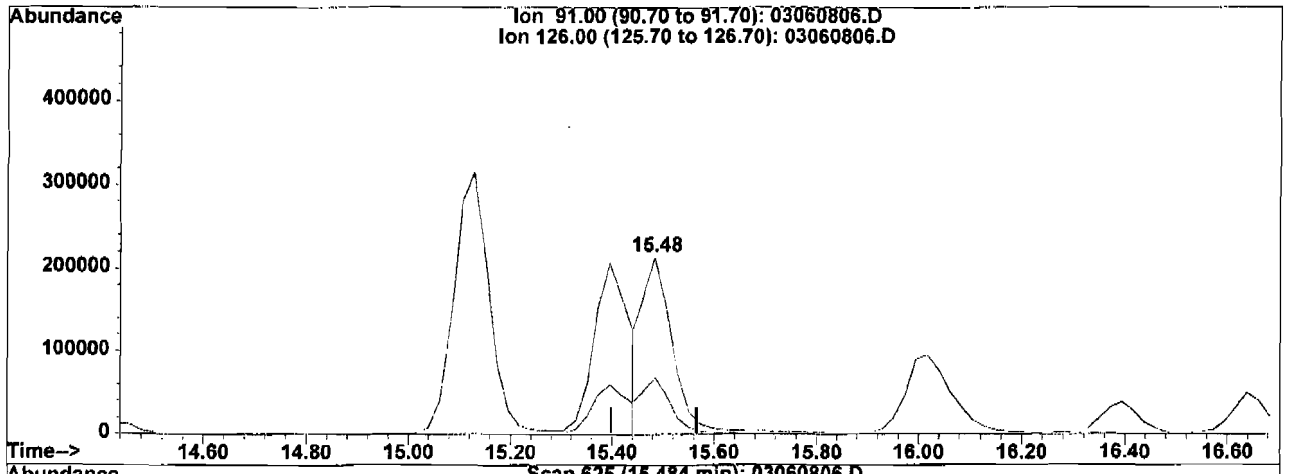
response 10606938

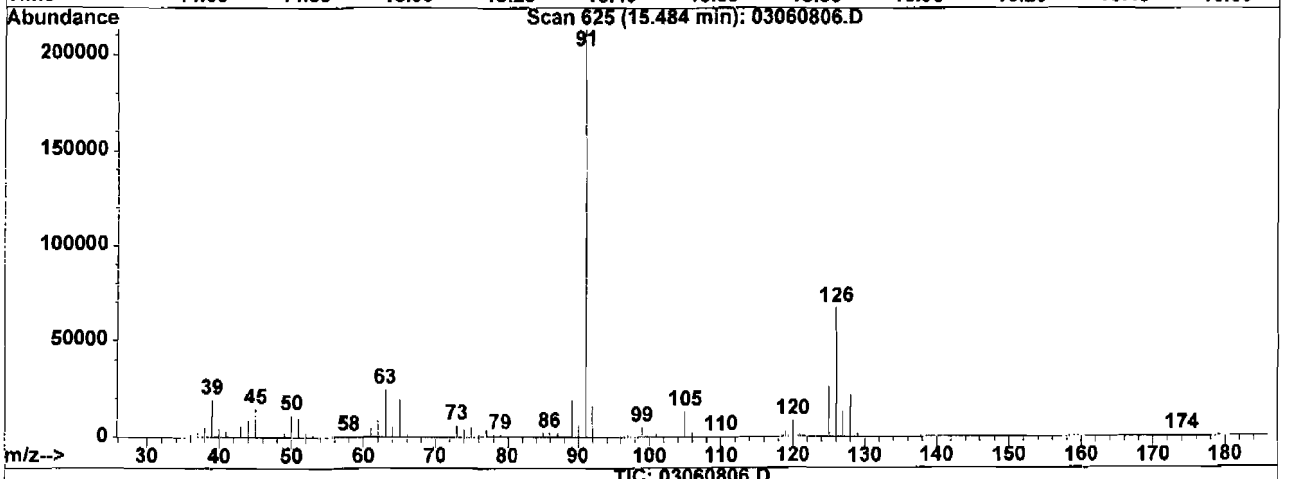
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060806.D Vial: 1
Acq On : 06 Mar 08 20:38 Operator:
Sample : CS3_80ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 10:59 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060806.D

(59) 4-Chlorotoluene

15.48min 78.78ng m

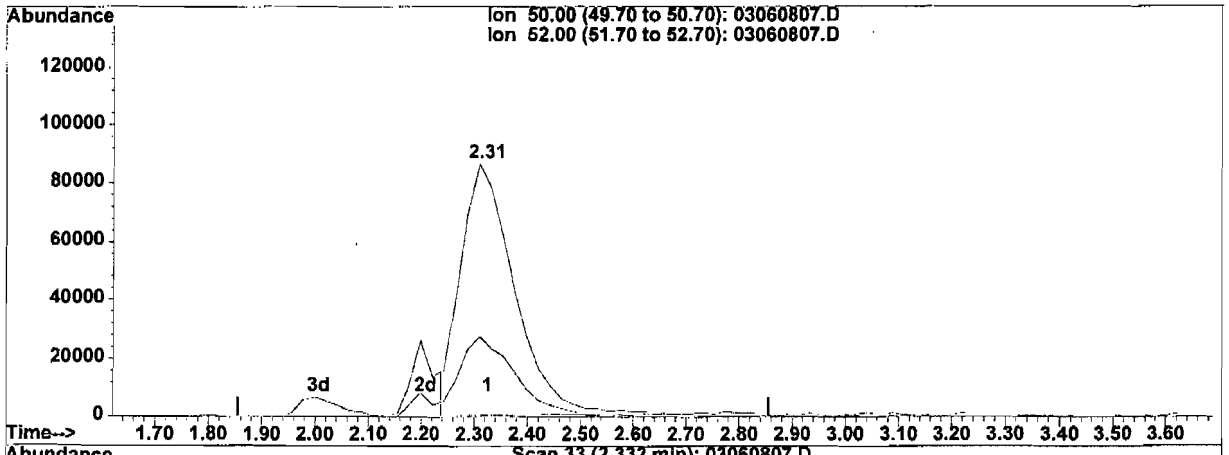
response 9884525

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:00 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(3) Chloromethane (P)

2.32min 119.46ng

response 6209262

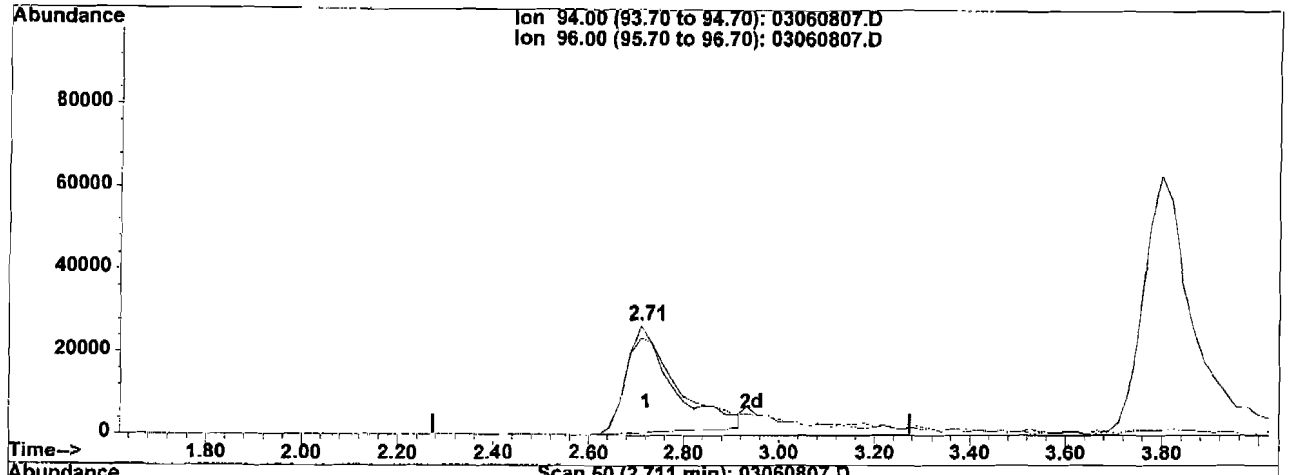
Ion	Exp%	Act%
50.00	100	100
52.00	30.00	32.87
0.00	0.00	0.00
0.00	0.00	0.00

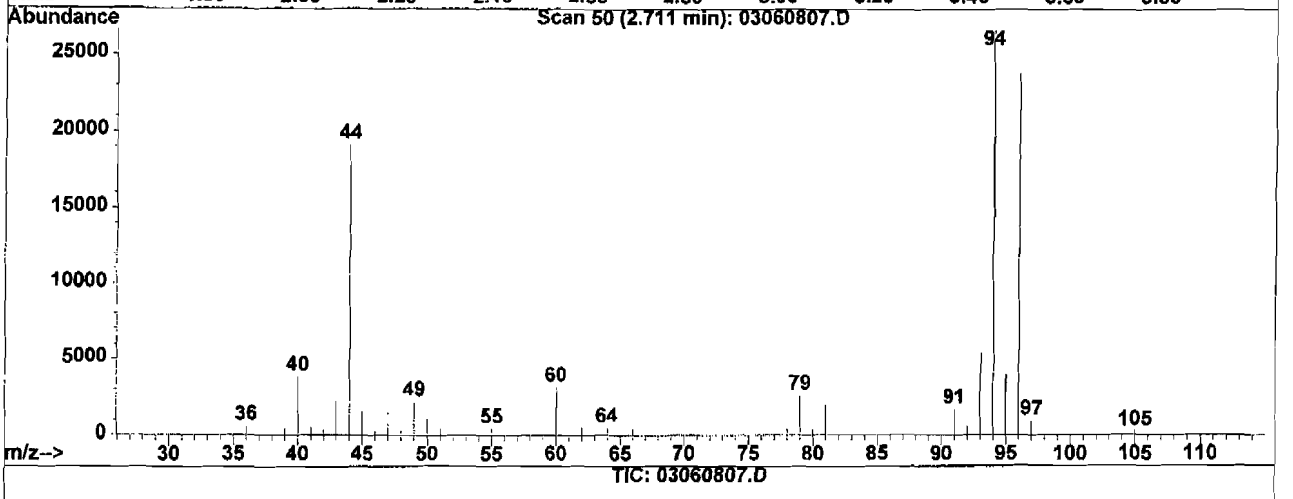
Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D
Acq On : 06 Mar 08 21:17
Sample : CS4_120ng_82608003
Misc :
Quant Time: Mar 7 11:00 19108

Vial: 1
Operator: csm
Inst :
Multiplr: 1.00
Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(5) Bromomethane

2.72min 106.51ng

response 1826328

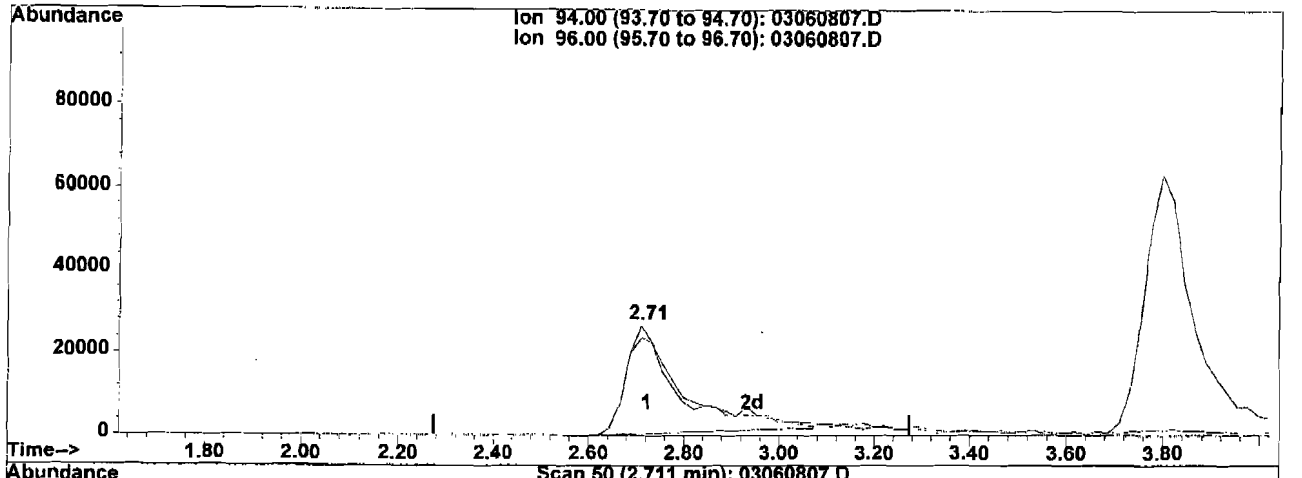
Ion	Exp%	Act%
94.00	100	100
96.00	86.20	103.73#
0.00	0.00	0.00
0.00	0.00	0.00

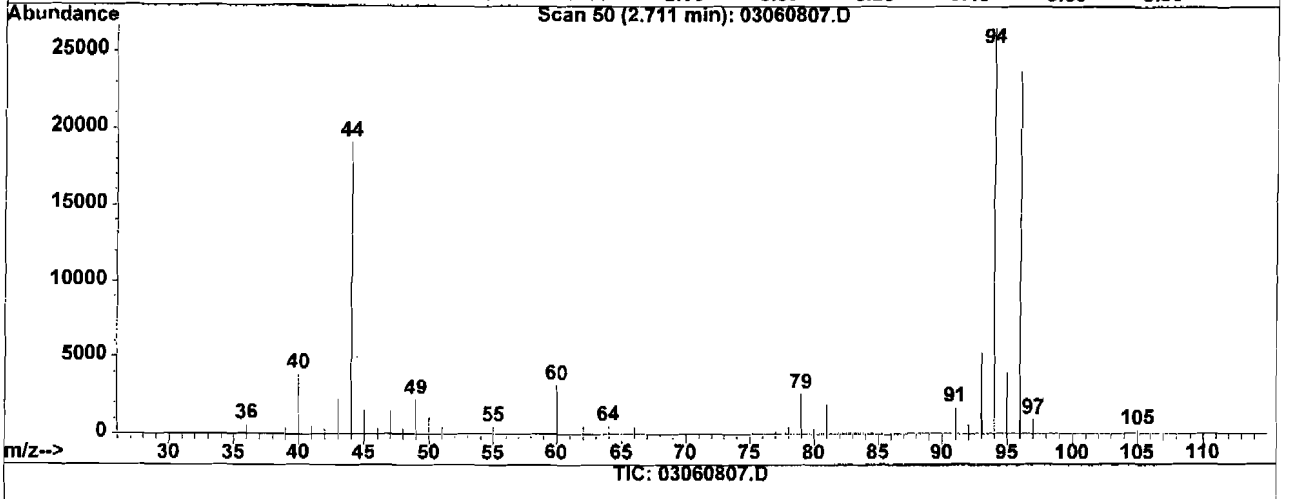
Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D
Acq On : 06 Mar 08 21:17
Sample : CS4_120ng_82608003
Misc :
Quant Time: Mar 7 11:01 19108

Vial: 1
Operator: csm
Inst :
Multiplr: 1.00
Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(5) Bromomethane

2.71min 121.80ng m

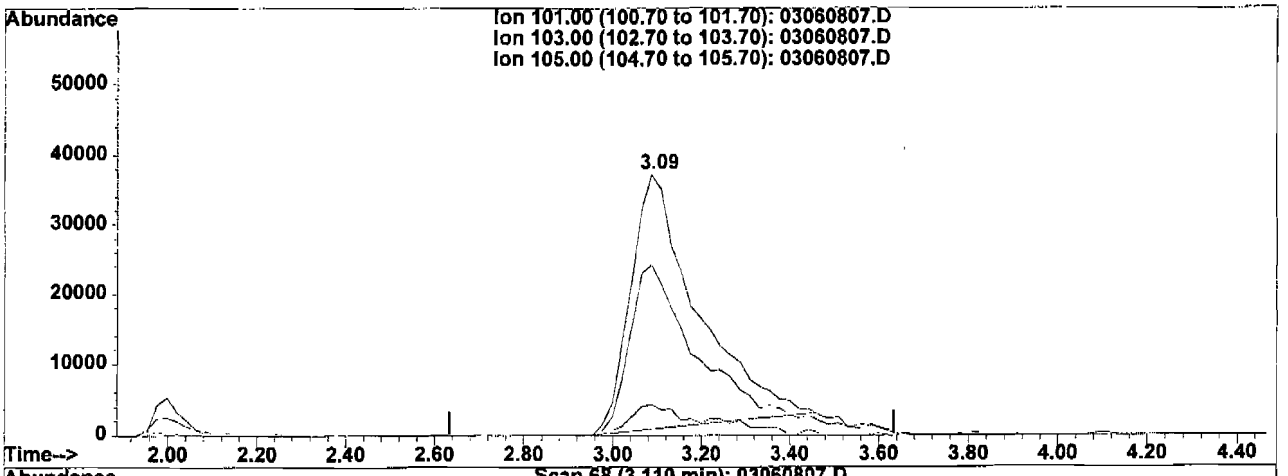
response 2129806

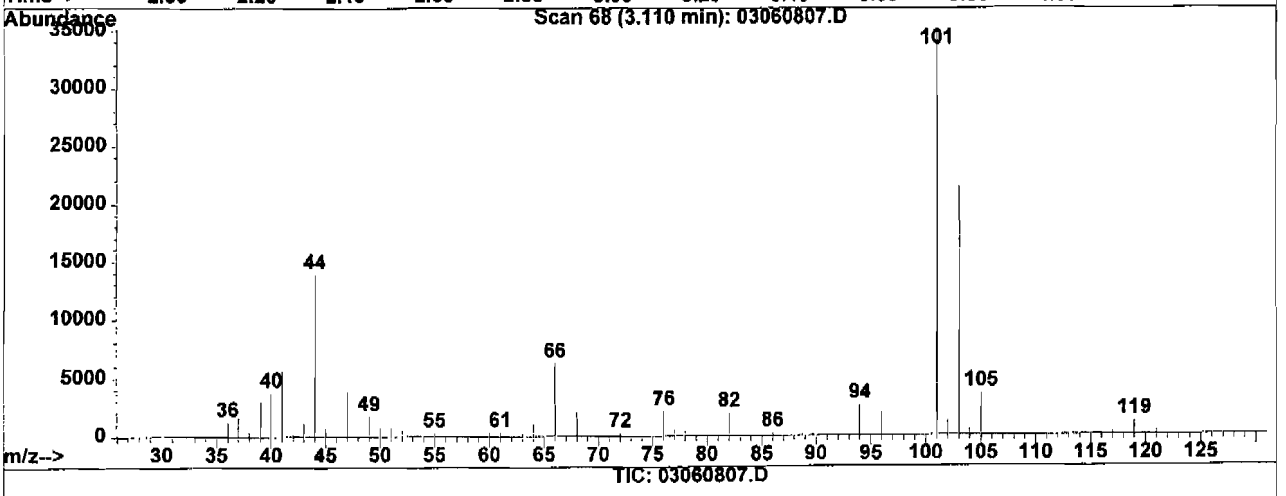
Ion	Exp%	Act%
94.00	100	100
96.00	86.20	88.95
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:01 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(7) Trichlorofluoromethane

3.10min 107.02ng

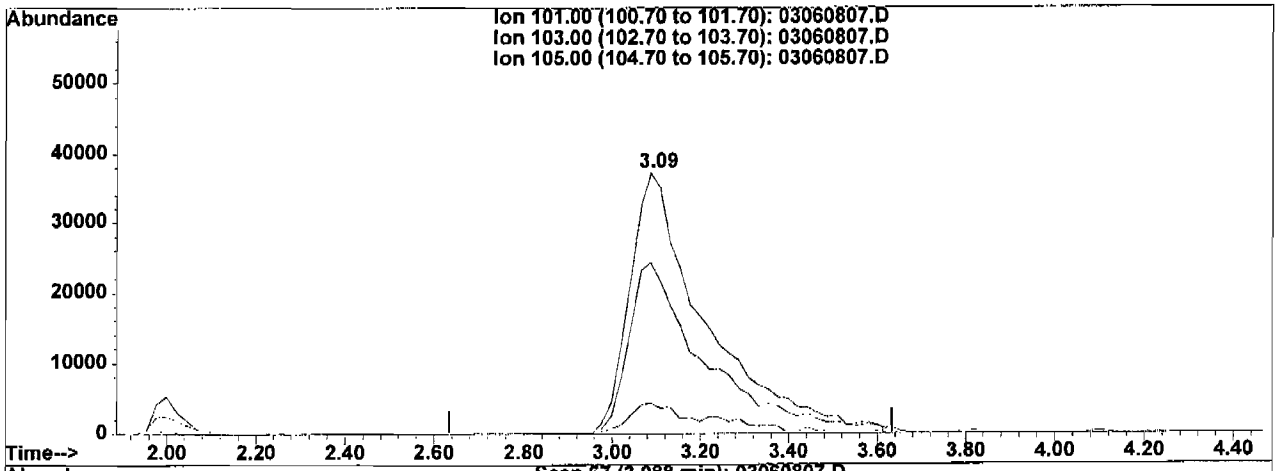
response 3776672

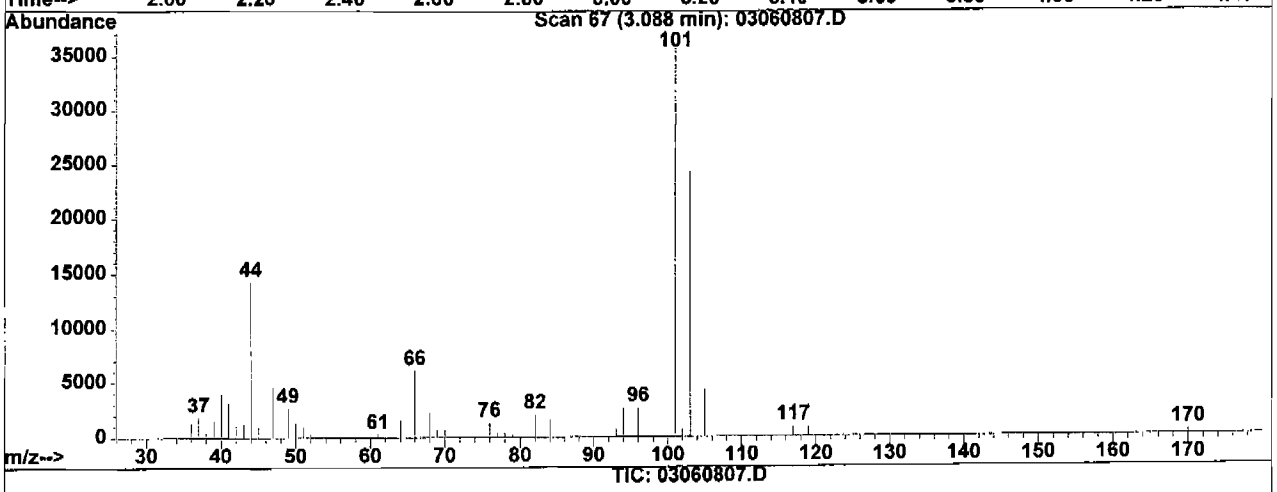
Ion	Exp%	Act%
101.00	100	100
103.00	61.20	64.93
105.00	5.80	13.72#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:01 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(7) Trichlorofluoromethane

3.09min 124.92ng m

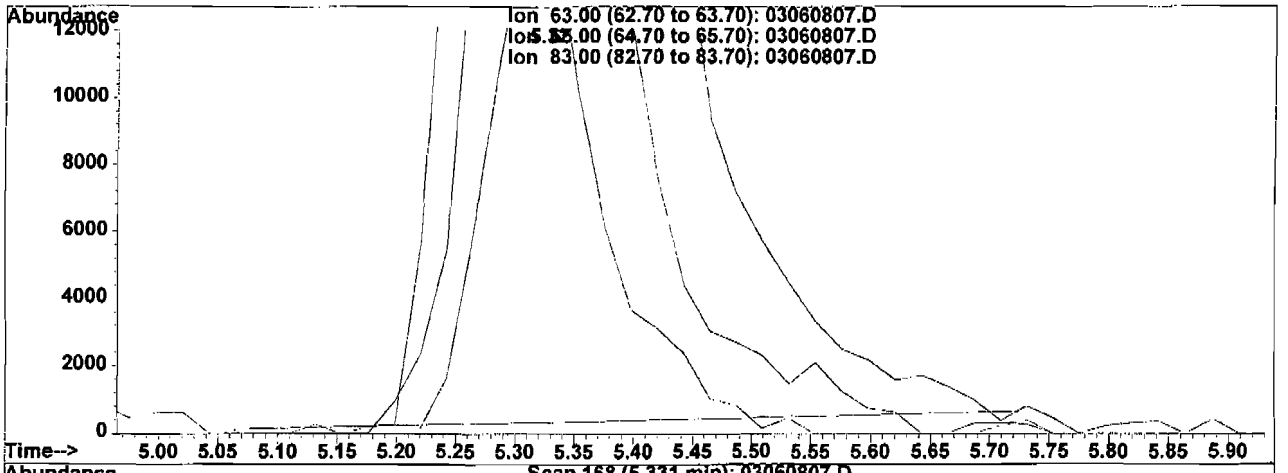
response 4403562

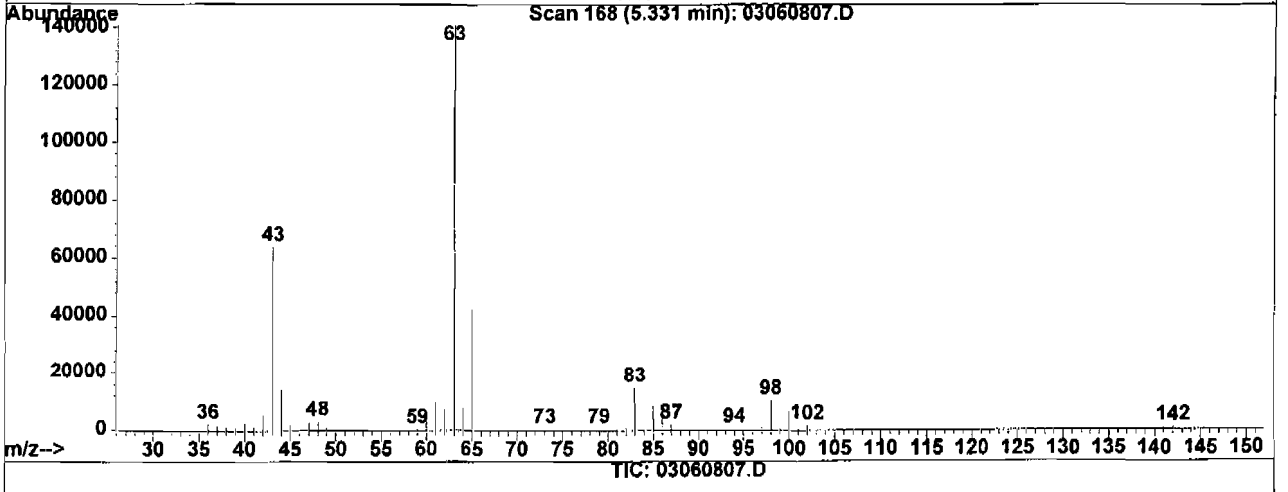
Ion	Exp%	Act%
101.00	100	100
103.00	61.20	55.69
105.00	5.80	11.77#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:01 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(15) 1,1-Dichloroethane (P)

5.33min -1508.55ng

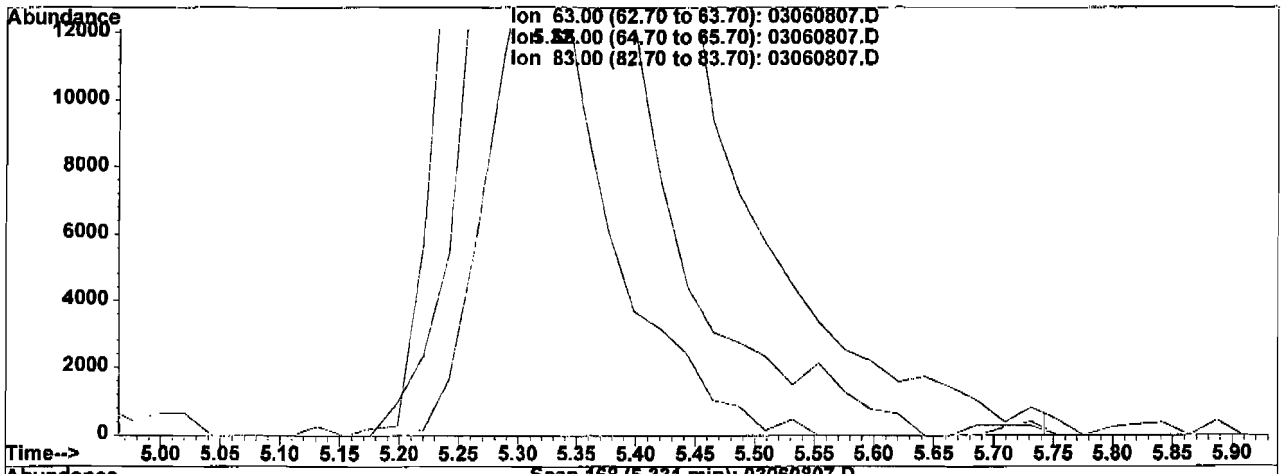
response 9588991

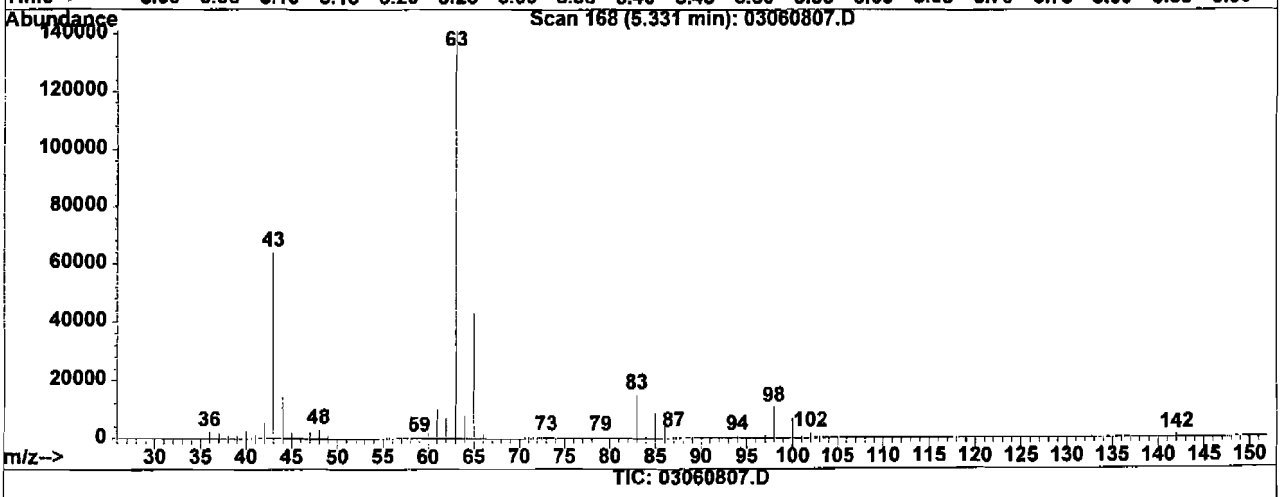
Ion	Exp%	Act%
63.00	100	100
65.00	31.30	32.72
83.00	10.30	10.67
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(15) 1,1-Dichloroethane (P)

5.33min -1545.16ng m

response 9745369

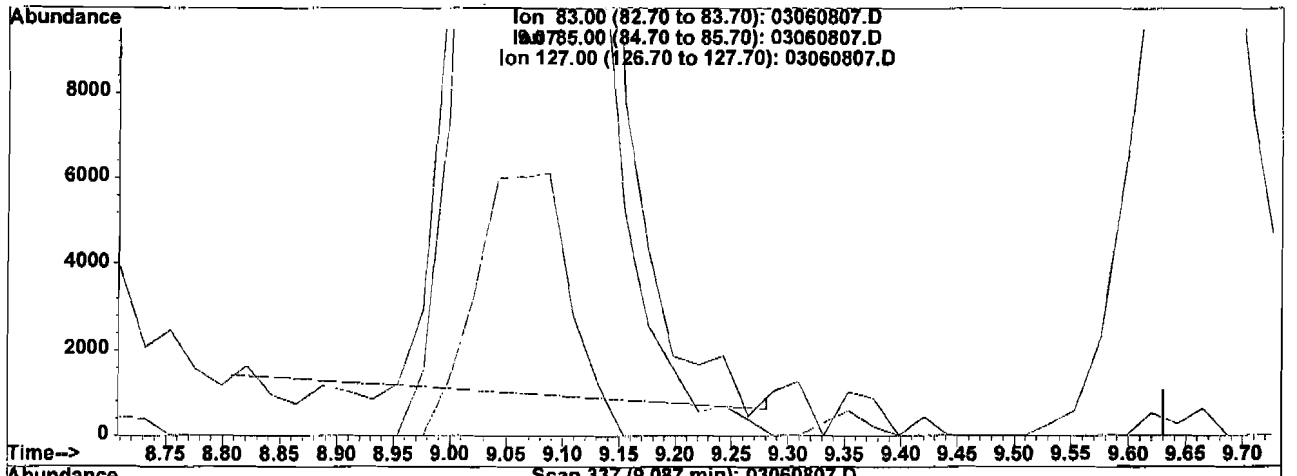
Ion	Exp%	Act%
63.00	100	100
65.00	31.30	32.20
83.00	10.30	10.50
0.00	0.00	0.00

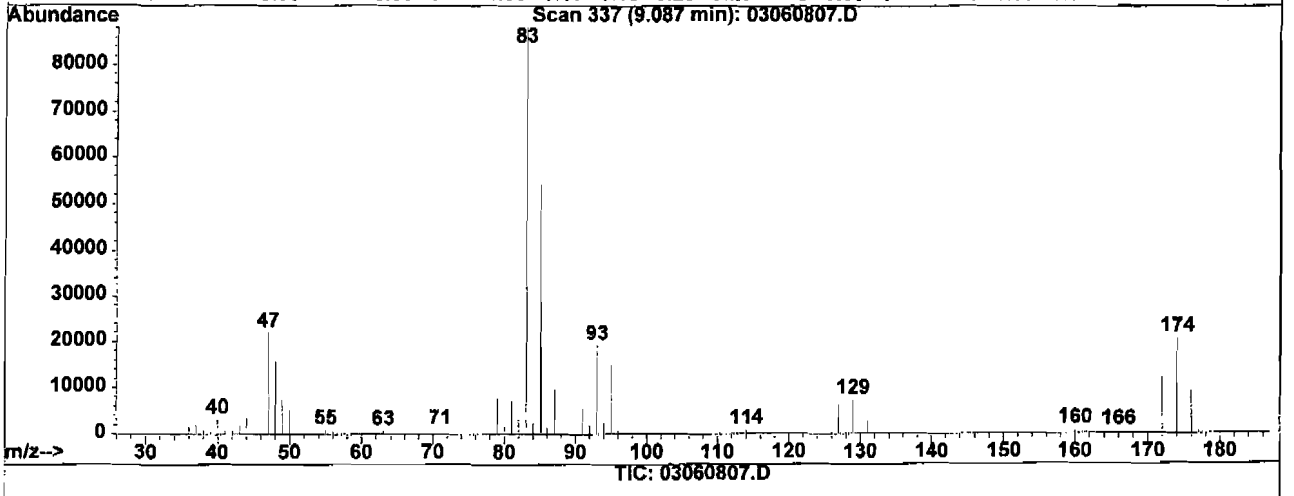
03060807.D 82608003.M Fri Mar 07 11:02:11 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(34) Bromodichloromethane

9.08min 116.69ng

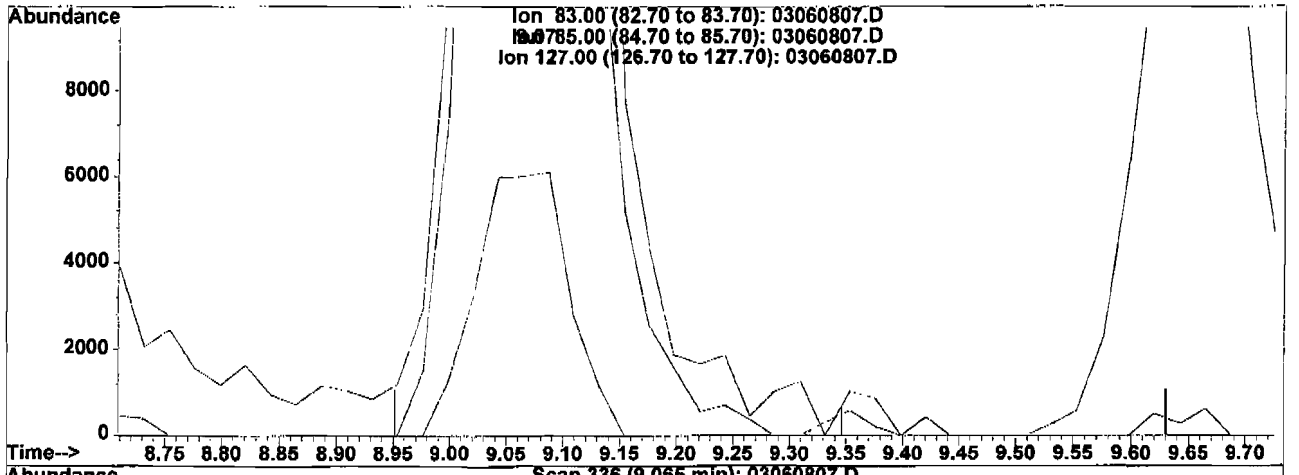
response 5103268

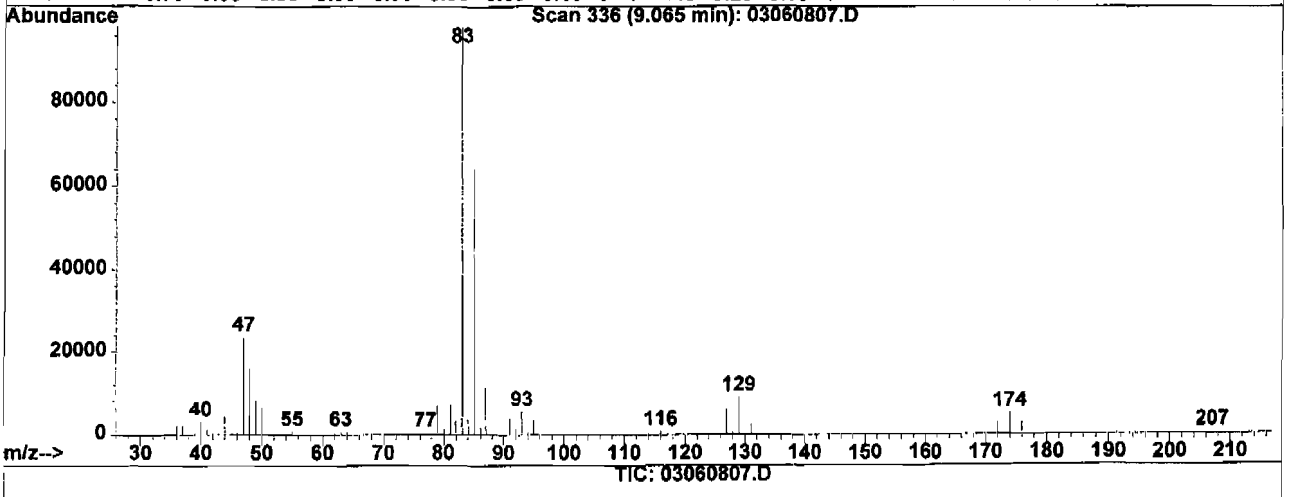
Ion	Exp%	Act%
83.00	100	100
85.00	61.30	65.42
127.00	7.20	6.96
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(34) Bromodichloromethane

9.07min 121.50ng m

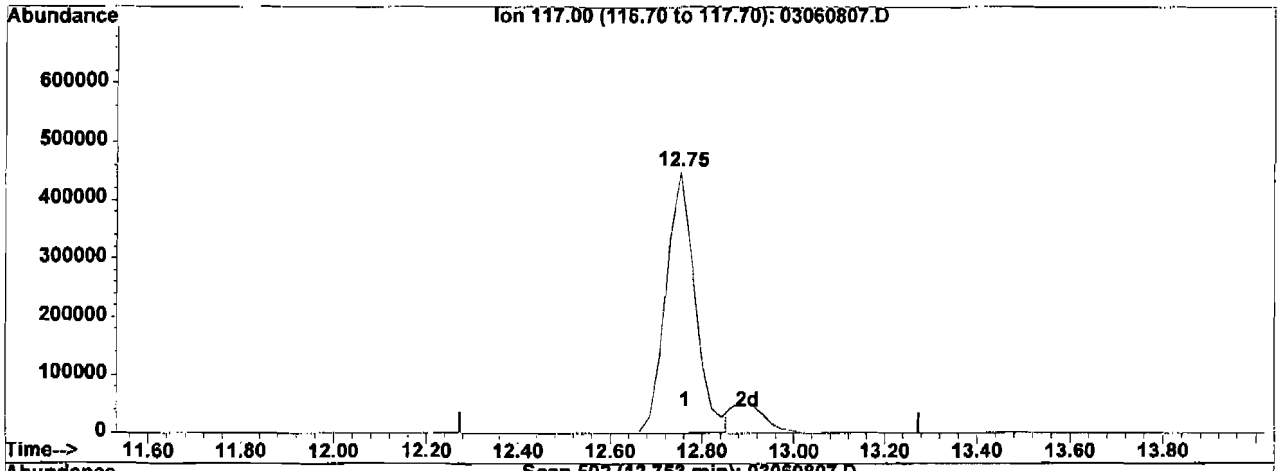
response 5317895

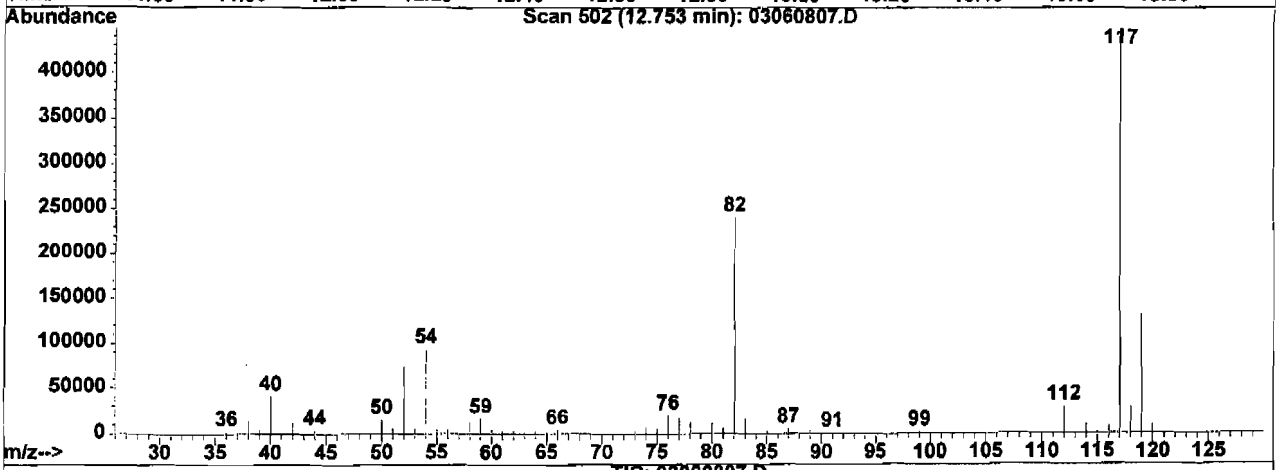
Ion	Exp%	Act%
83.00	100	100
85.00	61.30	62.78
127.00	7.20	6.68
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(43) Chlorobenzene-d5 (ins) (I)

12.76min 200.00ng

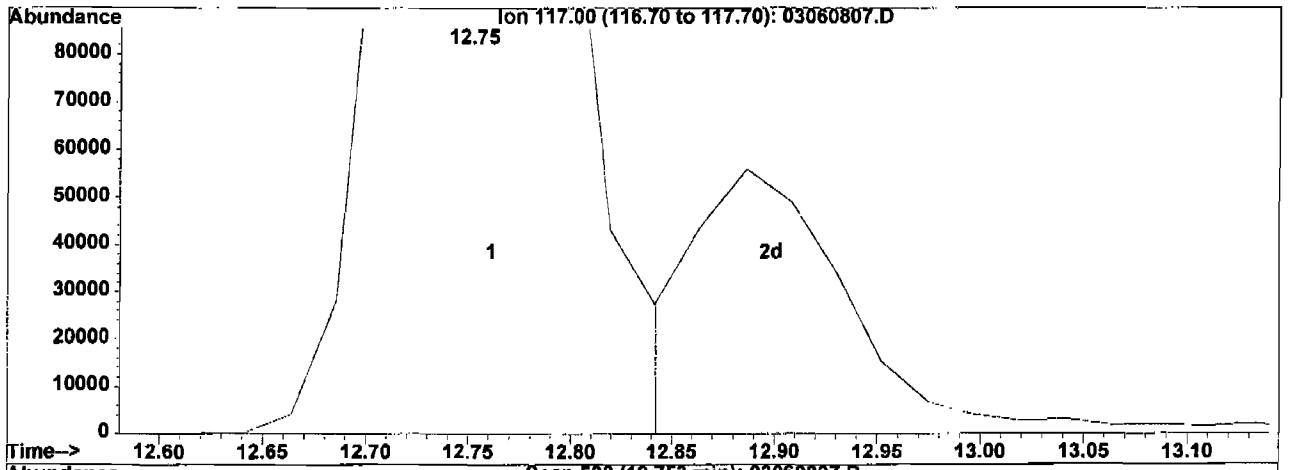
response 418898

Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



TIC: 03060807.D

(43) Chlorobenzene-d5 (ins) (I)

12.75min 200.00ng m

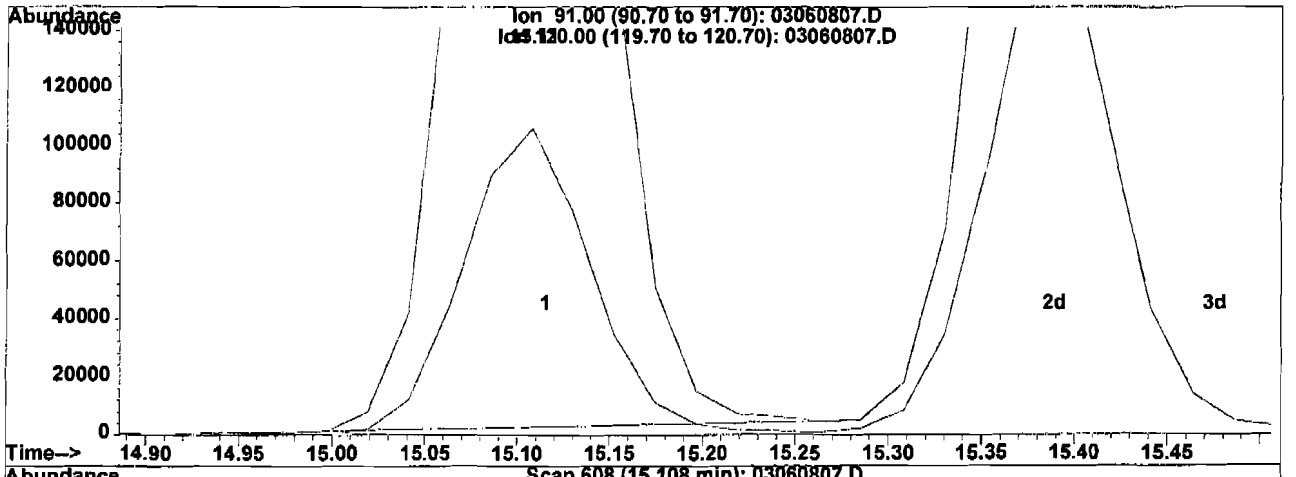
response 449186

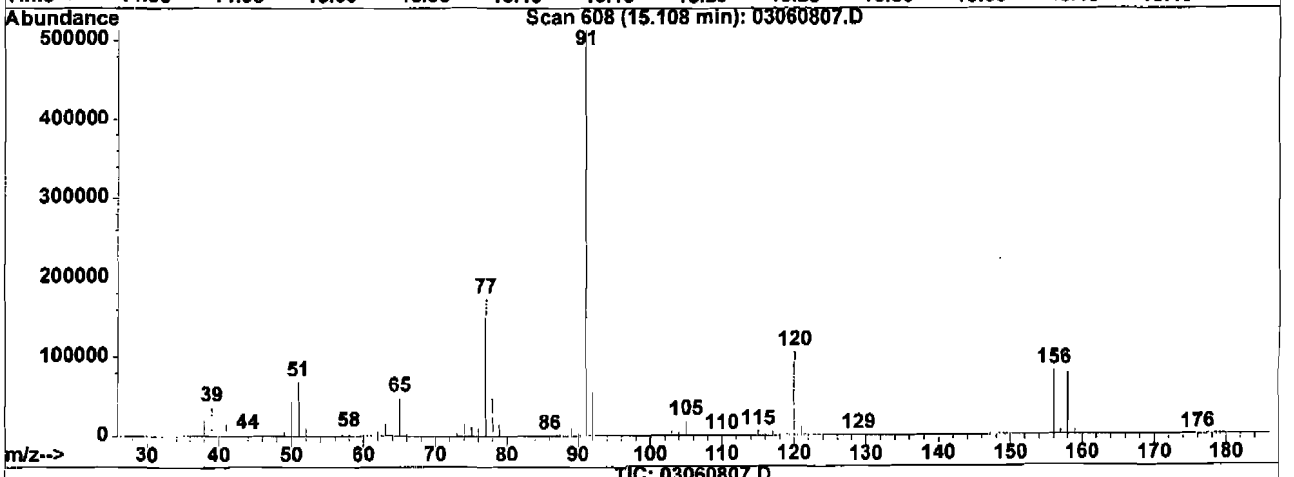
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(55) n-Propylbenzene

15.12min 114.83ng

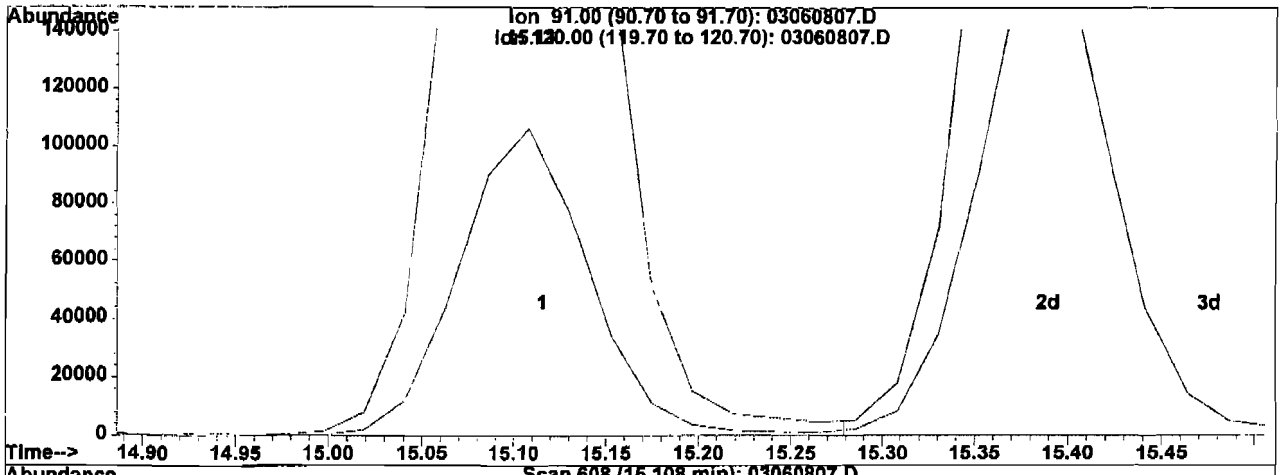
response 22918194

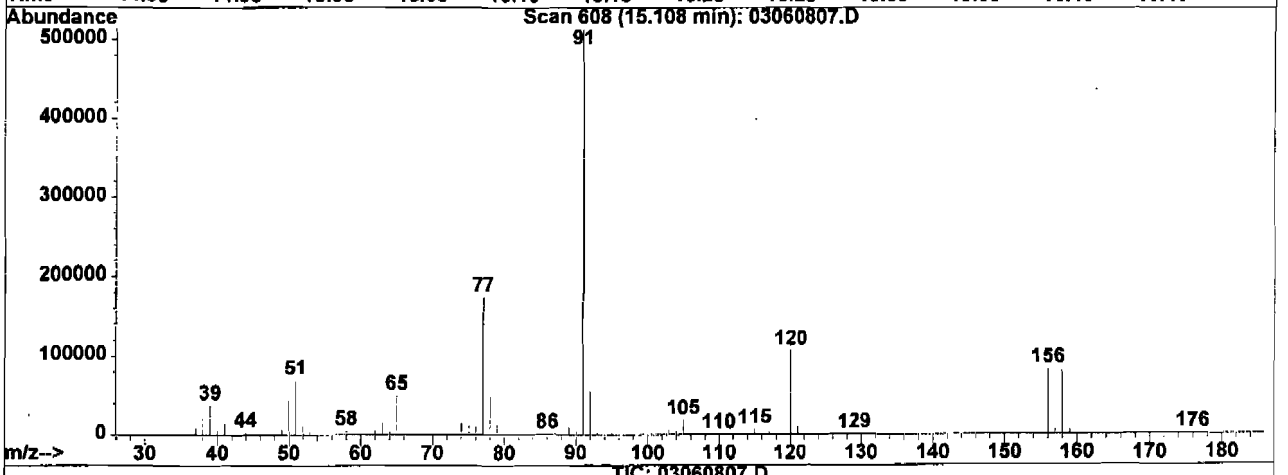
Ion	Exp%	Act%
91.00	100	100
120.00	22.90	21.98
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:03 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(55) n-Propylbenzene

15.11min 117.38ng m

response 23465105

Ion	Exp%	Act%
91.00	100	100
120.00	22.90	21.46
0.00	0.00	0.00
0.00	0.00	0.00

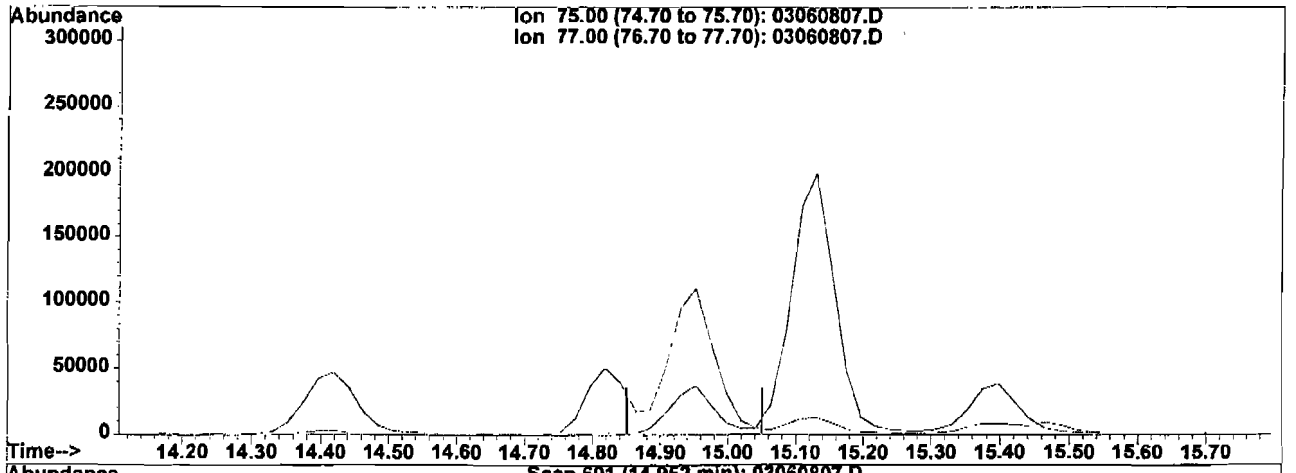
03060807.D 82608003.M Fri Mar 07 11:03:30 2008

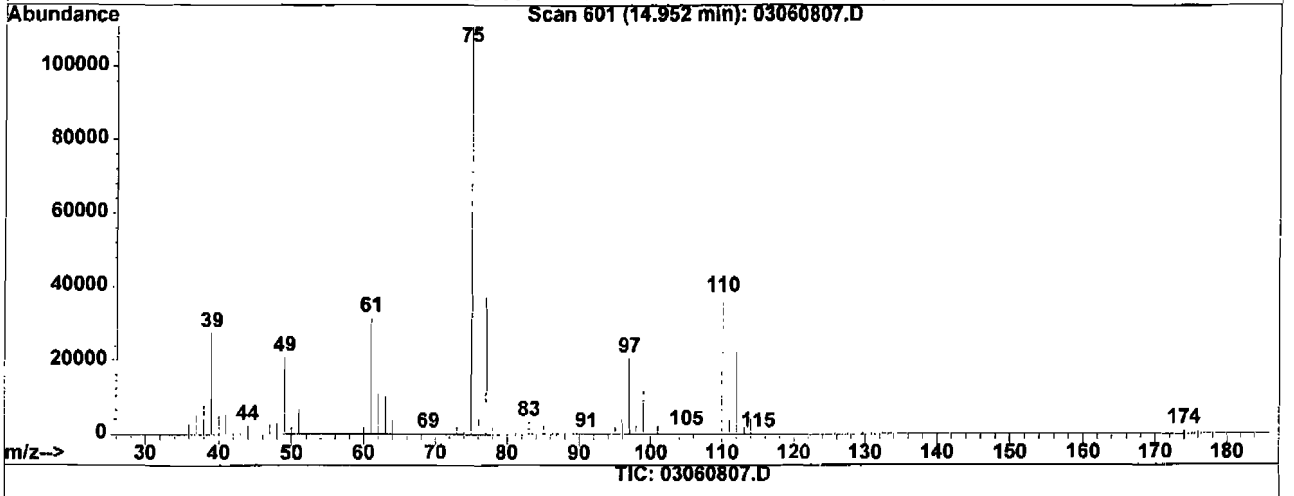
000008 FCC

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:03 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.95min 0.00ng d

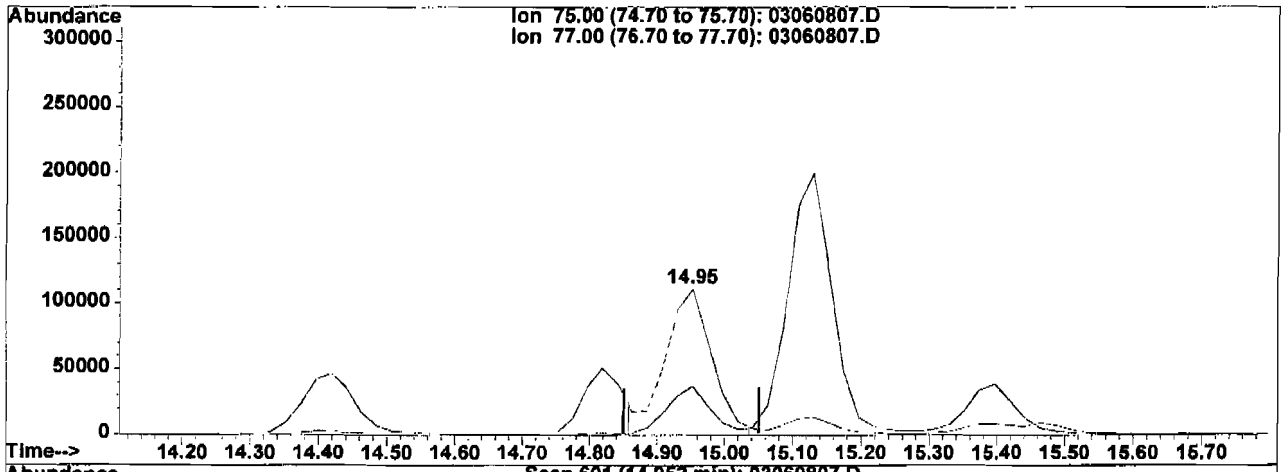
response 0

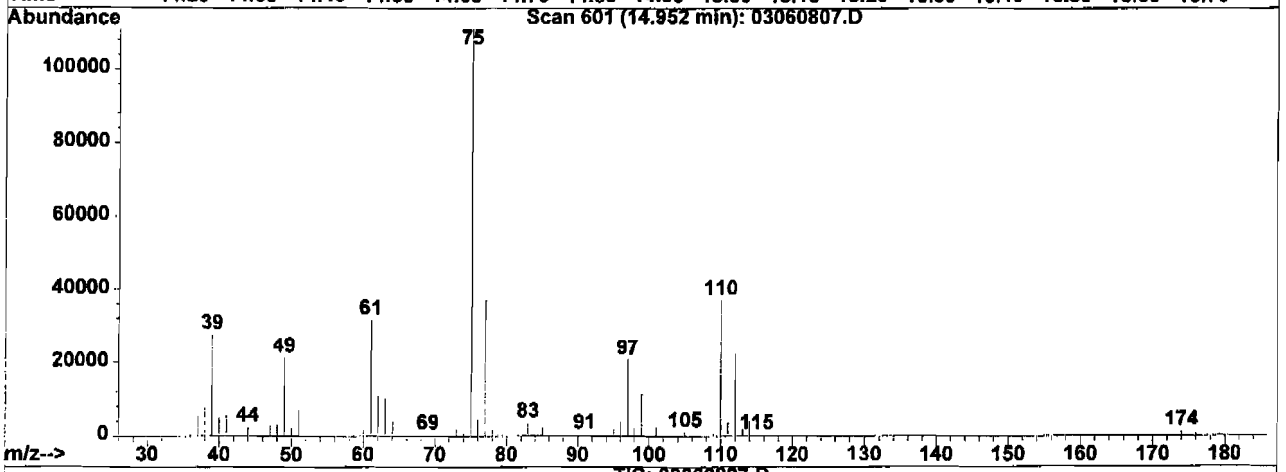
Ion	Exp%	Act%
75.00	100	0.00
77.00	5.60	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:03 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(56) 1,2,3-Trichloropropane

14.95min 119.22ng m

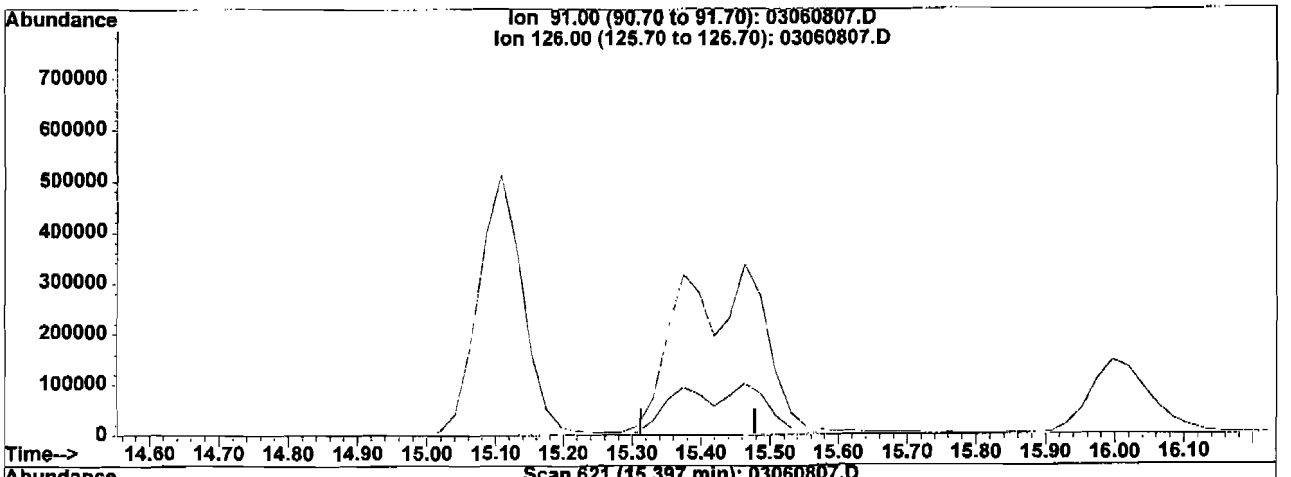
response 5354845

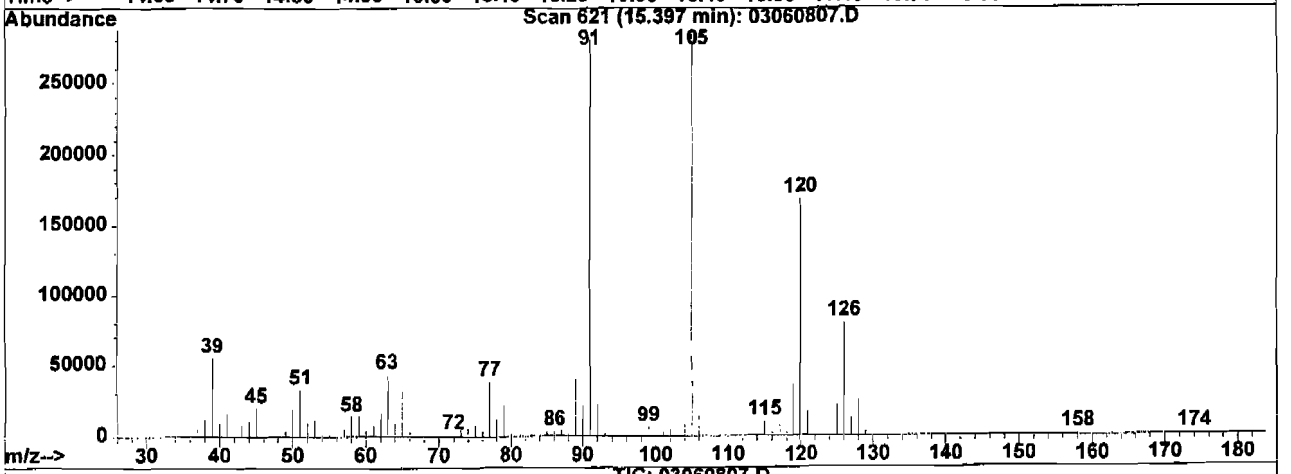
Ion	Exp%	Act%
75.00	100	100
77.00	5.60	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:03 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(57) 2-Chlorotoluene

15.40min 0.00ng d

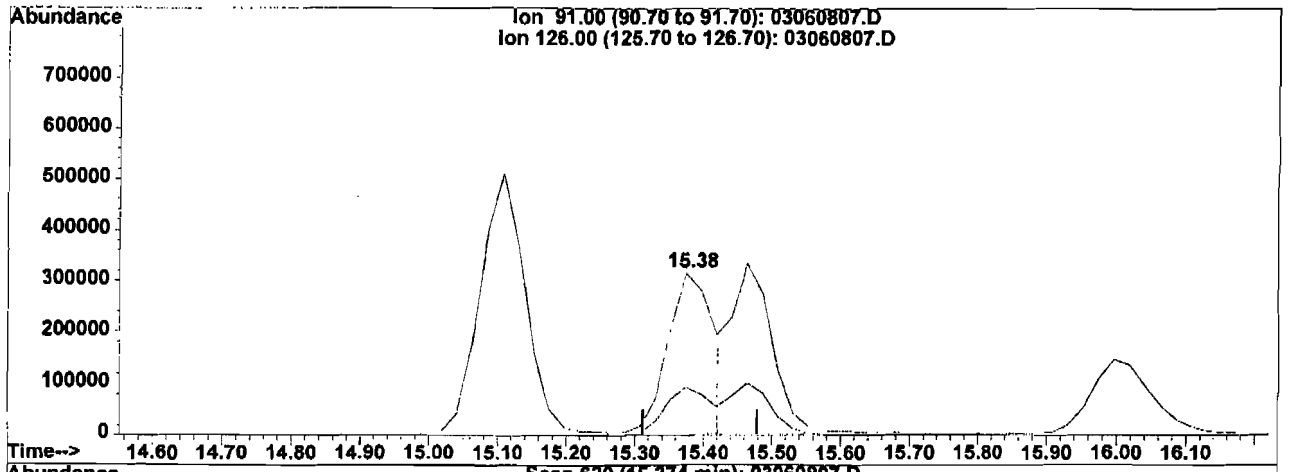
response 0

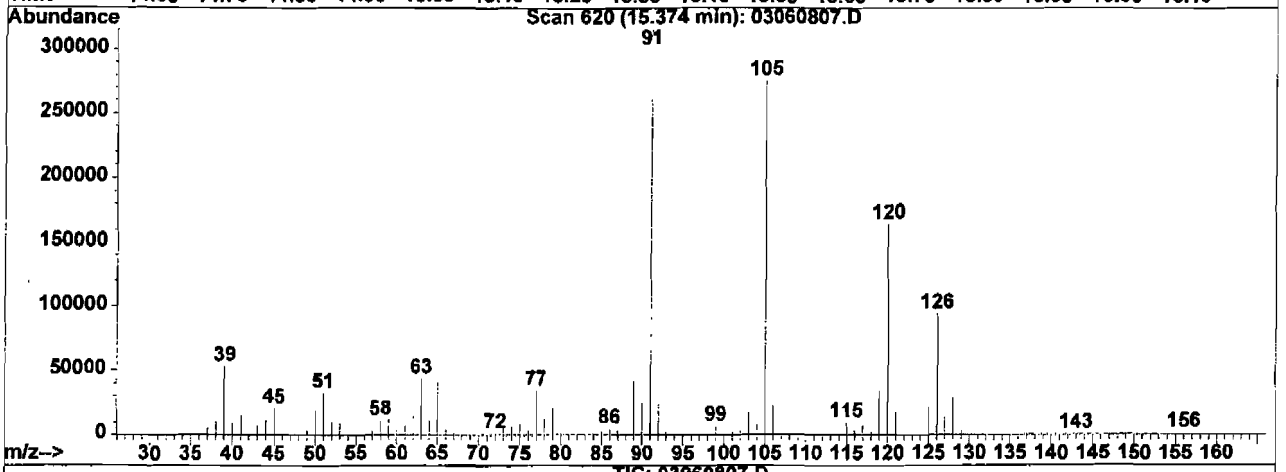
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:04 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(57) 2-Chlorotoluene

15.37min 132.98ng m

response 15734426

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

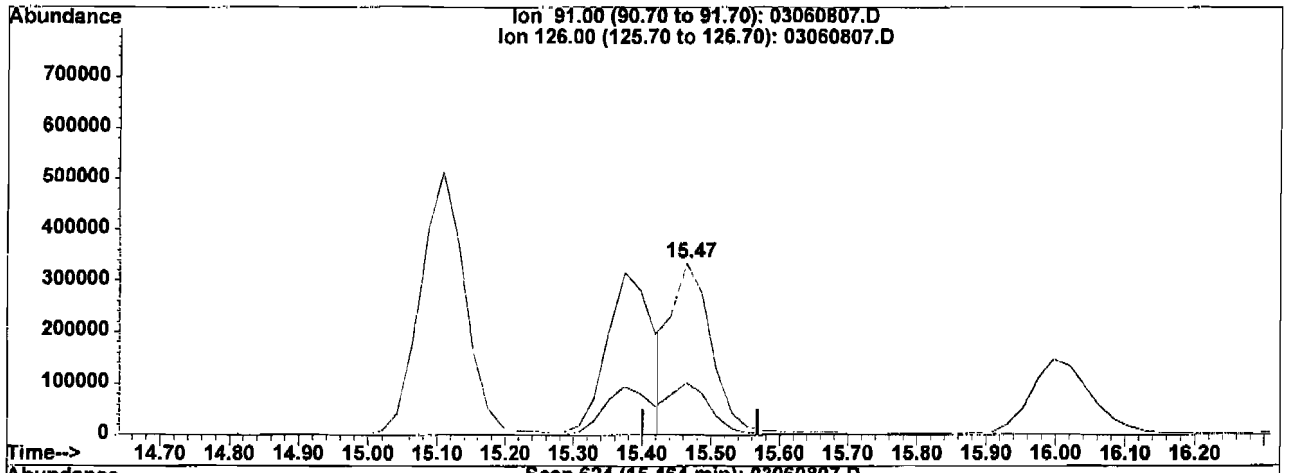
000072

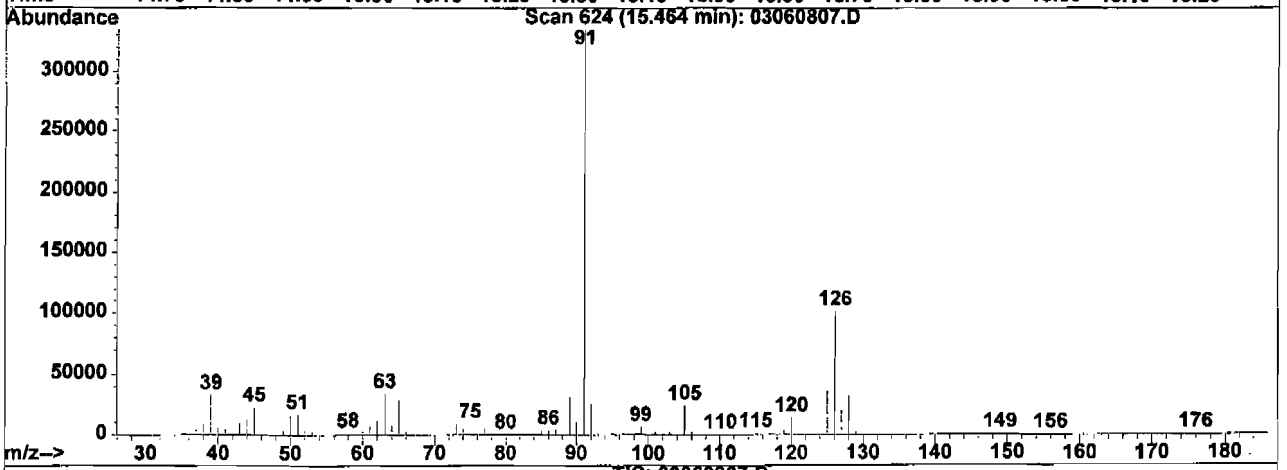
03060807.D 82608003.M Fri Mar 07 11:04:04 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060807.D Vial: 1
Acq On : 06 Mar 08 21:17 Operator: csm
Sample : CS4_120ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:04 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060807.D

(59) 4-Chlorotoluene

15.46min 115.83ng m

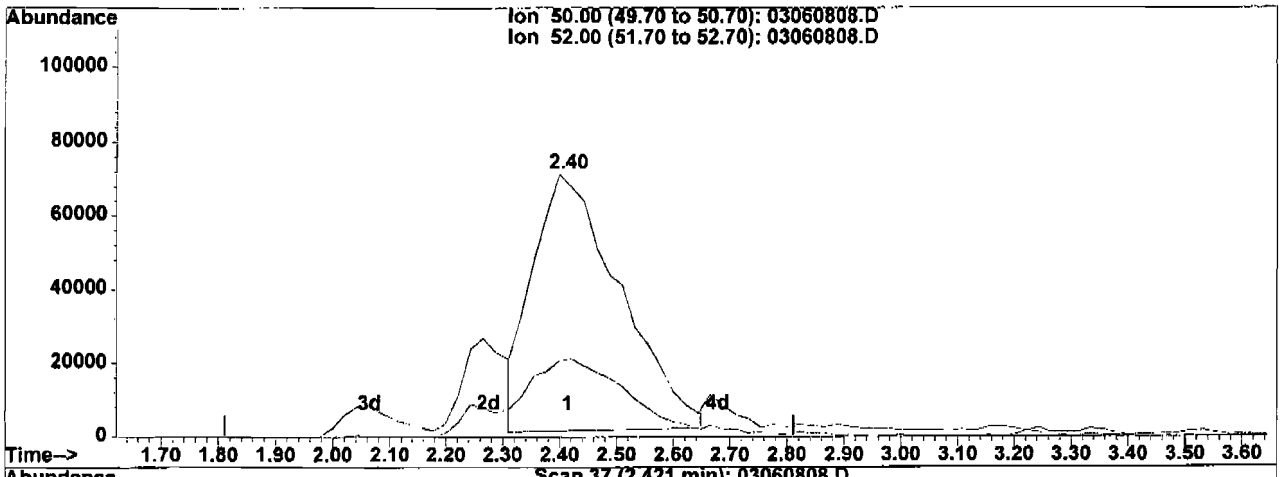
response 15046947

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:04 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



TIC: 03060808.D

(3) Chloromethane (P)

2.41min 155.25ng

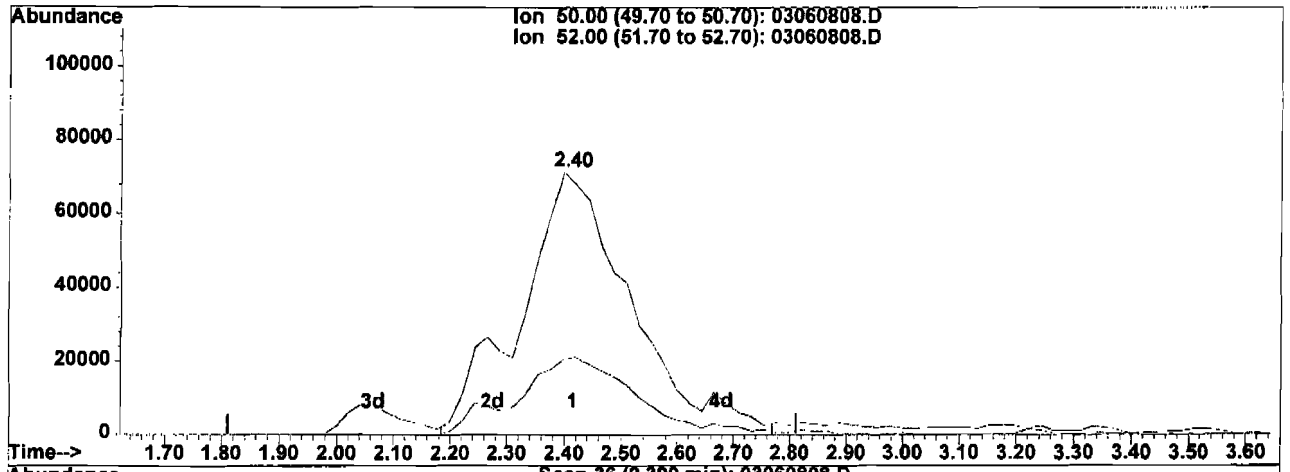
response 7574848

Ion	Exp%	Act%
50.00	100	100
52.00	29.40	33.36
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(3) Chloromethane (P)

2.40min 204.08ng m

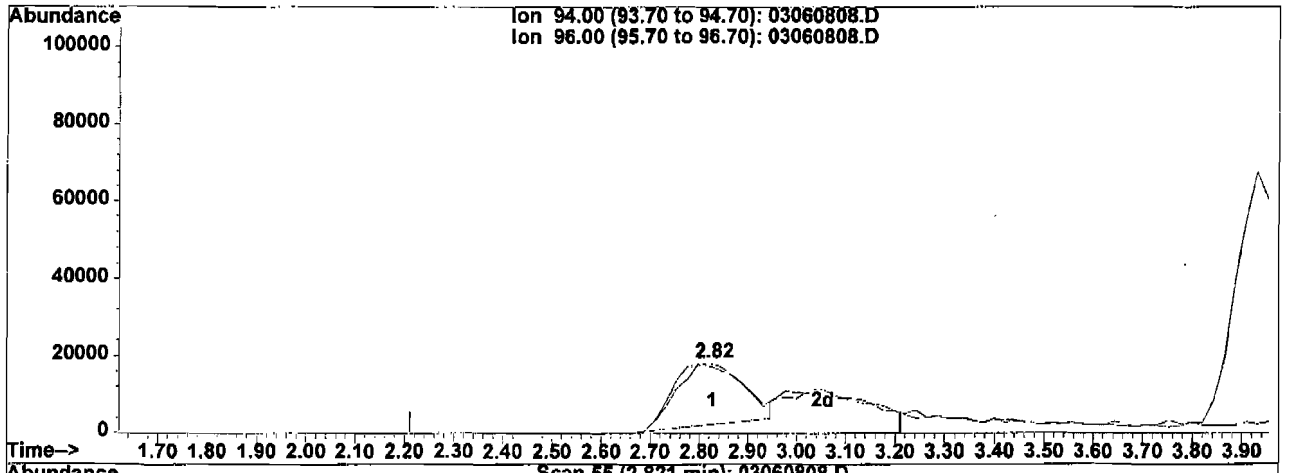
response 9620810

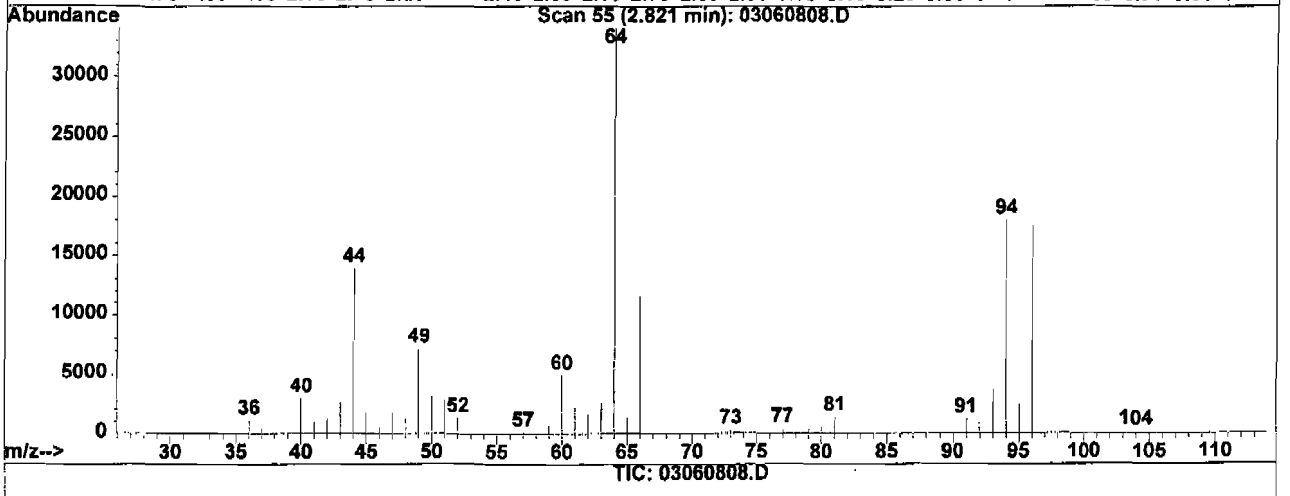
Ion	Exp%	Act%
50.00	100	100
52.00	29.40	26.26
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(5) Bromomethane

2.83min 92.89ng

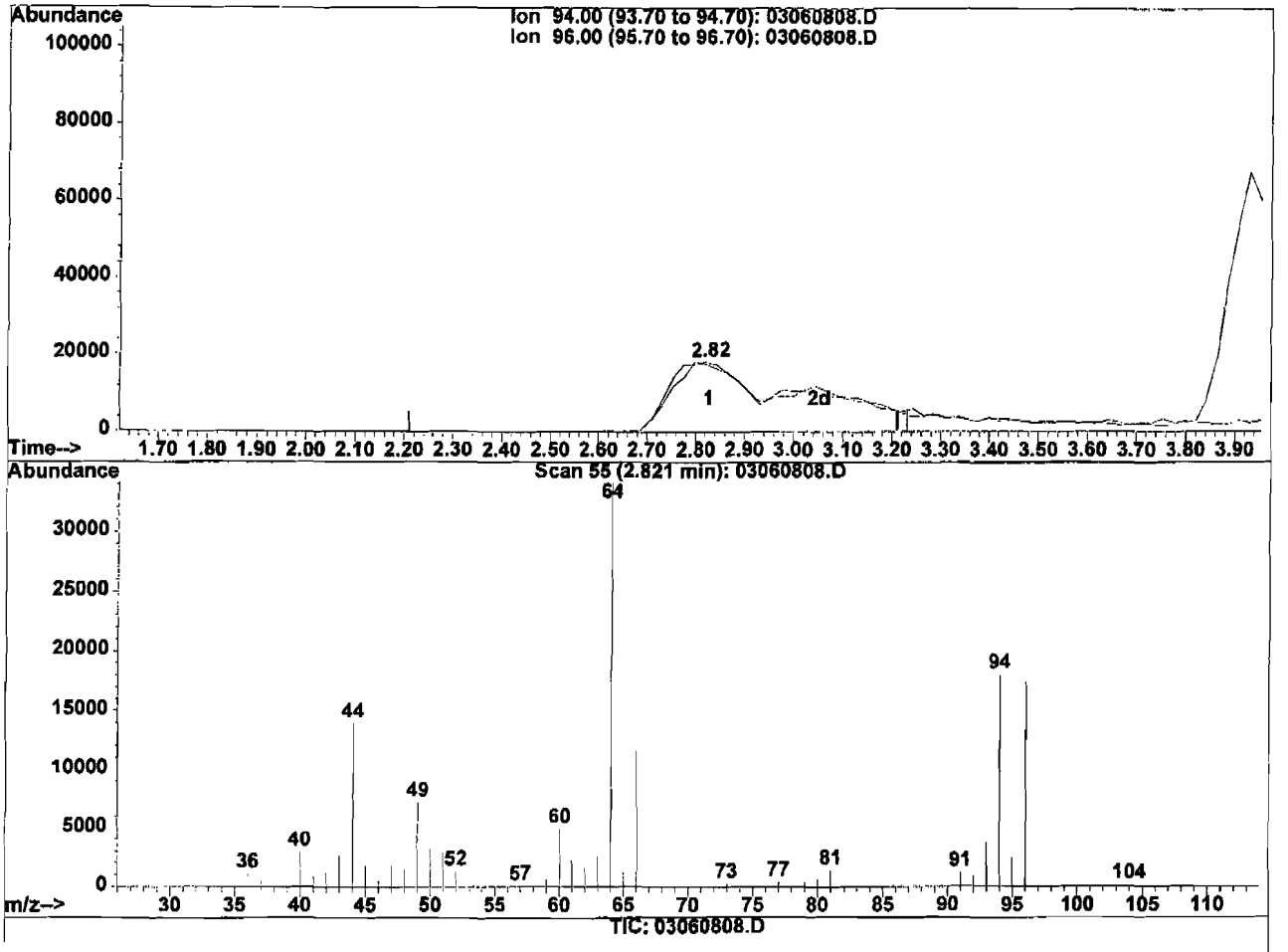
response 1522883

Ion	Exp%	Act%
94.00	100	100
96.00	89.00	97.13
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(5) Bromomethane

2.82min 191.19ng m

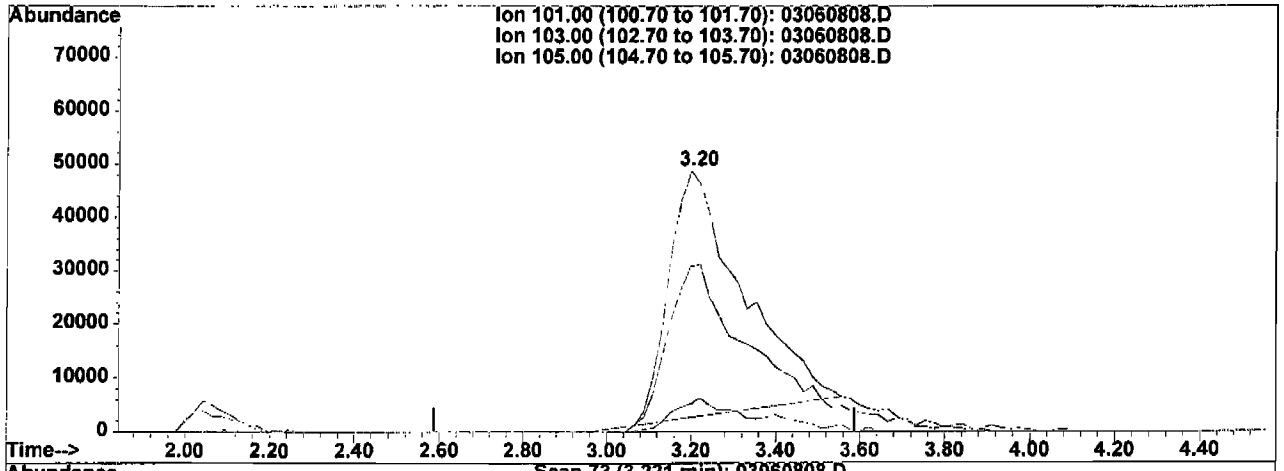
response 3428037

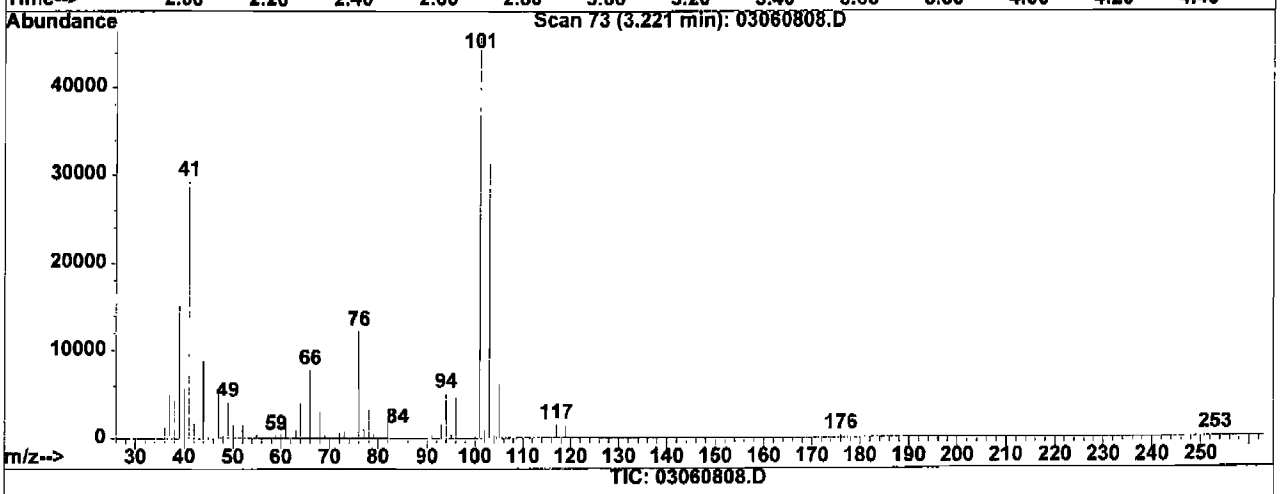
Ion	Exp%	Act%
94.00	100	100
96.00	89.00	43.15#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(7) Trichlorofluoromethane

3.21min 158.25ng

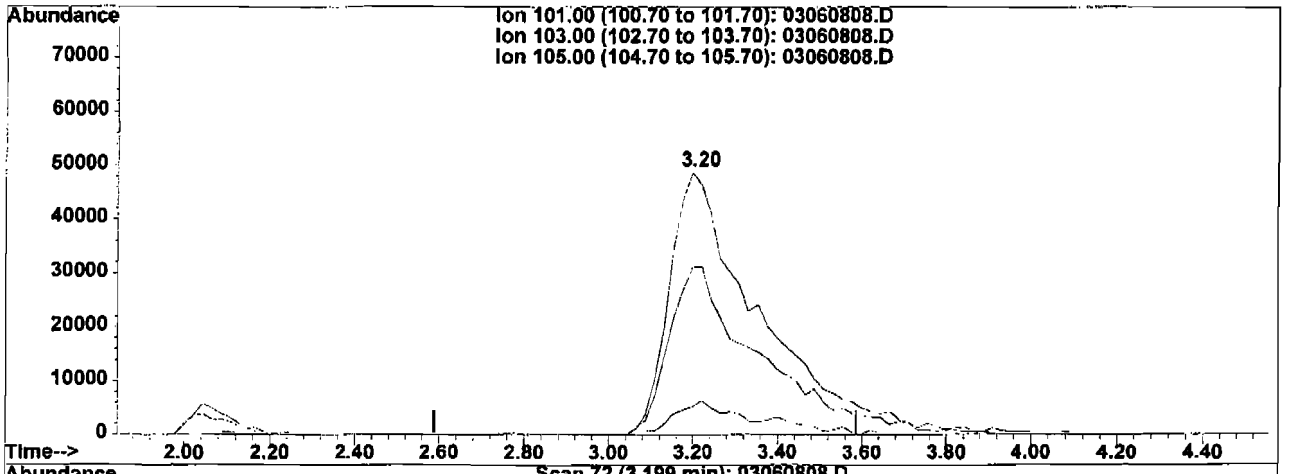
response 5495034

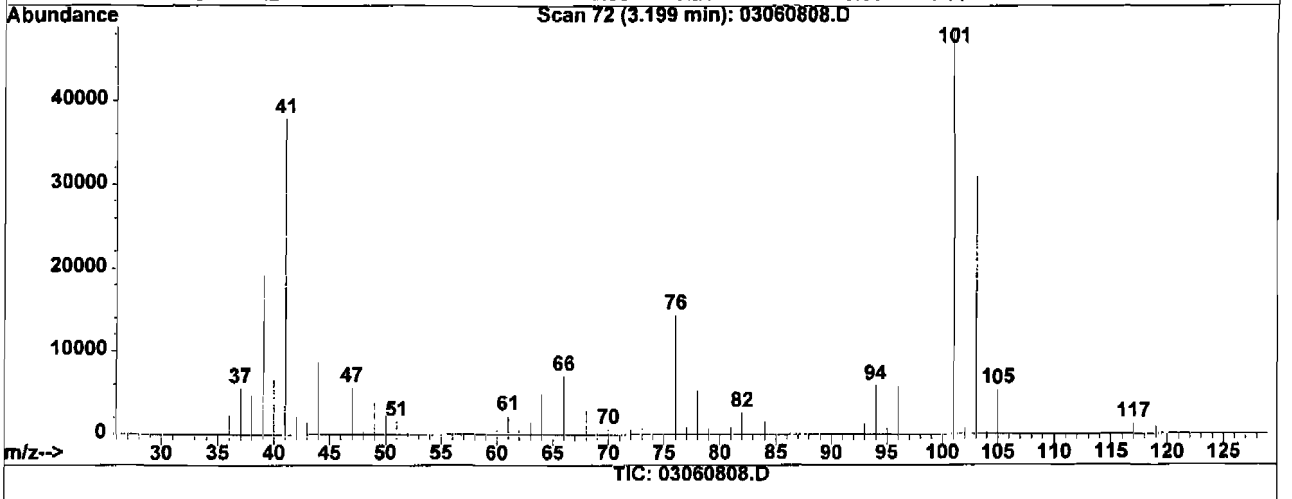
Ion	Exp%	Act%
101.00	100	100
103.00	55.70	63.09
105.00	11.80	9.76
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(7) Trichlorofluoromethane

3.20min 207.67ng m

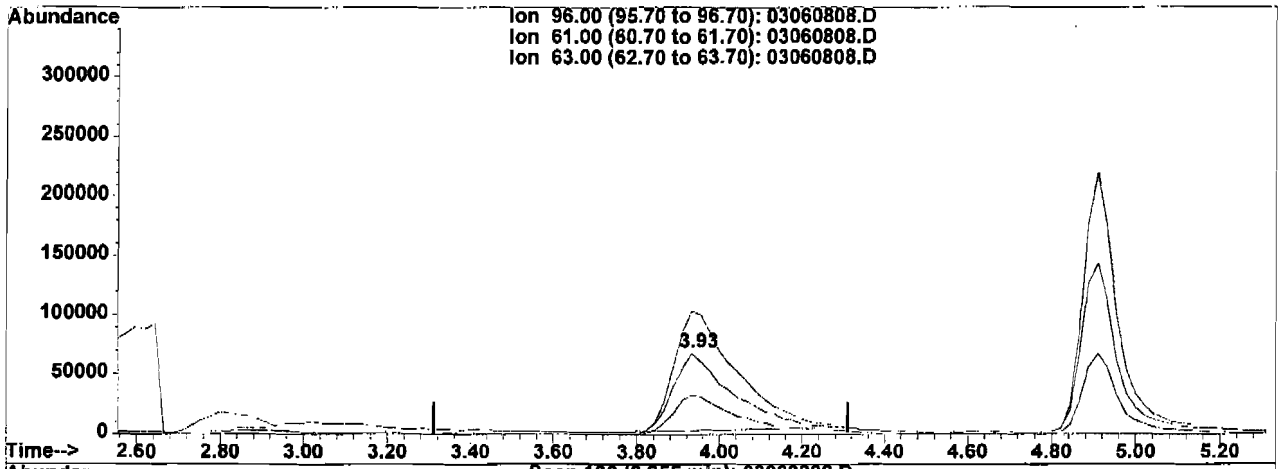
response 7179098

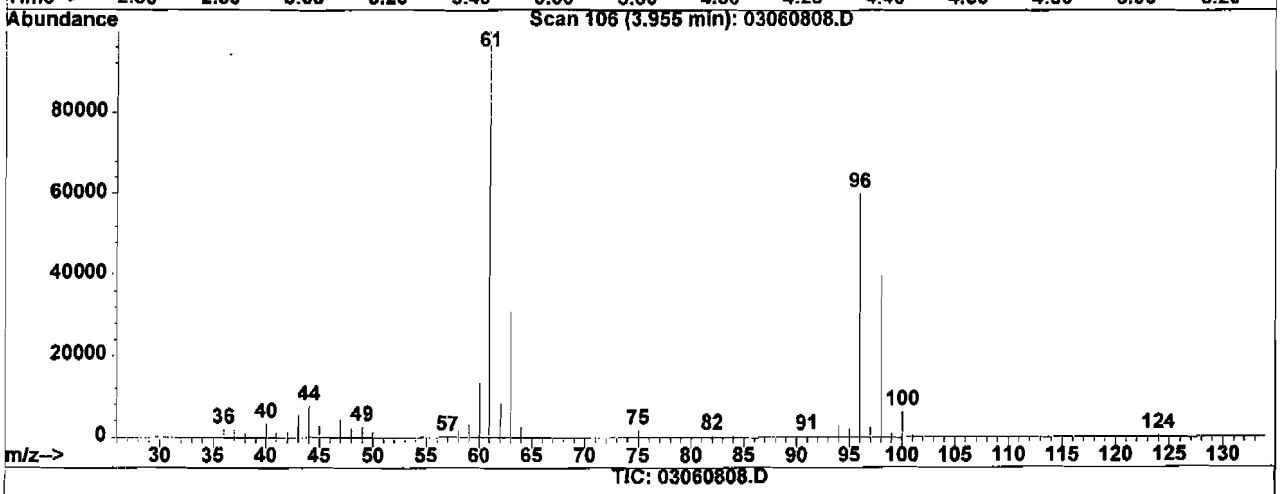
Ion	Exp%	Act%
101.00	100	100
103.00	55.70	48.29
105.00	11.80	7.47#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(8) 1,1-Dichloroethene (C)

3.94min 176.15ng

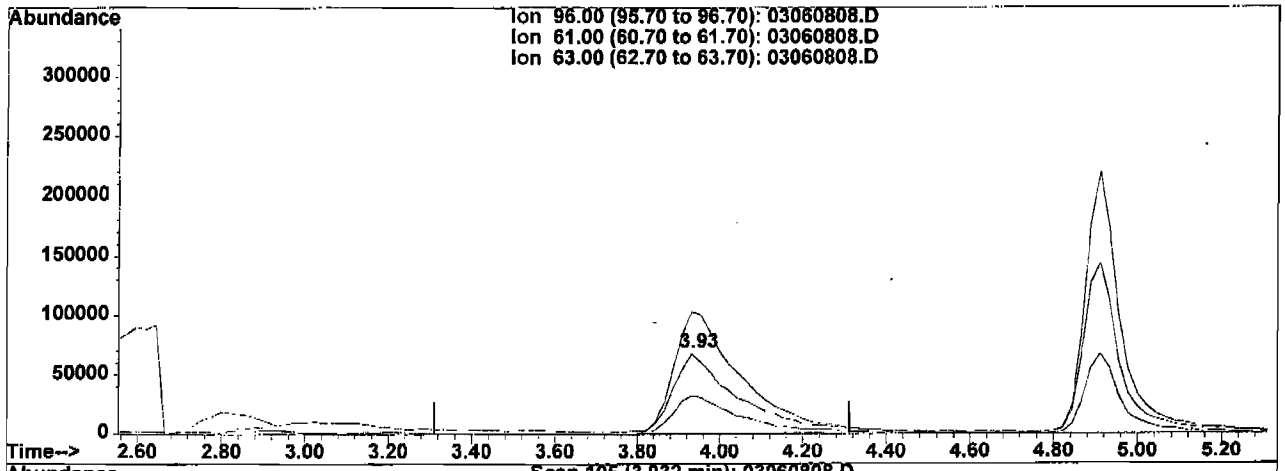
response 6390368

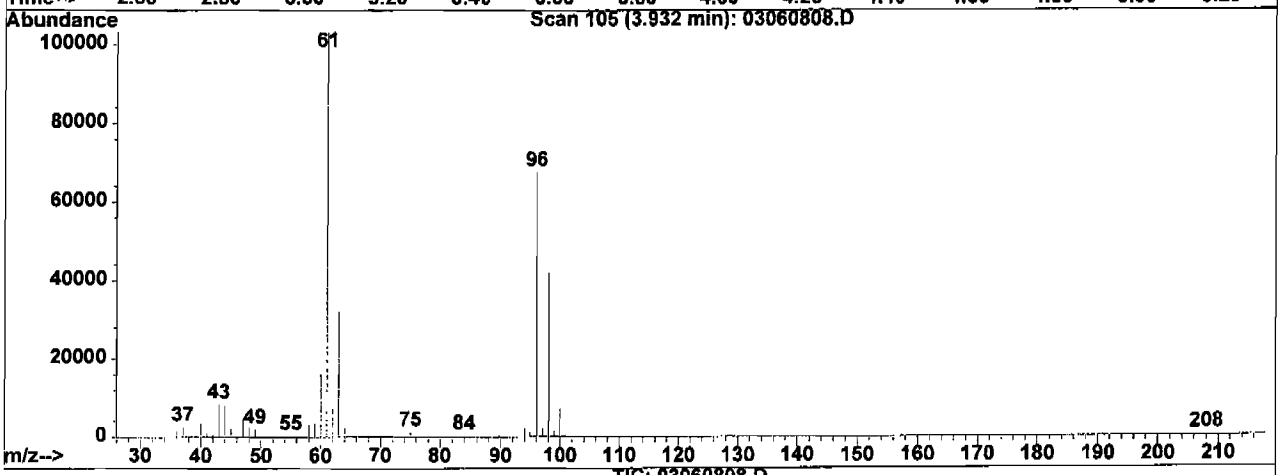
Ion	Exp%	Act%
96.00	100	100
61.00	155.90	164.71
63.00	48.50	51.53
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(8) 1,1-Dichloroethene (C)

3.93min 204.80ng m

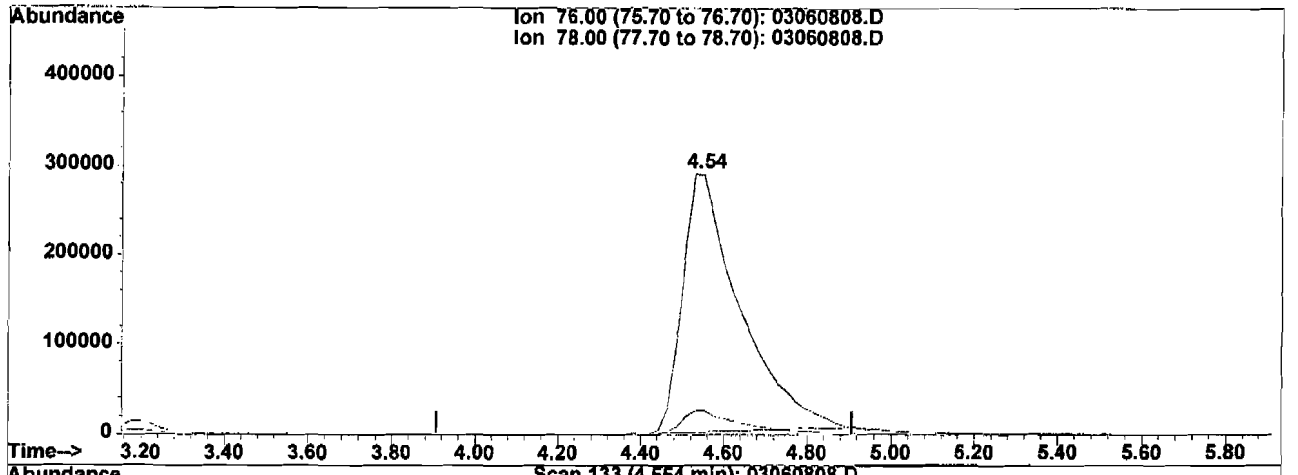
response 7422990

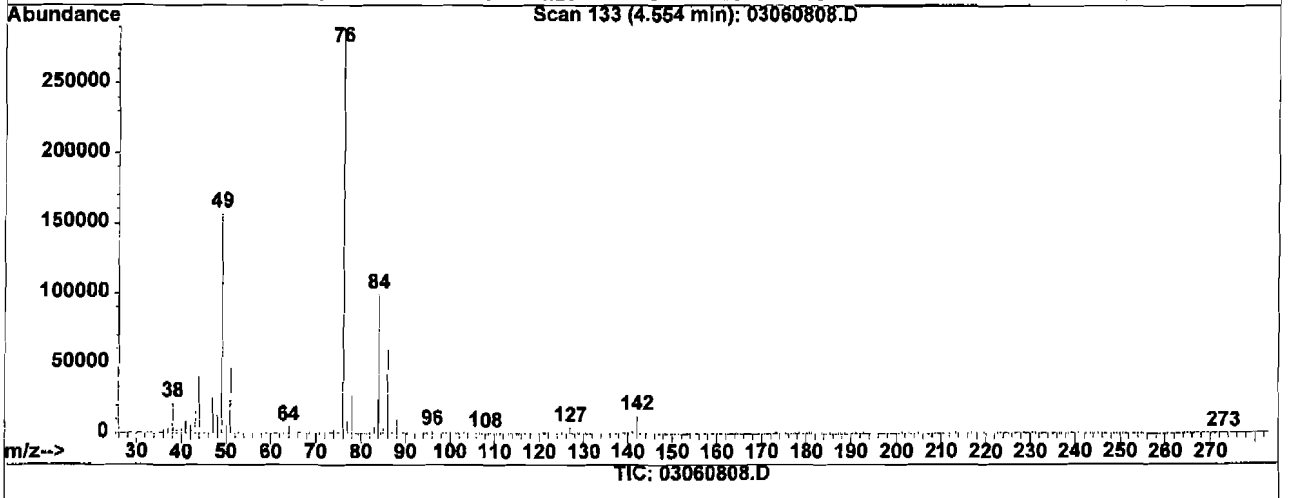
Ion	Exp%	Act%
96.00	100	100
61.00	155.90	141.80
63.00	48.50	44.36
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:05 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(11) Carbon disulfide

4.55min 192.03ng

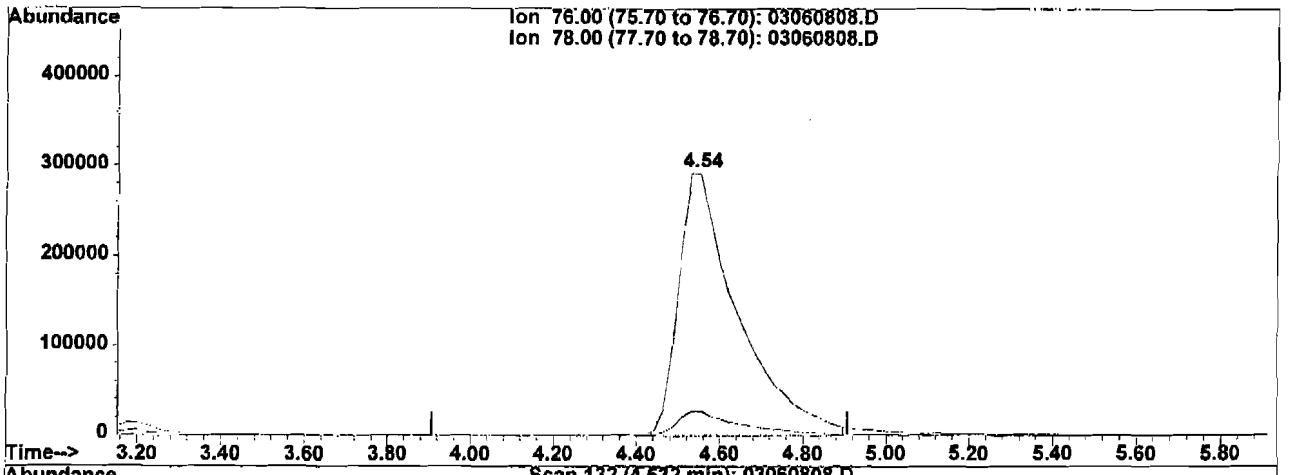
response 27525215

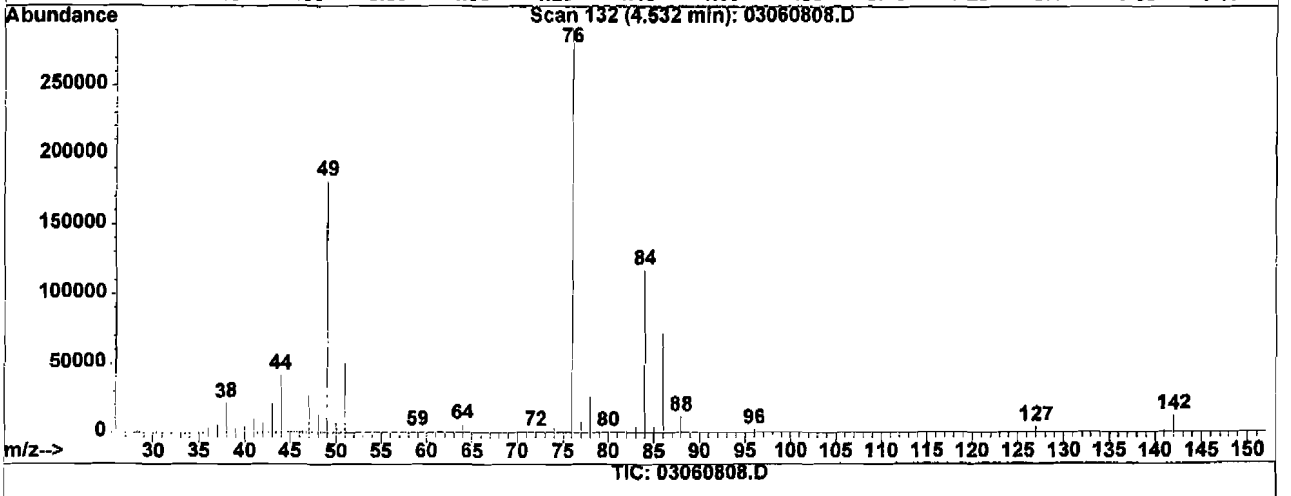
Ion	Exp%	Act%
76.00	100	100
78.00	9.80	9.56
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:06 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(11) Carbon disulfide

4.53min 201.54ng m

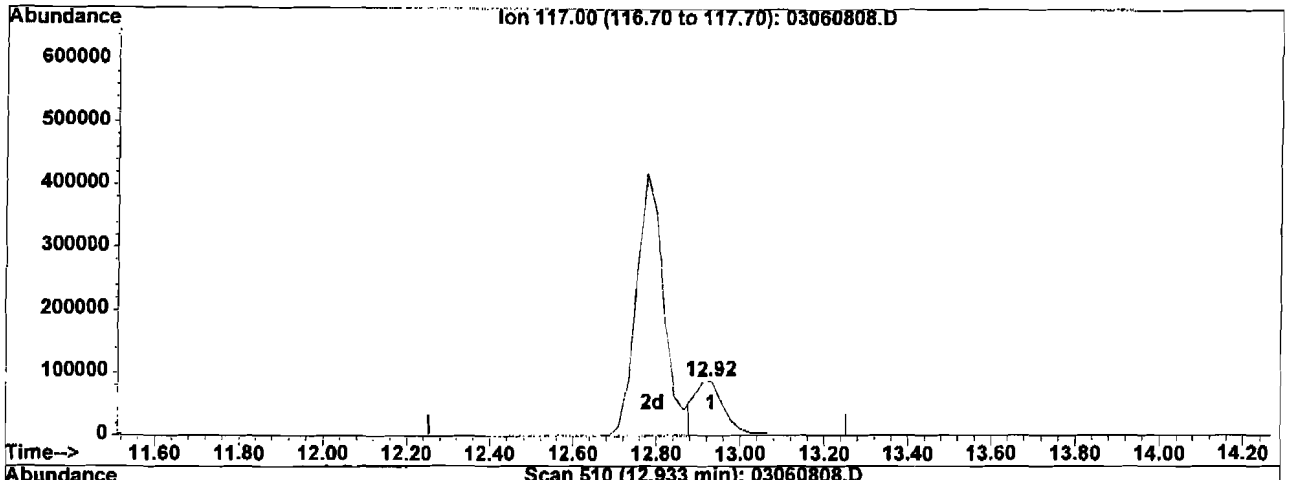
response 28914960

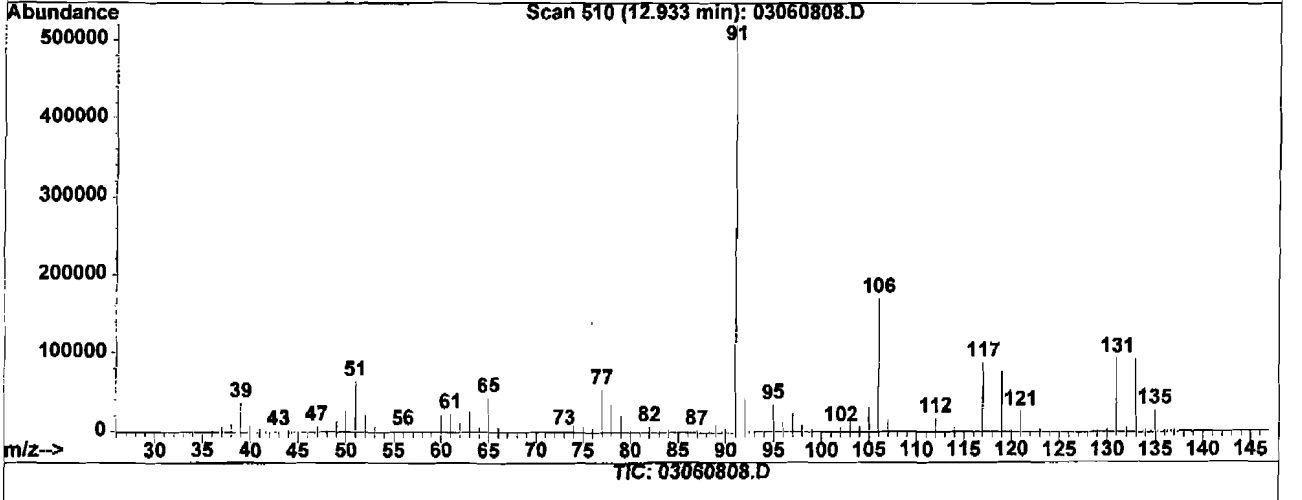
Ion	Exp%	Act%
76.00	100	100
78.00	9.80	9.10
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:06 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(43) Chlorobenzene-d5 (ins) (I)

12.93min 200.00ng

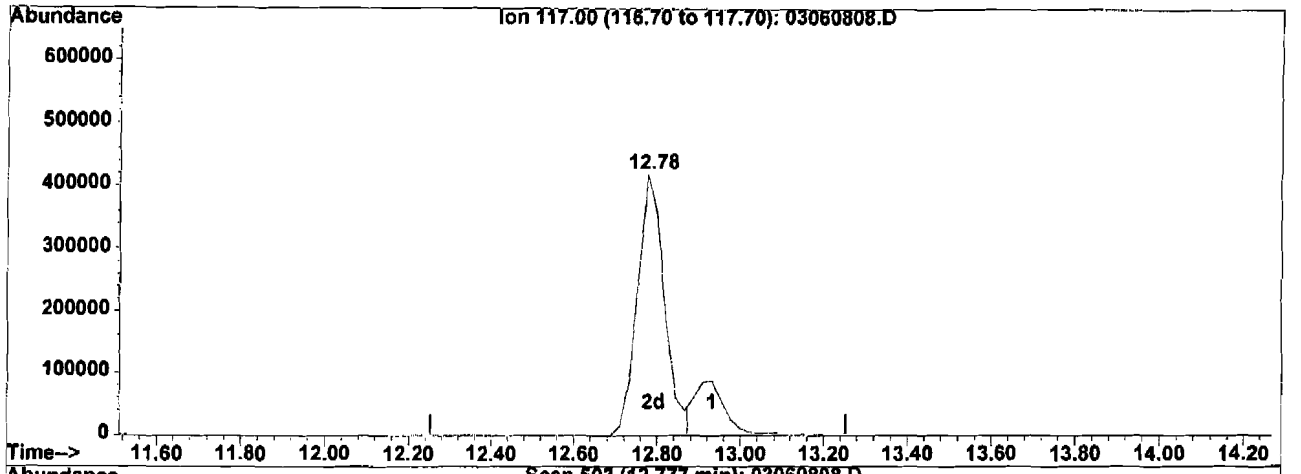
response 86507

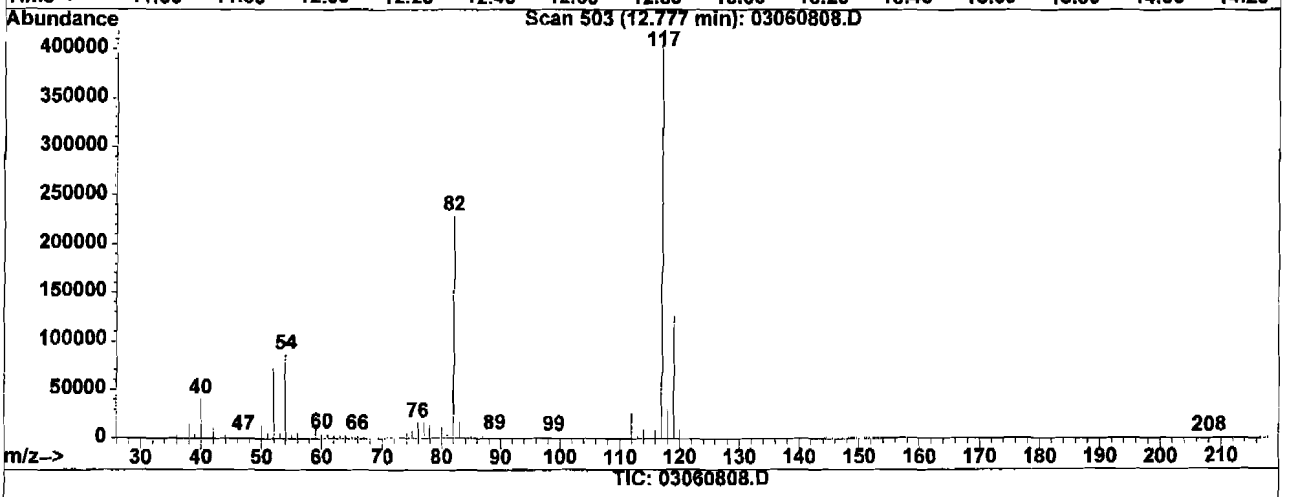
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:07 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(43) Chlorobenzene-d5 (ins) (I)

12.78min 200.00ng m

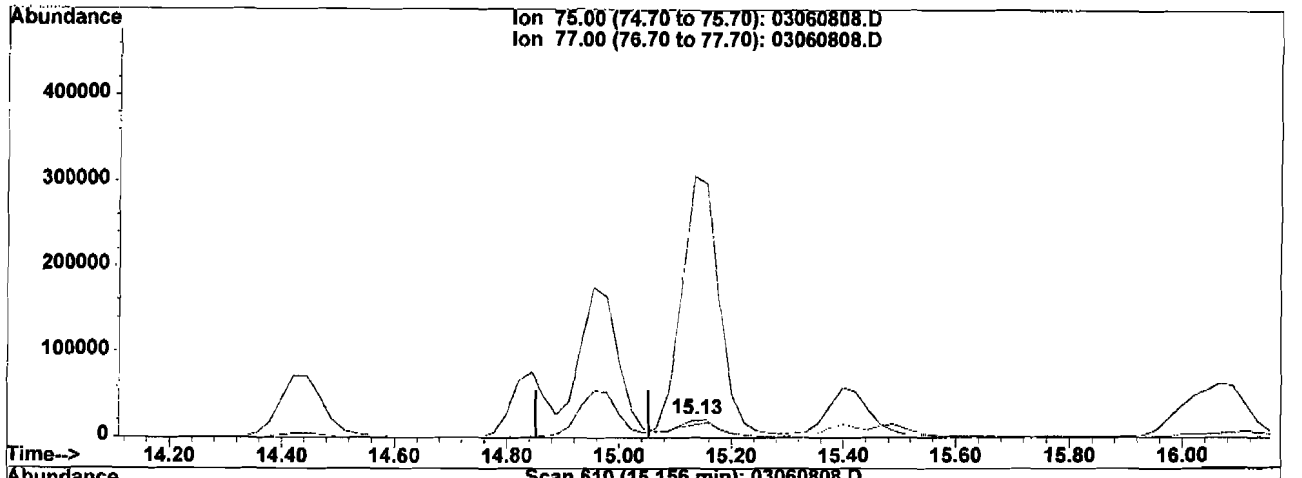
response 422687

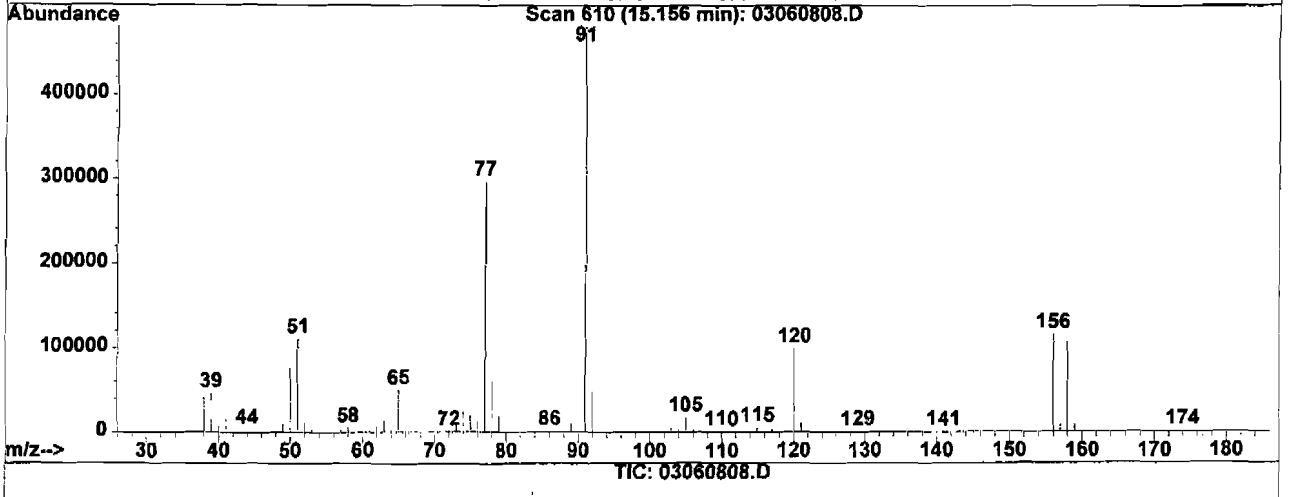
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:07 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

15.15min -4.70ng

response 151131

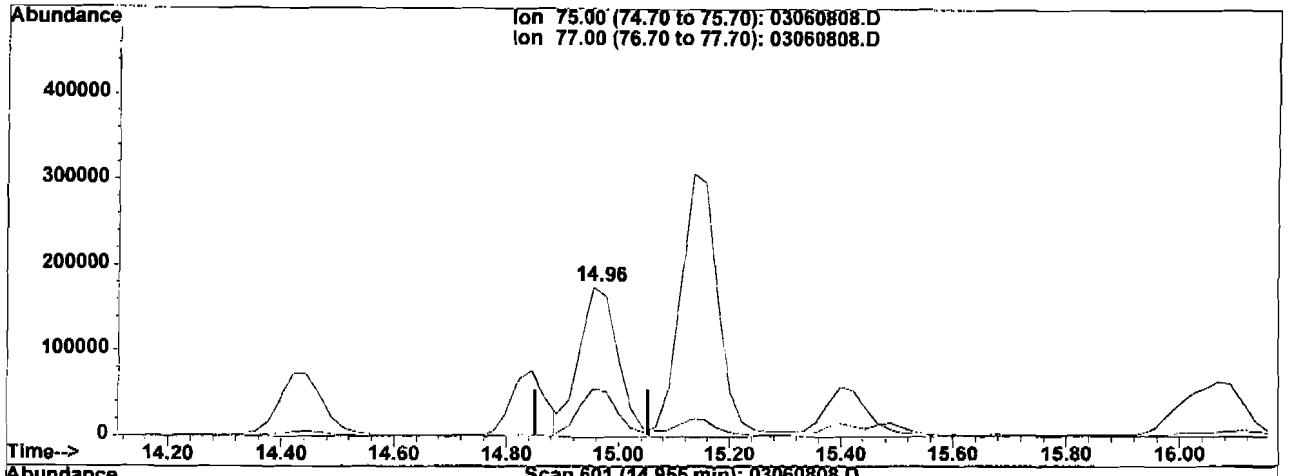
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	1905.83#
0.00	0.00	0.00
0.00	0.00	0.00

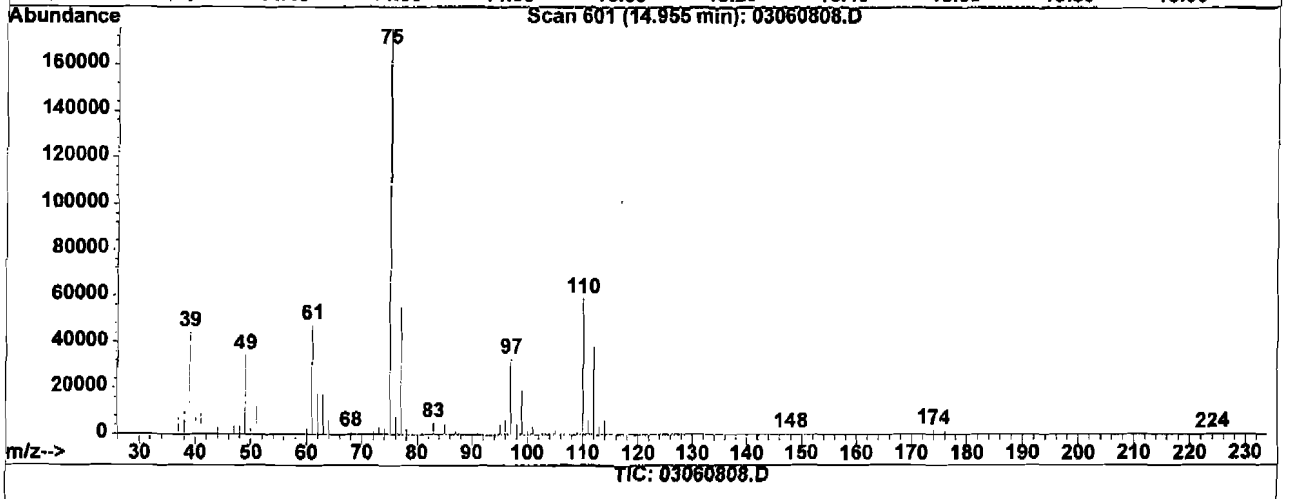
Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D
Acq On : 06 Mar 08 21:56
Sample : CS5_200ng_82608003
Misc :
Quant Time: Mar 7 11:07 19108

Vial: 1
Operator: csm
Inst :
Multiplr: 1.00
Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.96min 210.01ng m

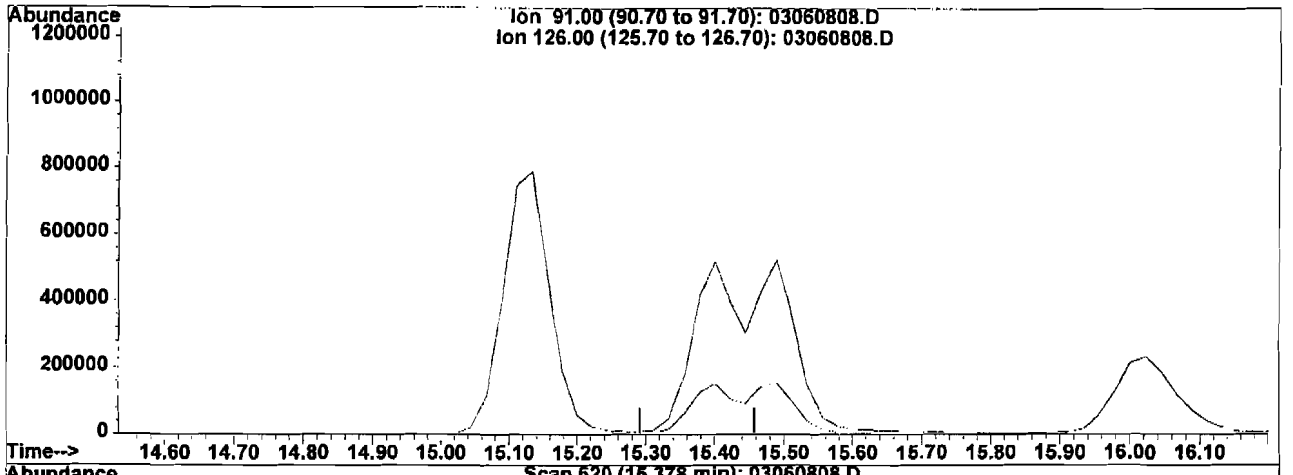
response 8602001

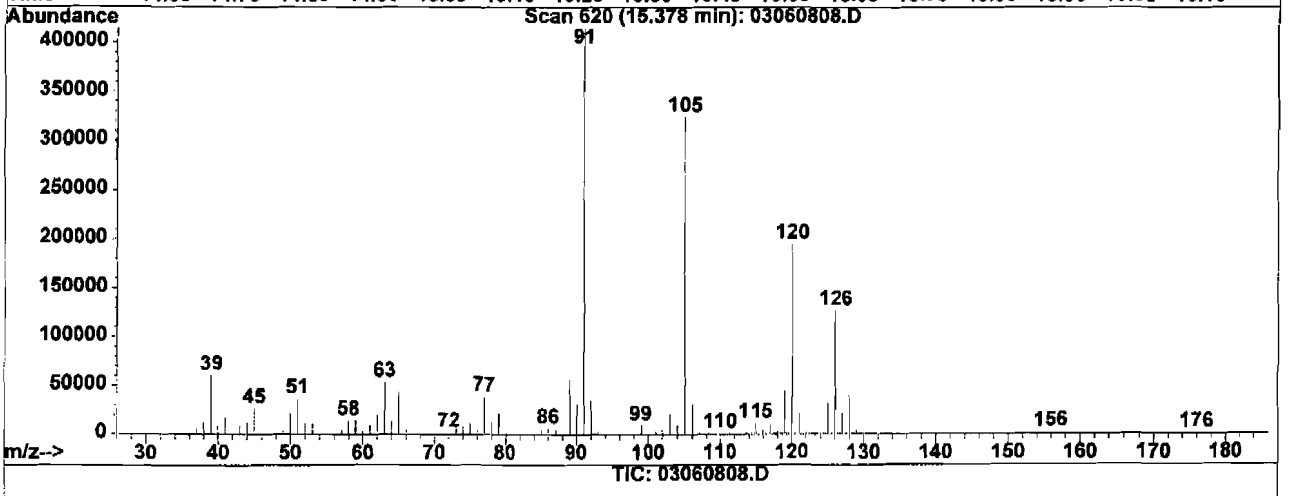
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	33.48#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:07 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.37min 0.00ng d

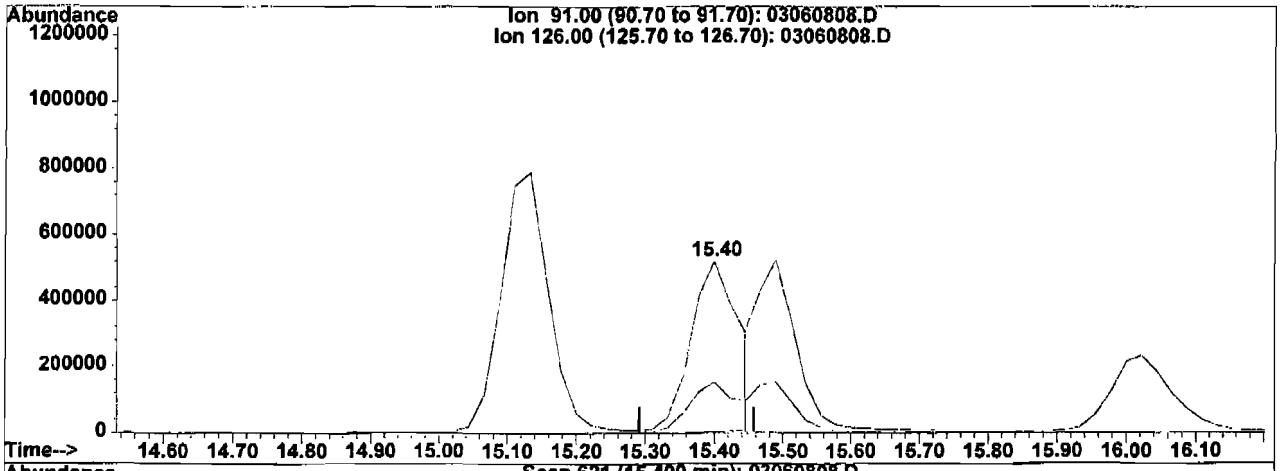
response 0

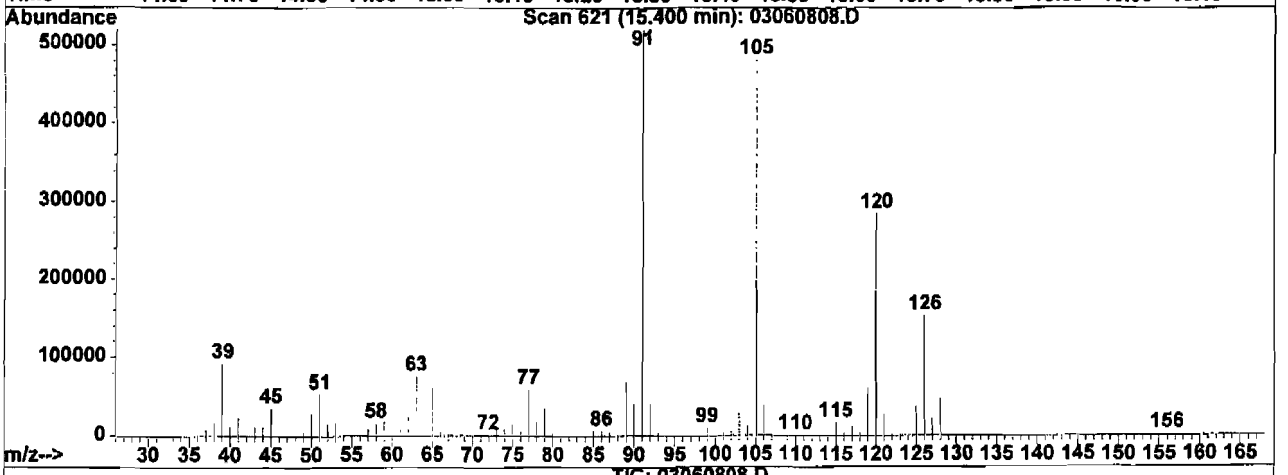
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:07 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(57) 2-Chlorotoluene

15.40min 174.80ng m

response 18847213

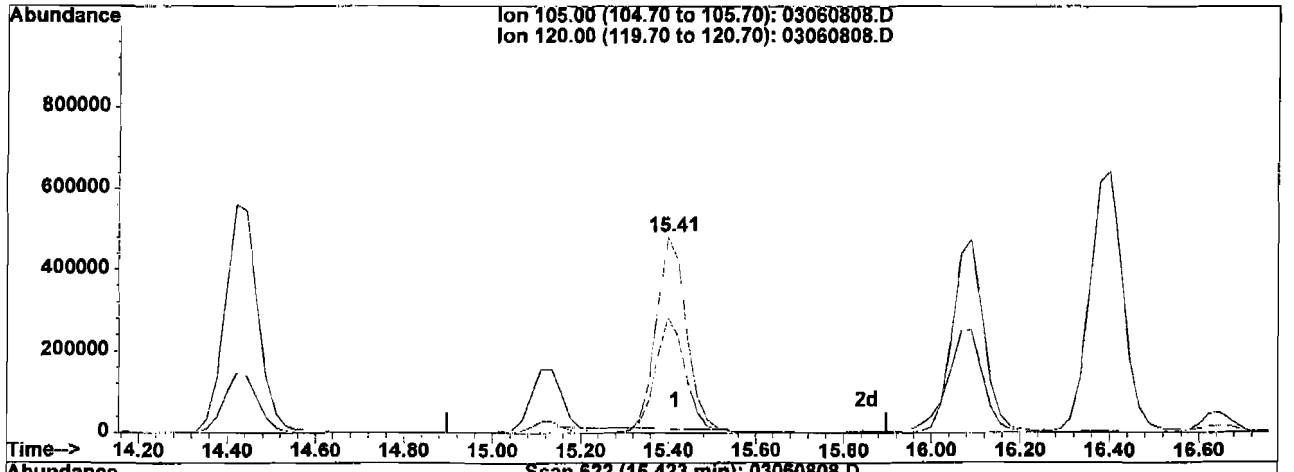
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

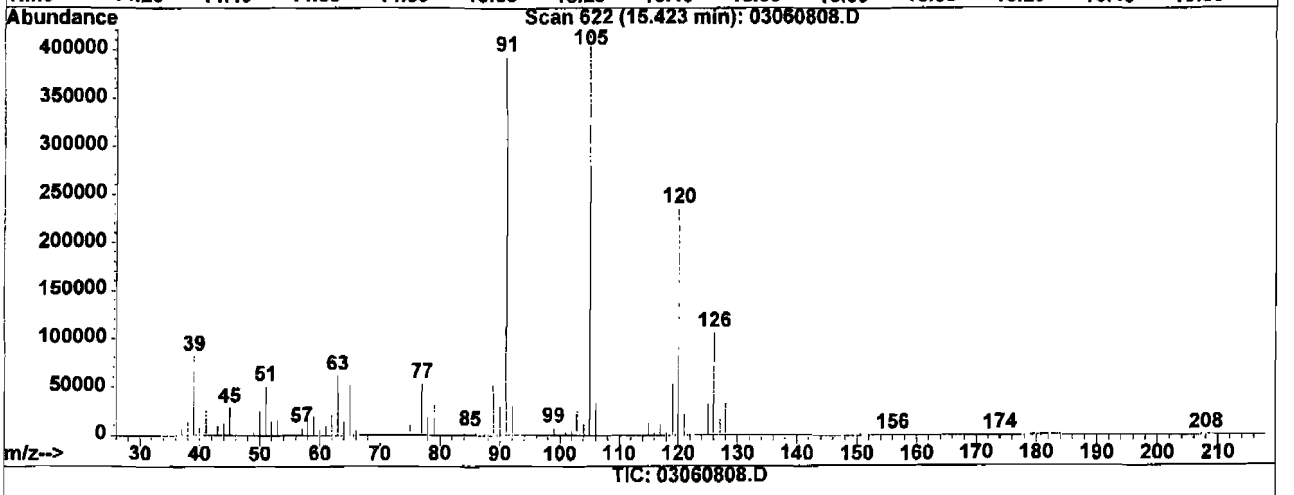
03060808.D 82608003.M Fri Mar 07 11:08:00 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:07 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(58) 1,3,5-Trimethylbenzene

15.42min 177.55ng

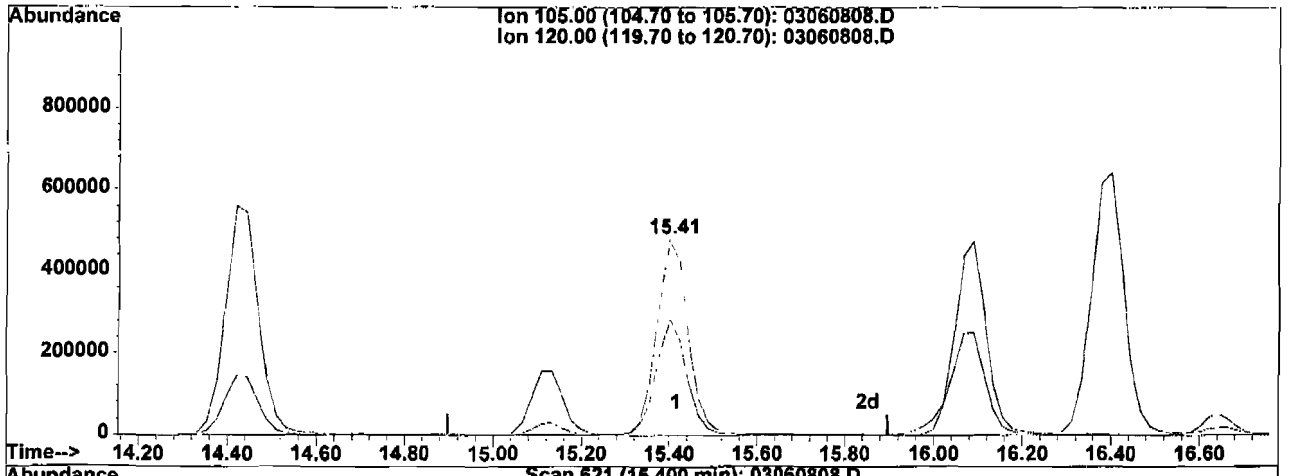
response 21392241

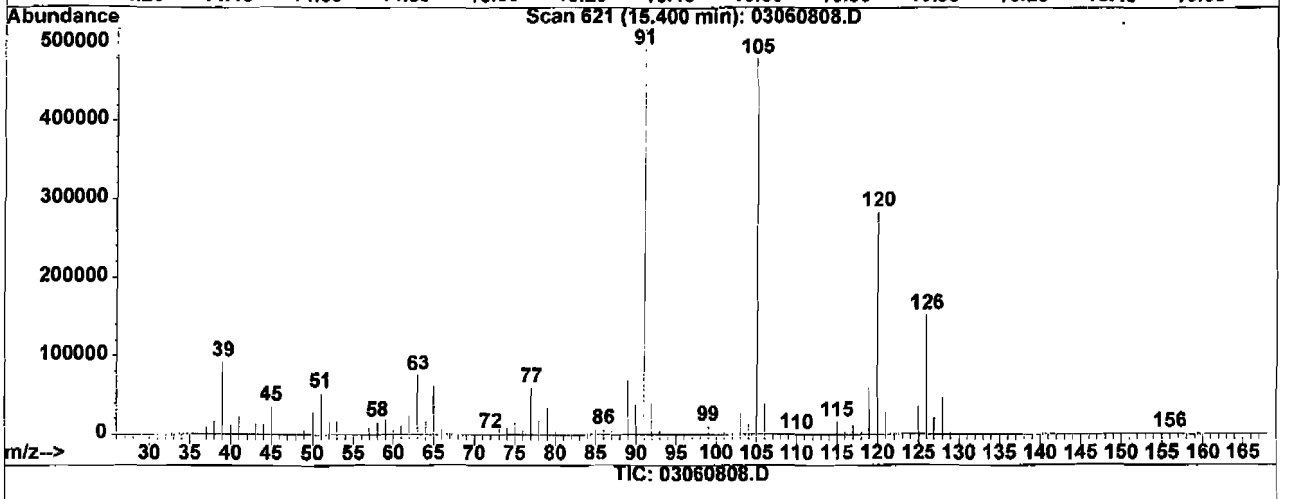
Ion	Exp%	Act%
105.00	100	100
120.00	60.20	50.34
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(58) 1,3,5-Trimethylbenzene

15.40min 196.65ng m

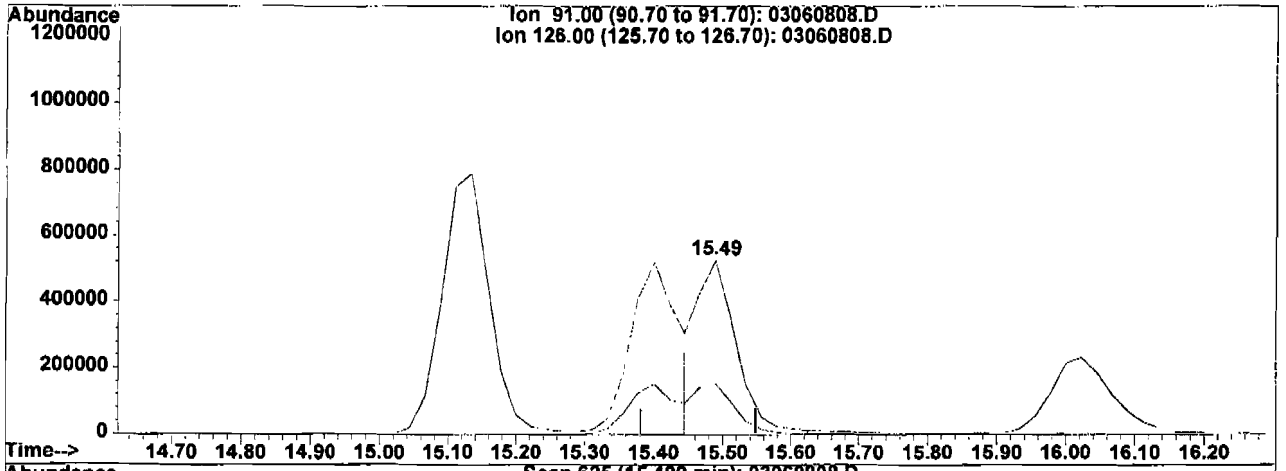
response 23781115

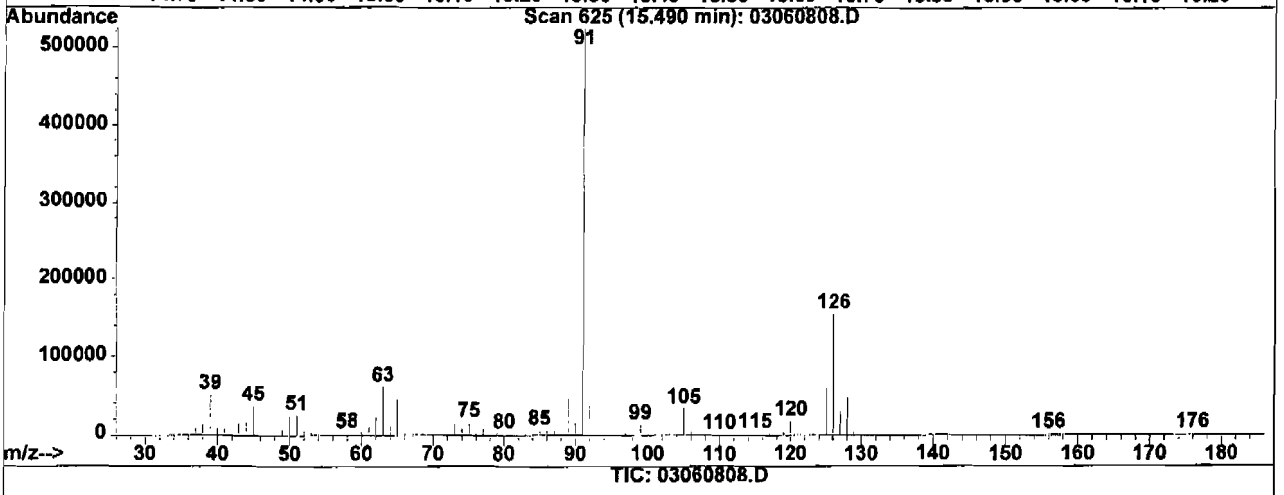
Ion	Exp%	Act%
105.00	100	100
120.00	60.20	45.29#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060808.D

(59) 4-Chlorotoluene

15.49min 189.45ng m

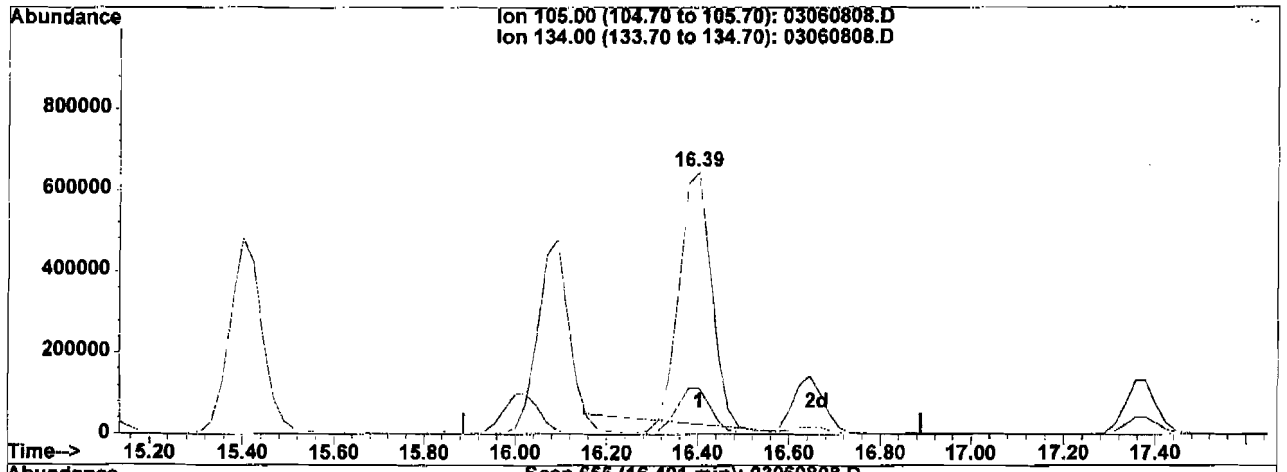
response 23208335

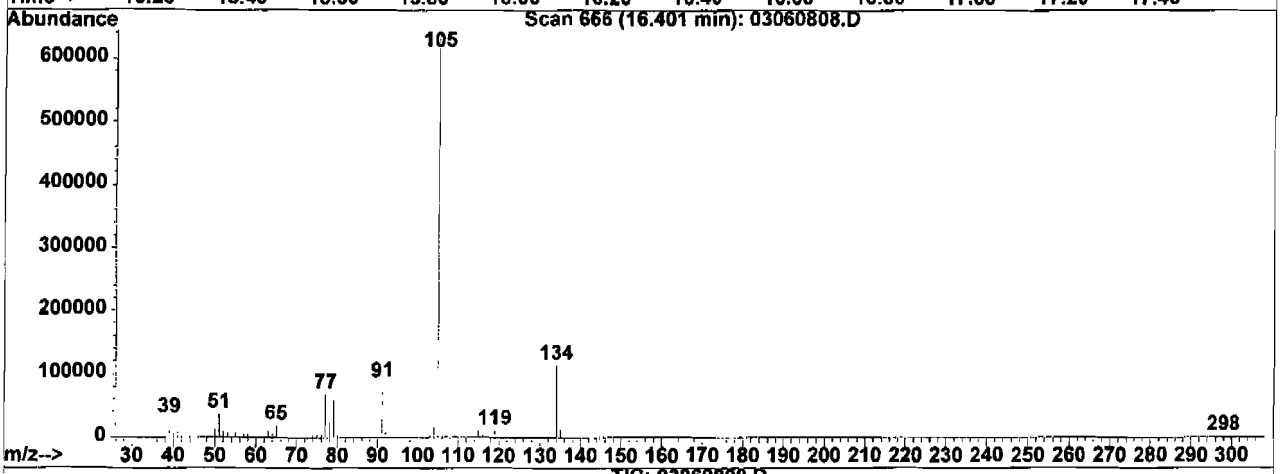
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(60) sec-Butylbenzene

16.40min 168.88ng

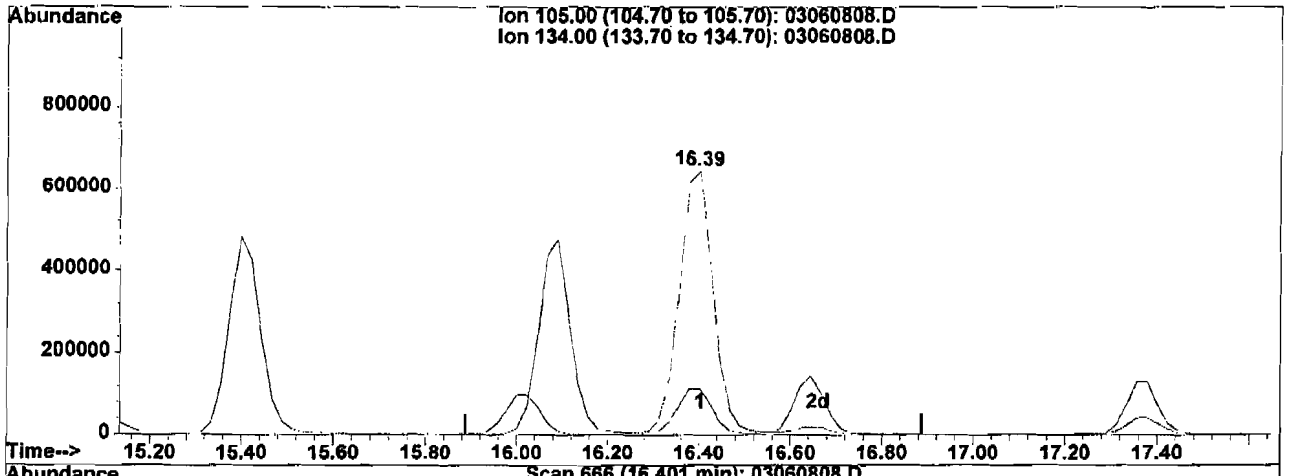
response 28448673

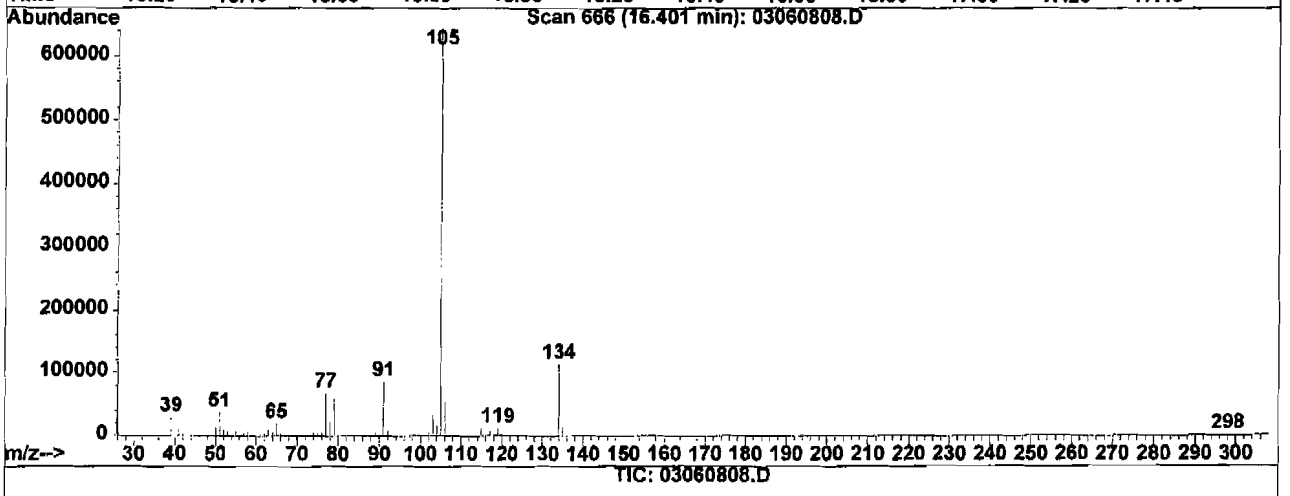
Ion	Exp%	Act%
105.00	100	100
134.00	19.50	21.20
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(60) sec-Butylbenzene

16.40min 197.37ng m

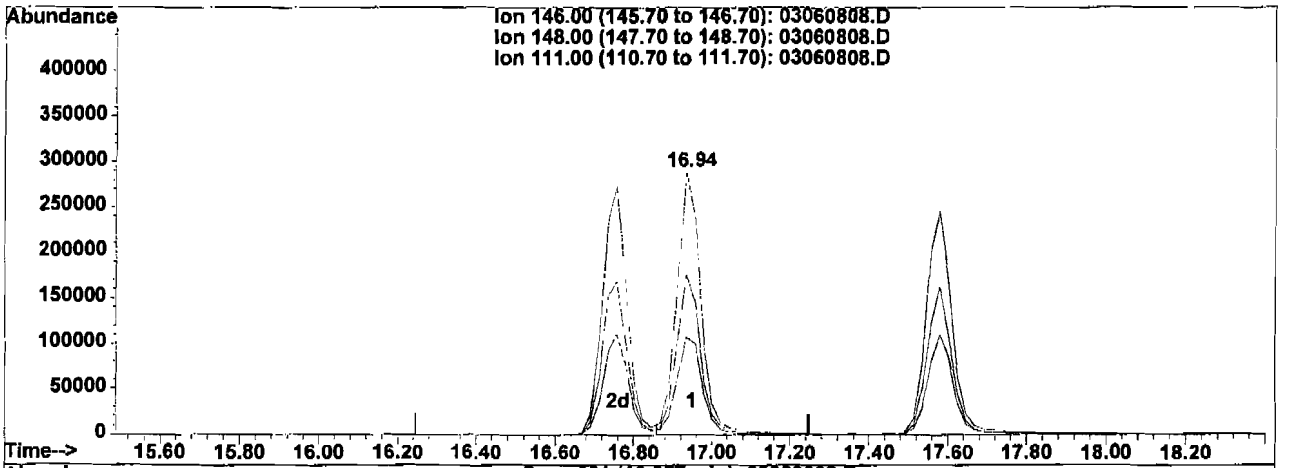
response 33408446

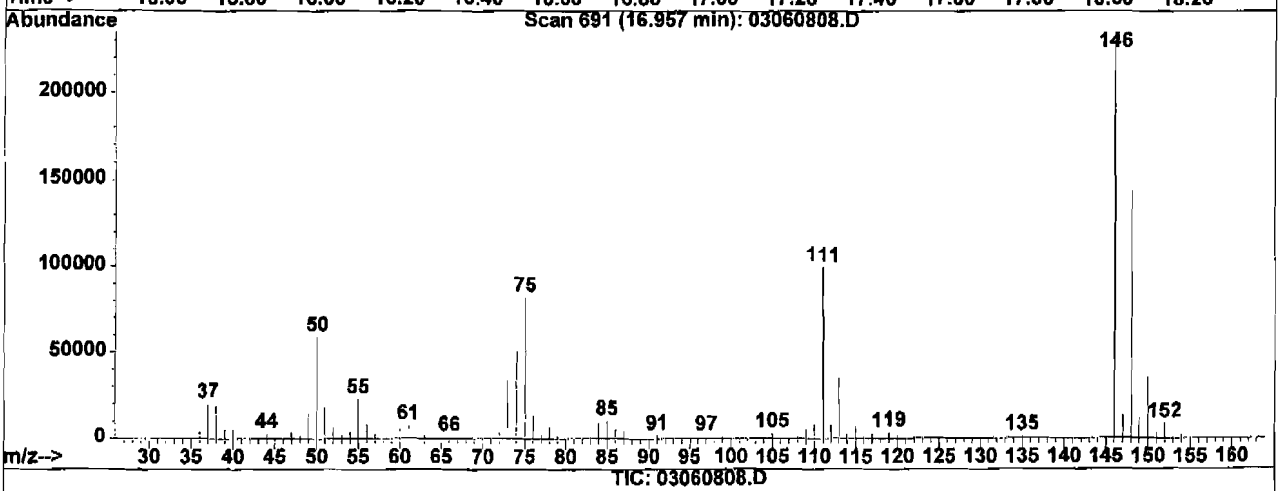
Ion	Exp%	Act%
105.00	100	100
134.00	19.50	18.05
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(63) 1,3-Dichlorobenzene

16.95min 211.53ng

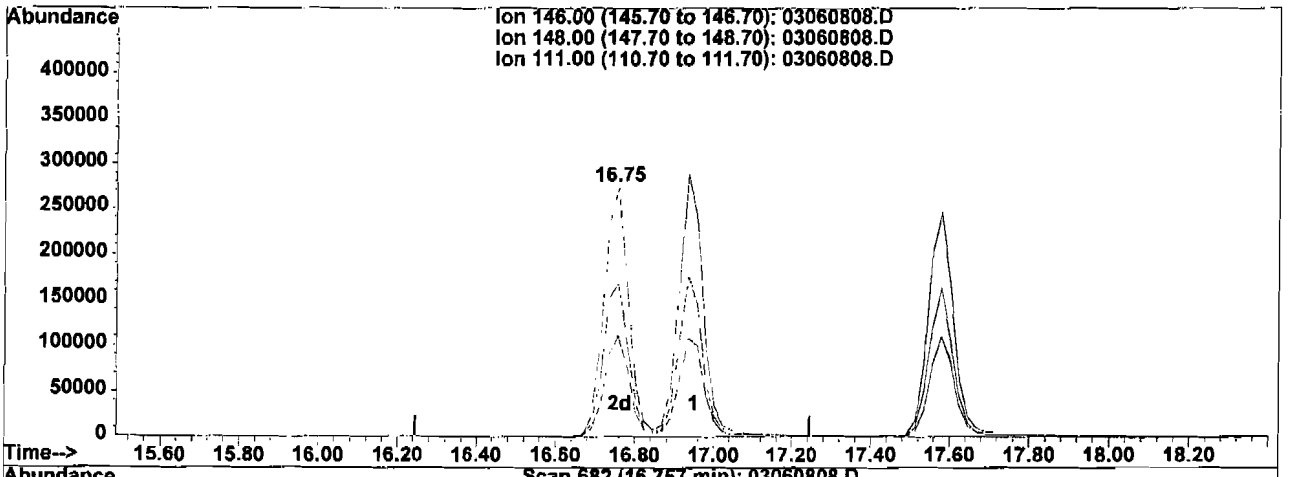
response 12441230

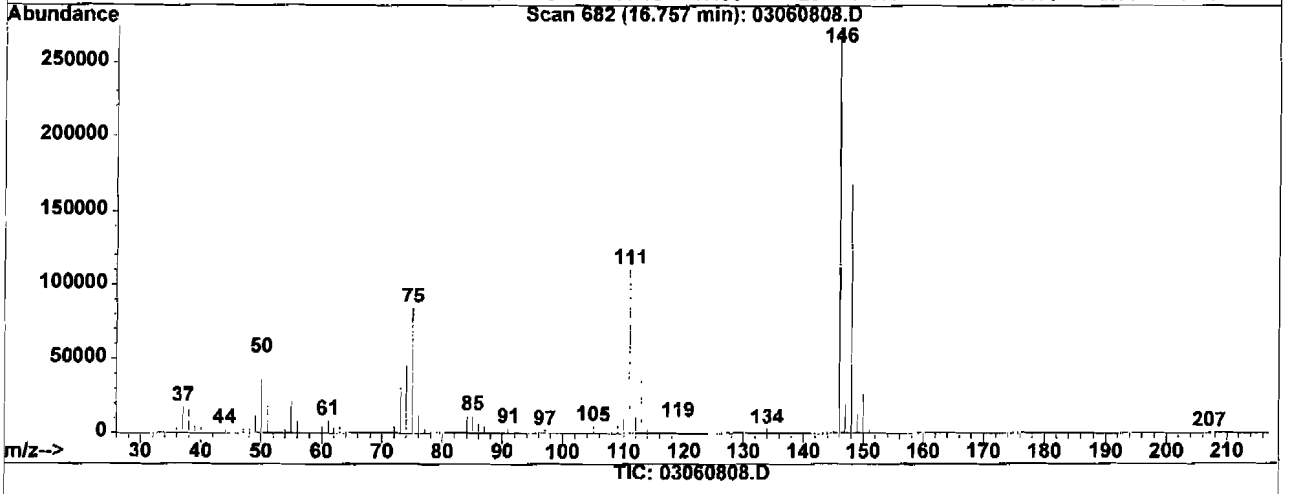
Ion	Exp%	Act%
146.00	100	100
148.00	64.10	60.37
111.00	41.20	40.81
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(63) 1,3-Dichlorobenzene

16.76min 200.28ng m

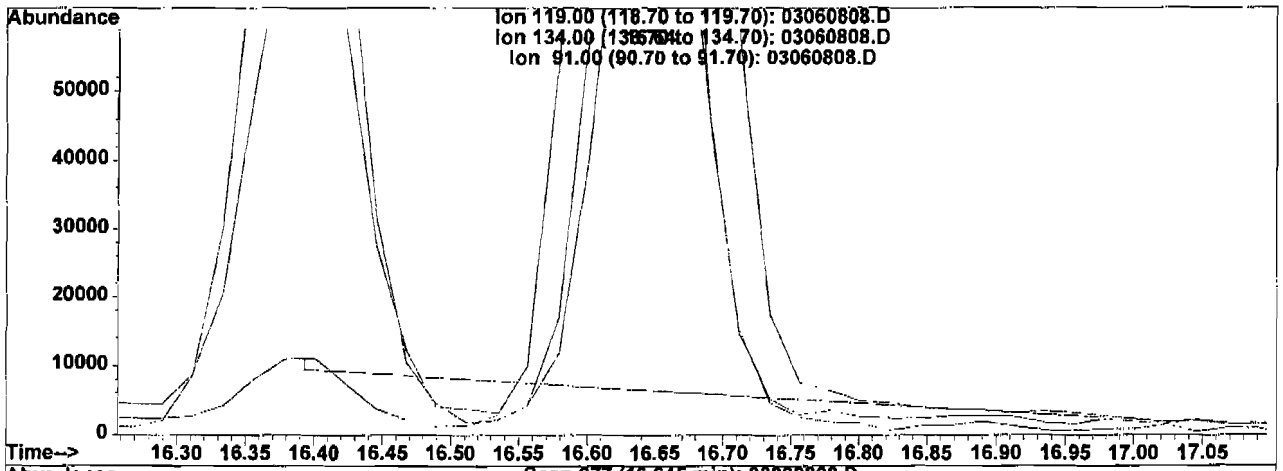
response 11773184

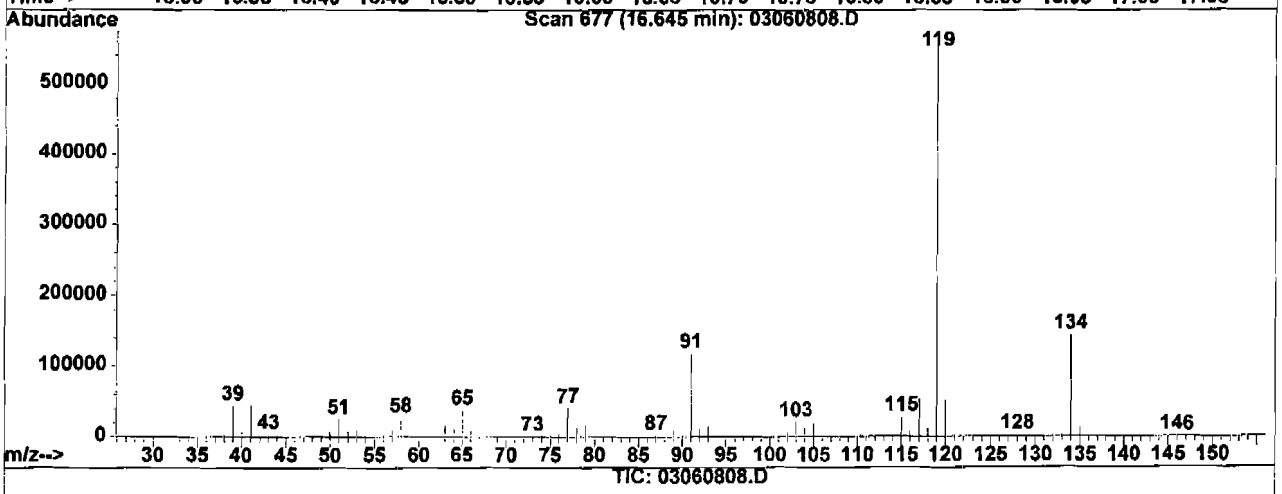
Ion	Exp%	Act%
146.00	100	100
148.00	64.10	63.79
111.00	41.20	43.13
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(64) p-Isopropyltoluene

16.65min 186.54ng

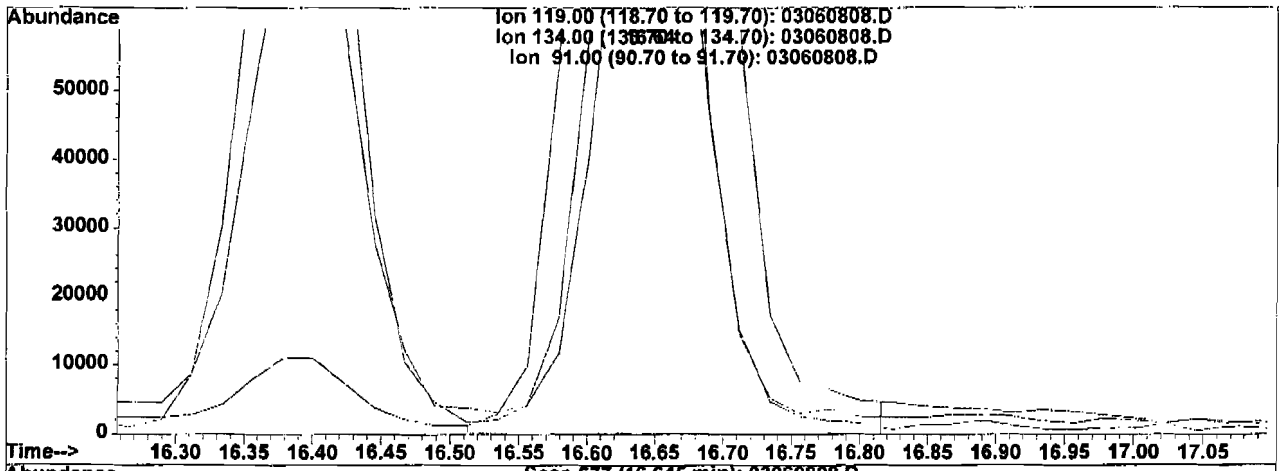
response 25332438

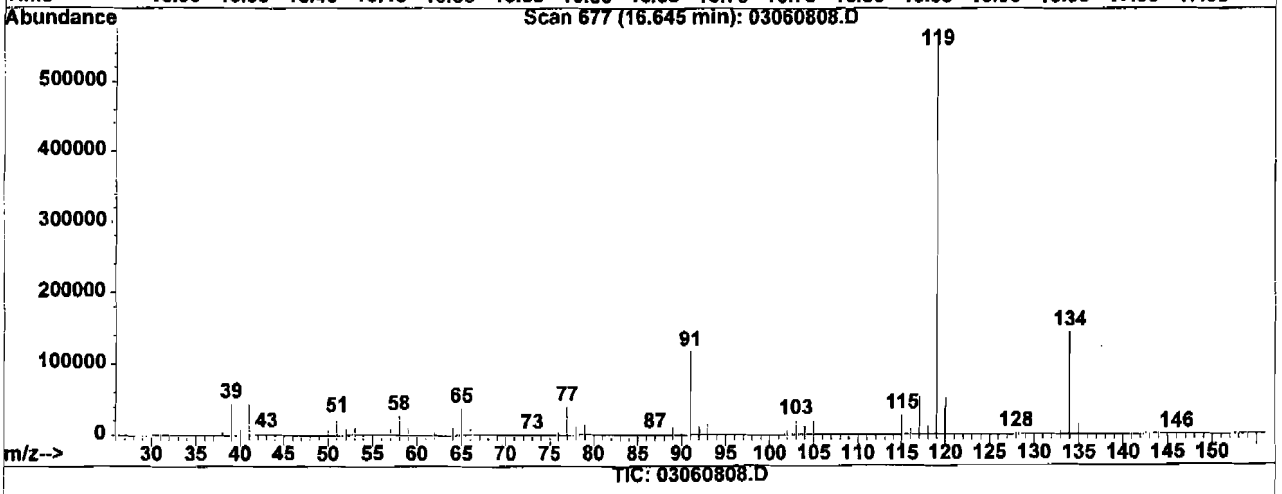
Ion	Exp%	Act%
119.00	100	100
134.00	26.00	13.17
91.00	19.90	9.97#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060808.D Vial: 1
Acq On : 06 Mar 08 21:56 Operator: csm
Sample : CS5_200ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:08 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(64) p-Isopropyltoluene

16.65min 195.65ng m

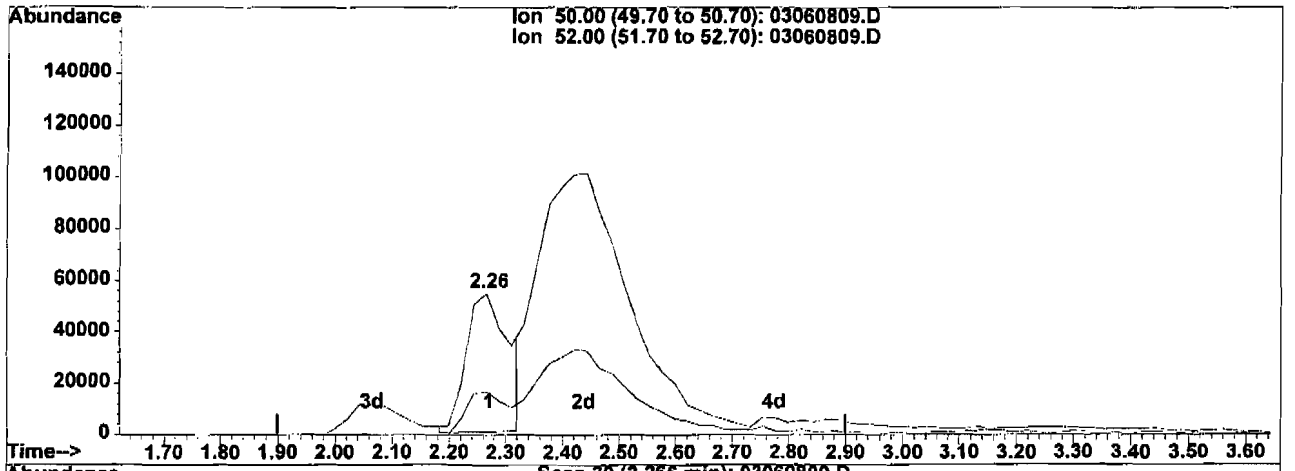
response 26603190

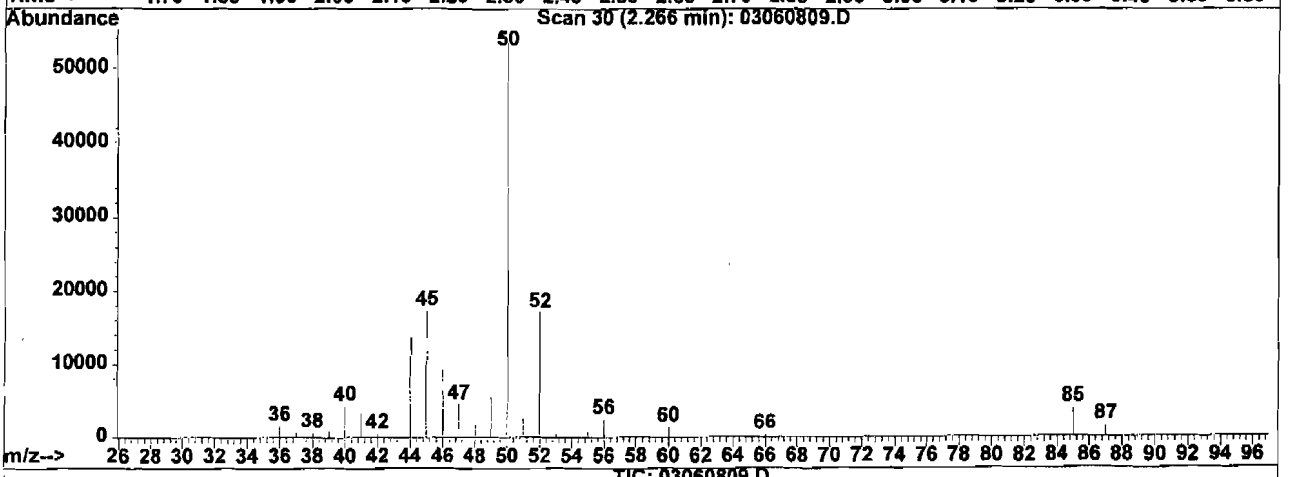
Ion	Exp%	Act%
119.00	100	100
134.00	26.00	12.54#
91.00	19.90	9.50#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(3) Chloromethane (P)

2.27min 28.90ng

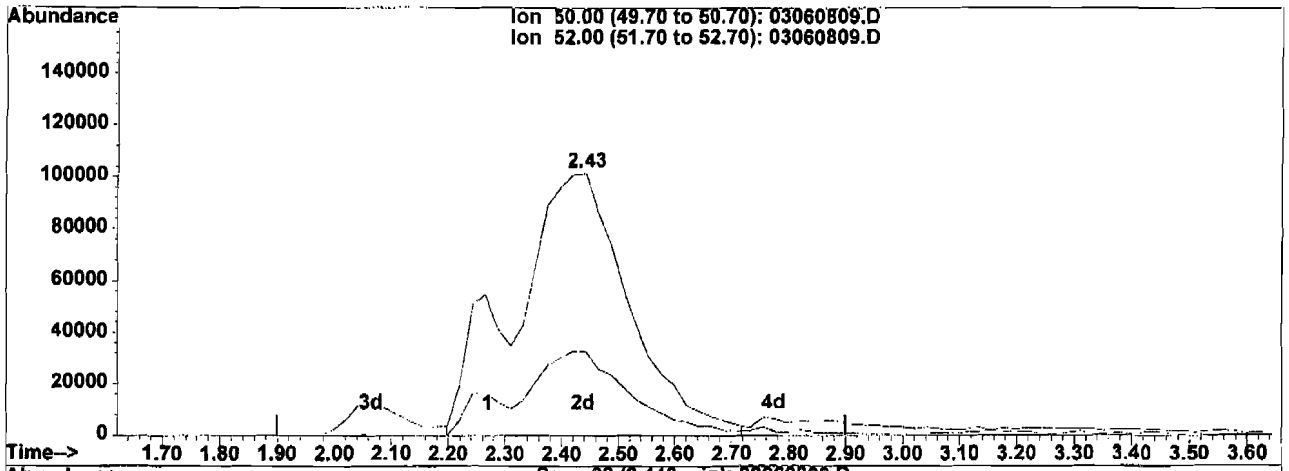
response 2438765

Ion	Exp%	Act%
50.00	100	100
52.00	26.30	30.98
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(3) Chloromethane (P)

2.44min 297.73ng m

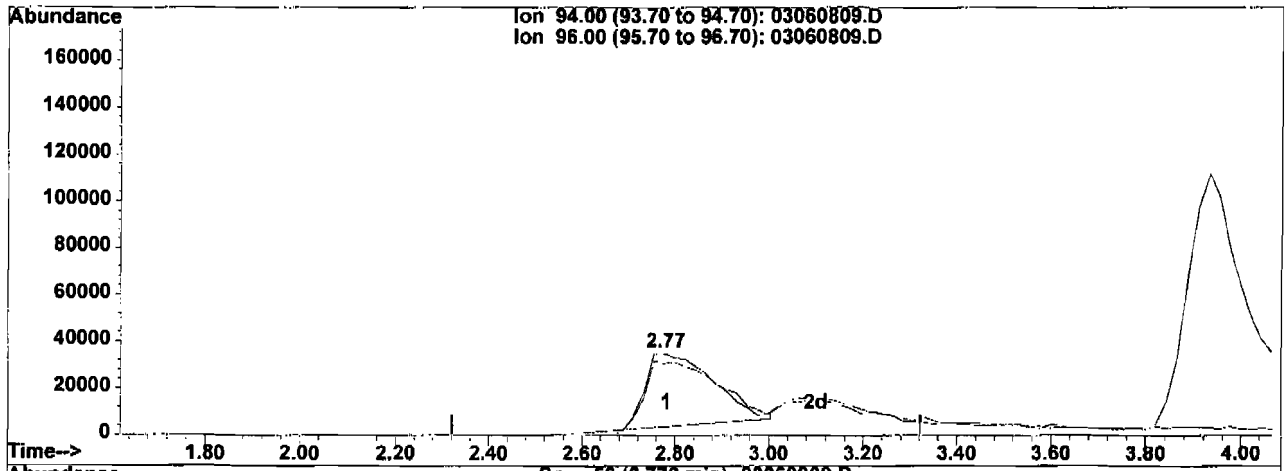
response 14377583

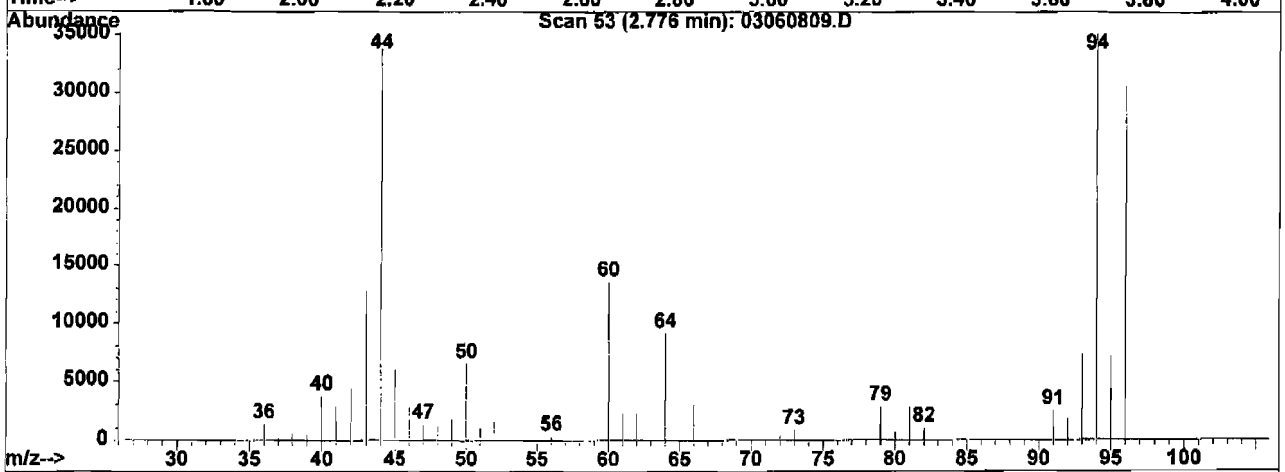
Ion	Exp%	Act%
50.00	100	100
52.00	26.30	5.25#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(5) Bromomethane

2.78min 164.05ng

response 3073029

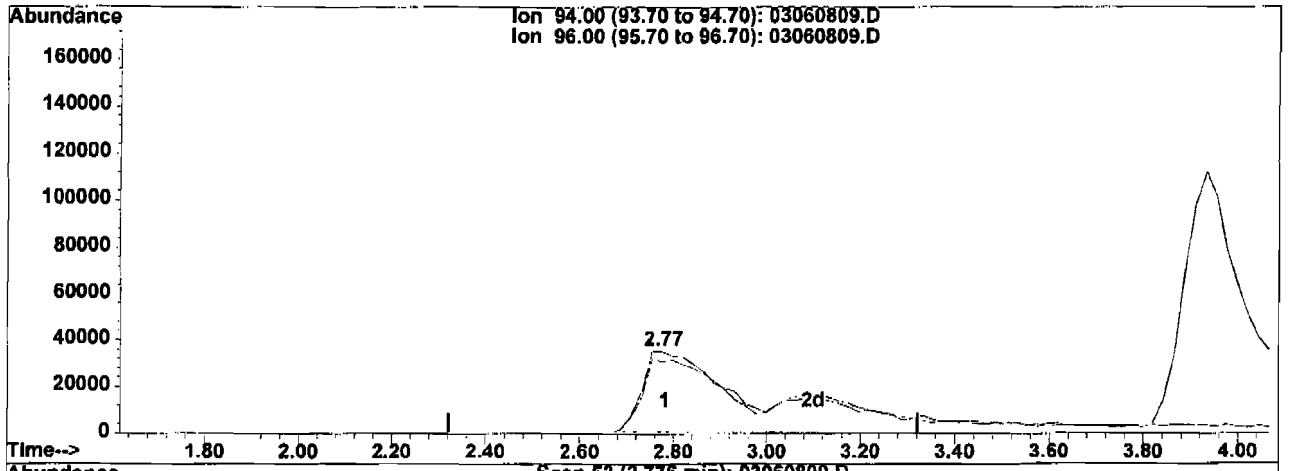
Ion	Exp%	Act%
94.00	100	100
96.00	43.10	90.82#
0.00	0.00	0.00
0.00	0.00	0.00

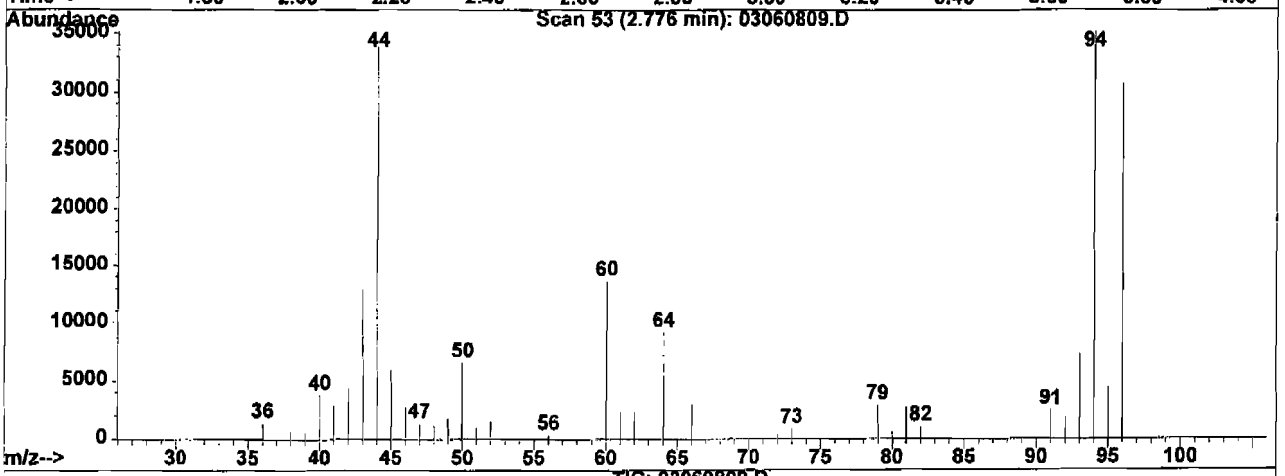
03060809.D 82608003.M Fri Mar 07 11:09:57 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:10 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(5) Bromomethane

2.78min 314.45ng m

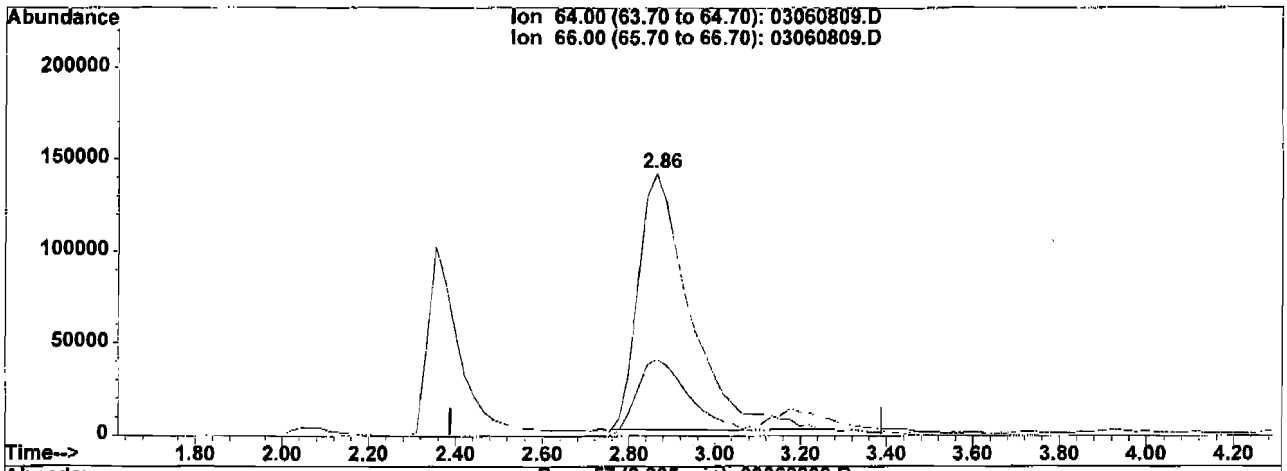
response 6160961

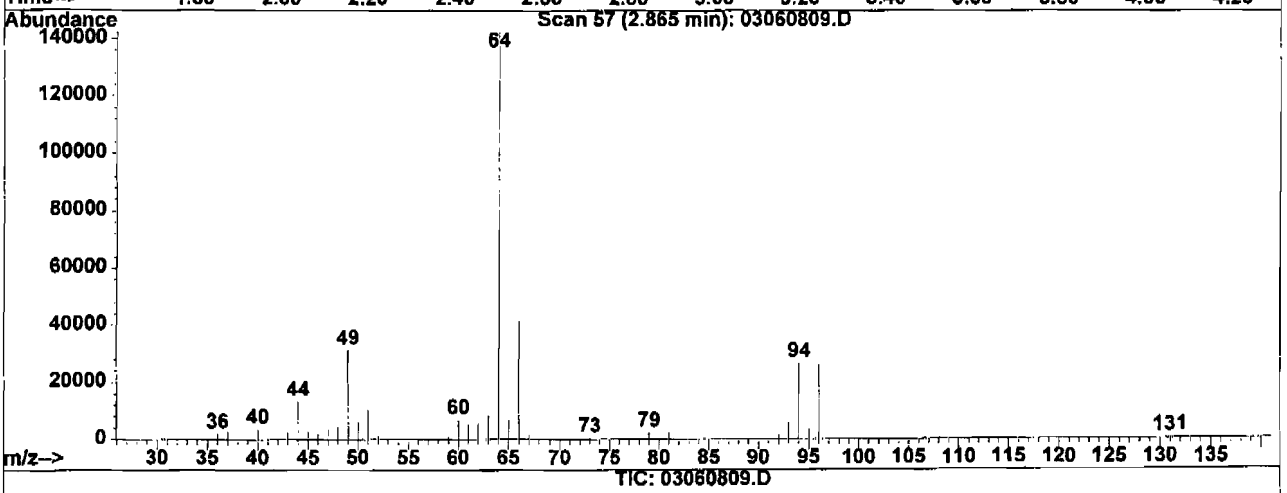
Ion	Exp%	Act%
94.00	100	100
96.00	43.10	45.30
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:10 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(6) Chloroethane

2.87min 315.18ng

response 11719539

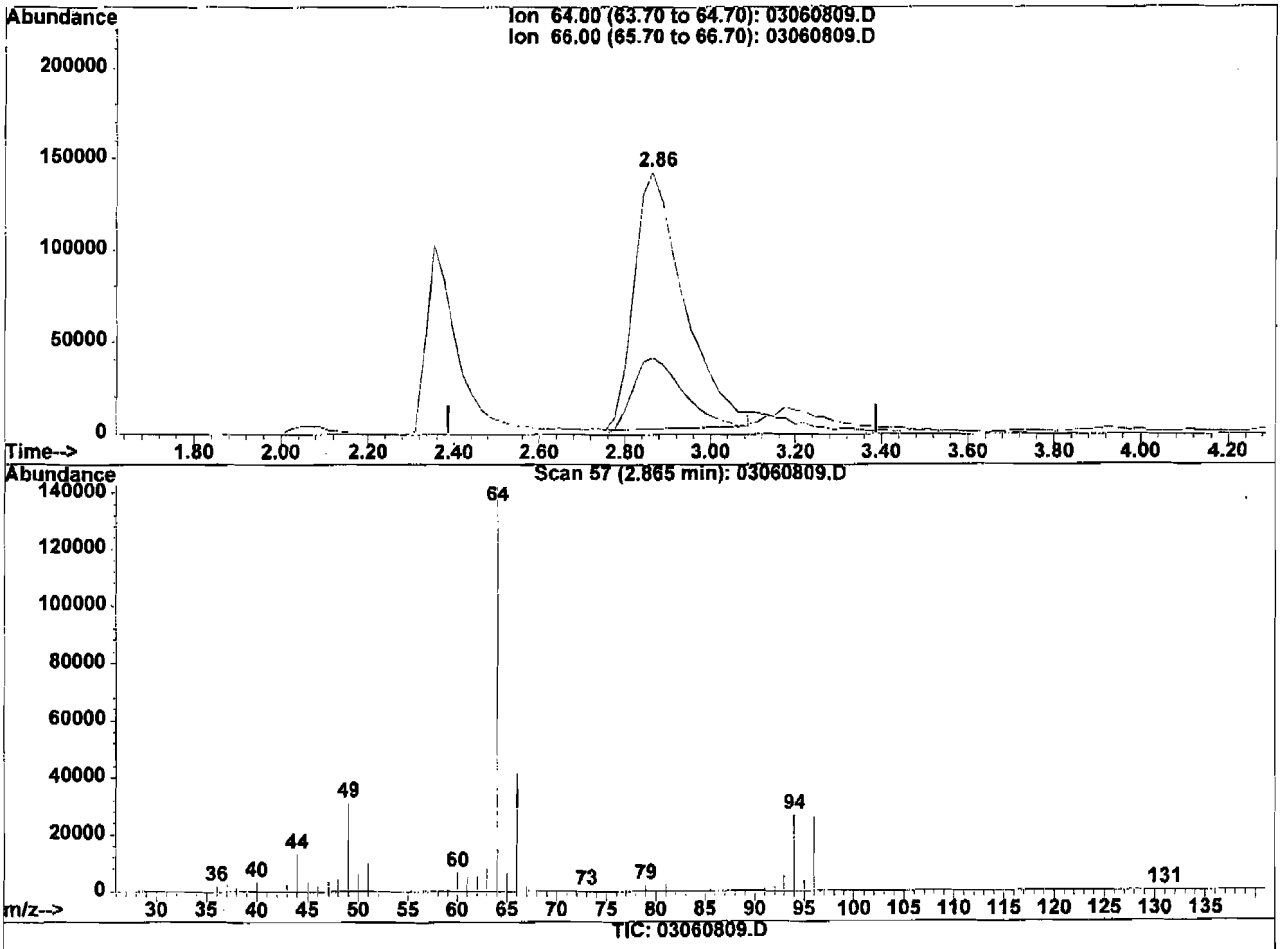
Ion	Exp%	Act%
64.00	100	100
66.00	24.20	27.29
0.00	0.00	0.00
0.00	0.00	0.00

03060809.D 82608003.M Fri Mar 07 11:10:36 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:10 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(6) Chloroethane

2.87min 298.02ng m

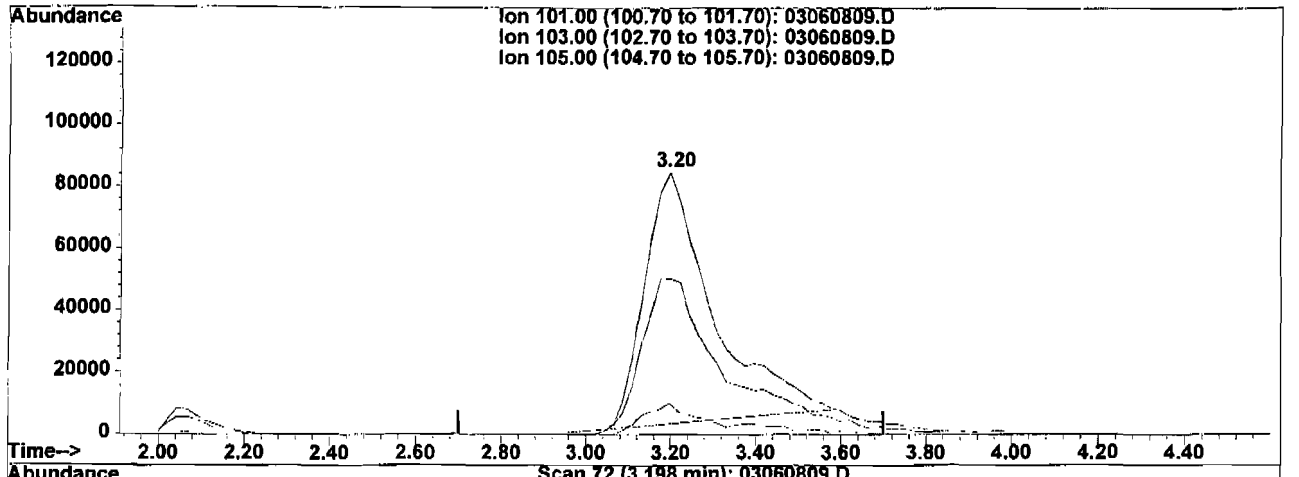
response 11127266

Ion	Exp%	Act%
64.00	100	100
66.00	24.20	28.74
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:10 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.20min 243.17ng

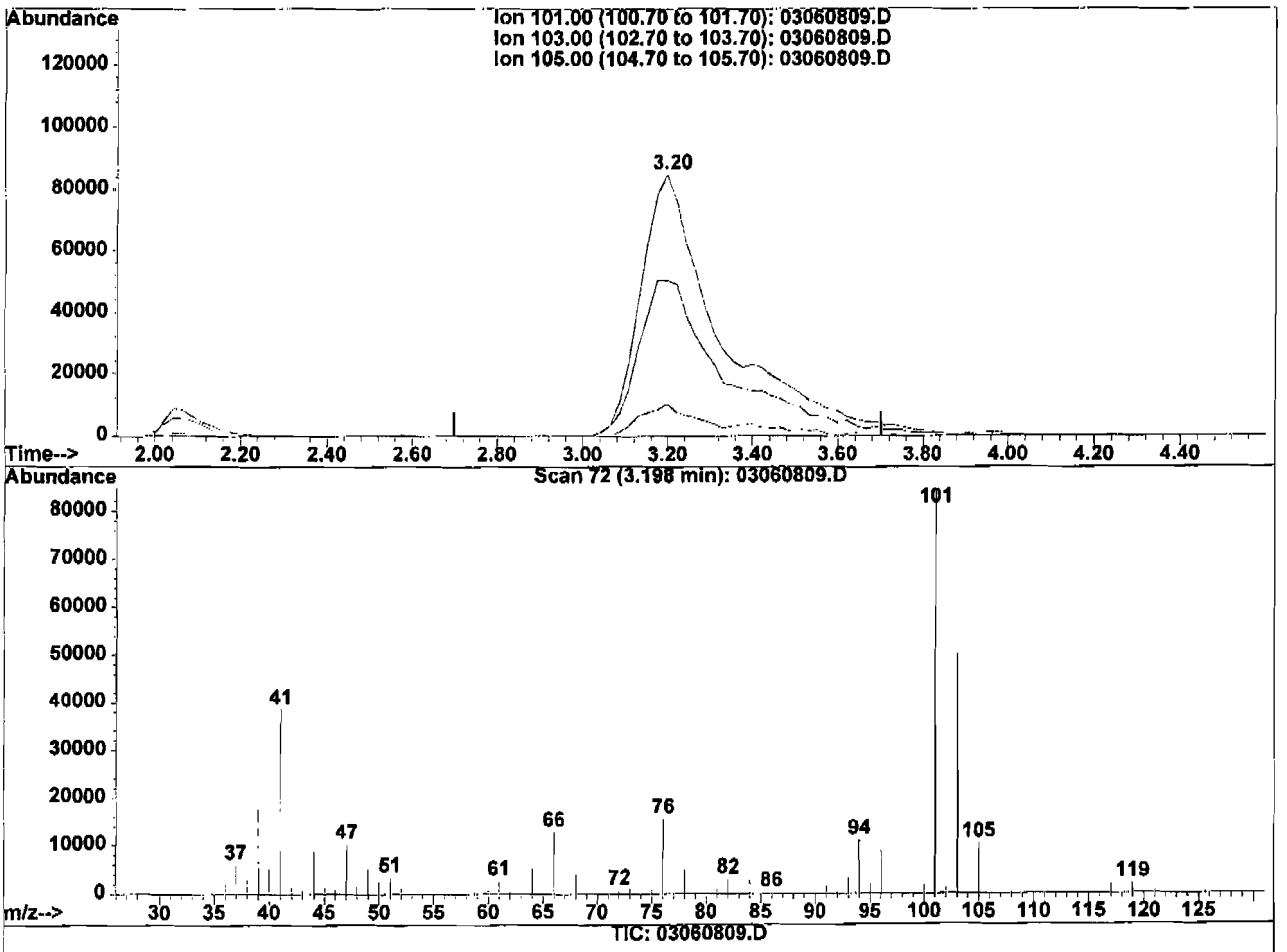
response 8924402

Ion	Exp%	Act%
101.00	100	100
103.00	48.30	65.01#
105.00	7.50	9.32#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:10 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.20min 307.26ng m

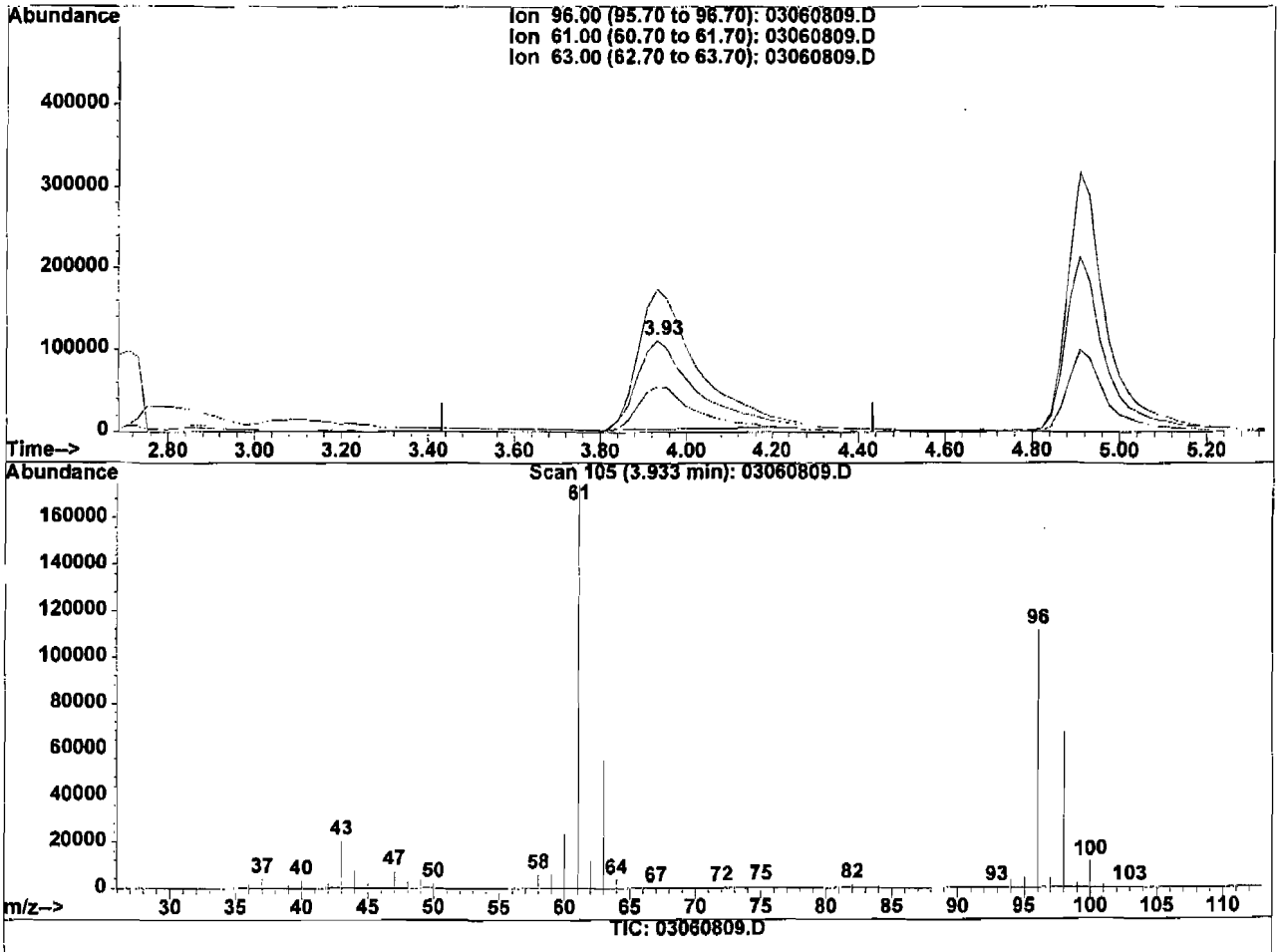
response 11239876

Ion	Exp%	Act%
101.00	100	100
103.00	48.30	51.62
105.00	7.50	7.40
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:10 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(8) 1,1-Dichloroethene (C)

3.94min 270.81ng

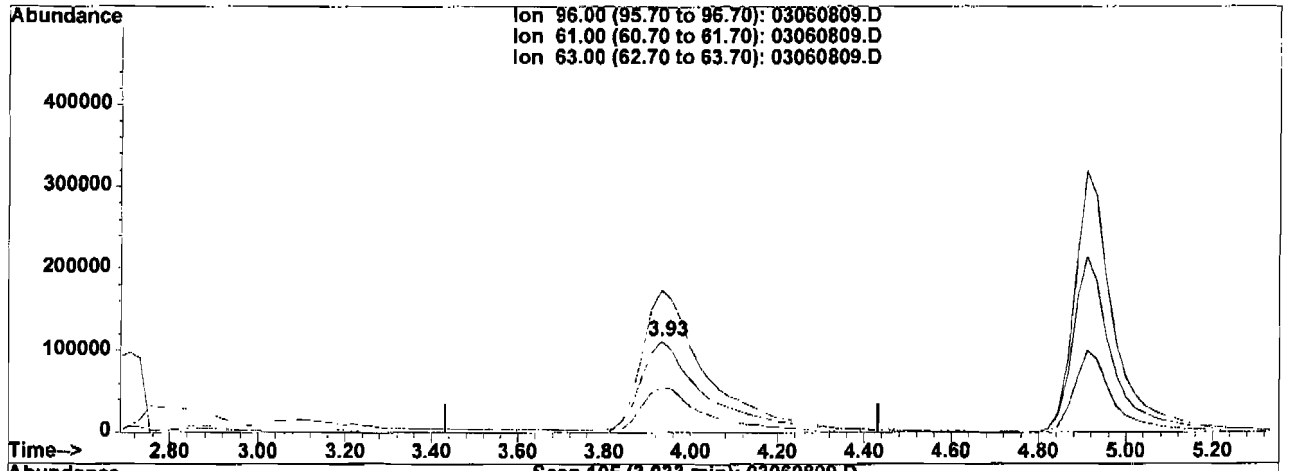
response 10366426

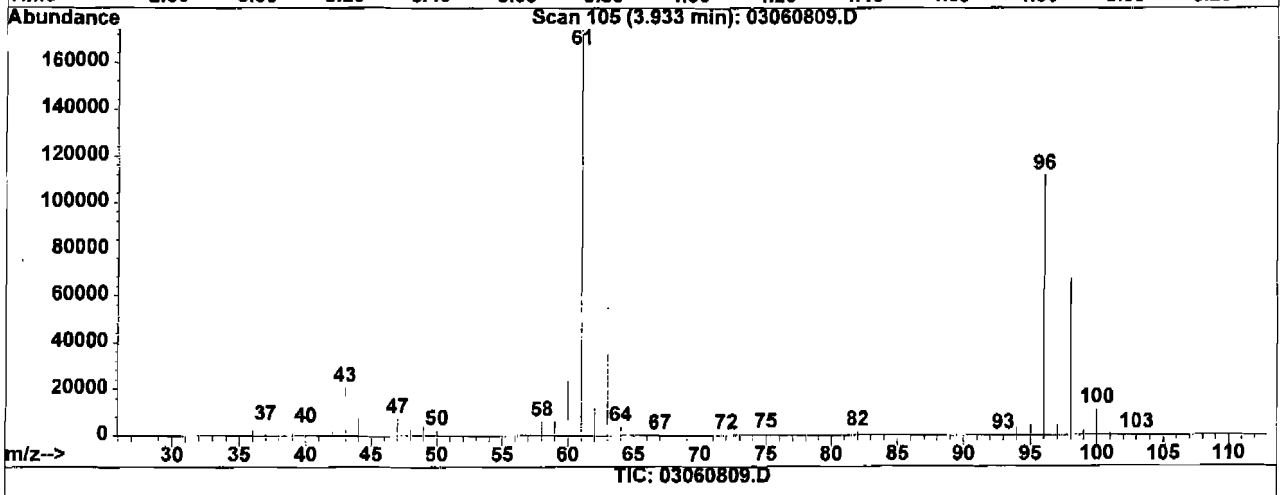
Ion	Exp%	Act%
96.00	100	100
61.00	141.80	160.46
63.00	44.40	52.27
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(8) 1,1-Dichloroethene (C)

3.93min 310.81ng m

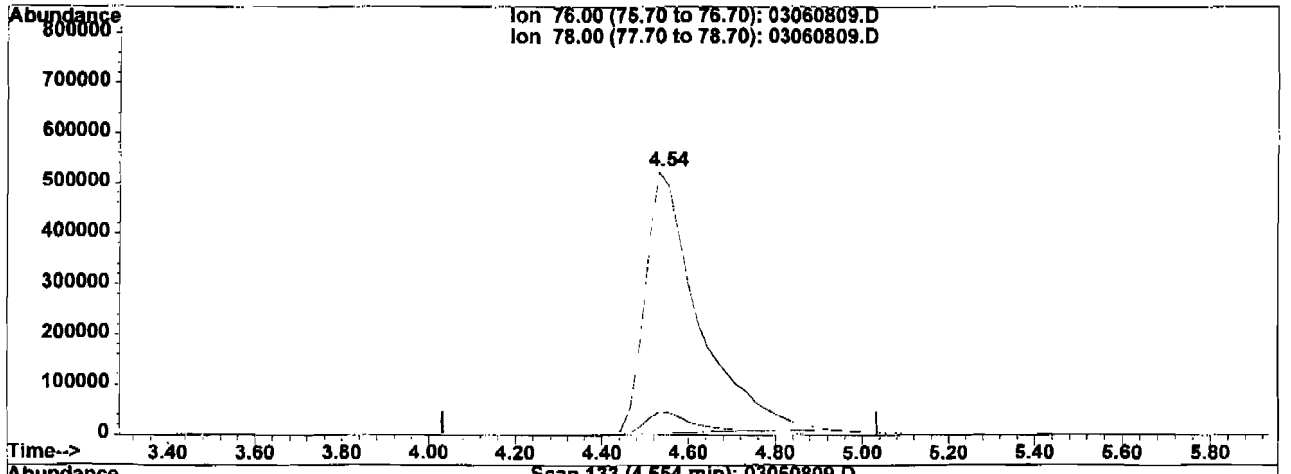
response 11893220

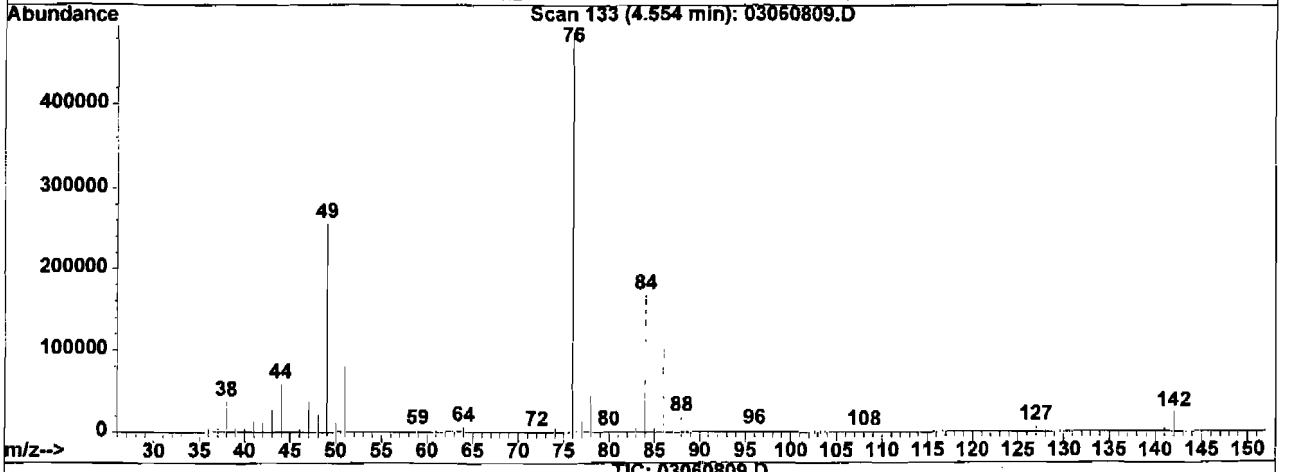
Ion	Exp%	Act%
96.00	100	100
61.00	141.80	139.86
63.00	44.40	45.56
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(11) Carbon disulfide

4.55min 289.06ng

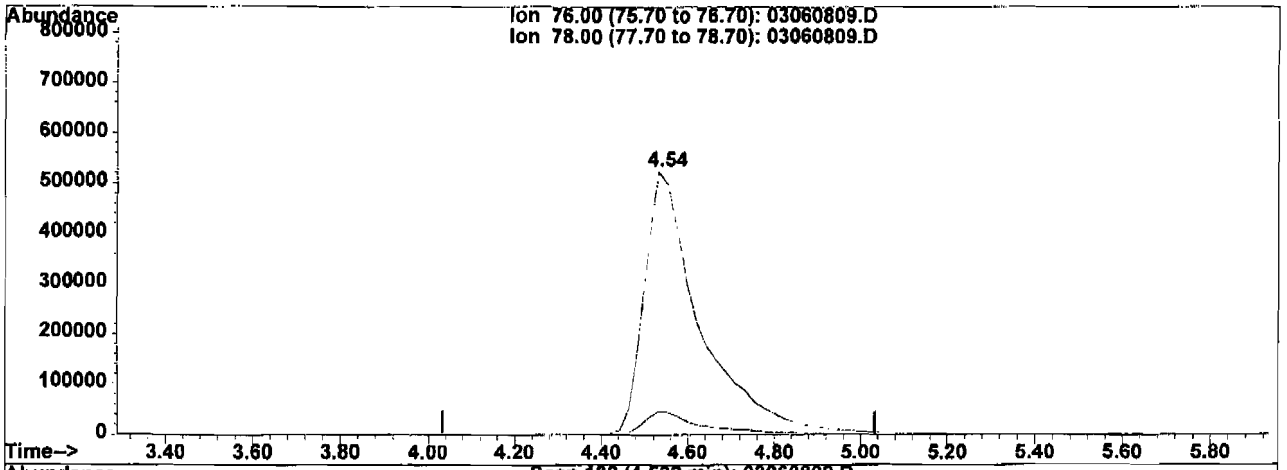
response 44444816

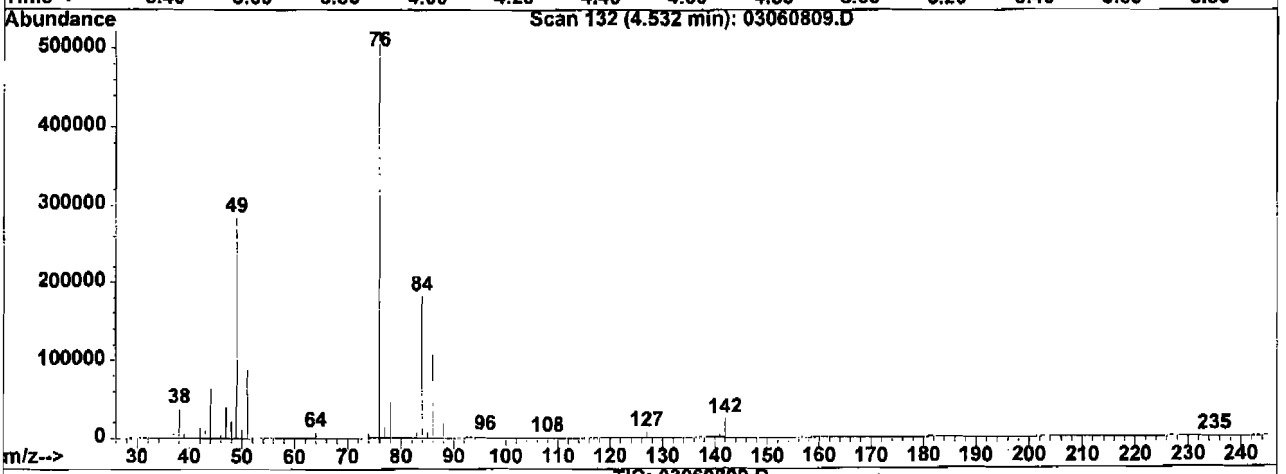
Ion	Exp%	Act%
76.00	100	100
78.00	9.10	9.18
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(11) Carbon disulfide

4.53min 303.75ng m

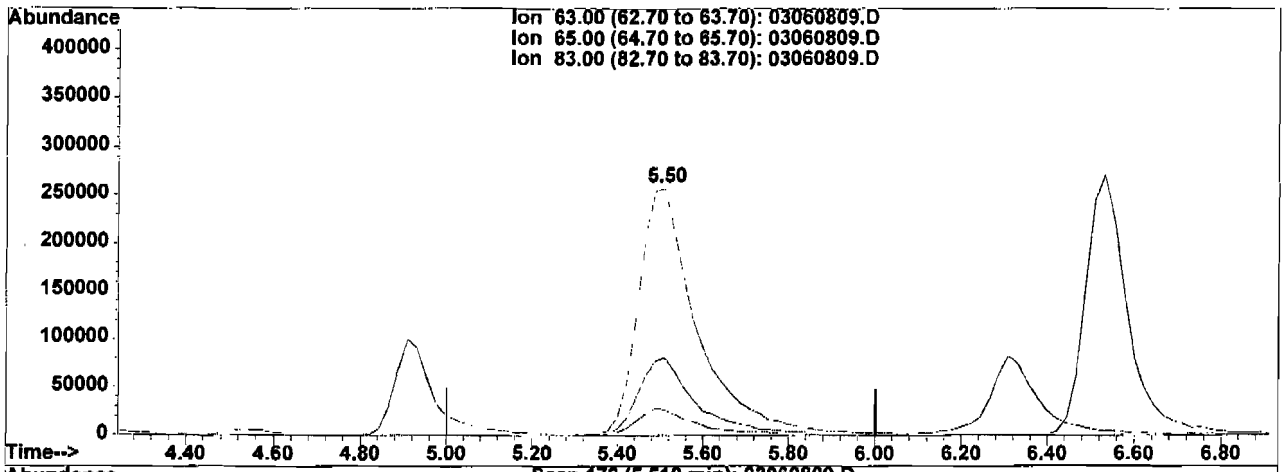
response 46719694

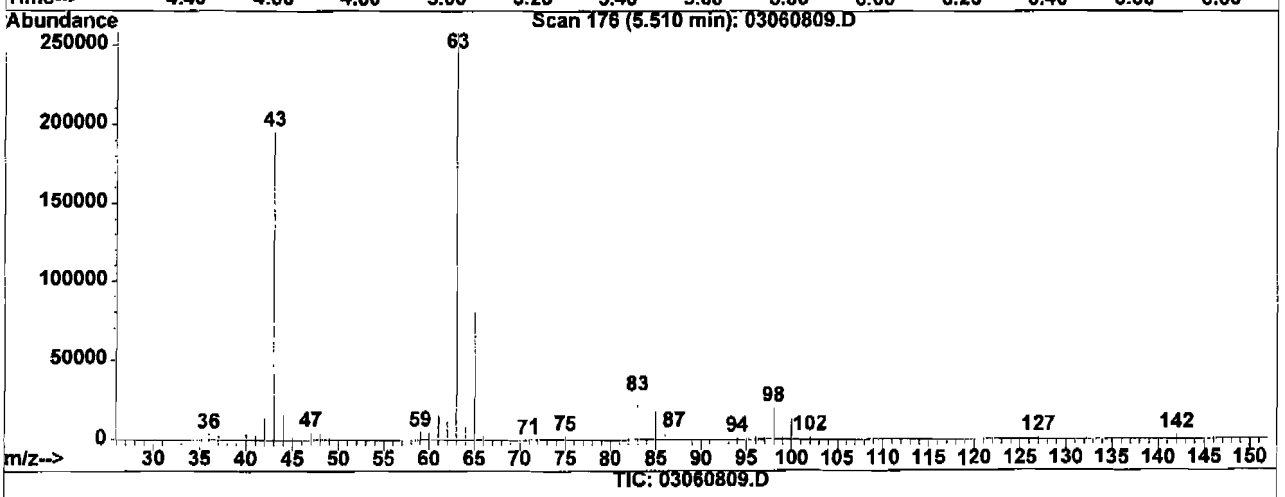
Ion	Exp%	Act%
76.00	100	100
78.00	9.10	8.73
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(15) 1,1-Dichloroethane (P)

5.51min -2667.95ng

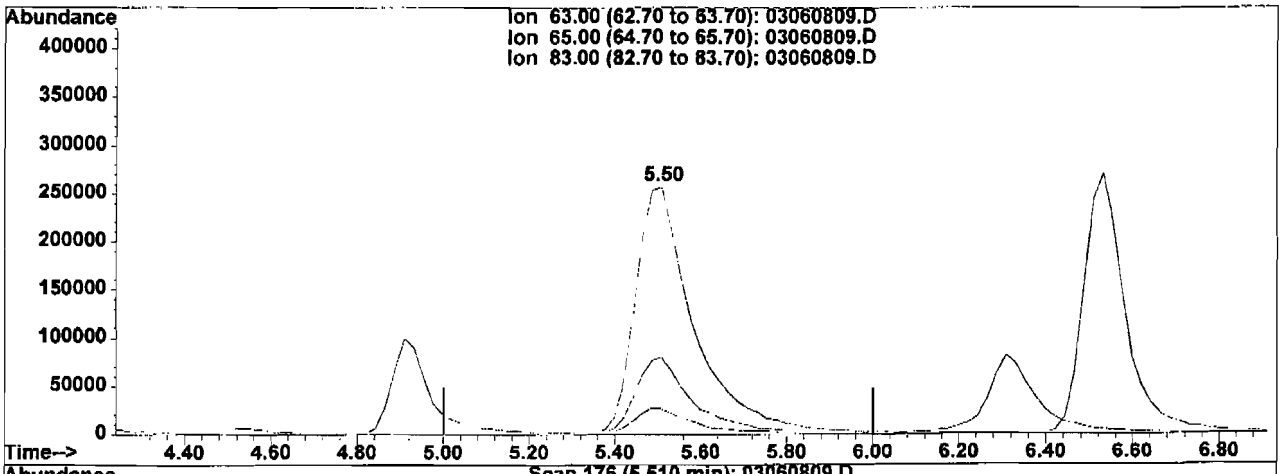
response 24256613

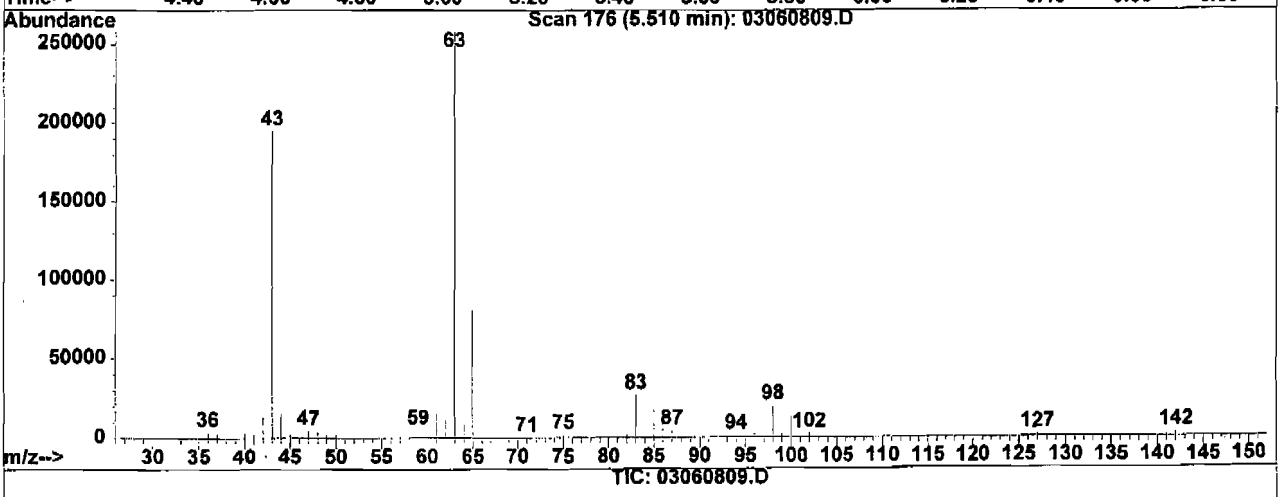
Ion	Exp%	Act%
63.00	100	100
65.00	30.10	30.13
83.00	9.70	10.97
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(15) 1,1-Dichloroethane (P)

5.51min -2722.61ng m

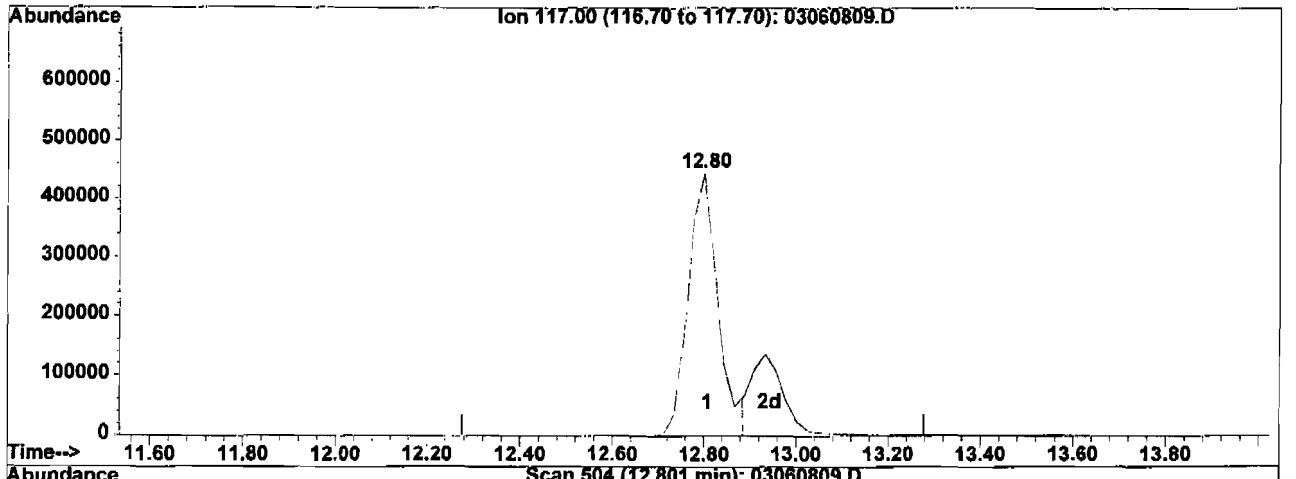
response 24606402

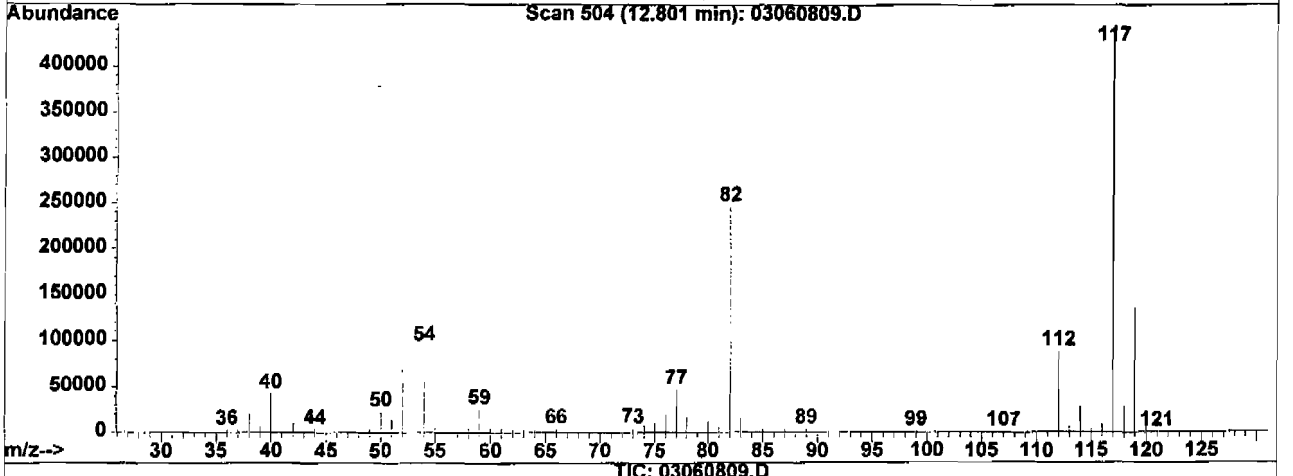
Ion	Exp%	Act%
63.00	100	100
65.00	30.10	29.70
83.00	9.70	10.81
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(43) Chlorobenzene-d5 (ins) (I)

12.81min 200.00ng

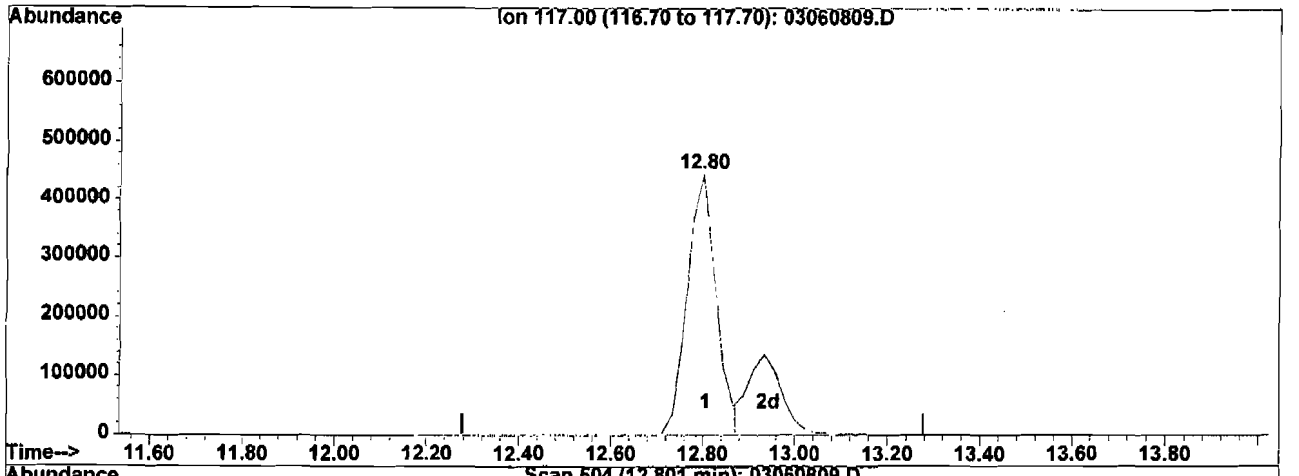
response 418140

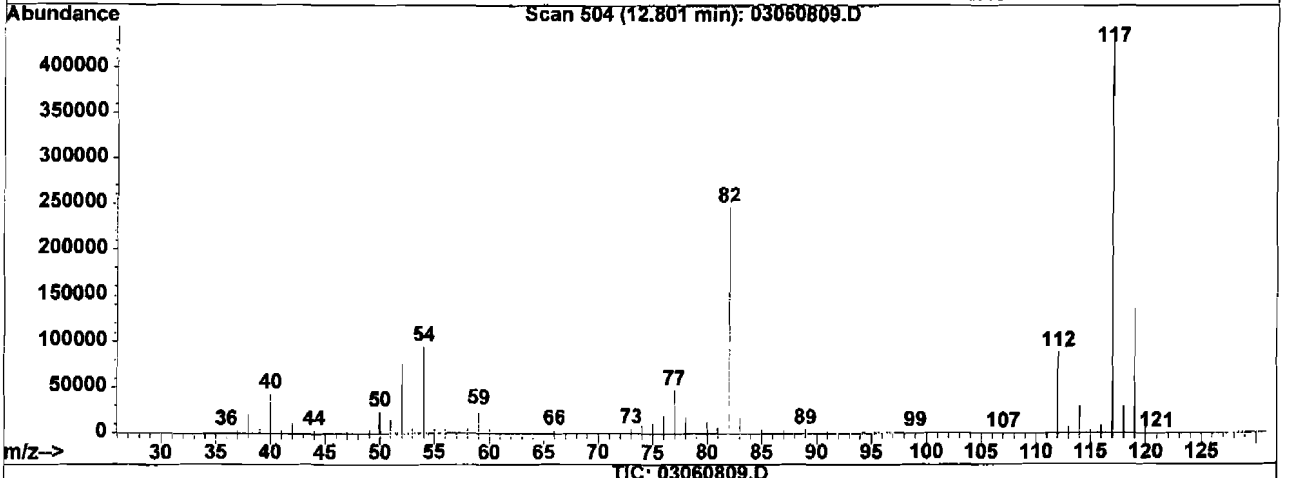
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(43) Chlorobenzene-d5 (ins) (I)

12.80min 200.00ng m

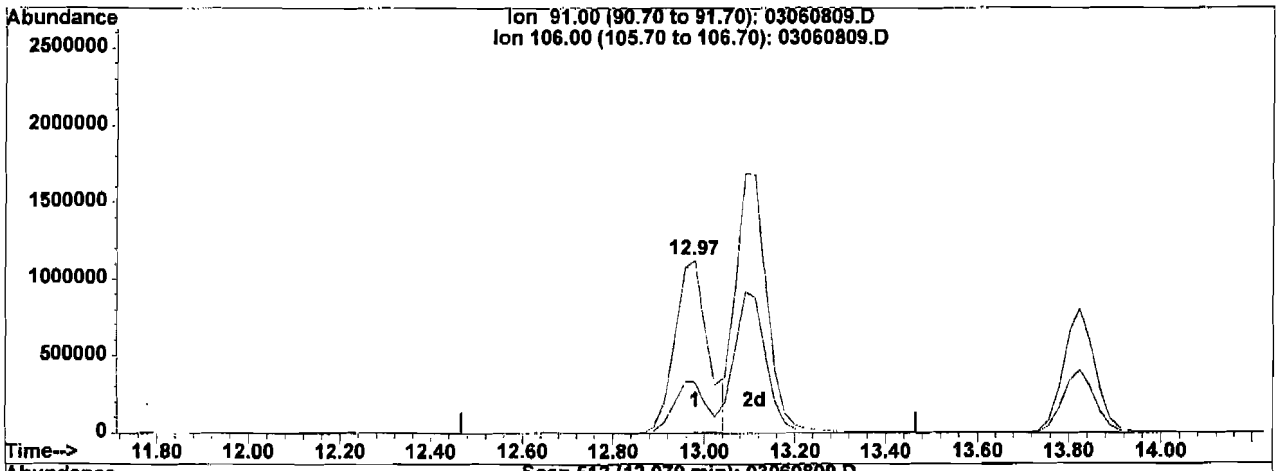
response 449231

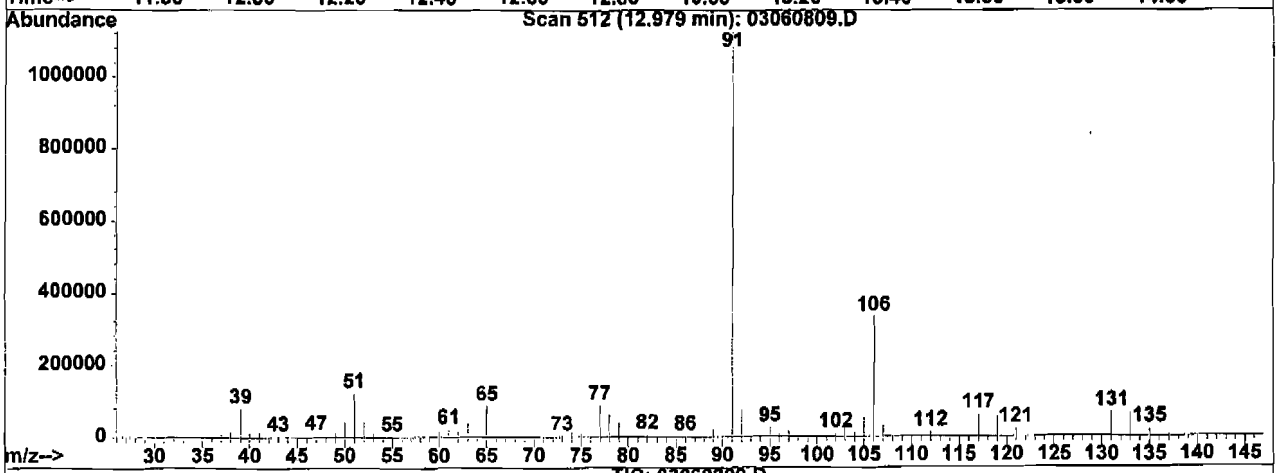
Ion	Exp%	Act%
117.00	100	100
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(45) Ethylbenzene (C)

12.98min 296.86ng

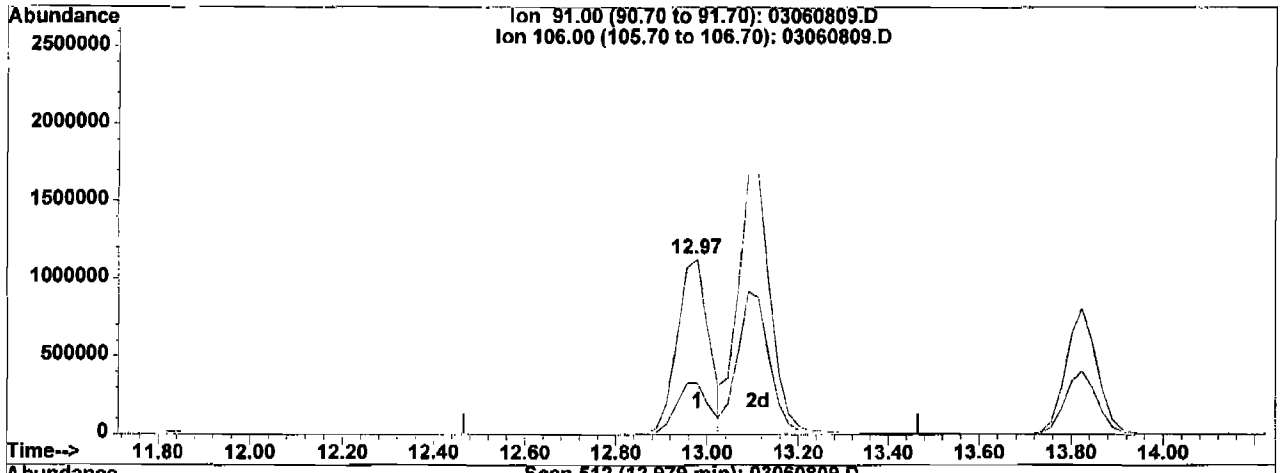
response 53232982

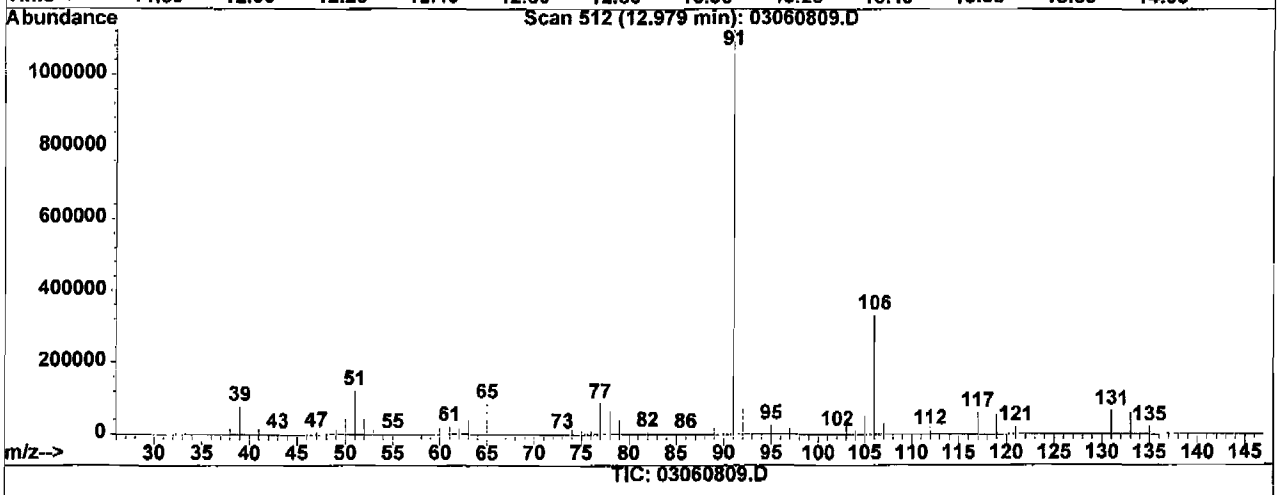
Ion	Exp%	Act%
91.00	100	100
106.00	30.90	29.66
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(45) Ethylbenzene (C)

12.98min 313.95ng m

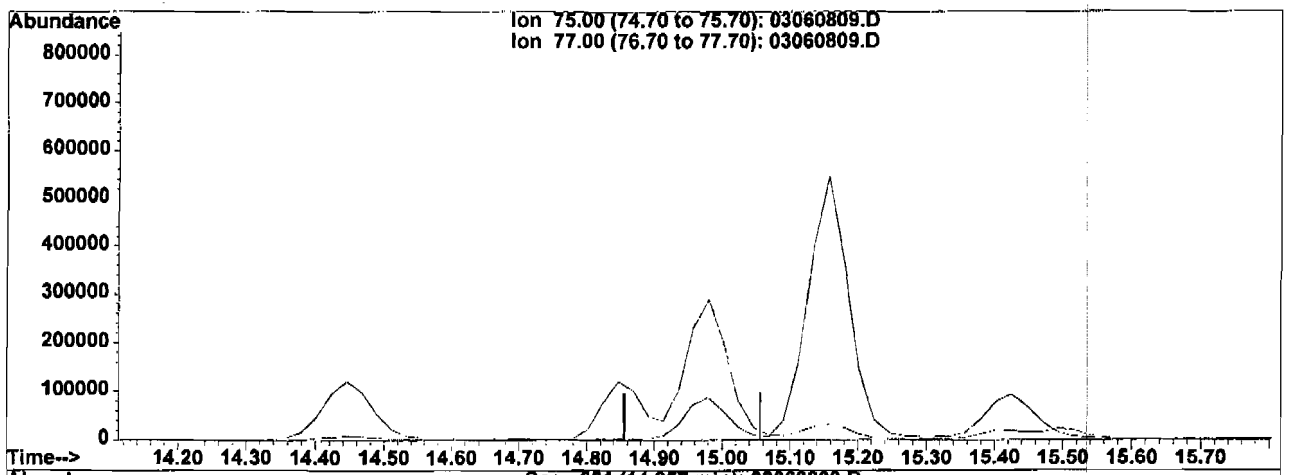
response 56393867

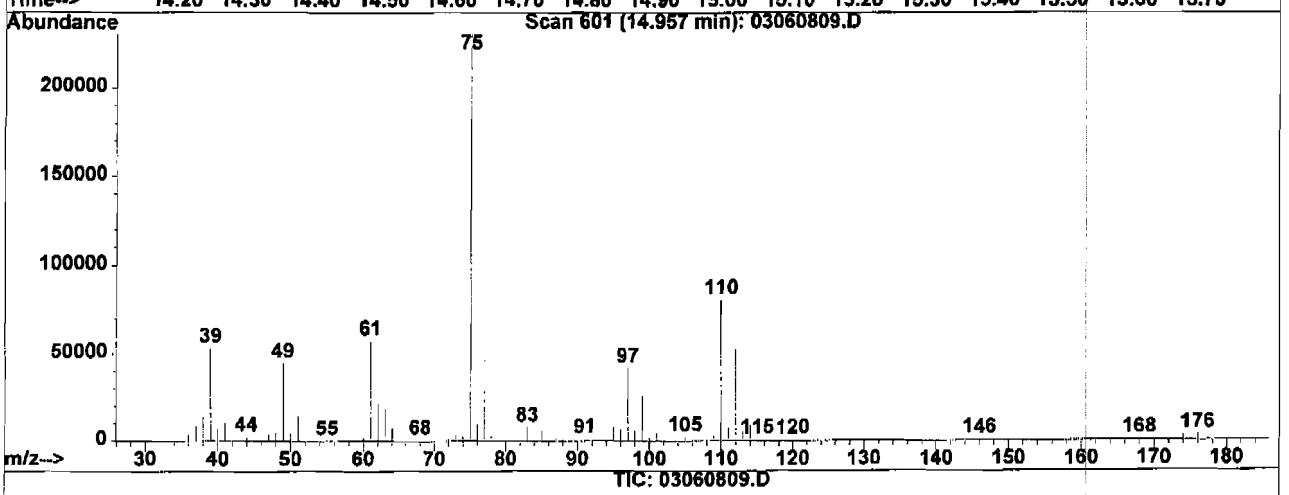
Ion	Exp%	Act%
91.00	100	100
106.00	30.90	27.99
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.96min 0.00ng d

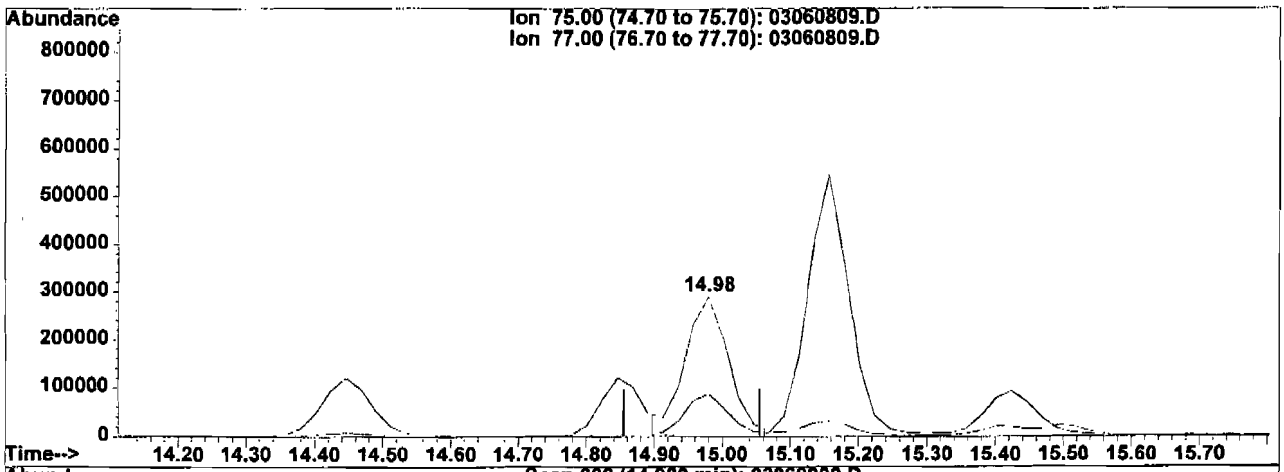
response 0

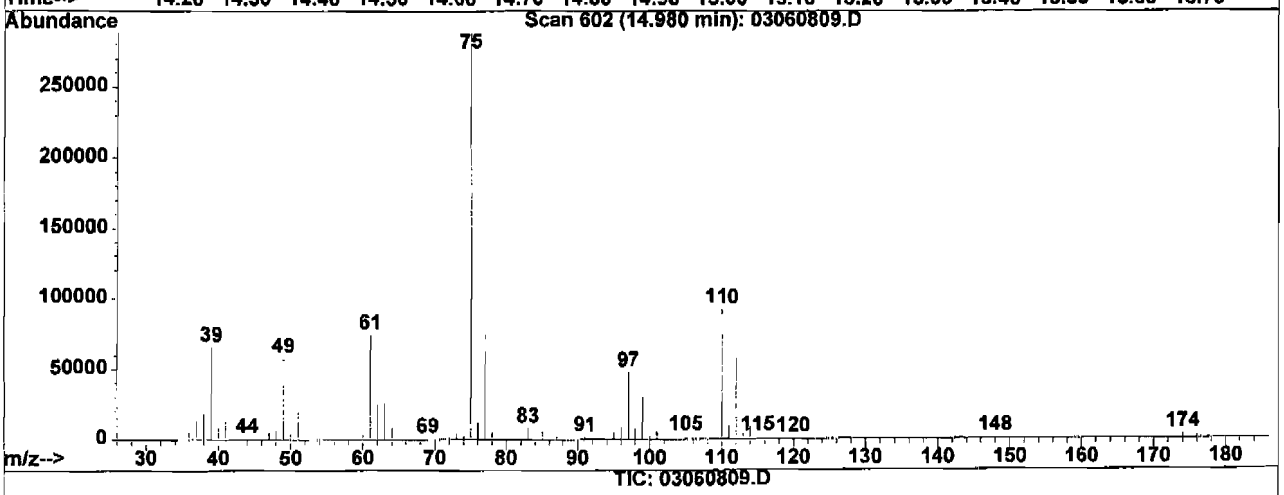
Ion	Exp%	Act%
75.00	100	0.00
77.00	33.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(56) 1,2,3-Trichloropropane

14.98min 298.92ng m

response 12853089

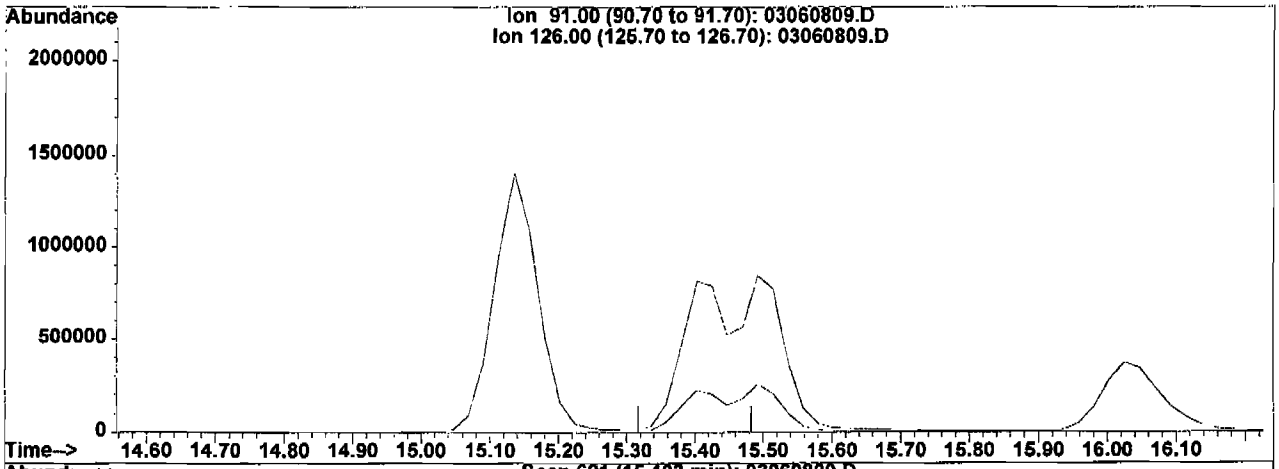
Ion	Exp%	Act%
75.00	100	100
77.00	33.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

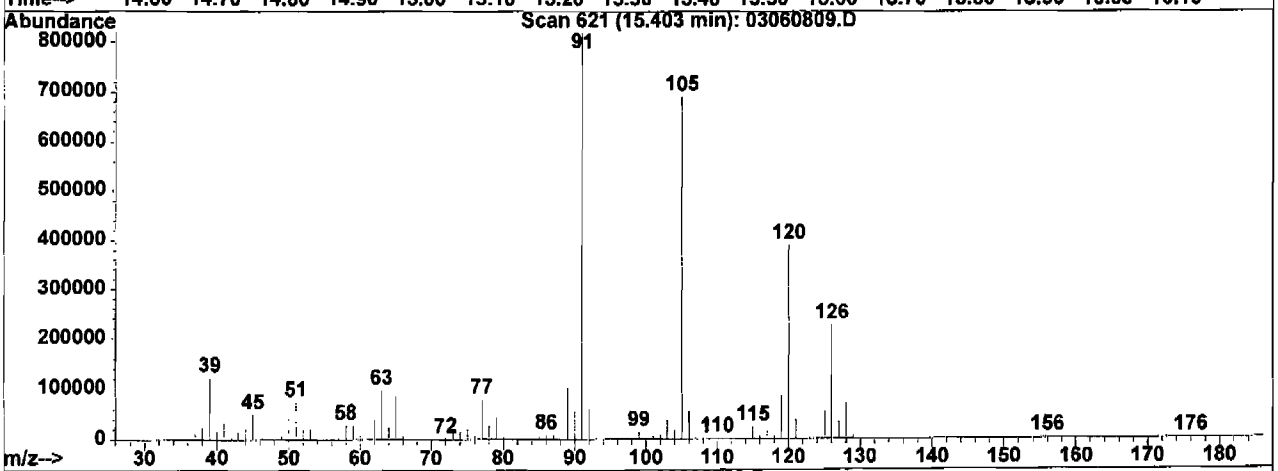
03060809.D 82608003.M Fri Mar 07 11:12:47 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060809.D

(57) 2-Chlorotoluene

15.40min 0.00ng d

response 0

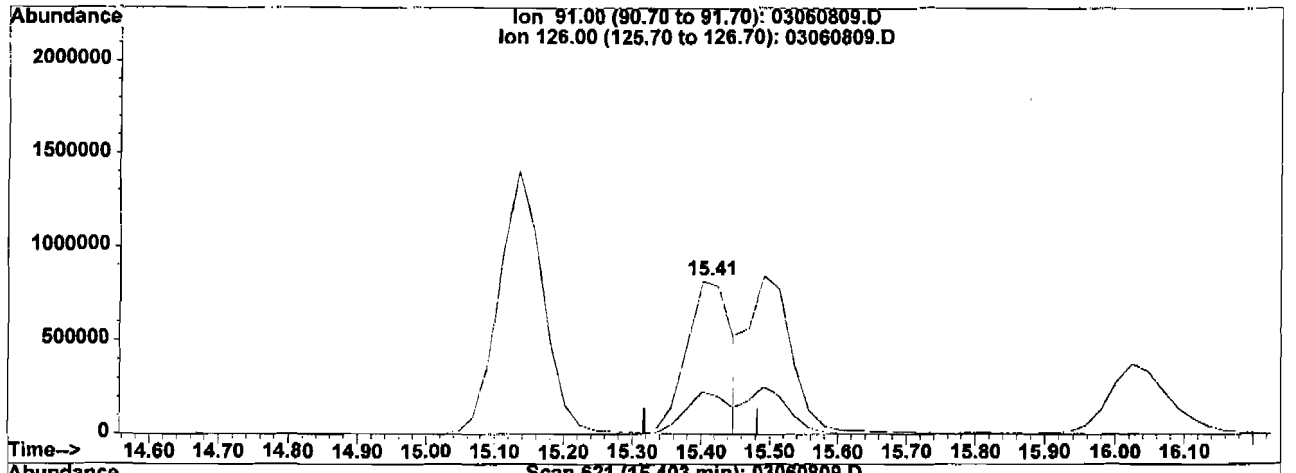
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

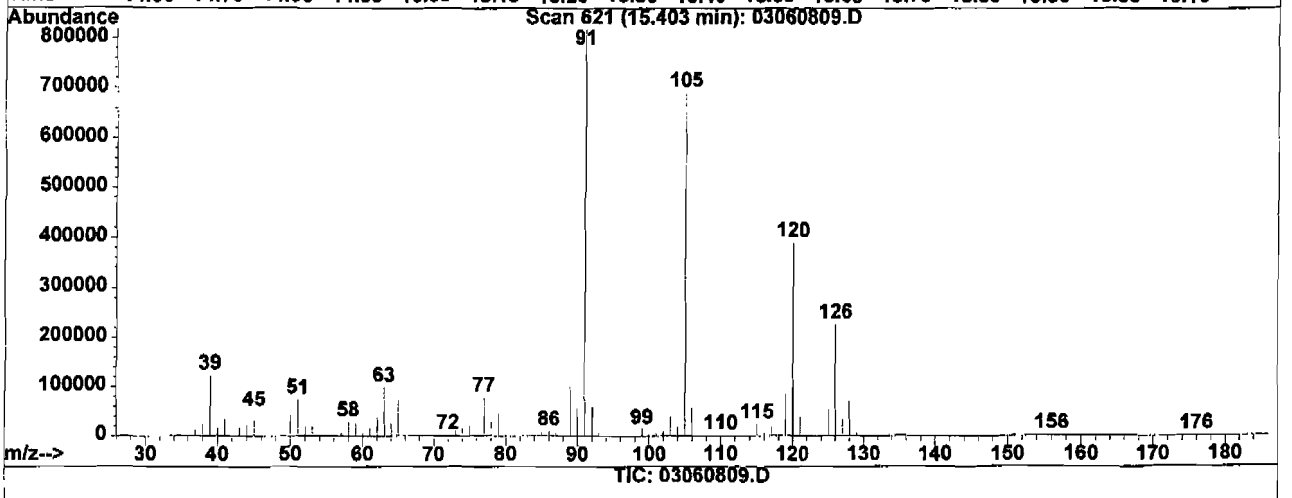
03060809.D 82608003.M Fri Mar 07 11:12:51 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:13 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.40min 372.31ng m

response 40907133

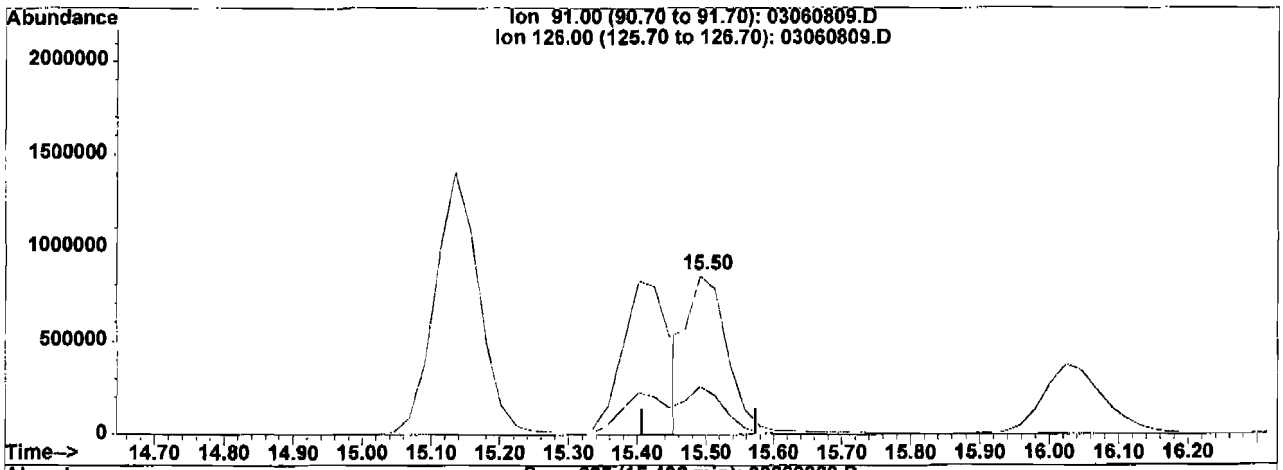
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

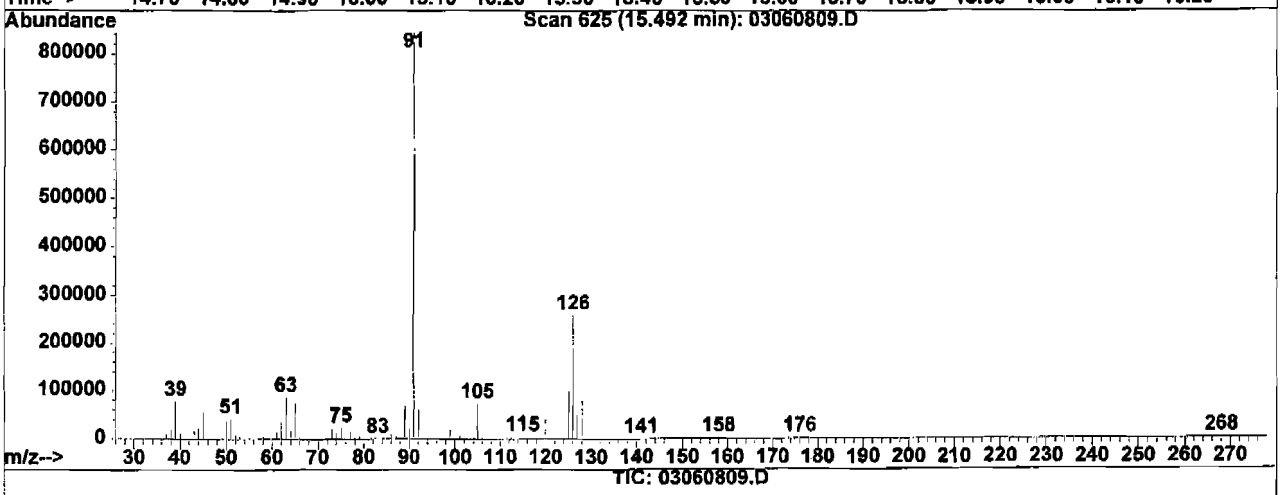
03060809.D 82608003.M Fri Mar 07 11:13:51 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060809.D Vial: 1
Acq On : 06 Mar 08 22:35 Operator:
Sample : CS6_300ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:13 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(59) 4-Chlorotoluene

15.49min 301.32ng m

response 39359775

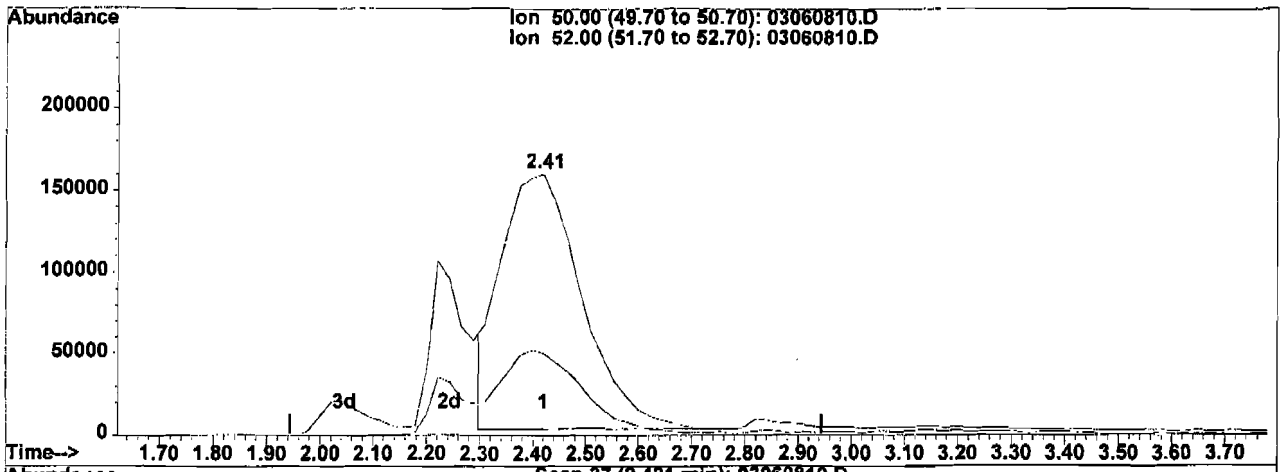
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

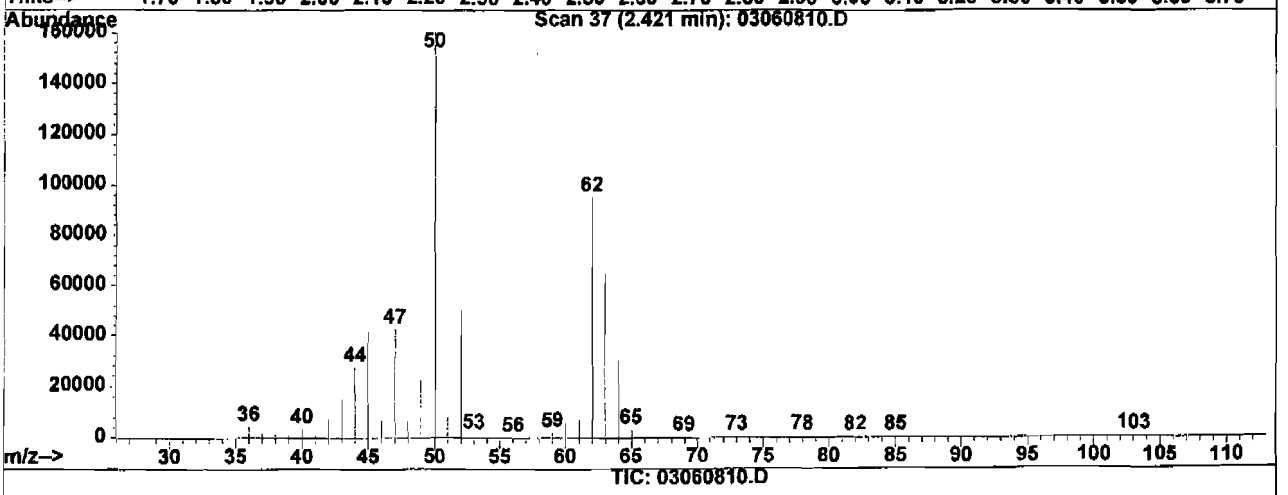
03060809.D 82608003.M Fri Mar 07 11:13:59 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(3) Chloromethane (P)

2.42min 372.03ng

response 17400534

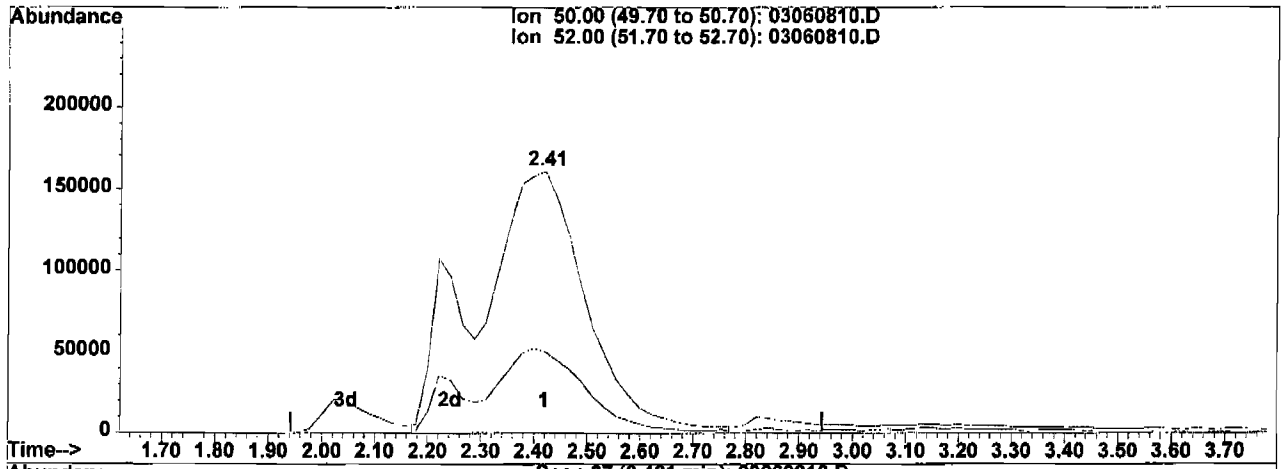
Ion	Exp%	Act%
50.00	100	100
52.00	5.30	33.19#
0.00	0.00	0.00
0.00	0.00	0.00

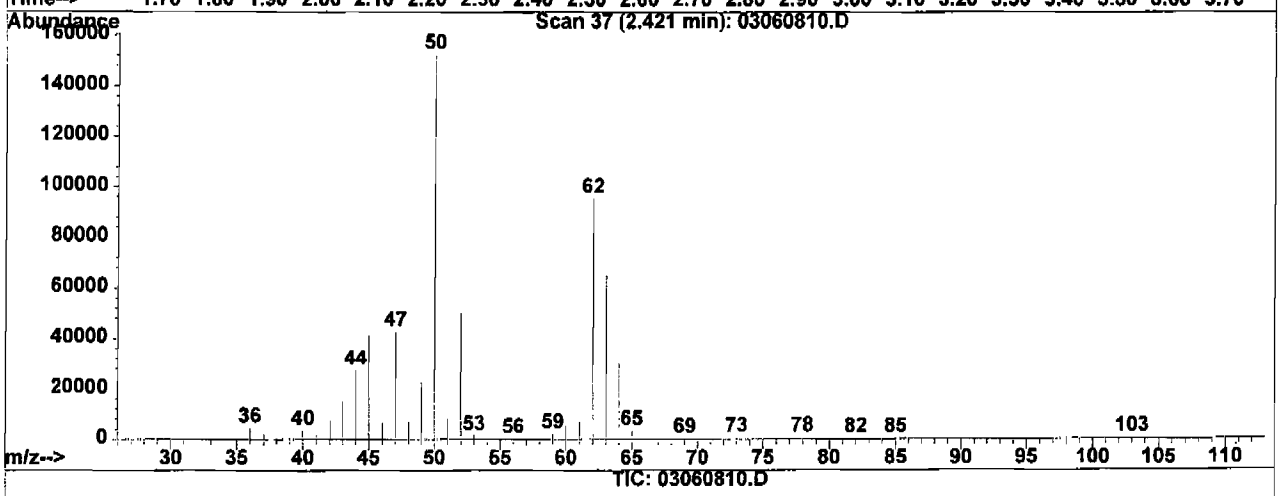
03060810.D 82608003.M Fri Mar 07 11:15:15 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(3) Chloromethane (P)

2.42min 499.16ng m

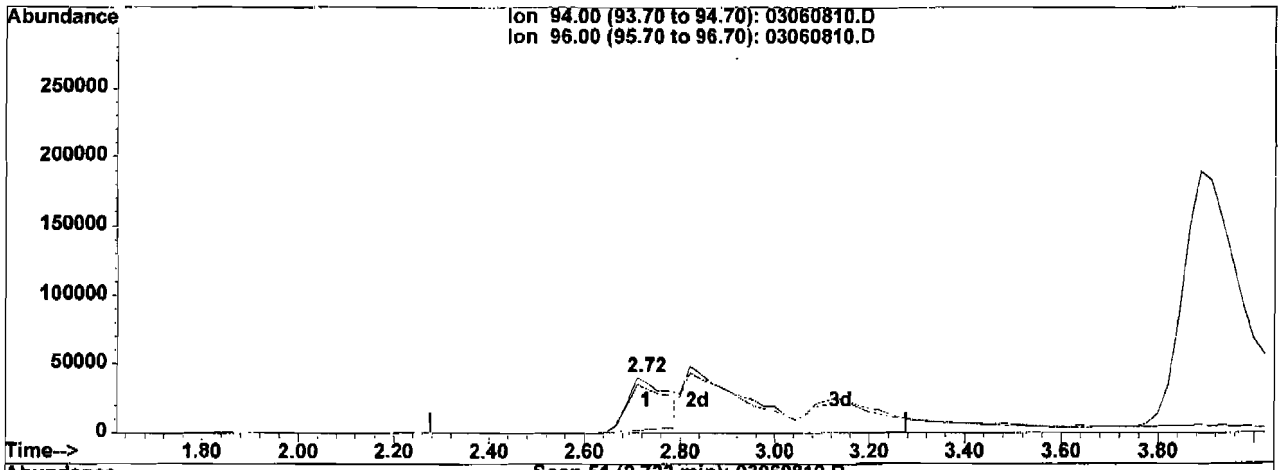
response 22958231

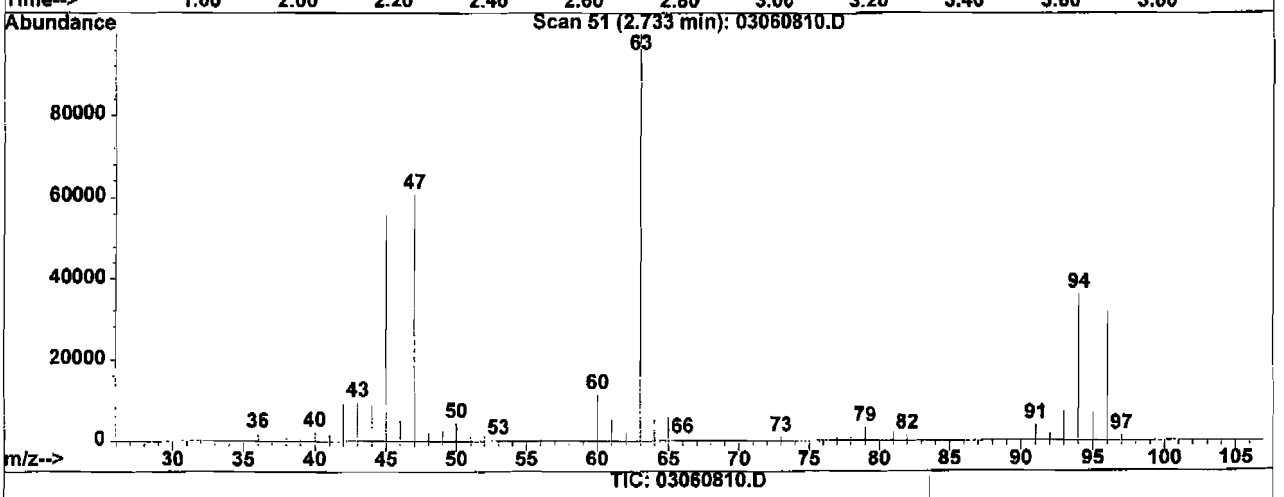
Ion	Exp%	Act%
50.00	100	100
52.00	5.30	25.15#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(5) Bromomethane

2.73min 102.51ng

response 1811877

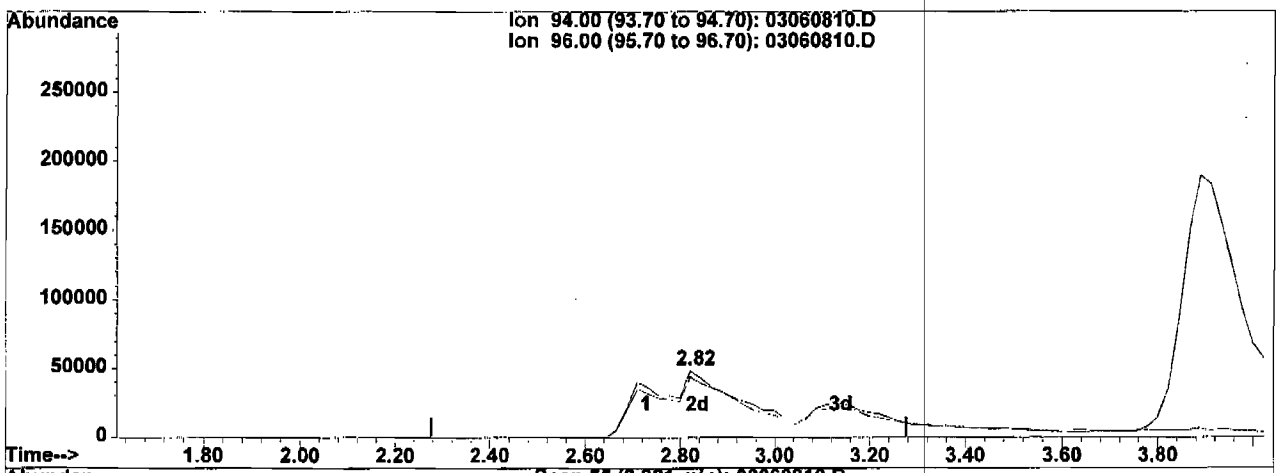
Ion	Exp%	Act%
94.00	100	100
96.00	45.30	91.56#
0.00	0.00	0.00
0.00	0.00	0.00

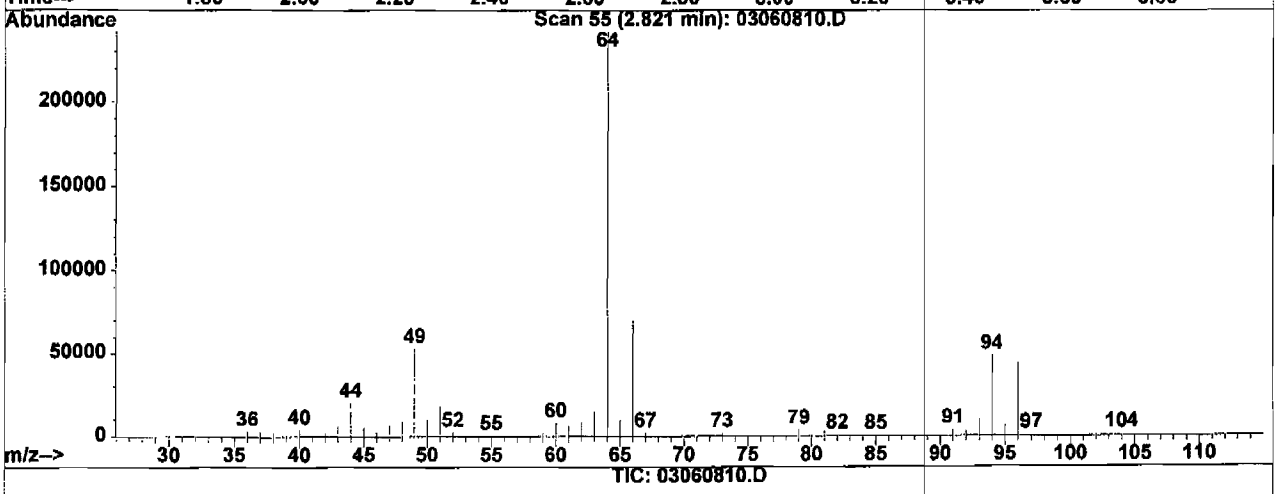
Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D
Acq On : 06 Mar 08 23:14
Sample : CS7_500ng_82608003
Misc :
Quant Time: Mar 7 11:15 19108

Vial: 1
Operator: csm
Inst :
Multiplr: 1.00
Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(5) Bromomethane

2.82min 461.15ng m

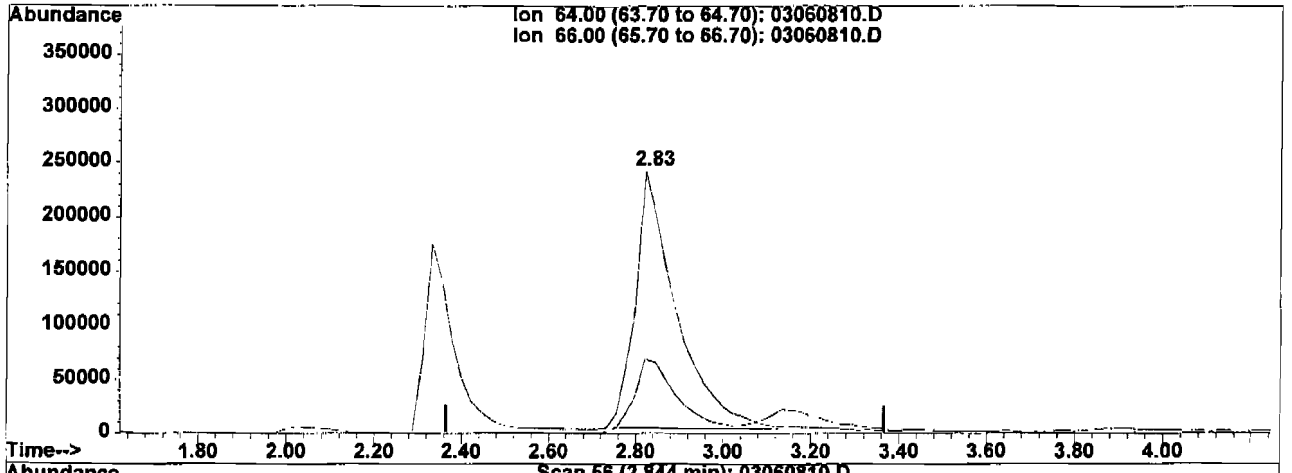
response 9149119

Ion	Exp%	Act%
94.00	100	100
96.00	45.30	18.13#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(6) Chloroethane

2.84min 436.97ng

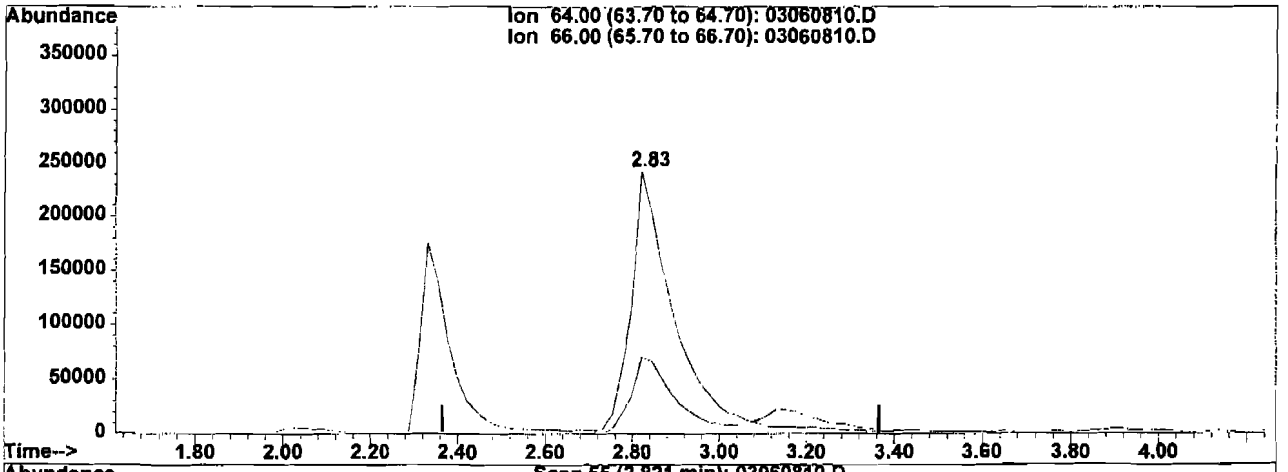
response 15499616

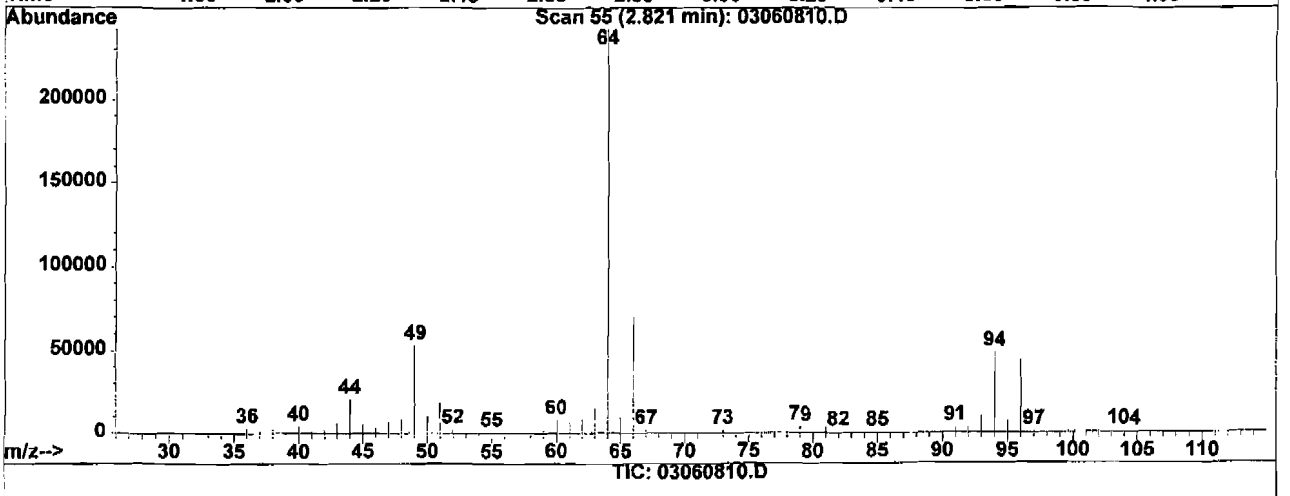
Ion	Exp%	Act%
64.00	100	100
66.00	28.70	28.24
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(6) Chloroethane

2.82min 490.97ng m

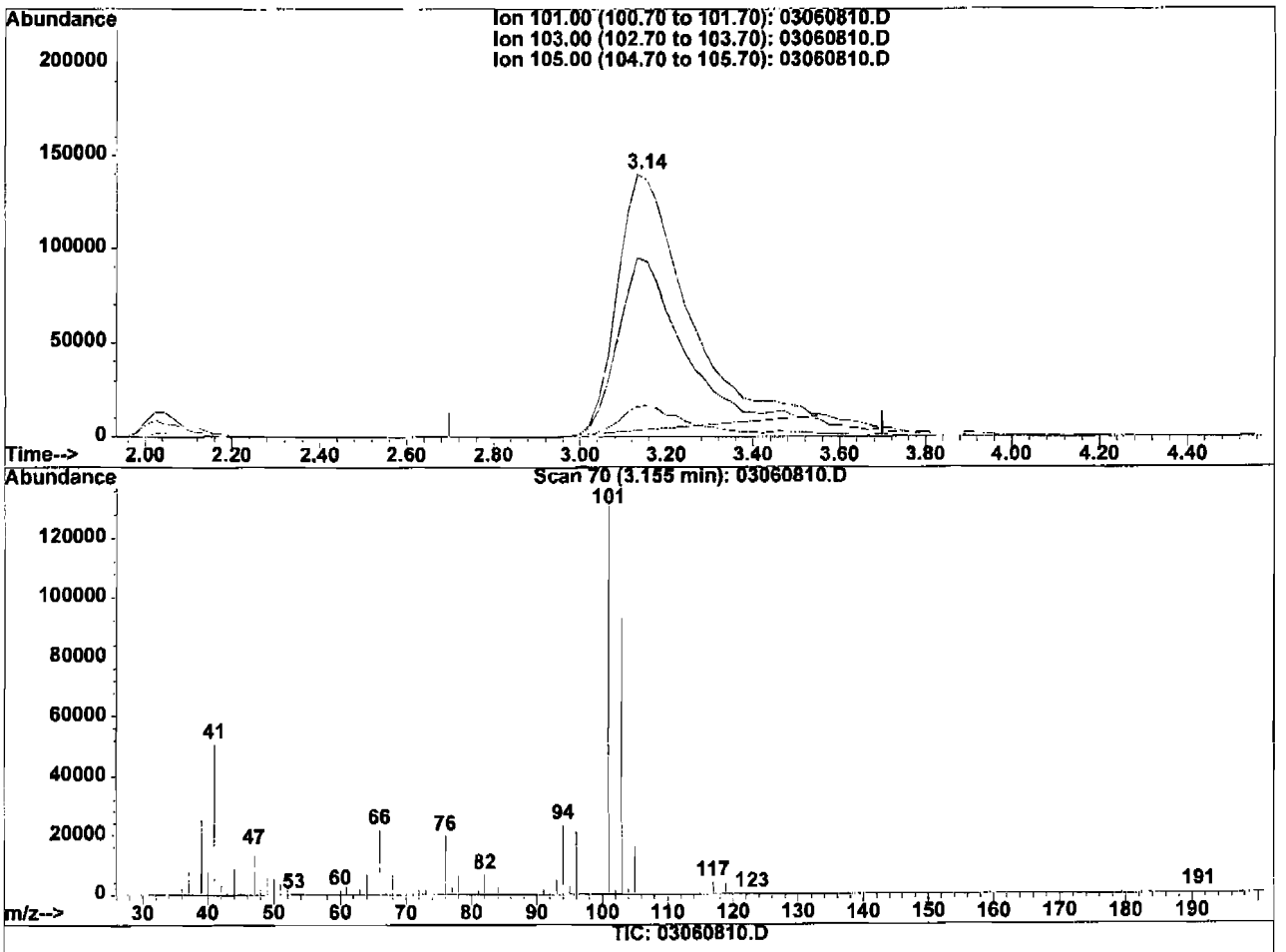
response 17313483

Ion	Exp%	Act%
64.00	100	100
66.00	28.70	25.28
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.15min 416.99ng

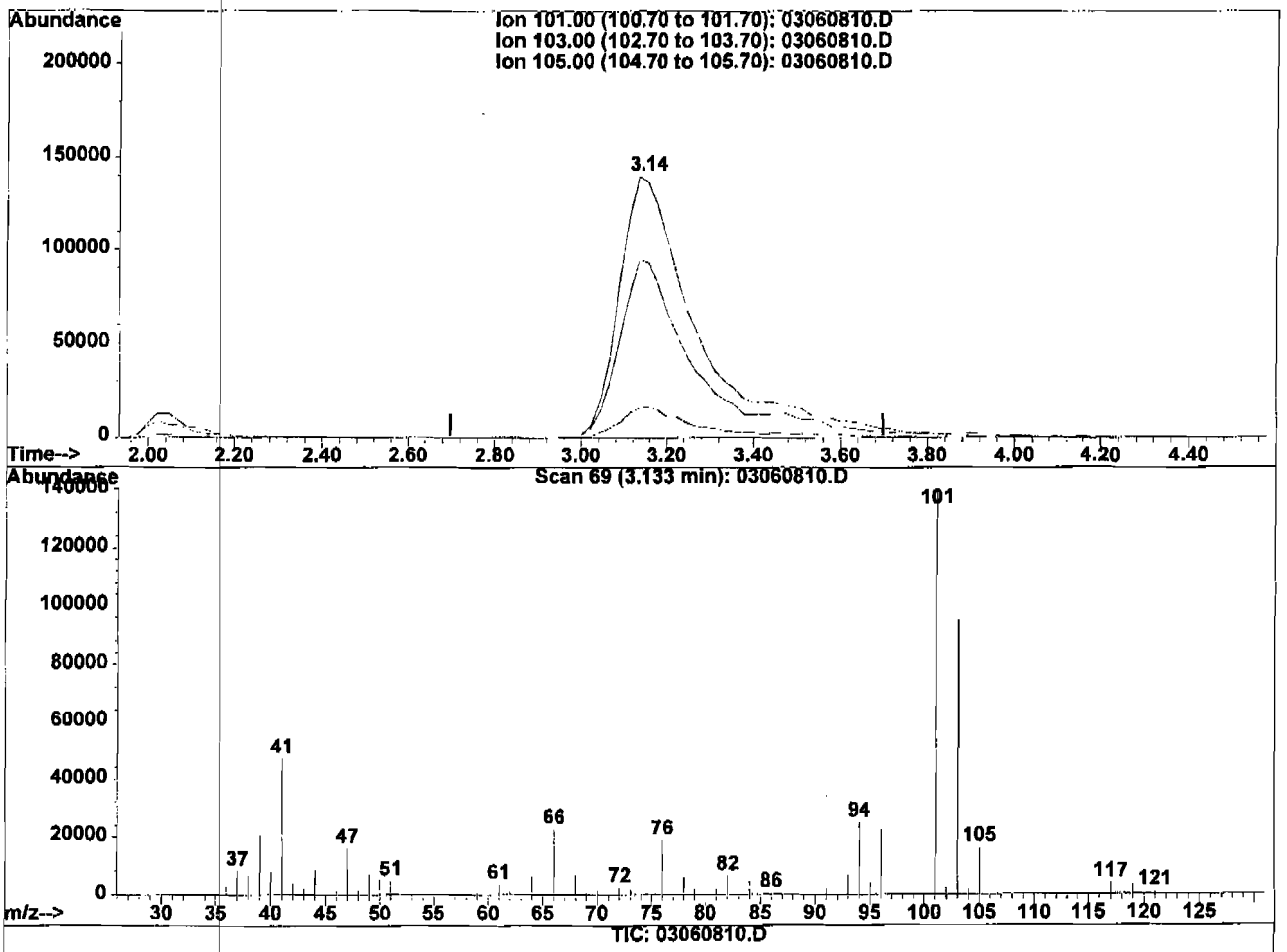
response 15072447

Ion	Exp%	Act%
101.00	100	100
103.00	51.60	63.33#
105.00	7.40	10.70#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(7) Trichlorofluoromethane

3.13min 497.55ng m

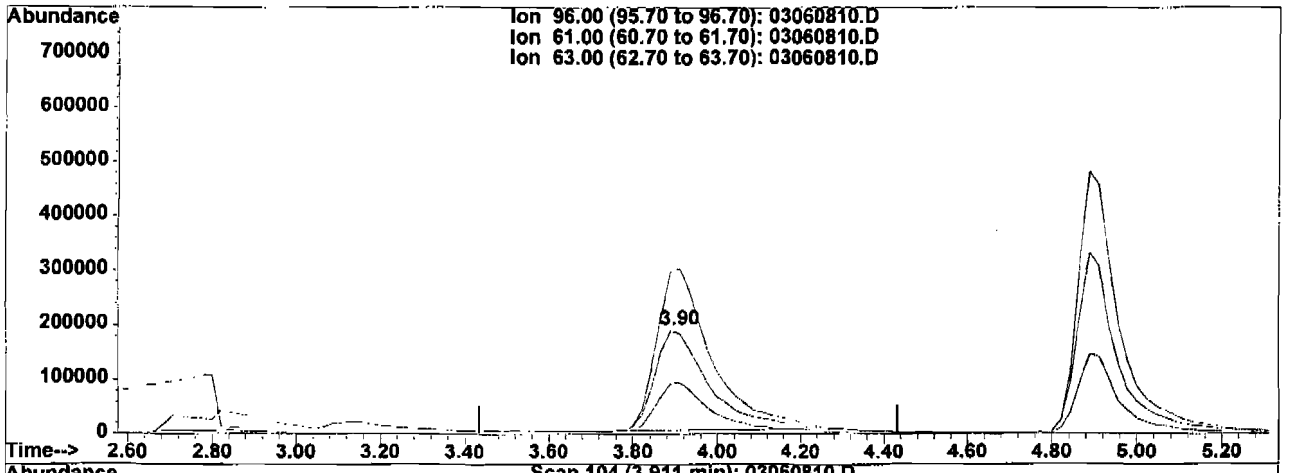
response 17956819

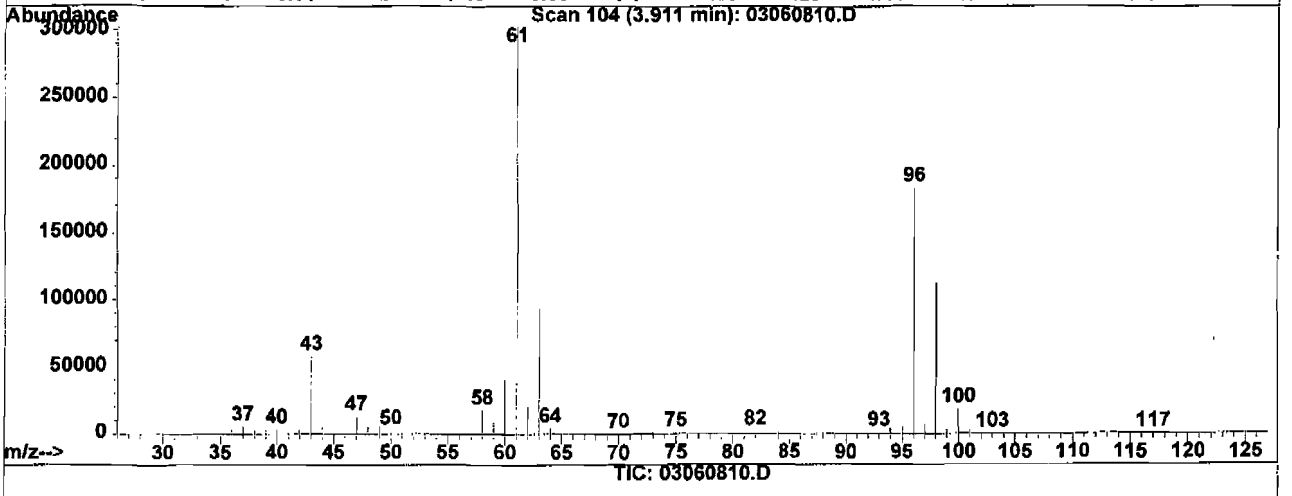
Ion	Exp%	Act%
101.00	100	100
103.00	51.60	53.16
105.00	7.40	8.98#
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(8) 1,1-Dichloroethene (C)

3.91min 427.75ng

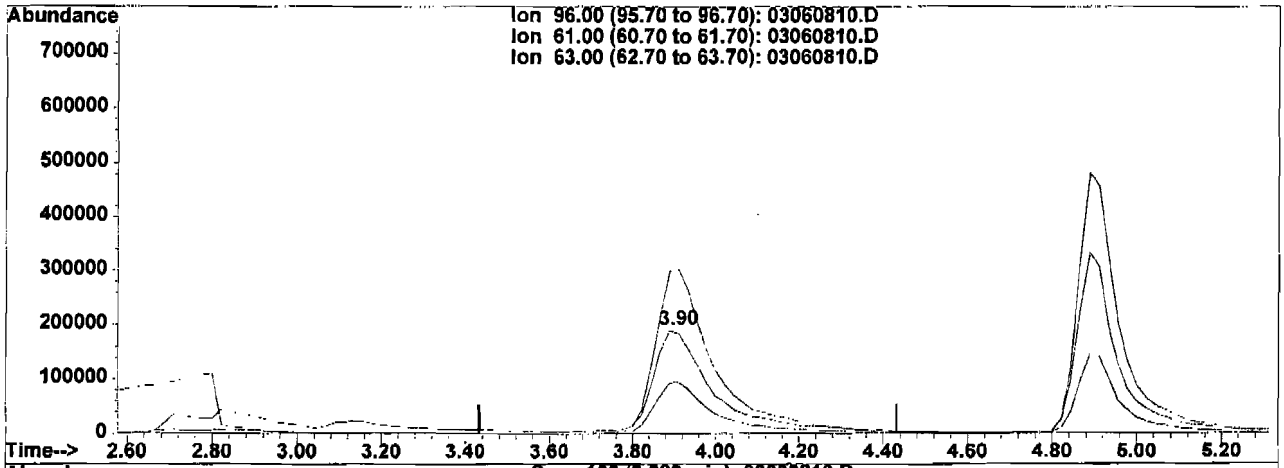
response 16487401

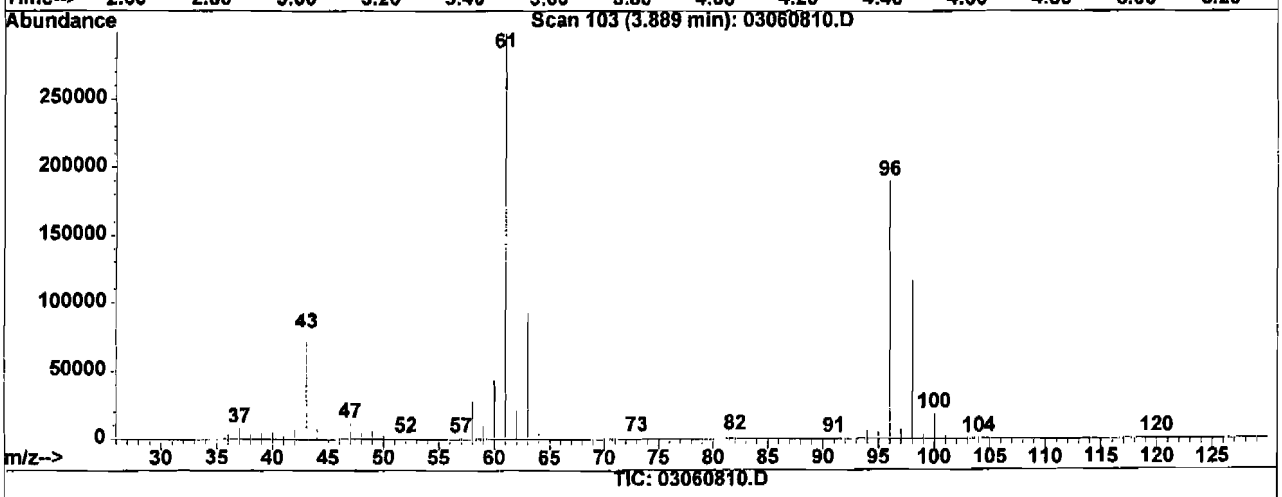
Ion	Exp%	Act%
96.00	100	100
61.00	139.90	168.02#
63.00	45.60	52.96
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(8) 1,1-Dichloroethene (C)

3.89min 506.71ng m

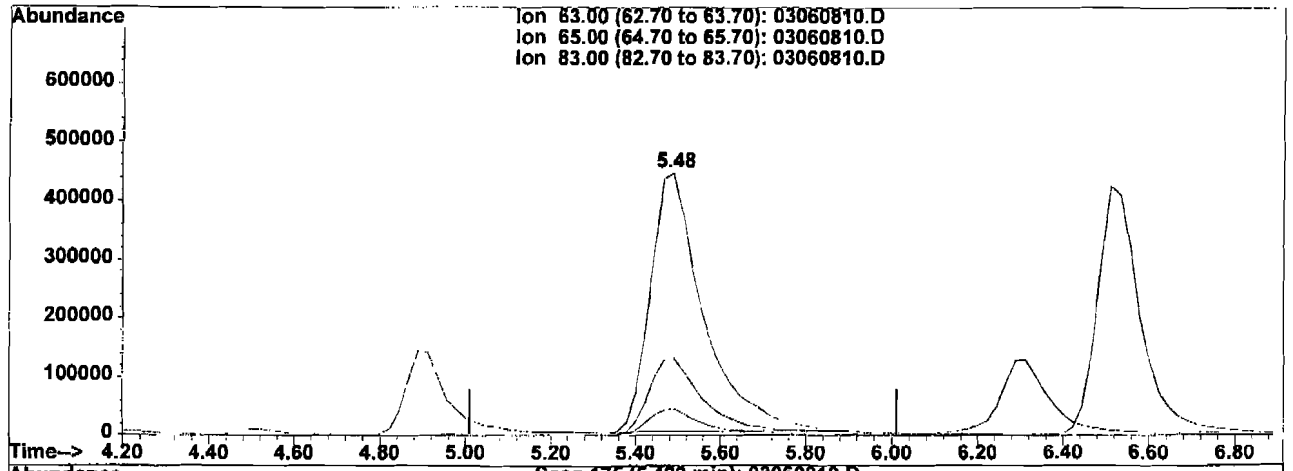
response 19522044

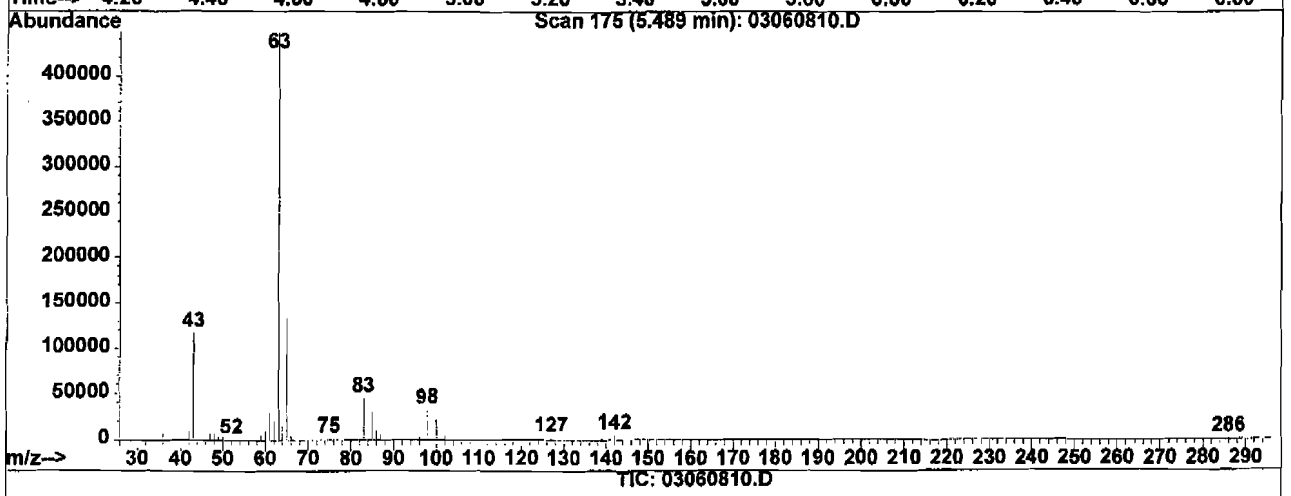
Ion	Exp%	Act%
96.00	100	100
61.00	139.90	141.90
63.00	45.60	44.73
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060810.D

(15) 1,1-Dichloroethane (P)

5.49min 3228.91ng

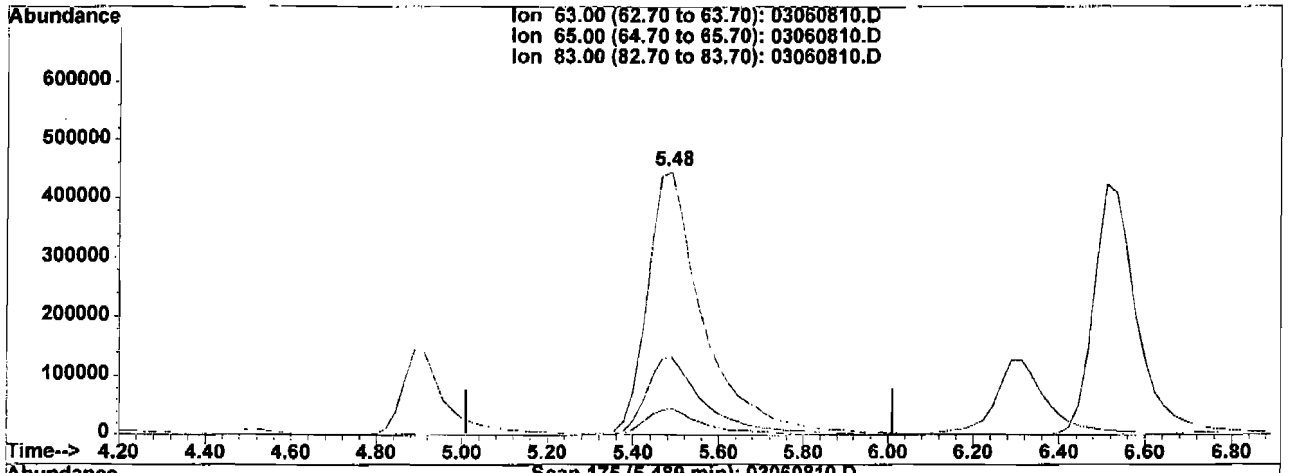
response 38370922

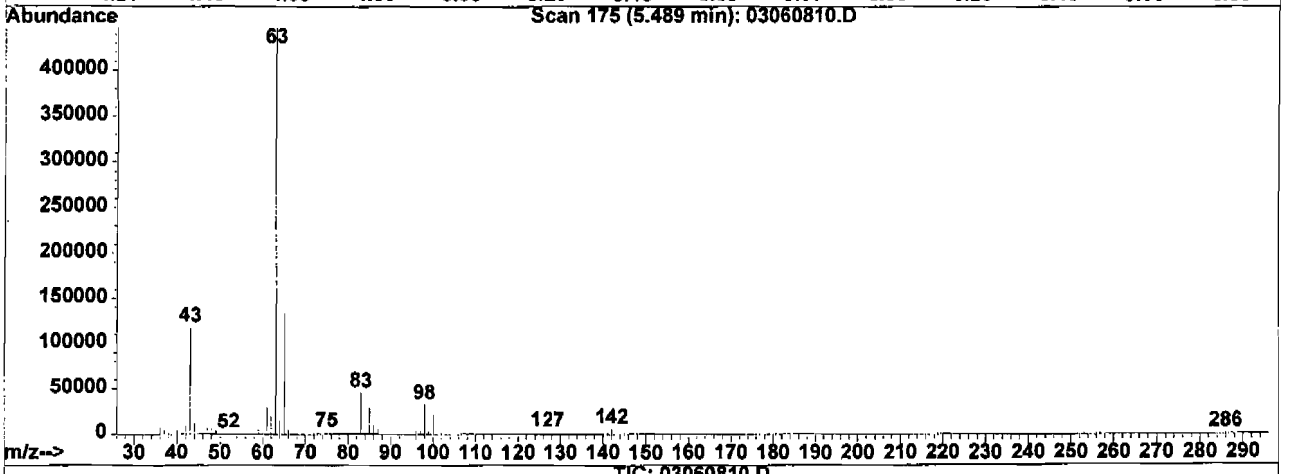
Ion	Exp%	Act%
63.00	100	100
65.00	29.70	31.17
83.00	10.80	10.61
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060810.D

(15) 1,1-Dichloroethane (P)

5.49min 3506.09ng m

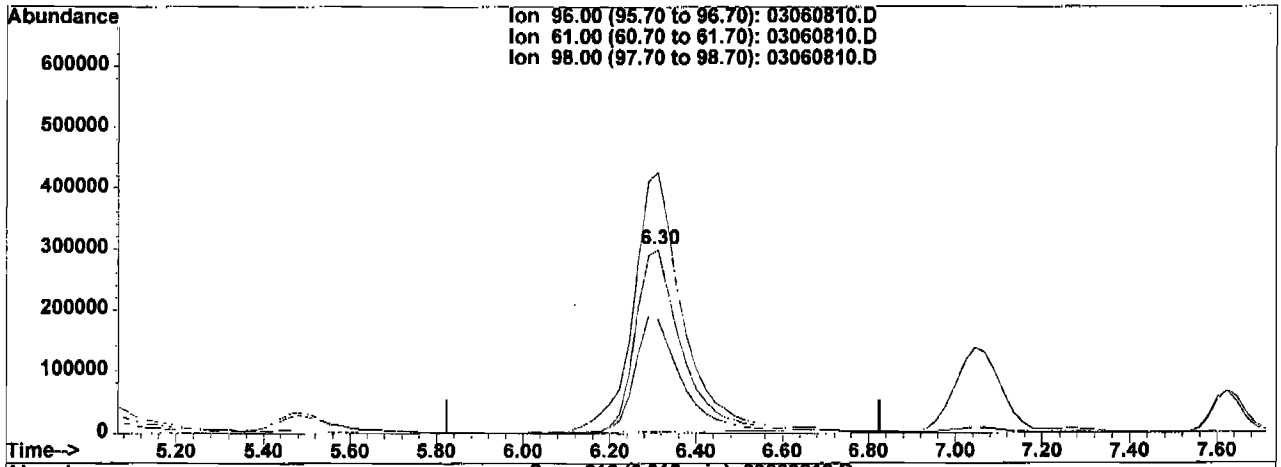
response 41022137

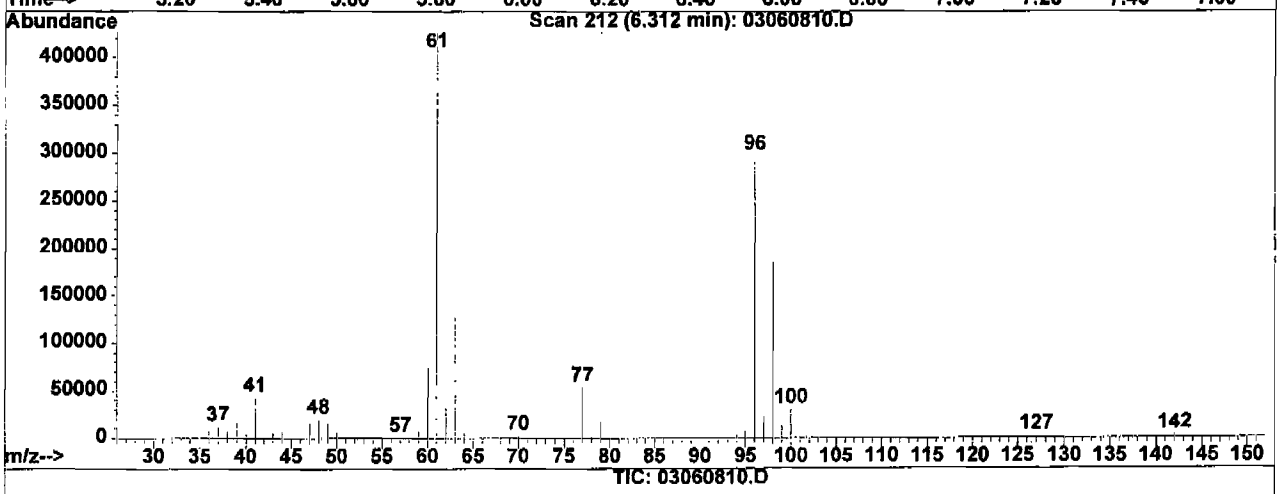
Ion	Exp%	Act%
63.00	100	100
65.00	29.70	29.16
83.00	10.80	9.93
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060810.D

(18) cis-1,2-Dichloroethene

6.31min 489.27ng

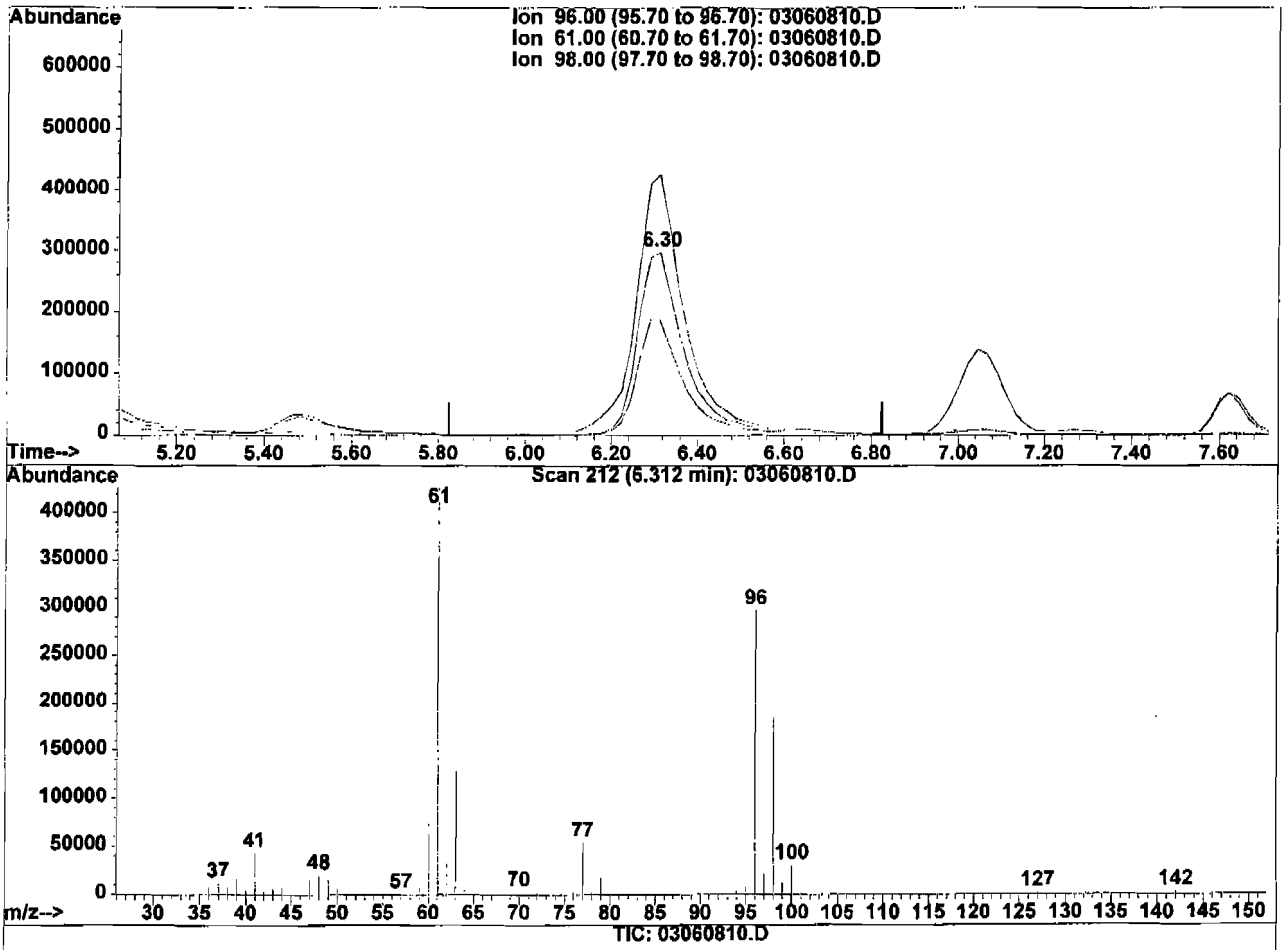
response 22013755

Ion	Exp%	Act%
96.00	100	100
61.00	146.90	149.52
98.00	59.80	60.80
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(18) cis-1,2-Dichloroethene

6.31min 513.23ng m

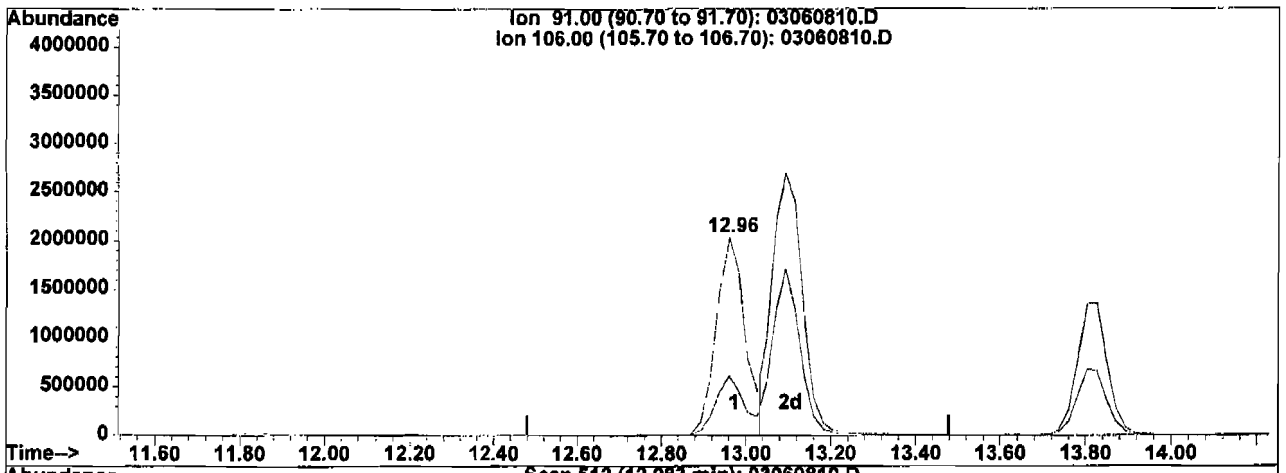
response 23087003

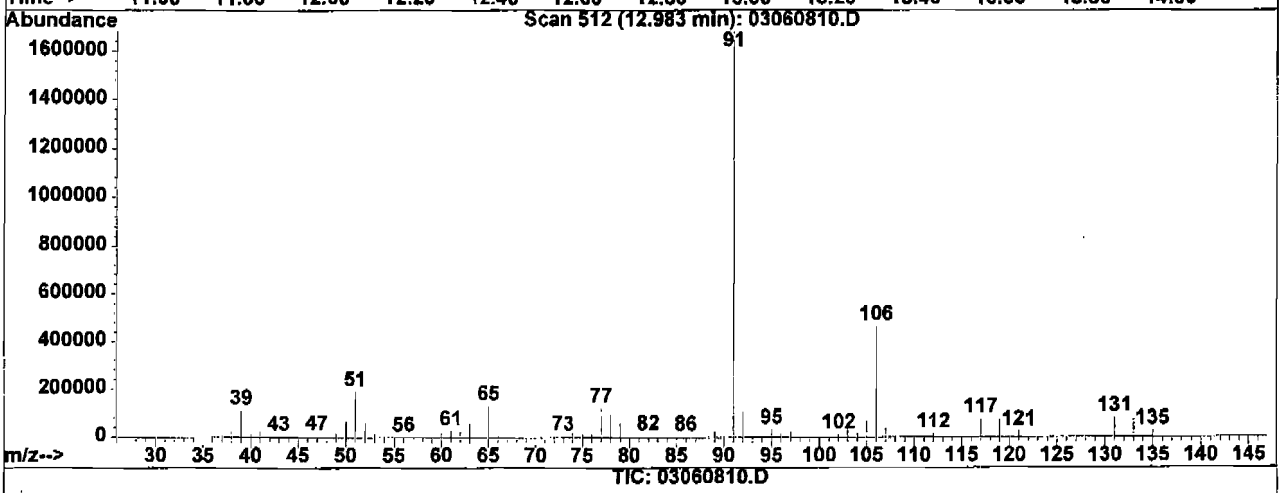
Ion	Exp%	Act%
96.00	100	100
61.00	146.90	142.57
98.00	59.80	57.97
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060810.D

(45) Ethylbenzene (C)

12.97min 523.90ng

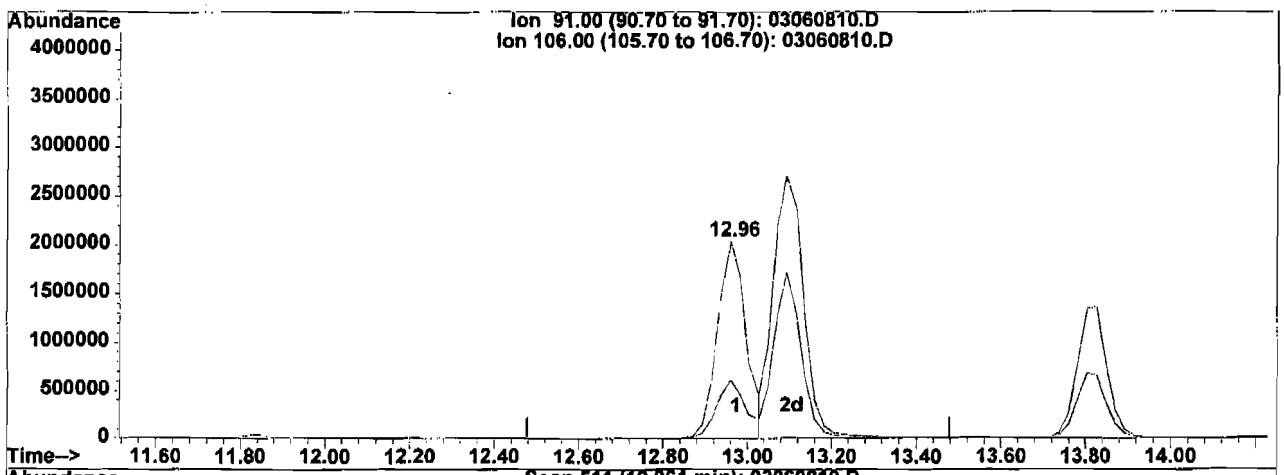
response 90071388

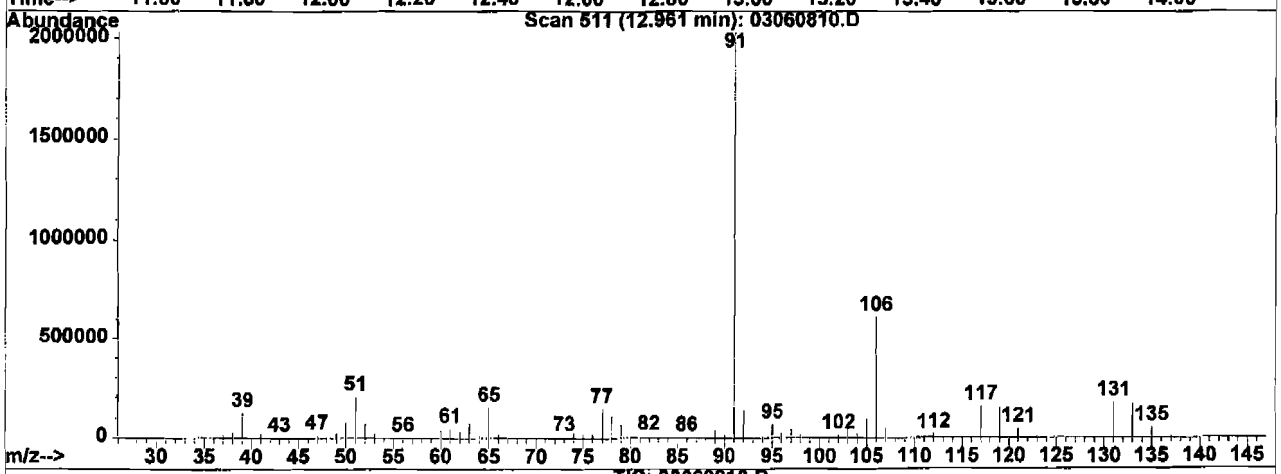
Ion	Exp%	Act%
91.00	100	100
106.00	28.00	29.75
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:17 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060810.D

(45) Ethylbenzene (C)

12.96min 505.57ng m

response 86867729

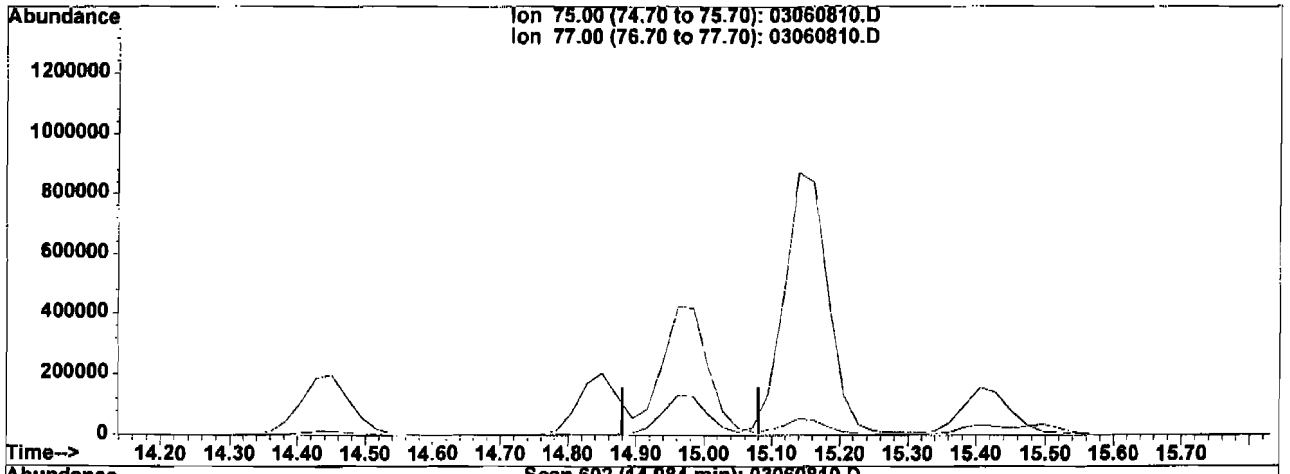
Ion	Exp%	Act%
91.00	100	100
106.00	28.00	30.85
0.00	0.00	0.00
0.00	0.00	0.00

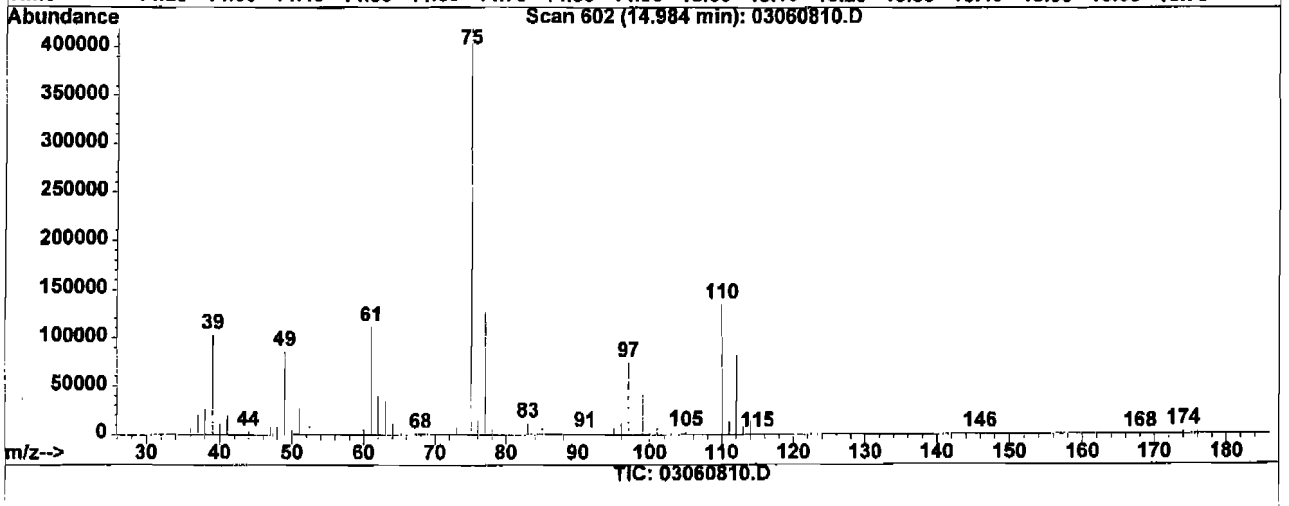
03060810.D 82608003.M Fri Mar 07 11:17:21 2008

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:17 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.98min 0.00ng d

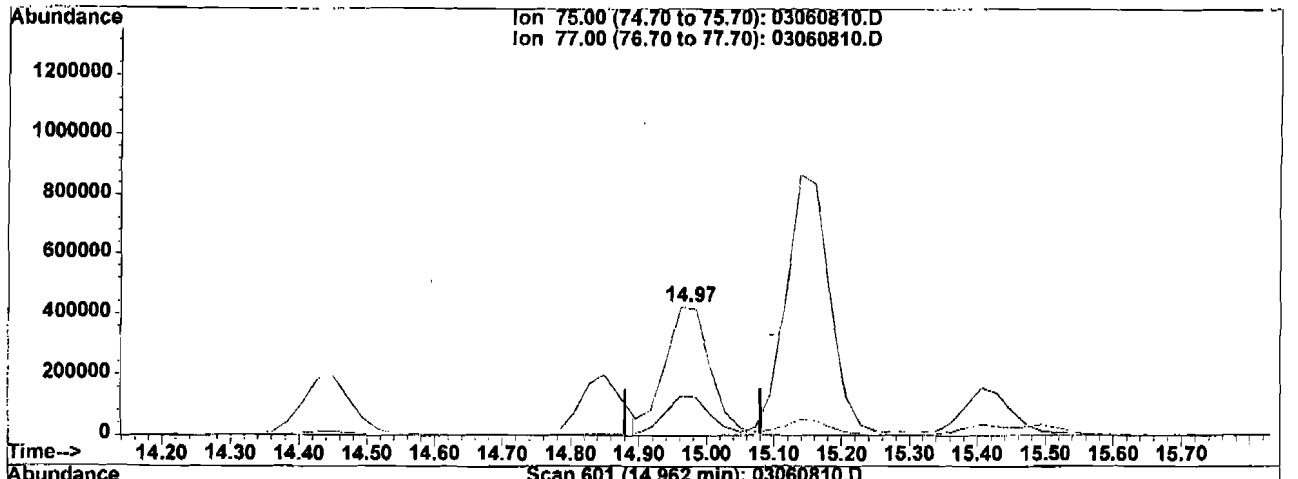
response 0

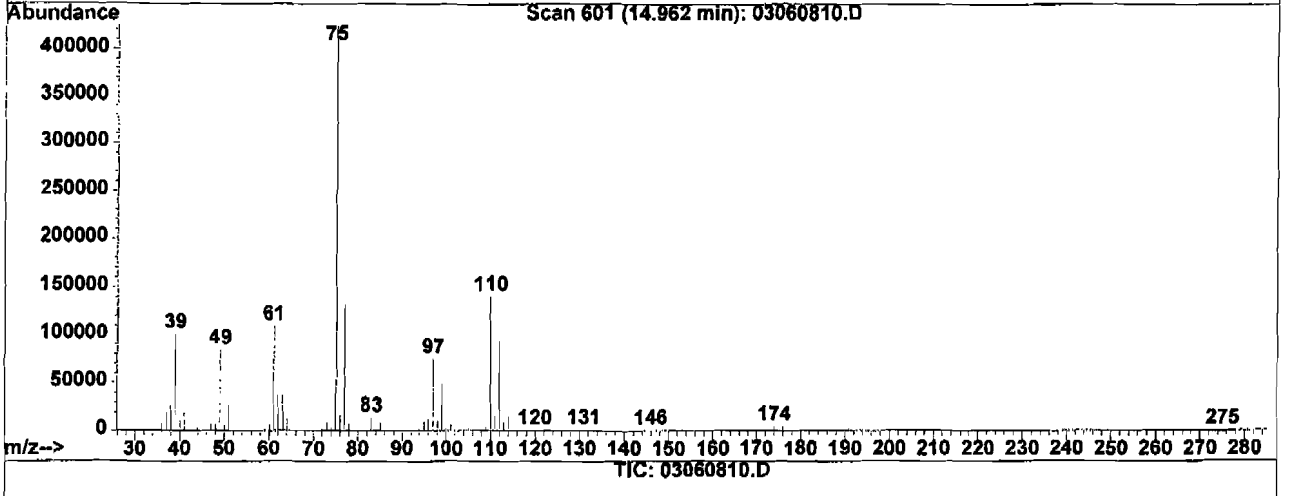
Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:17 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.96min 516.81ng m

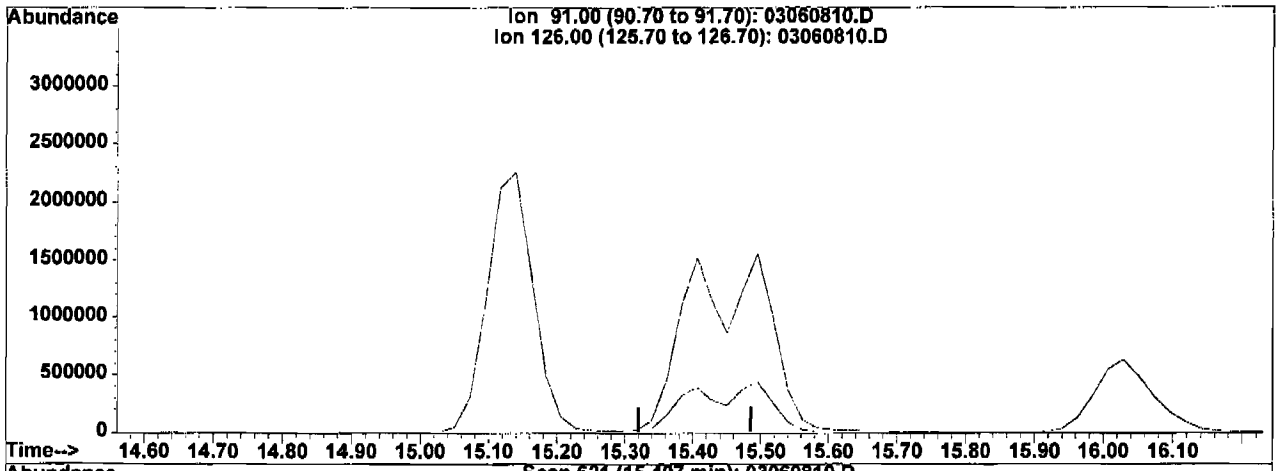
response 20385859

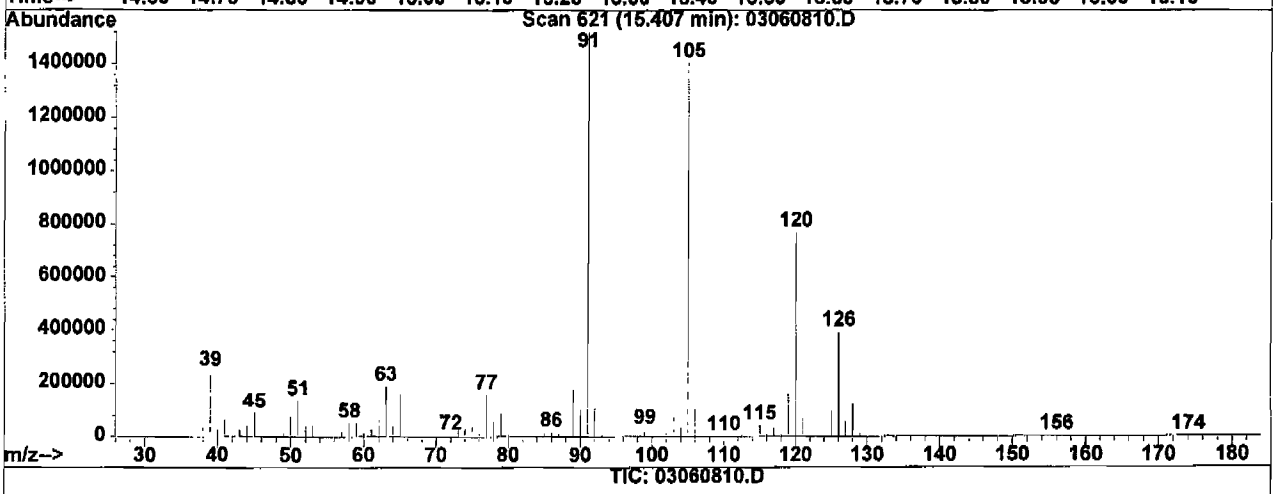
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:17 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration





TIC: 03060810.D

(57) 2-Chlorotoluene

15.40min 0.00ng d

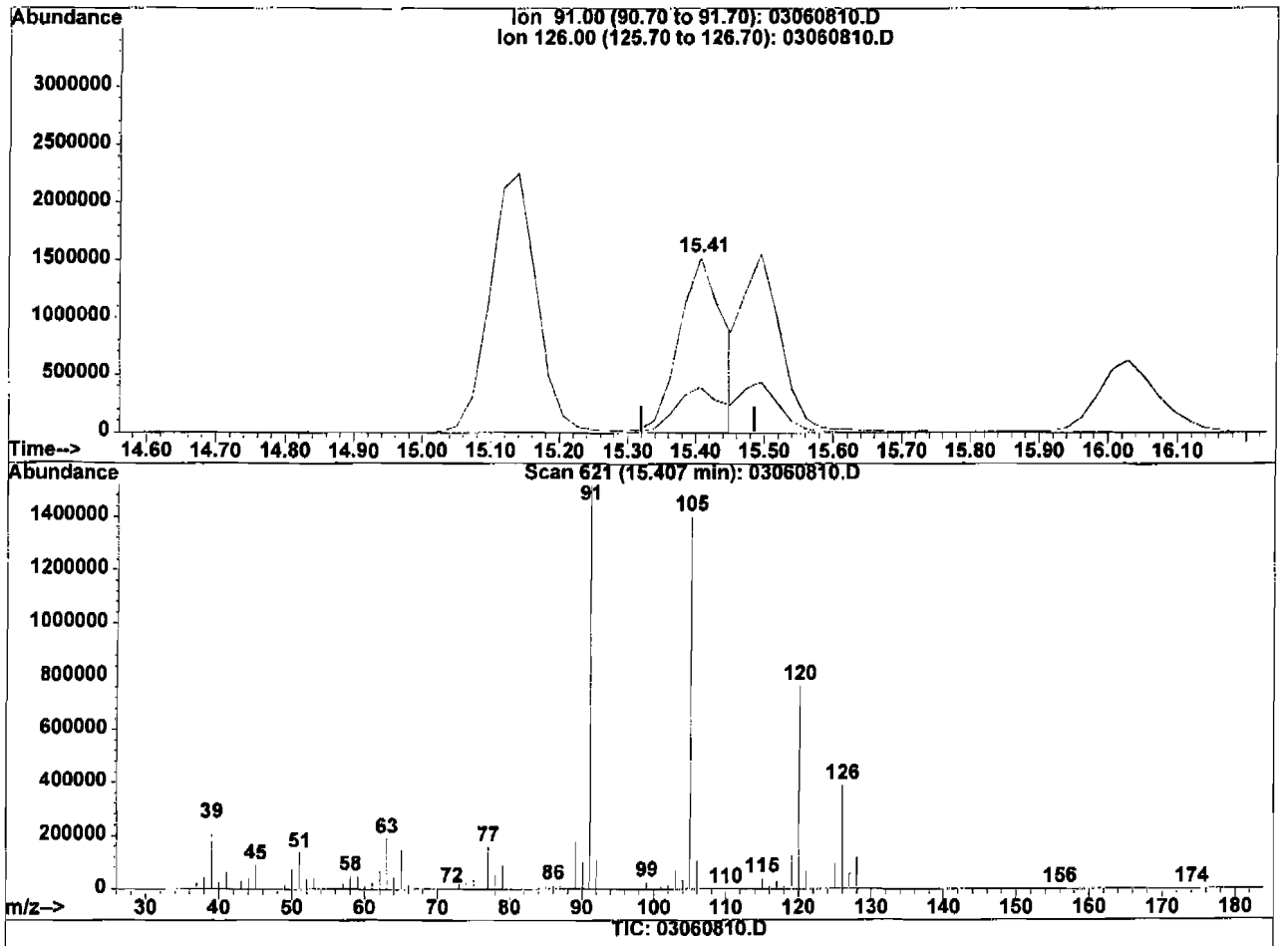
response 0

Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\82608003\03060810.D Vial: 1
Acq On : 06 Mar 08 23:14 Operator: csm
Sample : CS7_500ng_82608003 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 7 11:17 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 07 10:45:08 2008
Response via : Multiple Level Calibration



(57) 2-Chlorotoluene

15.41min 554.61ng m

response 53693257

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

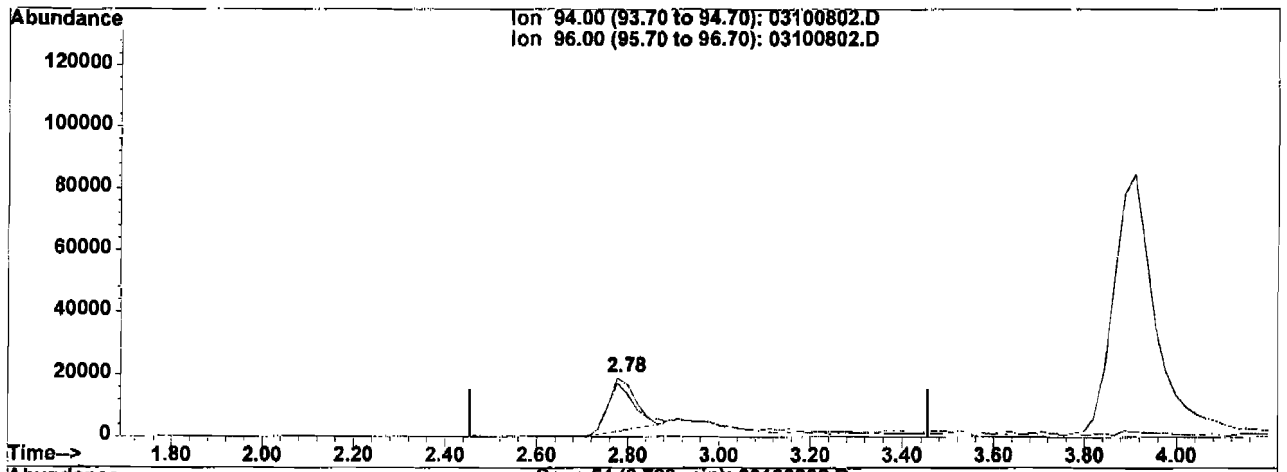
Manual Tests
Samples & Cal.

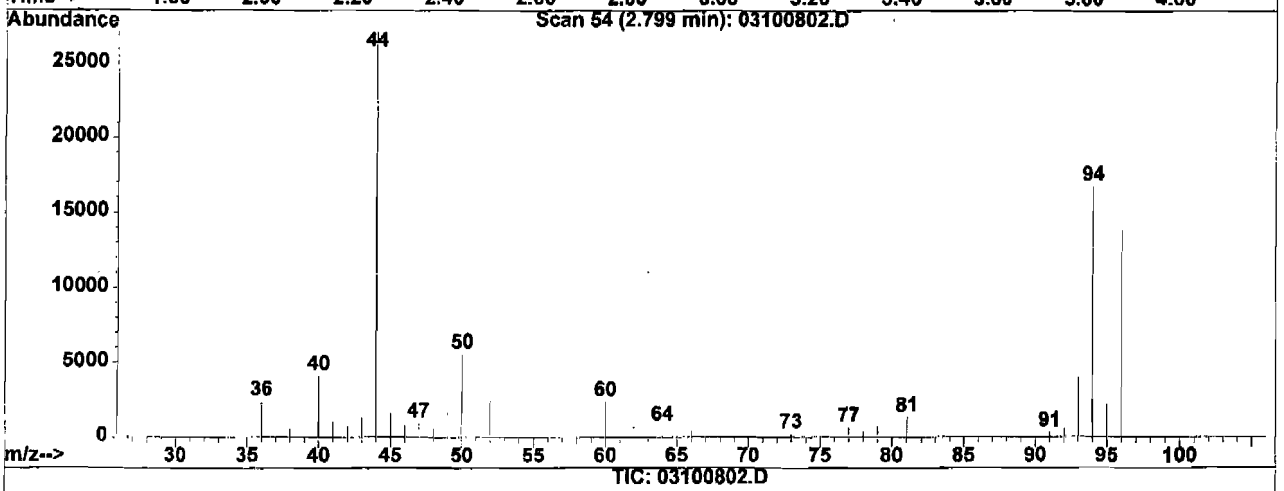
"B 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(5) Bromomethane

2.79min 31.60ng

response 677901

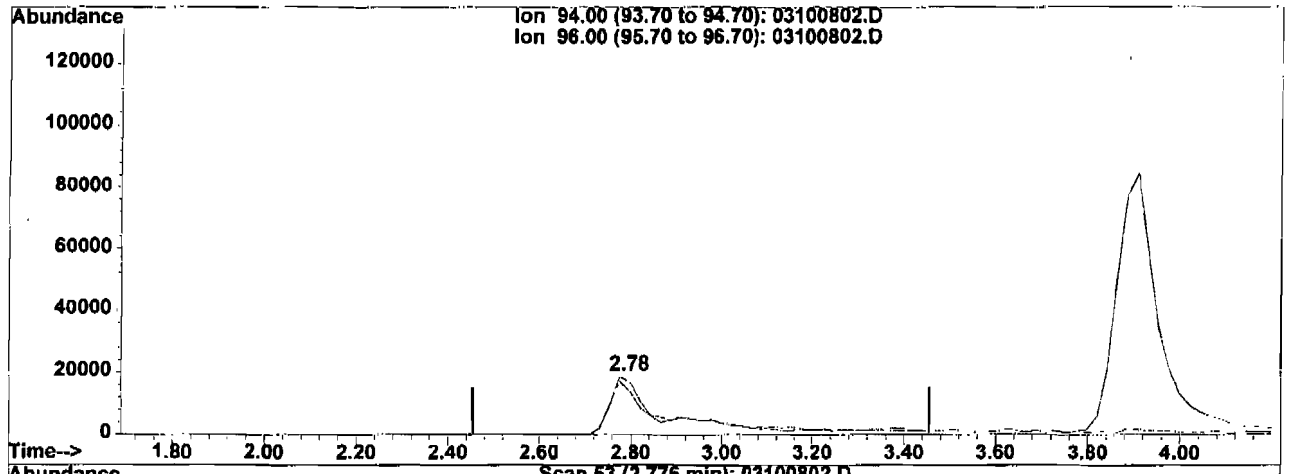
Ion	Exp%	Act%
94.00	100	100
96.00	0.00	180.02#
0.00	0.00	0.00
0.00	0.00	0.00

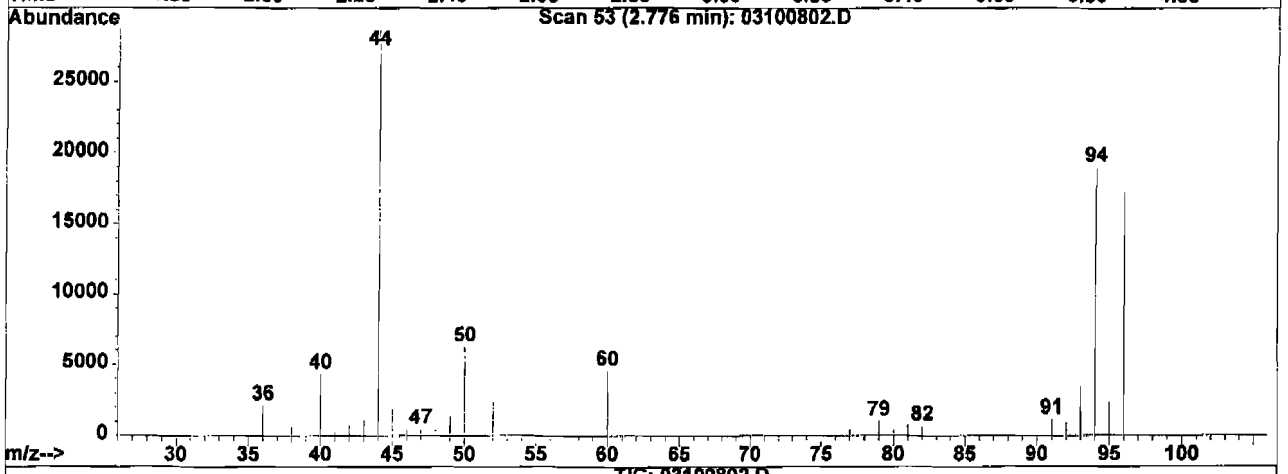
"A" Acq 11/9/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03100802.D

(5) Bromomethane

2.78min 71.94ng m

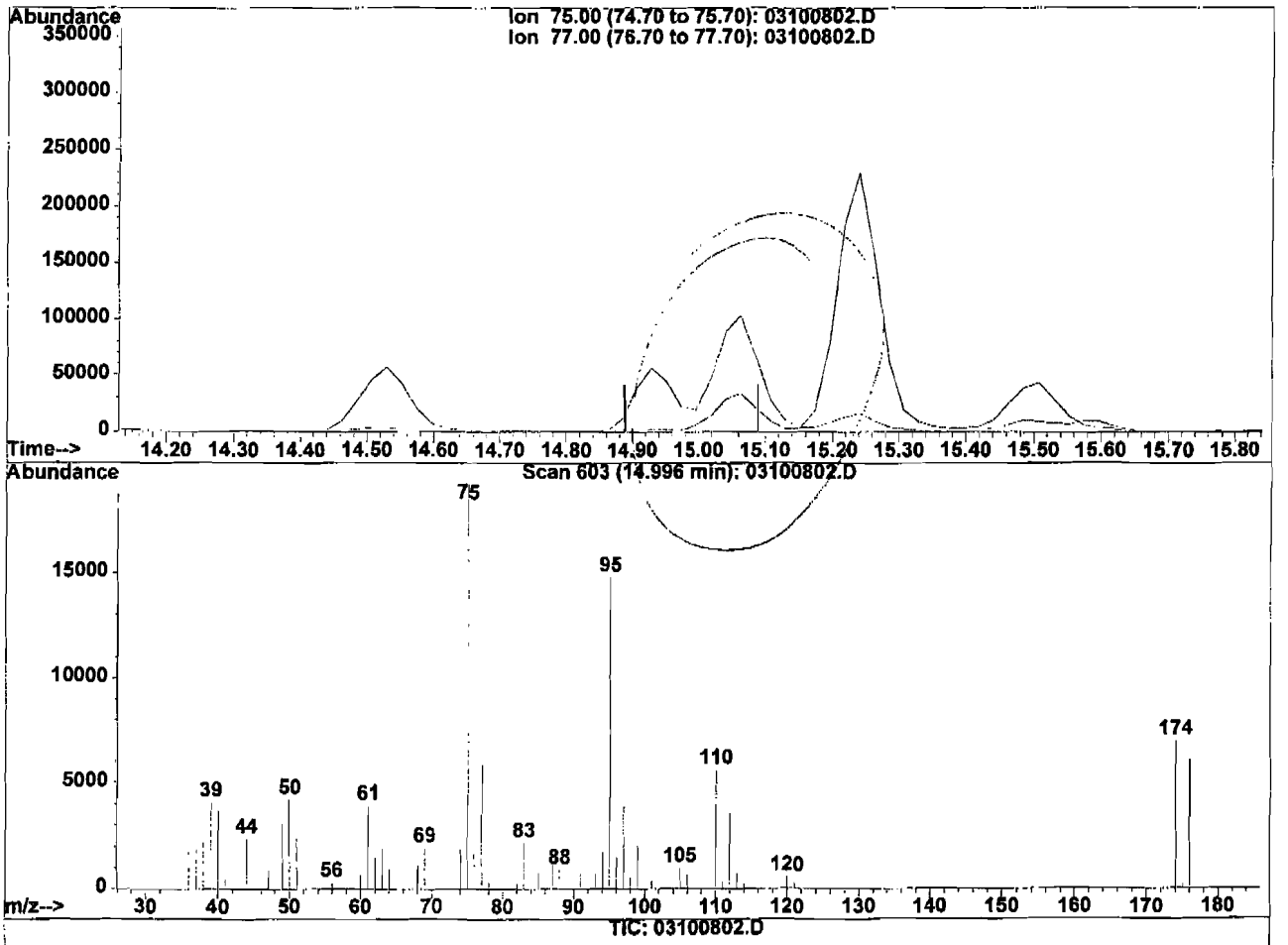
response 1543220

Ion	Exp%	Act%
94.00	100	100
96.00	0.00	79.08#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:54 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(56) 1,2,3-Trichloropropane

14.99min 0.00ng d

response 0

Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

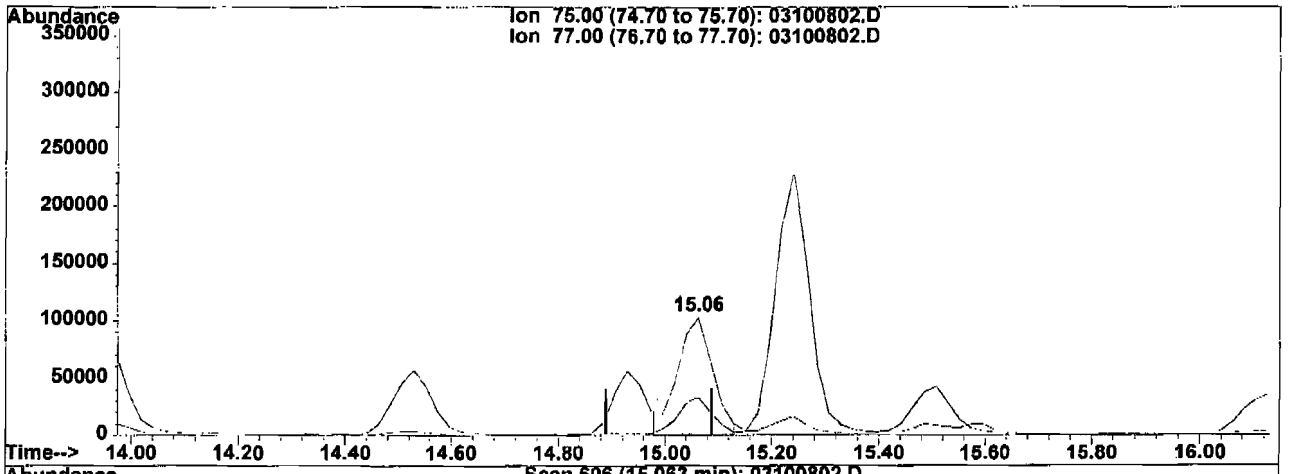
03100802.D 82608003.M Wed Mar 19 13:55:16 2008

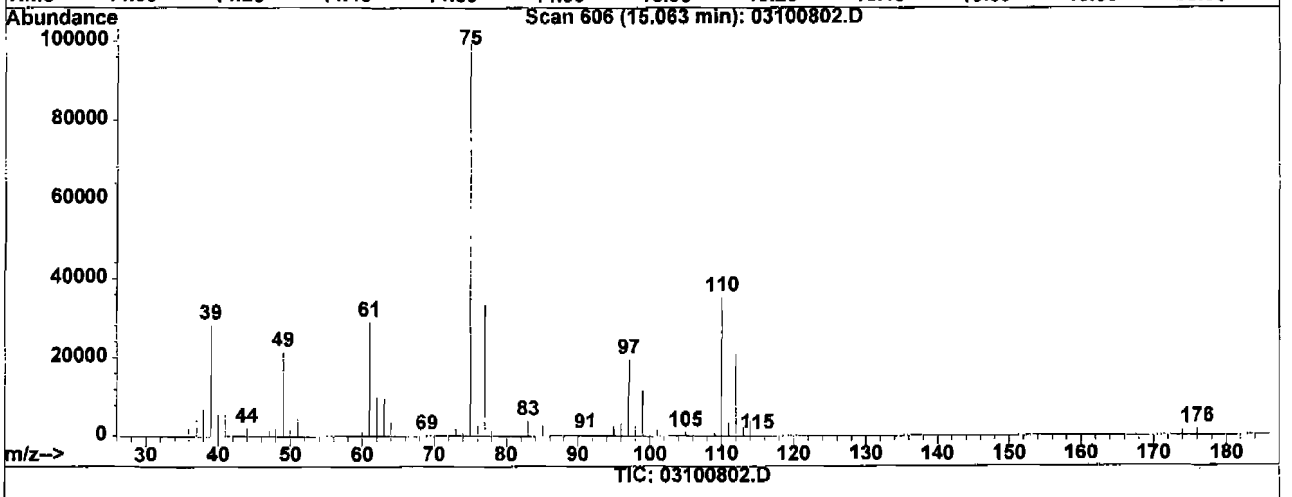
"A" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:56 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

15.06min 101.26ng m

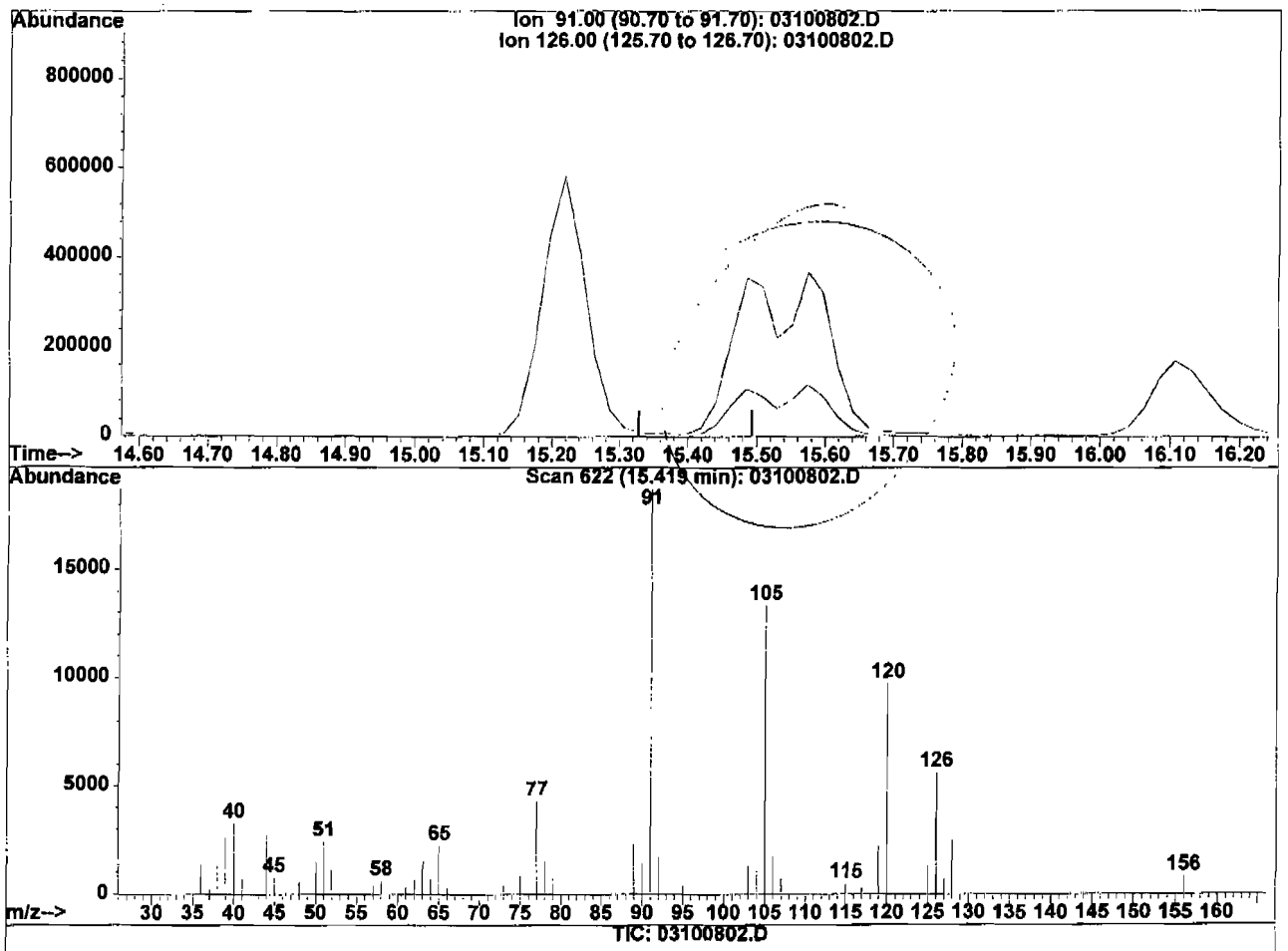
response 103605

Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

'B' 03/31/08 Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(57) 2-Chlorotoluene

15.41min 0.00ng d

response 0

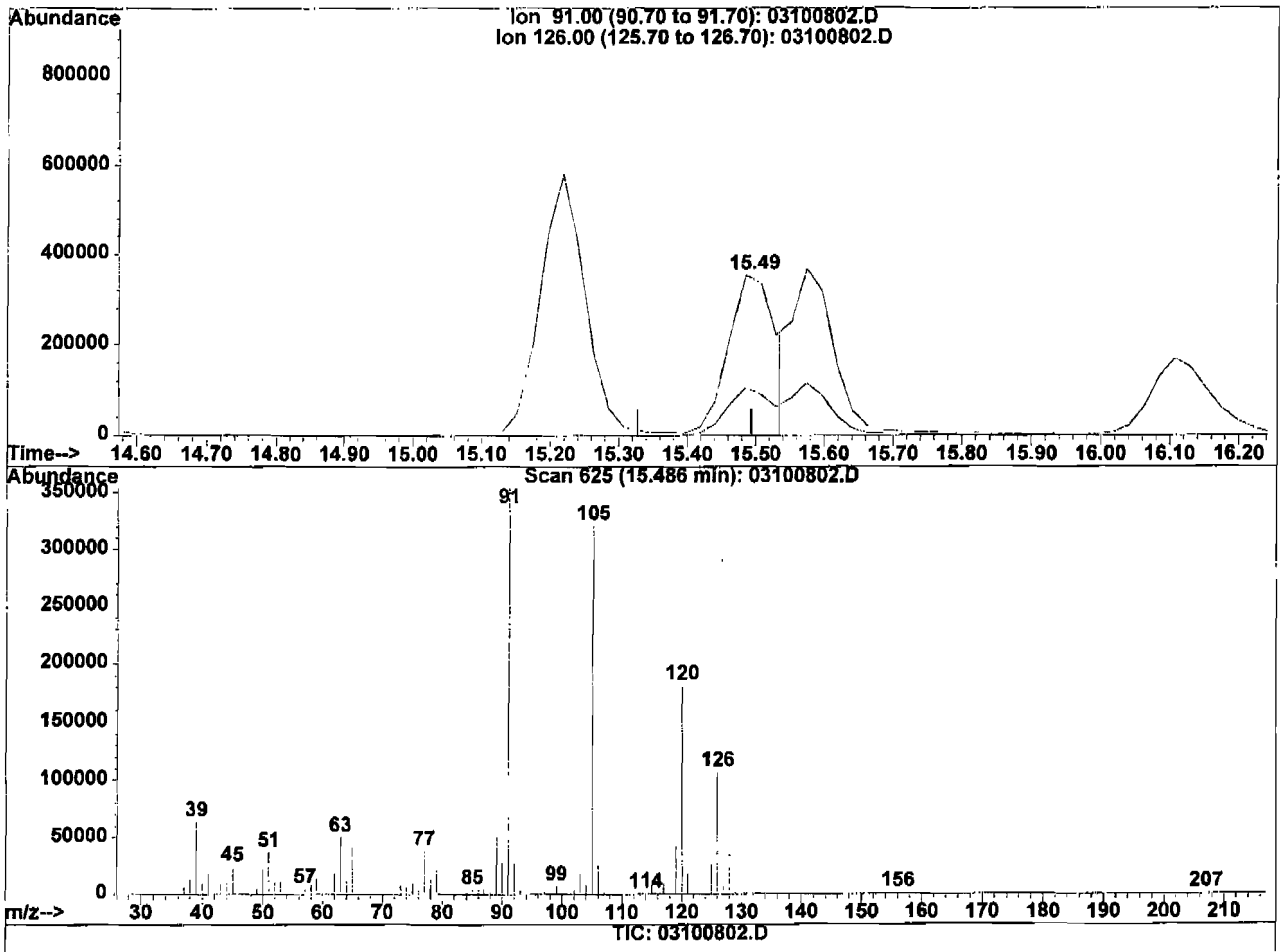
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

"A" CS 3/18/08 I.C.

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(57) 2-Chlorotoluene

15.49min 110.29ng m

response 363904

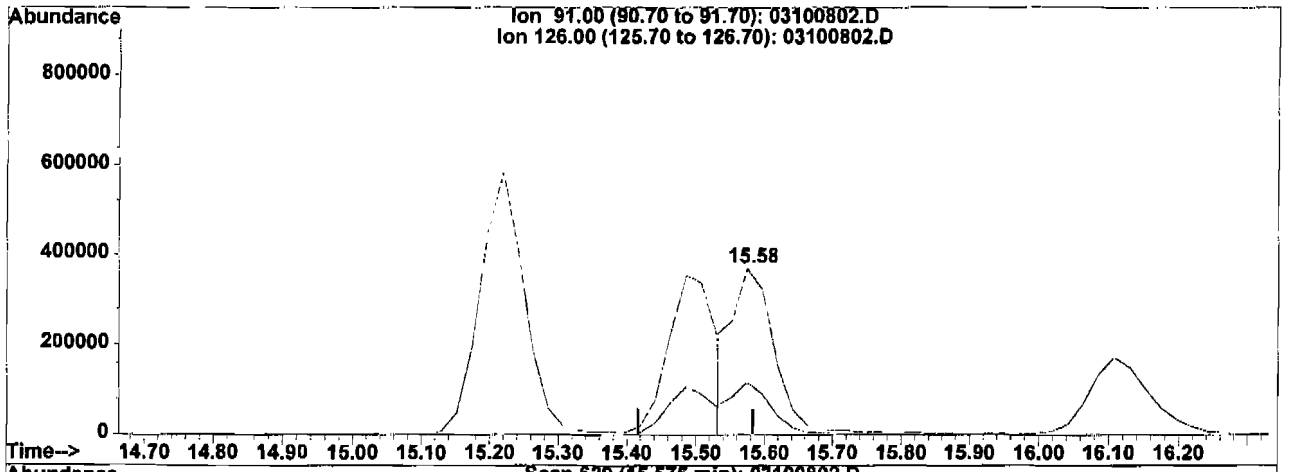
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

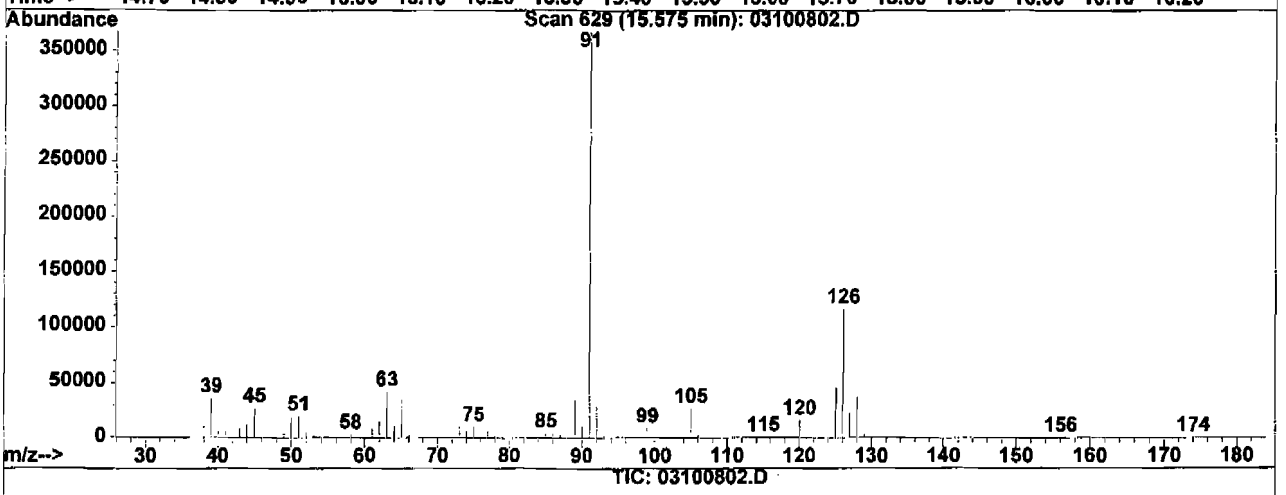
"A" 03/31/08 I.C.

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03100802.D

(59) 4-Chlorotoluene

15.57min 110.06ng m

response 371059

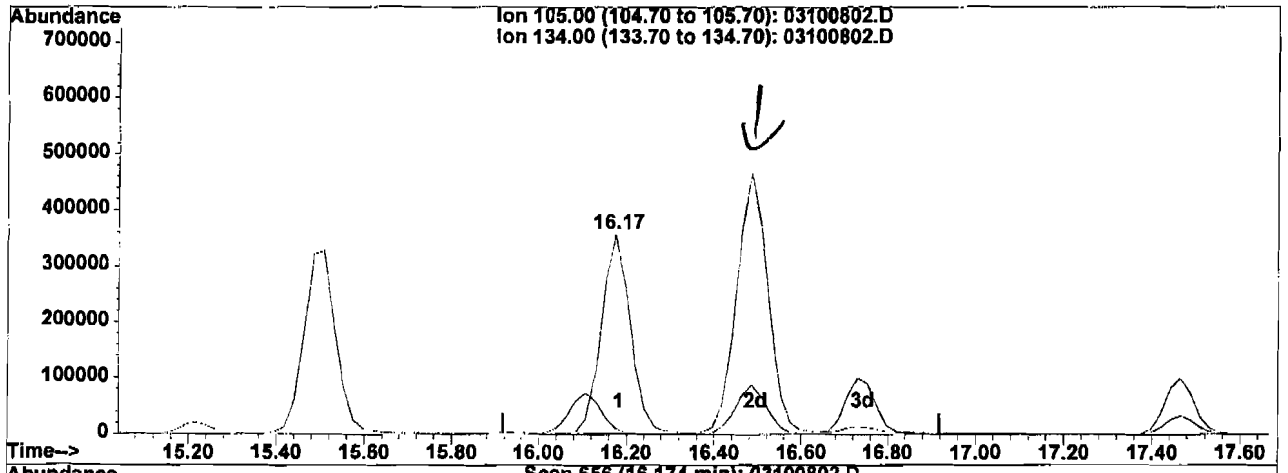
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

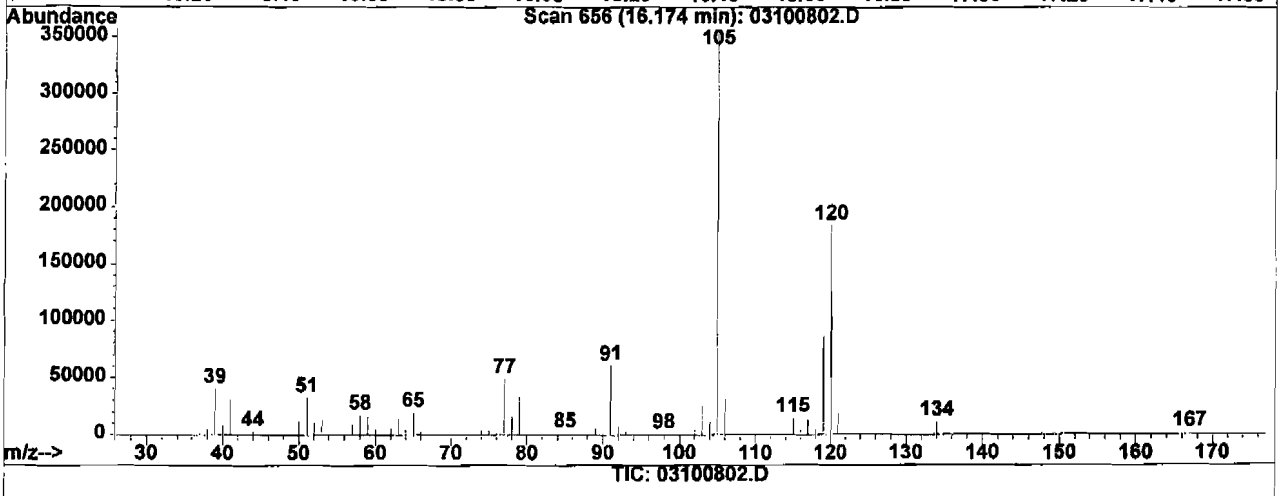
'B' 3/14/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:55 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(60) sec-Butylbenzene

16.18min 80.70ng

response 16257771

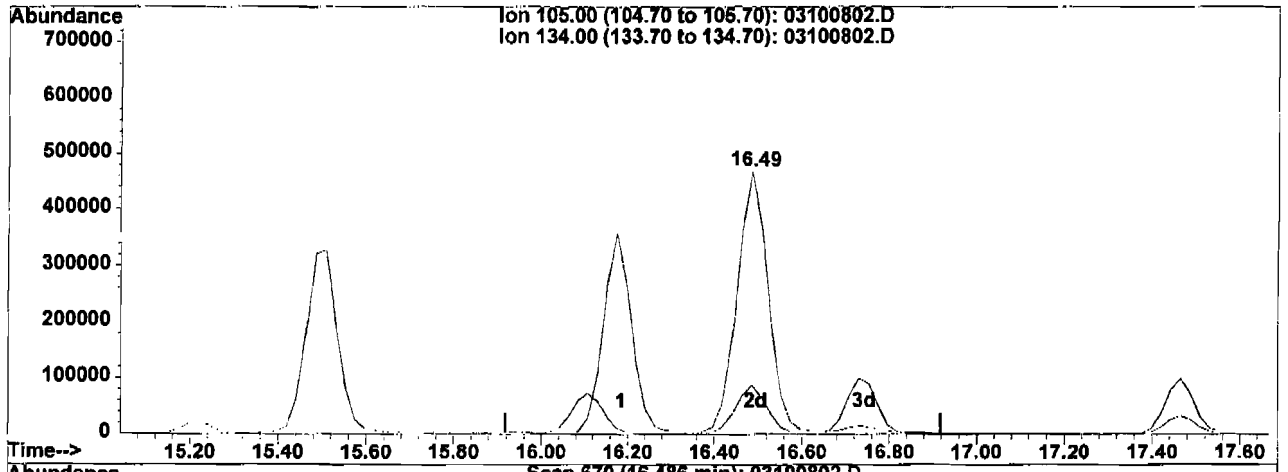
Ion	Exp%	Act%
105.00	100	100
134.00	25.20	22.51
0.00	0.00	0.00
0.00	0.00	0.00

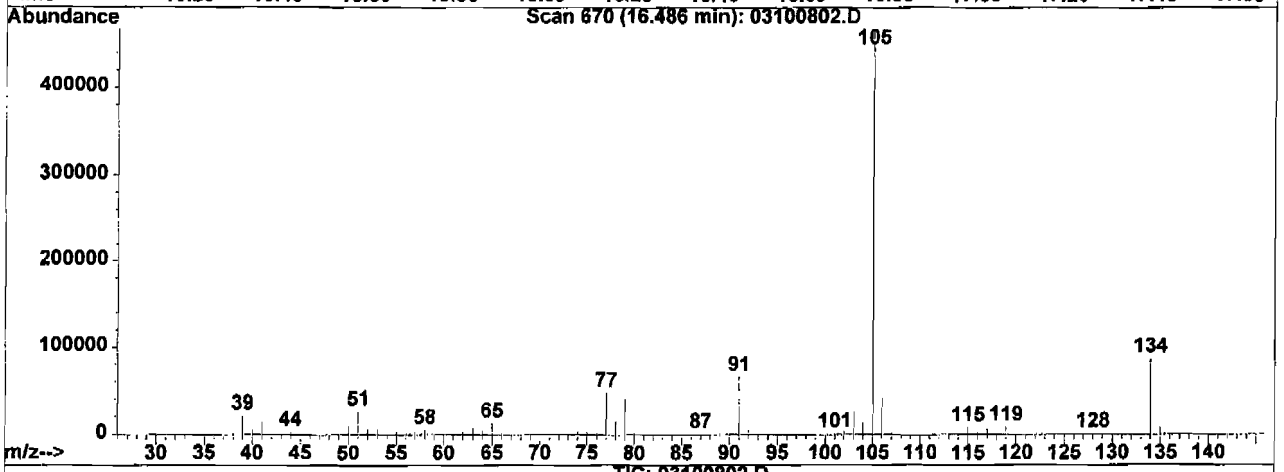
"A" CH/3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100802.D Vial: 1
Acq On : 10 Mar 08 09:28 Operator: csm
Sample : CCAL_82608003C02 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 13:56 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03100802.D

(60) sec-Butylbenzene

16.49min 115.24ng m

response 23218017

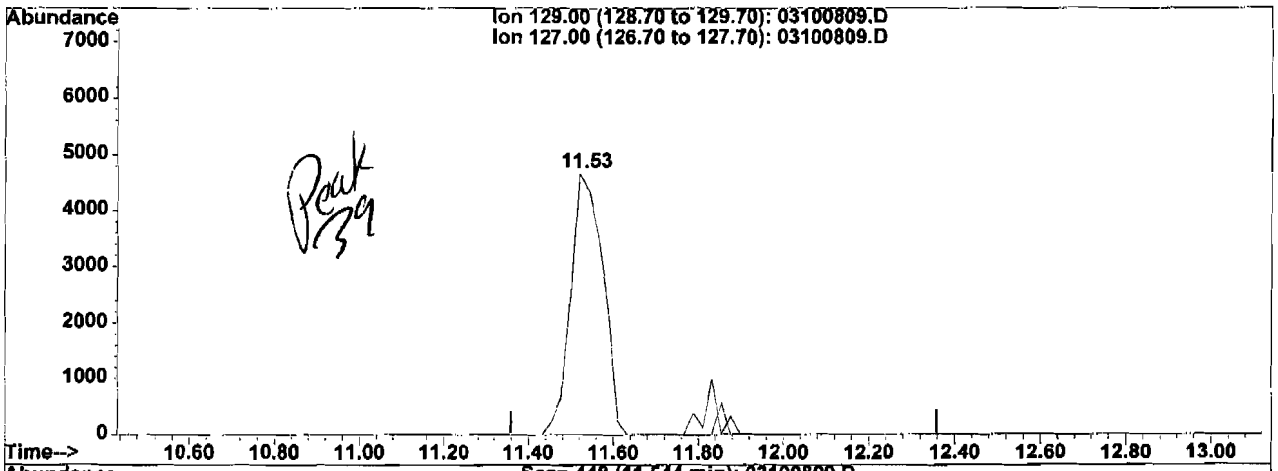
Ion	Exp%	Act%
105.00	100	100
134.00	25.20	15.76#
0.00	0.00	0.00
0.00	0.00	0.00

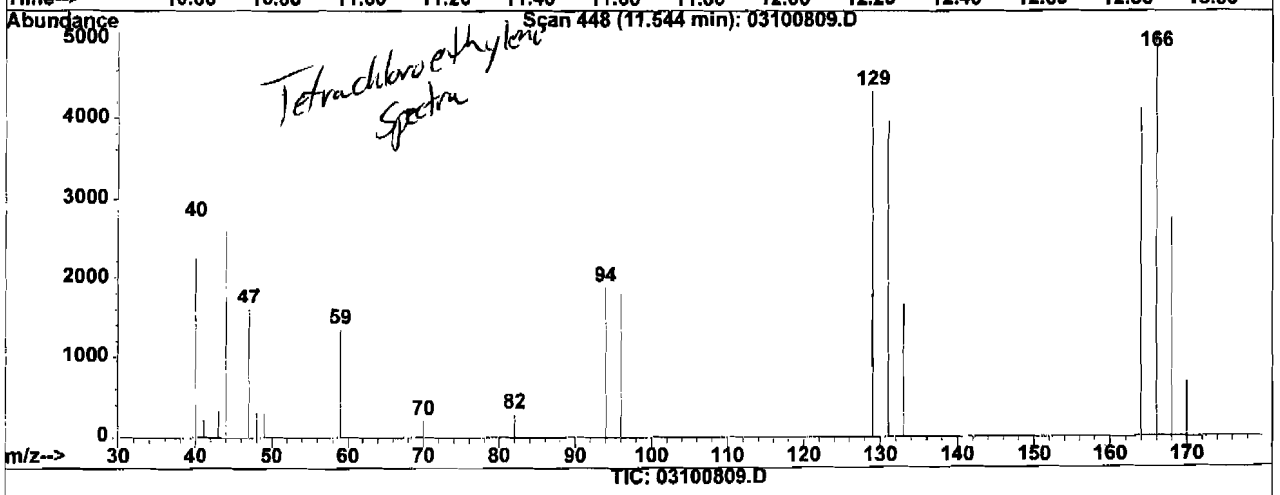
Deleted CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100809.D Vial: 1
Acq On : 10 Mar 08 16:58 Operator: CSM
Sample : 0208030-4a 5.0mL Inst :
Misc : 1316063 Multiplr: 1.00
Quant Time: Mar 19 14:11 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(41) Dibromochloromethane

11.54min 7.33ng

response 244502

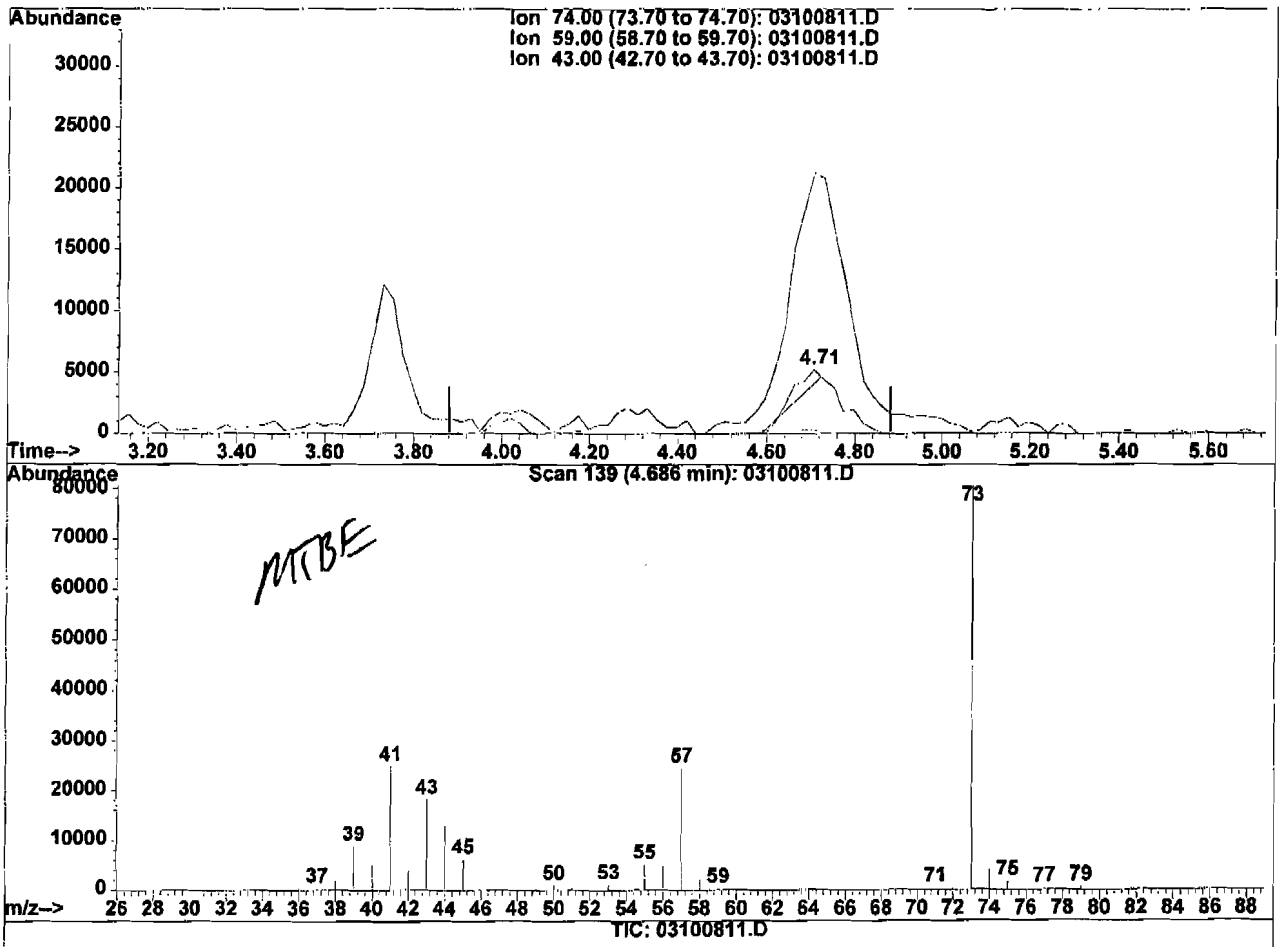
Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Deleted CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100811.D Vial: 1
Acq On : 10 Mar 08 18:09 Operator: csm
Sample : 0208030-20 5.0mL Inst :
Misc : 1316059 Multiplr: 1.00
Quant Time: Mar 19 14:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



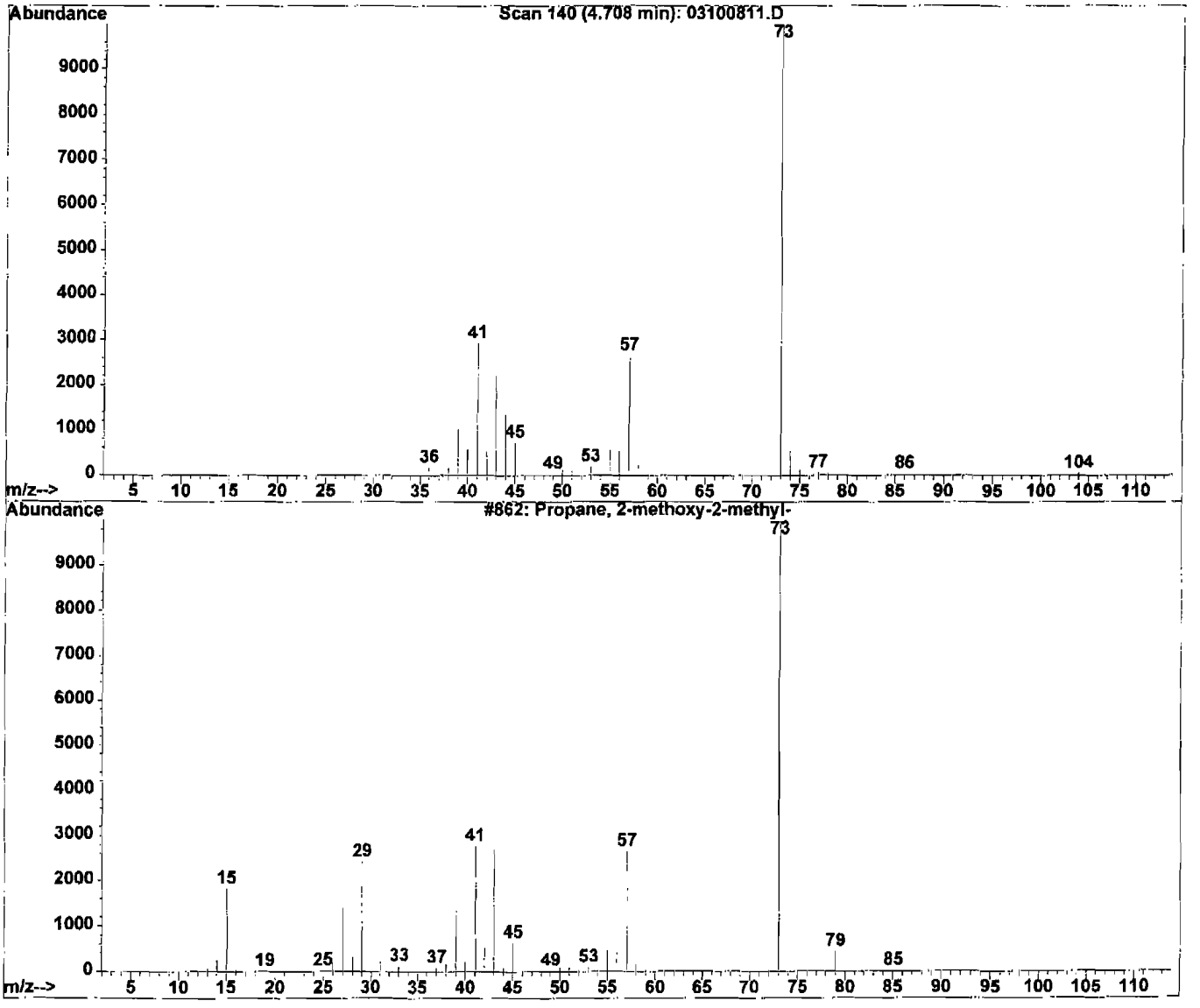
(10) Methyl Acetate

4.72min 3.51ng

response 70798

Ion	Exp%	Act%
74.00	100	100
59.00	32.80	0.00#
43.00	477.30	0.00#
0.00	0.00	0.00

Library Searched : C:\DATABASE\nbs75k.1
Quality : 53
ID : Propane, 2-methoxy-2-methyl-



000154

Quantitation Report (QT Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03100811.D Vial: 1
Acq On : 10 Mar 08 18:09 Operator: csm
Sample : 0208030-20 5.0mL Inst :
Misc : 1316059 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: Mar 19 14:18 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Initial Calibration
DataAcq Meth : 8260

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Benzene, pentafluoro- (ins	6.64	168	10316404	200.00 ng	-0.04
28) 1,2-Difluorobenzene (ins)	8.08	114	23399837	200.00 ng	-0.02
43) Chlorobenzene-d5 (ins)	12.83	117	427535	200.00 ng	0.02
65) 1,4-Dichlorobenzene-d4 (in	16.94	152	7818185	200.00 ng	0.04
System Monitoring Compounds					
23) Dibromofluoromethane(surr)	6.79	192	1000016	197.75 ng	-0.05
Spiked Amount 200.000			Recovery =	98.88%	
35) Toluene-d8(surr)	10.40	98	25489423	198.56 ng	0.00
Spiked Amount 200.000			Recovery =	99.28%	
52) BFB(surr)	14.88	174	5488030	205.31 ng	0.02
Spiked Amount 200.000			Recovery =	102.66%	

Target Compounds					Qvalue
2) Dichlorodifluoromethane	0.00	85		N.D.	
3) Chloromethane	2.26	50	316673	5.23 ng #	41
4) Vinyl chloride	2.36	62	602349	10.85 ng	89
5) Bromomethane	0.00	94		N.D.	
6) Chloroethane	0.00	64		N.D.	
7) Trichlorofluoromethane	0.00	101		N.D.	
8) 1,1-Dichloroethene	0.00	96		N.D.	
9) Acetone	3.74	58	208968	28.50 ng	96
10) Methyl Acetate	0.00	74		N.D. d	
11) Carbon disulfide	0.00	76		N.D.	
12) Methyl-tert-butyl-ether	4.72	73	8043363	60.09 ng	97
13) Methylene Chloride	4.48	84	878520	17.88 ng #	80
14) trans-1,2-Dichloroethene	0.00	96		N.D.	
15) 1,1-Dichloroethane	0.00	63		N.D.	
16) 2-Butanone	0.00	72		N.D.	
17) Propane, 2,2-dichloro-	0.00	77		N.D.	
18) cis-1,2-Dichloroethene	6.27	96	6171908	129.21 ng	91
19) Chloroform	6.50	83	671577	10.83 ng	95
20) Methane, bromochloro-	0.00	128		N.D.	
21) Cyclohexane	0.00	56		N.D.	
22) 1,1,1,-Trichloroethane	0.00	97		N.D.	
24) Carbon tetrachloride	0.00	117		N.D.	
25) 1,1-Dichloropropene	0.00	75		N.D.	
26) Benzene	0.00	78		N.D.	
27) 1,2-Dichloroethane	0.00	62		N.D.	
29) Cyclohexane, methyl-	0.00	83		N.D.	
30) Trichloroethene	8.56	95	4043553	104.24 ng	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : C:\GALWIN98\DATA\0208030B\03100811.D Vial: 1
Acq On : 10 Mar 08 18:09 Operator: csm
Sample : 0208030-20 5.0mL Inst :
Misc : 1316059 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: Mar 19 14:18 19108 Quant Results File: 82608003.RES

Quant Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Initial Calibration
DataAcq Meth : 8260

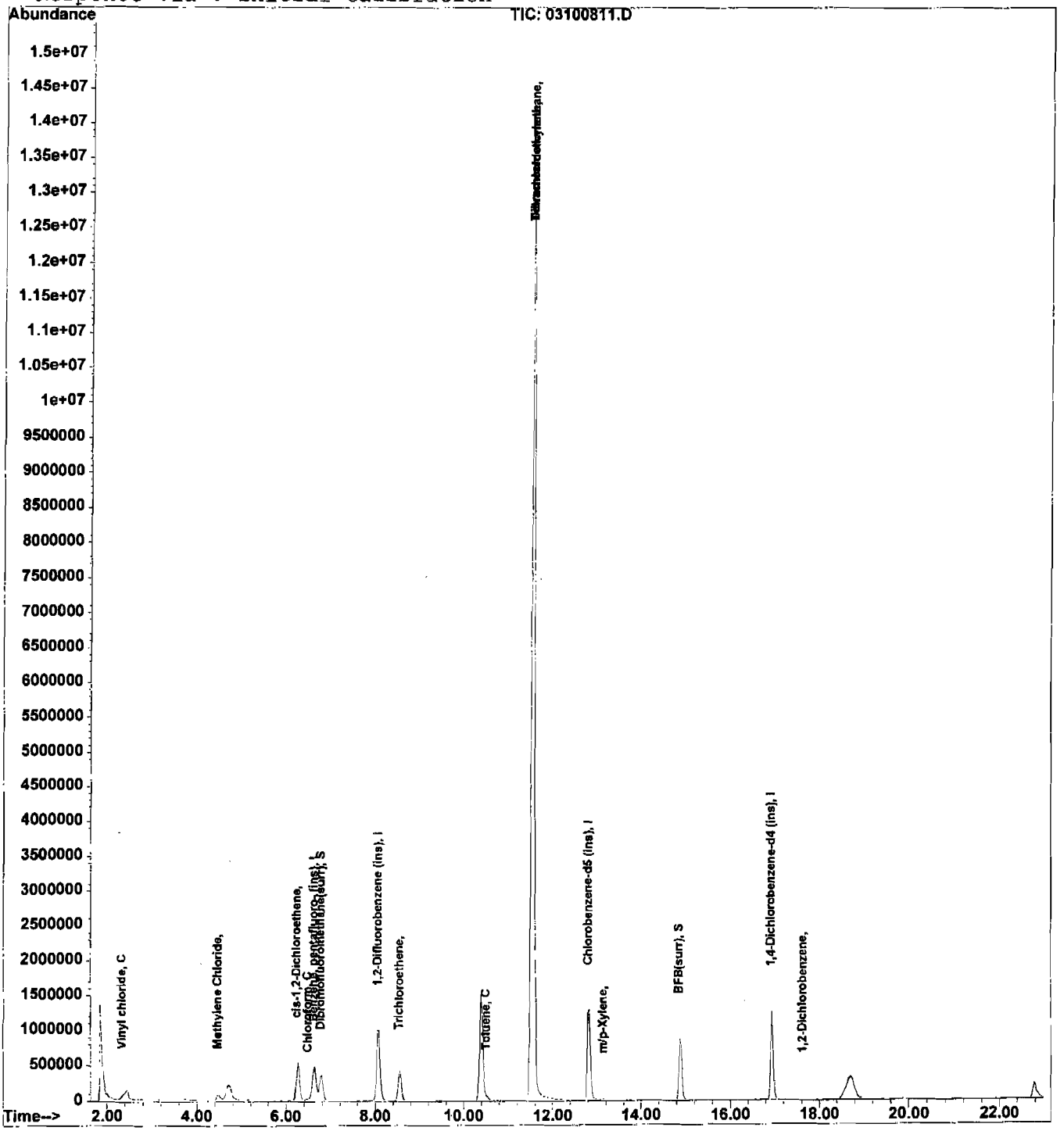
Compound	R.T.	QIon	Response	Conc Unit		Qvalue
31) 1,2-Dichloropropane	0.00	63		N.D.		
32) Methyl Isobutyl Ketone	0.00	100		N.D.		
33) Dibromomethane	0.00	93		N.D.		
34) Bromodichloromethane	0.00	83		N.D.		
36) 2-Hexanone	0.00	43		N.D.		
37) Toluene	10.53	92	546296	4.77 ng		89
38) 1,1,2-Trichloroethane	0.00	83		N.D.		
39) Tetrachloroethylene	11.56	164	89242491	3645.97 ng		97
40) 1,3-Dichloropropane	0.00	76		N.D.		
41) Dibromochloromethane	11.56	129	89947302	2794.39 ng	#	9
42) 1,2-Dibromoethane	0.00	107		N.D.		
44) Chlorobenzene	0.00	112		N.D.		
45) Ethylbenzene	0.00	91		N.D.		
46) 1,1,1,2-Tetrachloroethane	0.00	131		N.D.		
47) m/p-Xylene	13.16	106	169532	2.19 ng		89
48) o-Xylene	0.00	106		N.D.		
49) Styrene	0.00	104		N.D.		
50) Bromoform	0.00	173		N.D.		
51) Isopropylbenzene	0.00	105		N.D.		
53) Bromobenzene	0.00	156		N.D.		
54) 1,1,2,2-Tetrachloroethane	0.00	83		N.D.		
55) n-Propylbenzene	0.00	91		N.D.		
56) 1,2,3-Trichloropropane	0.00	75		N.D.		
57) 2-Chlorotoluene	0.00	91		N.D.		
58) 1,3,5-Trimethylbenzene	0.00	105		N.D.		
59) 4-Chlorotoluene	0.00	91		N.D.		
60) sec-Butylbenzene	0.00	105		N.D.		
61) 1,2,4-Trimethylbenzene	0.00	105		N.D.		
62) tert-Butylbenzene	0.00	119		N.D.		
63) 1,3-Dichlorobenzene	0.00	146		N.D.		
64) p-Isopropyltoluene	0.00	119		N.D.		
66) n-Butylbenzene	0.00	91		N.D.		
67) 1,4-Dichlorobenzene	0.00	146		N.D.		
68) 1,2-Dichlorobenzene	17.65	146	203440	3.39 ng	#	26
69) 1,2-Dibromo-3-chloropropan	0.00	75		N.D.		
70) 1,2,4-Trichlorobenzene	0.00	180		N.D.		
71) Hexachlorobutadiene	0.00	225		N.D.		
72) Naphthalene	0.00	128		N.D.		
73) 1,2,3-Trichlorobenzene	0.00	180		N.D.		

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100811.D Vial: 1
Acq On : 10 Mar 08 18:09 Operator: csm
Sample : 0208030-20 5.0mL Inst :
Misc : 1316059 Multiplr: 1.00
MS Integration Params: LSCINT.E
Quant Time: Mar 19 14:18 19108 Quant Results File: 82608003.RES

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Initial Calibration



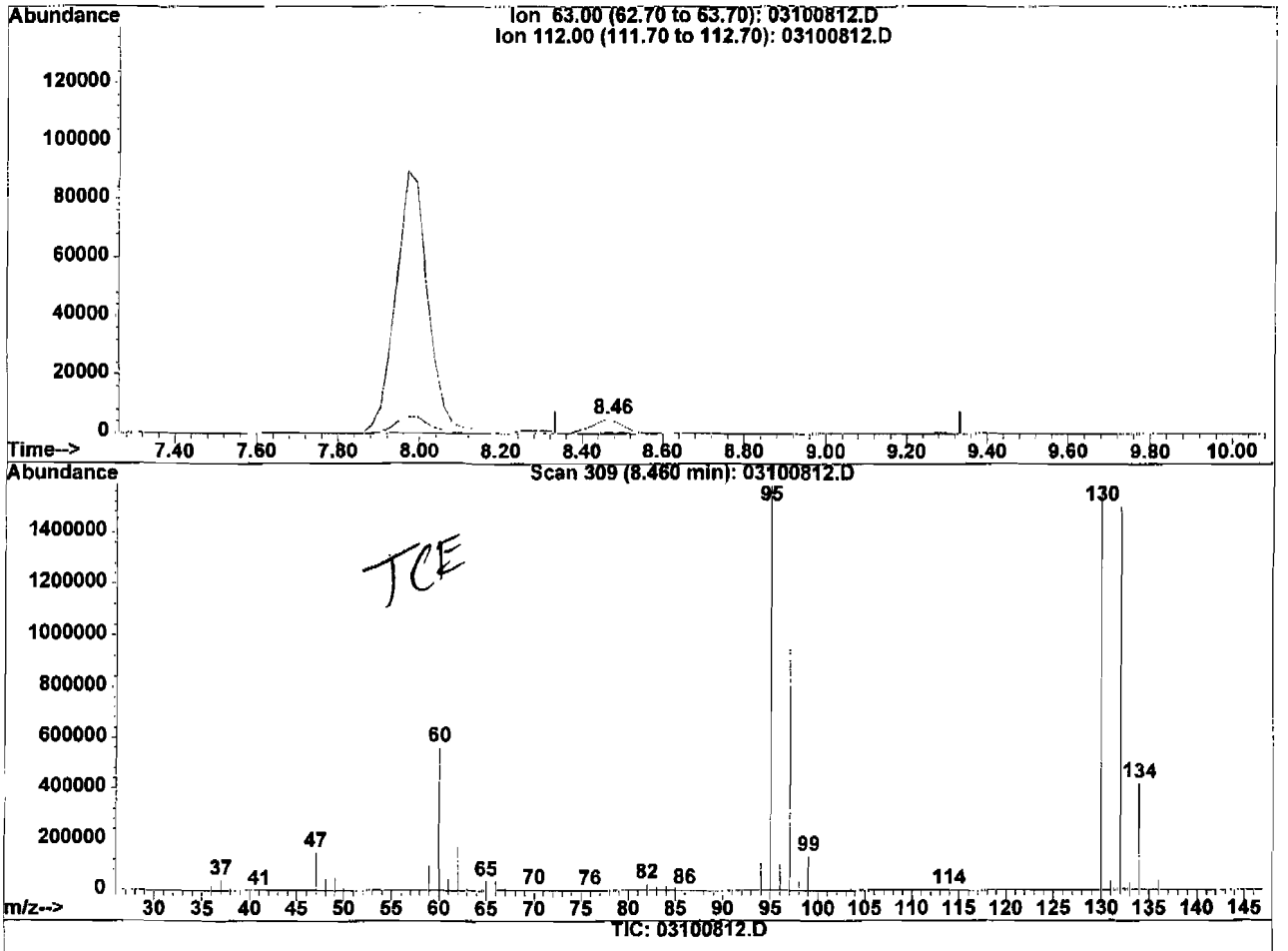
000157

Deleted @ 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100812.D Vial: 1
Acq On : 10 Mar 08 18:44 Operator: csm
Sample : 0208030-5 100uL Inst :
Misc : 1316058 Multiplr: ~~500.00~~ 1.0167
Quant Time: Mar 19 14:22 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(31) 1,2-Dichloropropane (C)

8.47min 4.36ng

response 209981

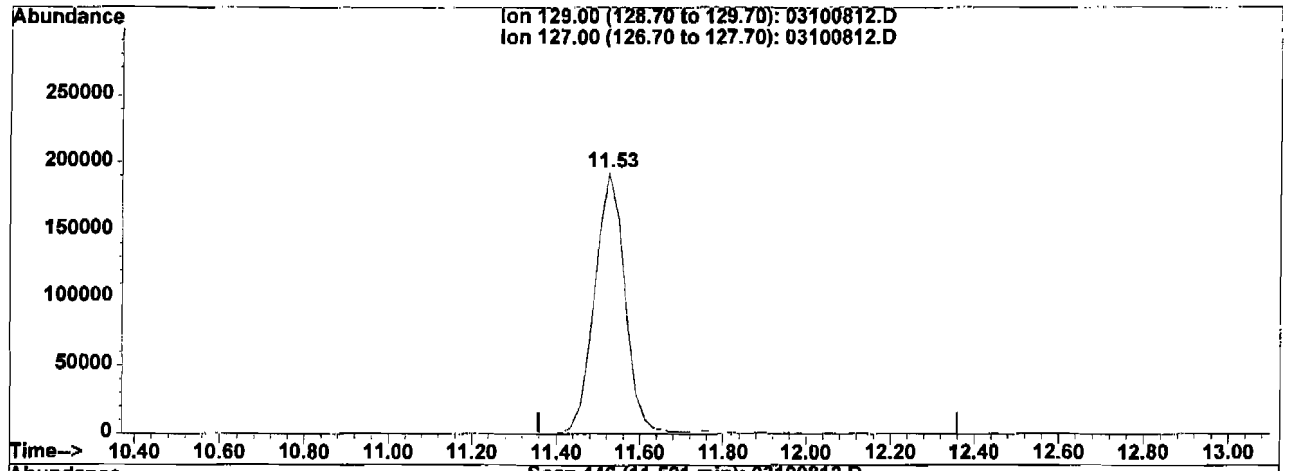
Ion	Exp%	Act%
63.00	100	100
112.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

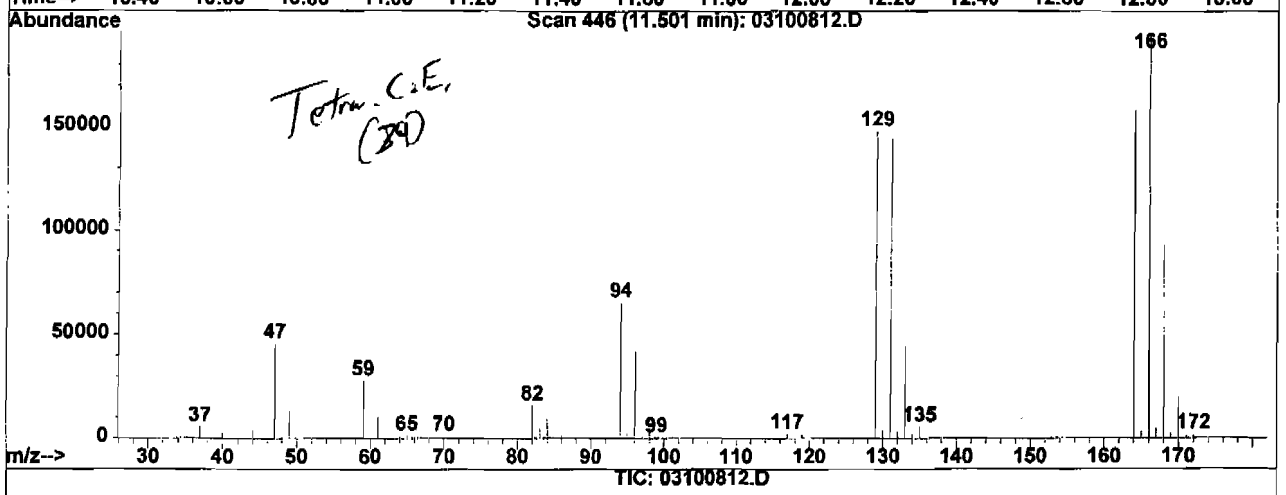
Deleted 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100812.D Vial: 1
Acq On : 10 Mar 08 18:44 Operator: csm
Sample : 0208030-5 100uL Inst :
Misc : 1316058 Multiplr: ~~500.00~~ 10.57
Quant Time: Mar 19 14:23 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





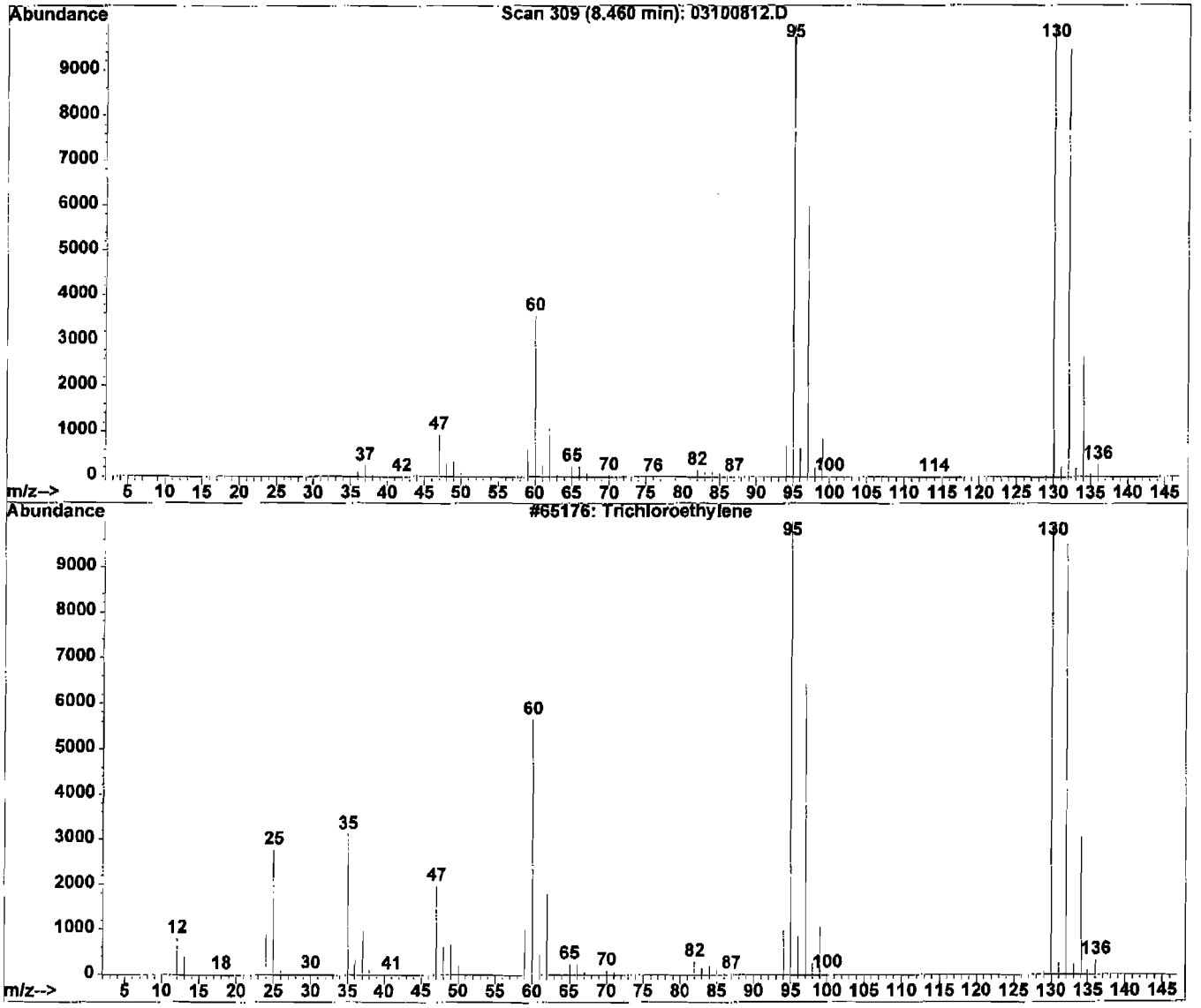
(41) Dibromochloromethane

11.54min 328.33ng

response 9532291

Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Library Searched : C:\DATABASE\nbs75k.l
Quality : 96
ID : Trichloroethylene

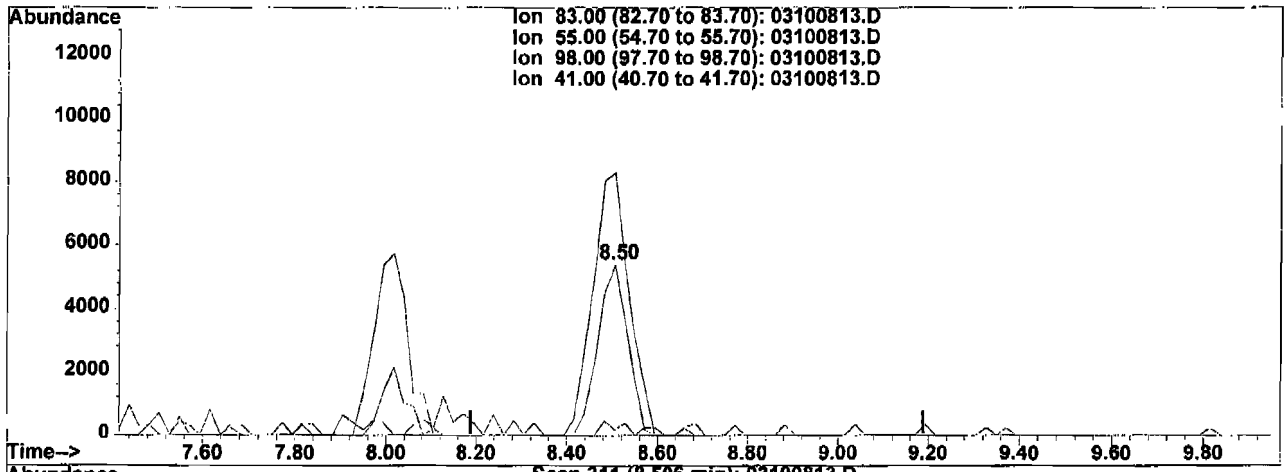


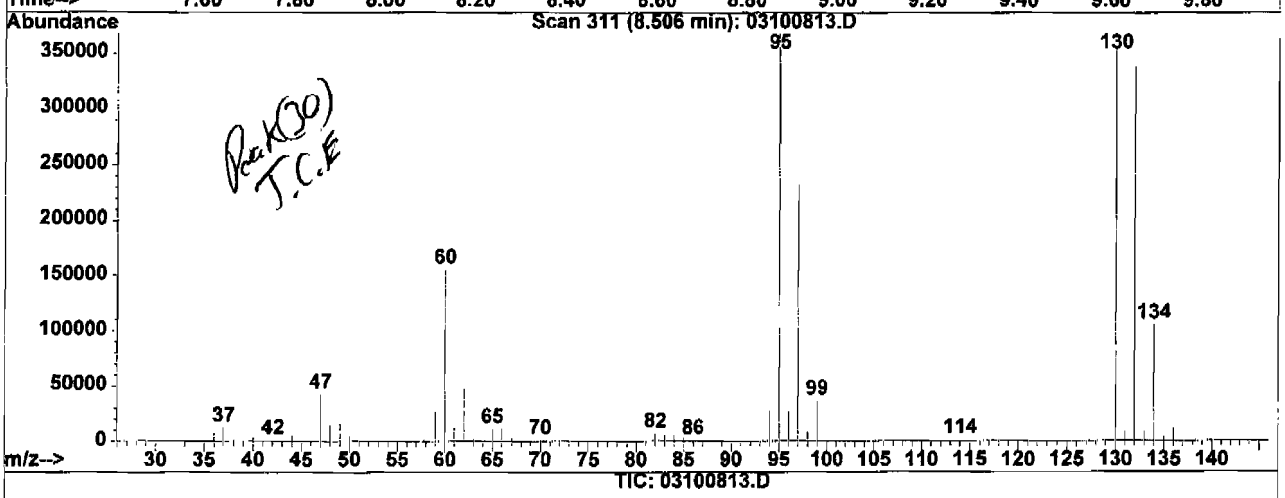
Deleted CSP 3/14/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100813.D Vial: 1
Acq On : 10 Mar 08 19:19 Operator: csm
Sample : 0208030-6 100uL Inst :
Misc : 1316061 Multiplr: 1.00
Quant Time: Mar 19 14:25 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





Peak (30) T.C.E

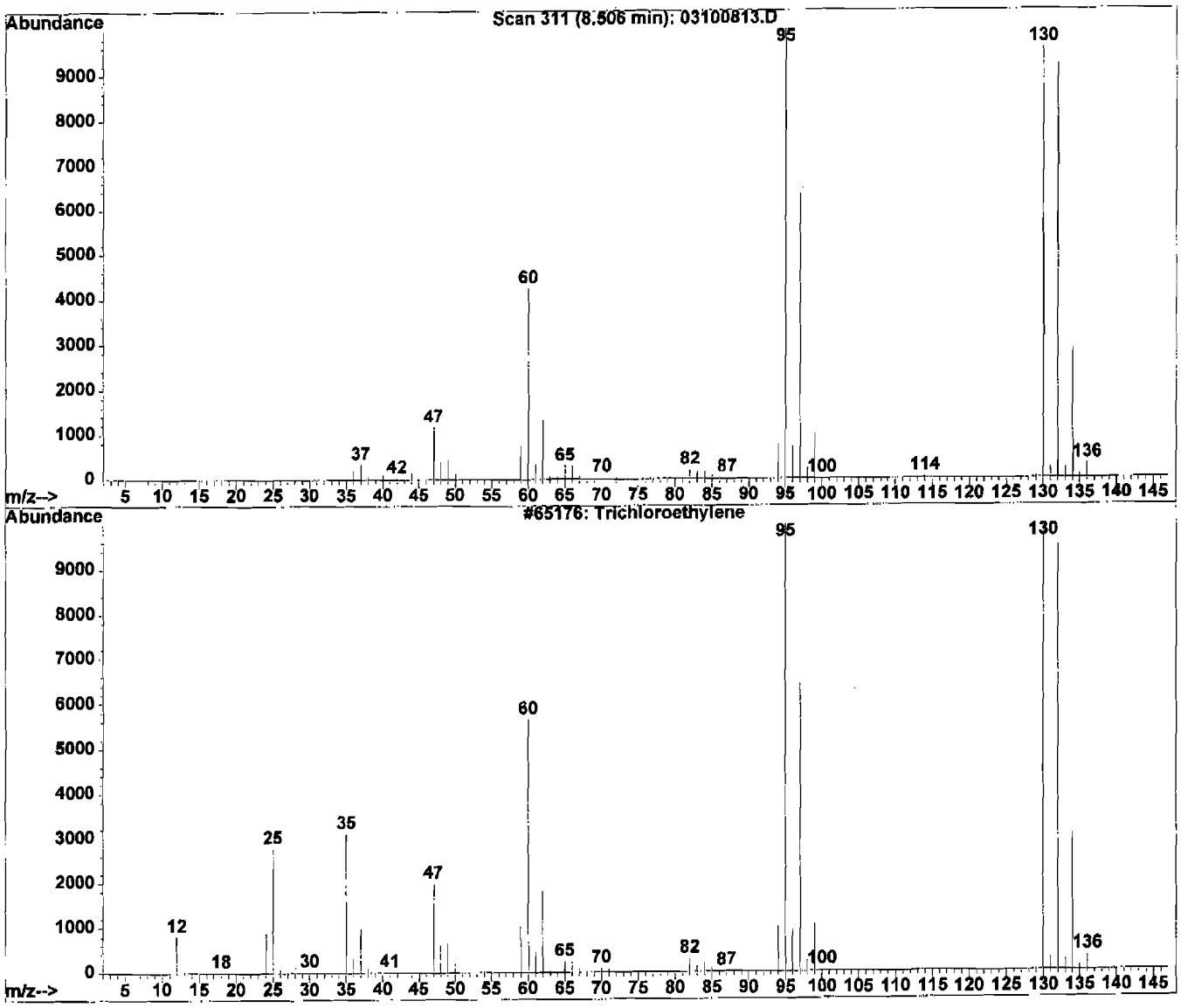
(29) Cyclohexane, methyl-

8.51min 2.28ng

response 244464

Ion	Exp%	Act%
83.00	100	100
55.00	92.60	0.00#
98.00	55.70	187.56#
41.00	51.30	0.00#

Library Searched : C:\DATABASE\nbs75k.l
Quality : 97
ID : Trichloroethylene



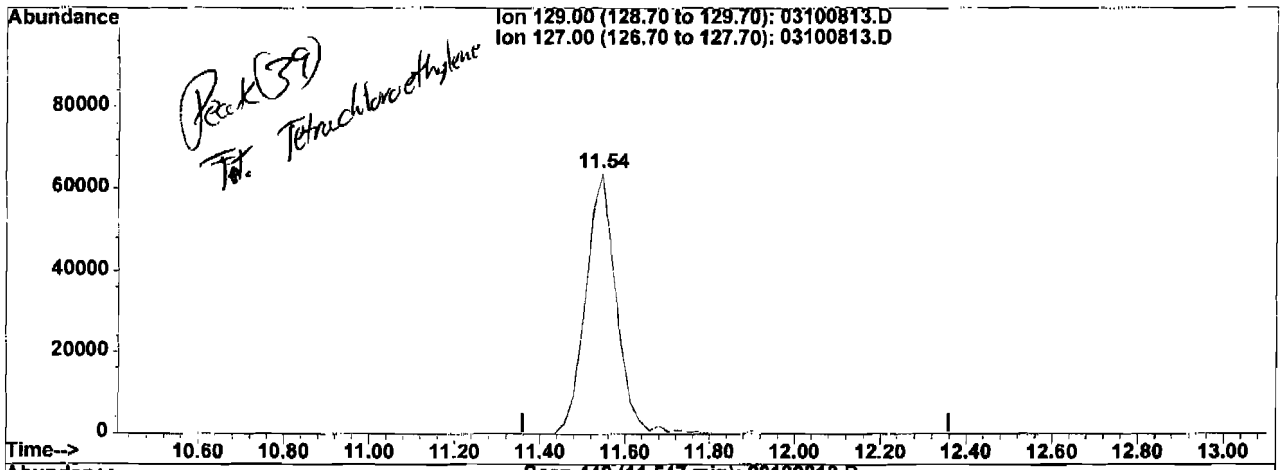
000182

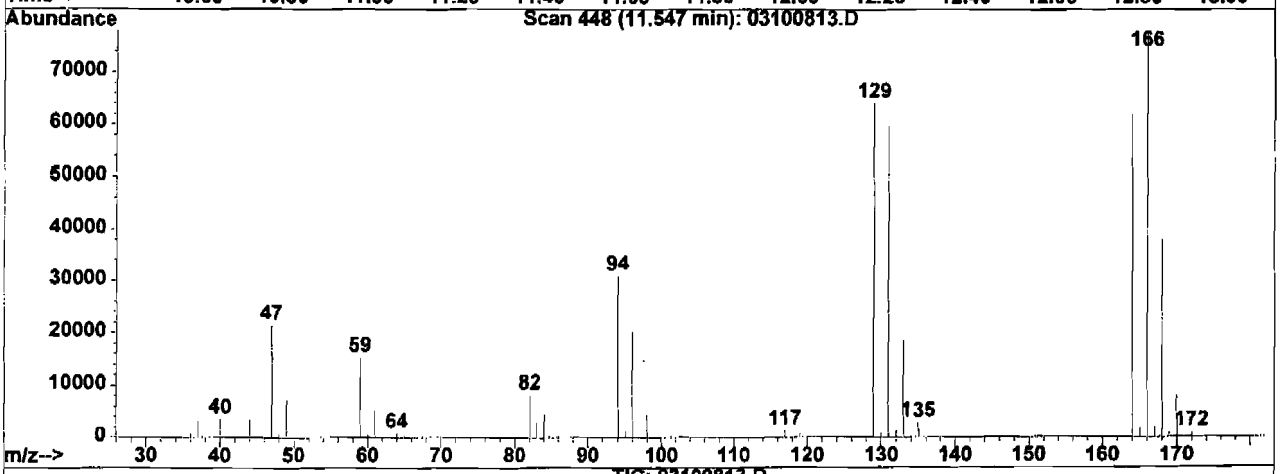
Deleted 03/31/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100813.D Vial: 1
Acq On : 10 Mar 08 19:19 Operator: csm
Sample : 0208030-6 100uL Inst :
Misc : 1316061 Multiplr: 1.00
Quant Time: Mar 19 14:27 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03100813.D

(41) Dibromochloromethane

11.55min 82.71ng

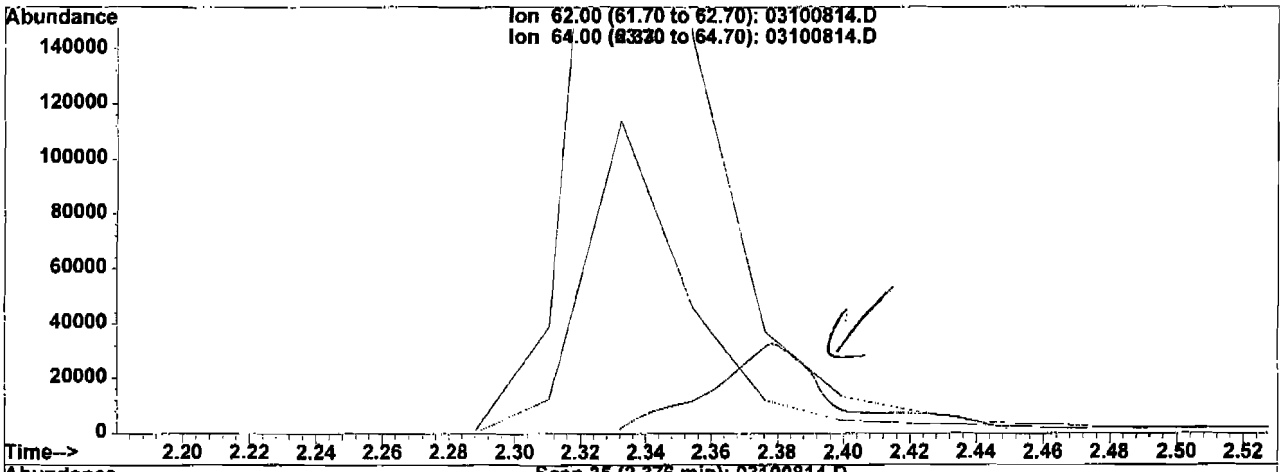
response 3187209

Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100814.D Vial: 1
Acq On : 10 Mar 08 19:52 Operator: csm
Sample : CCAL._82608003C03 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 15:06 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(4) Vinyl chloride (C)

2.34min 160.96ng

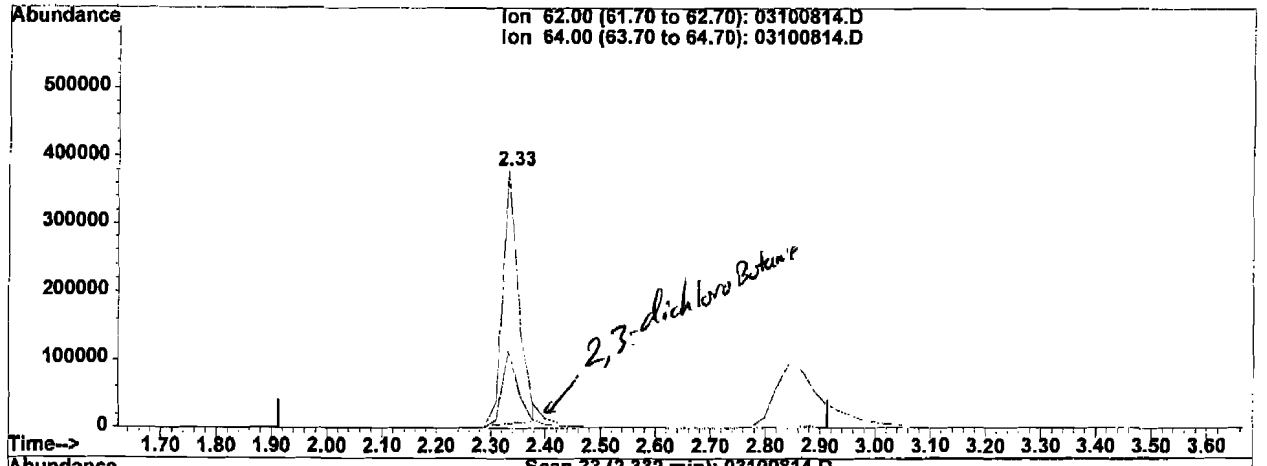
response 8411734

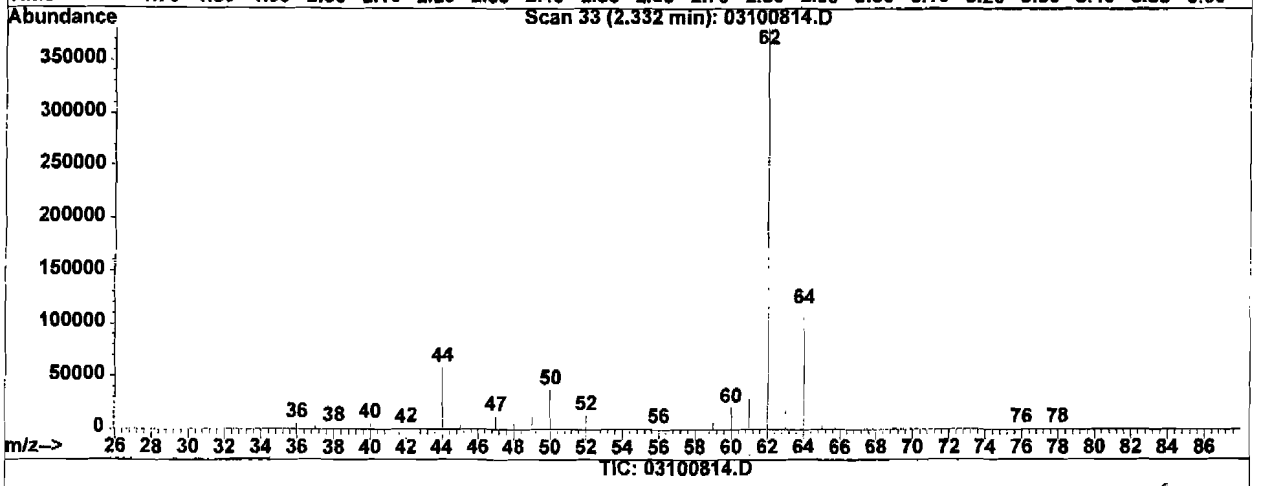
Ion	Exp%	Act%
62.00	100	100
64.00	36.30	32.04
0.00	0.00	0.00
0.00	0.00	0.00

"A" 3/19/08 Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100814.D Vial: 1
Acq On : 10 Mar 08 19:52 Operator: csm
Sample : CCAL._82608003C03 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 15:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(4) Vinyl chloride (C)

2.33min 139.46ng m

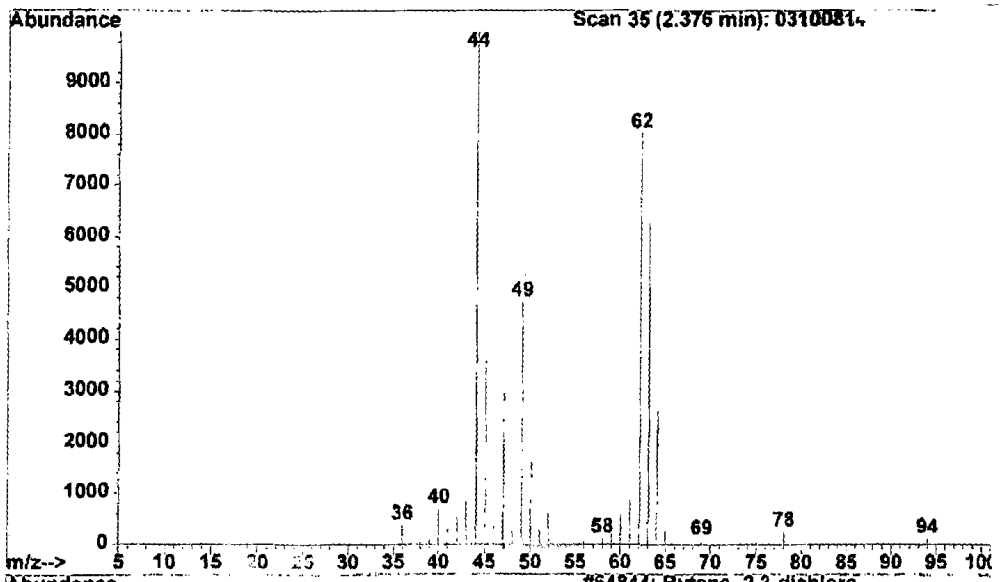
response 7288535

Ion	Exp%	Act%
62.00	100	100
64.00	36.30	36.98
0.00	0.00	0.00
0.00	0.00	0.00

2,3-dichlorobutane masses 62 & 64 interfere w/ Vinyl chloride quant.

03100814.D 82608003.M Fri Mar 21 13:50:42 2008

Library Searched : C:\DATABASE\nbs75k.l
Quality : 40
ID : Butane, 2,3-dichloro-



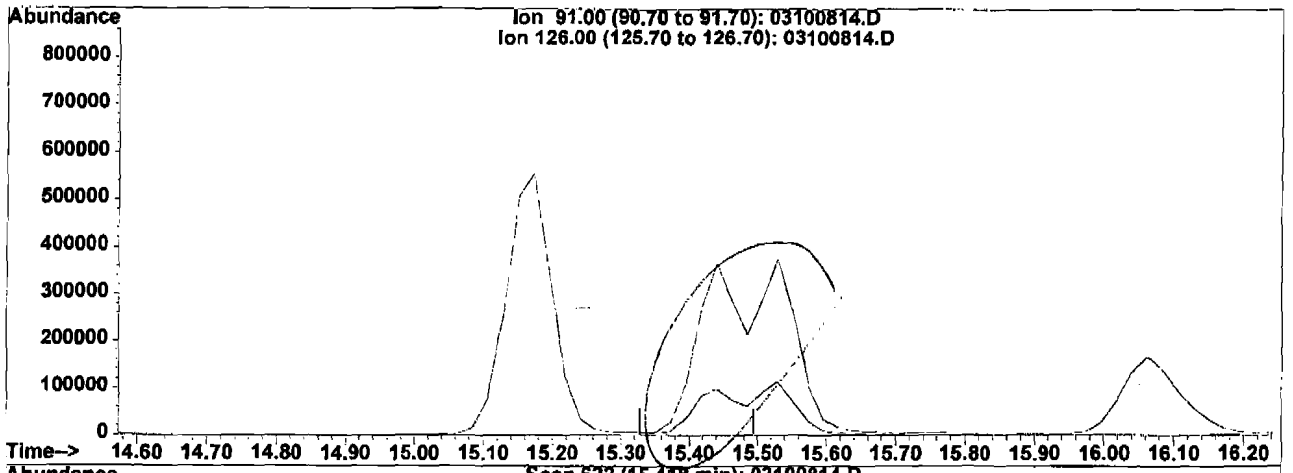
000106

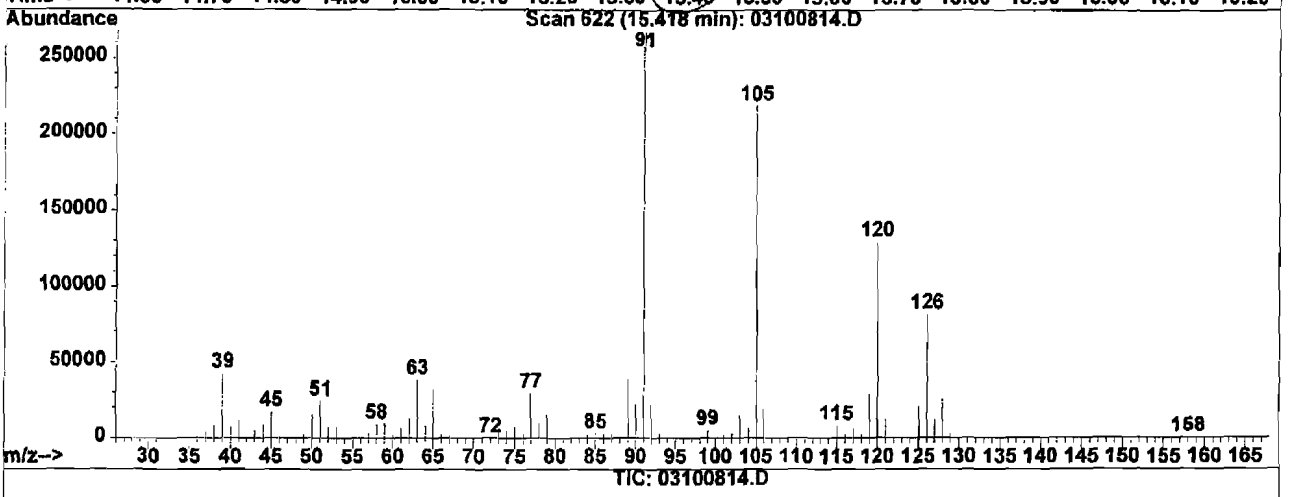
BCS 3/14/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100814.D Vial: 1
Acq On : 10 Mar 08 19:52 Operator: csm
Sample : CCAL._82608003C03 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 15:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.41min 0.00ng d

response 0

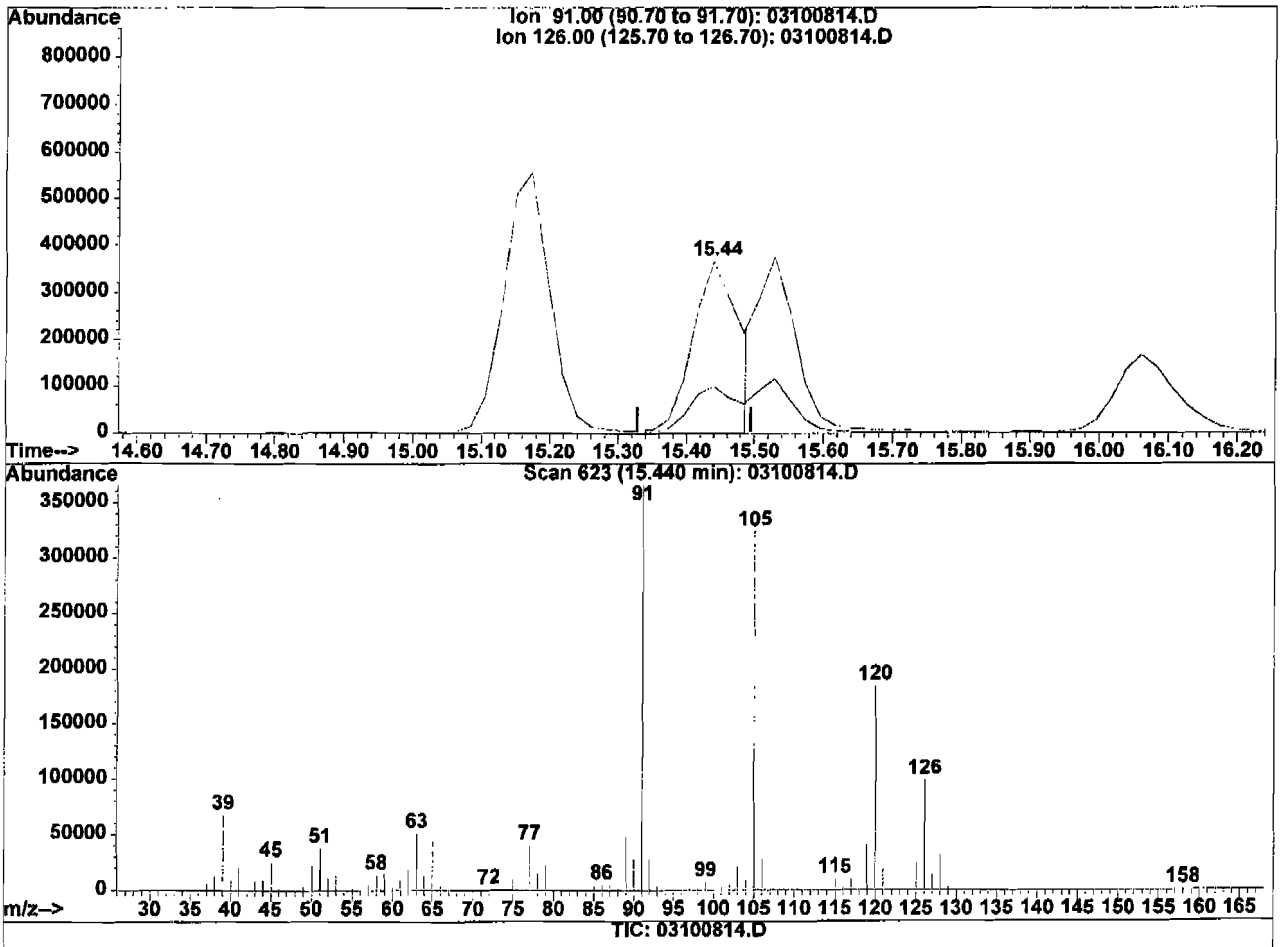
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

"A" 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100814.D Vial: 1
Acq On : 10 Mar 08 19:52 Operator: csm
Sample : CCAL._82608003C03 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 15:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(57) 2-Chlorotoluene

15.44min 122.83ng m

response 365864

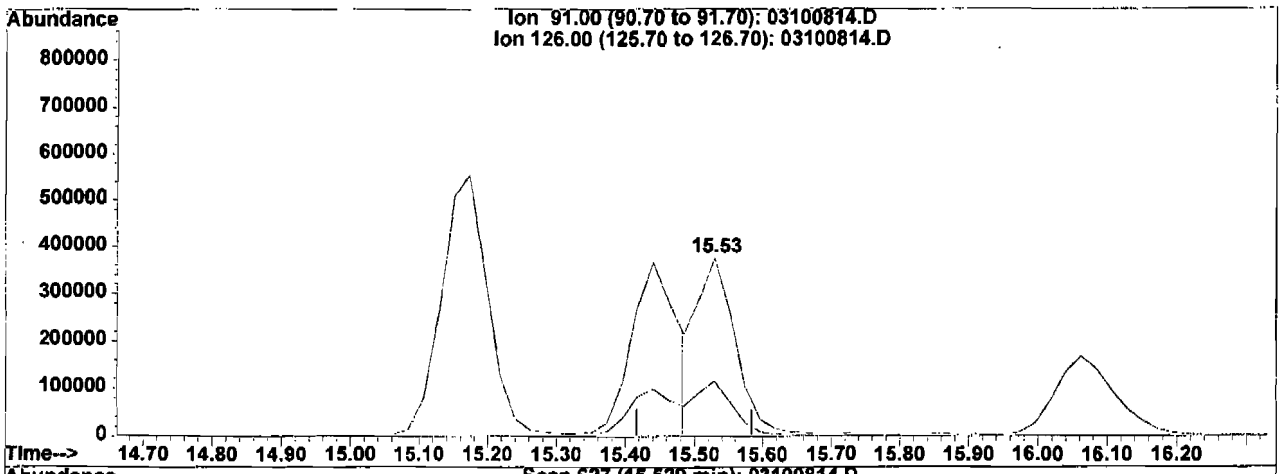
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

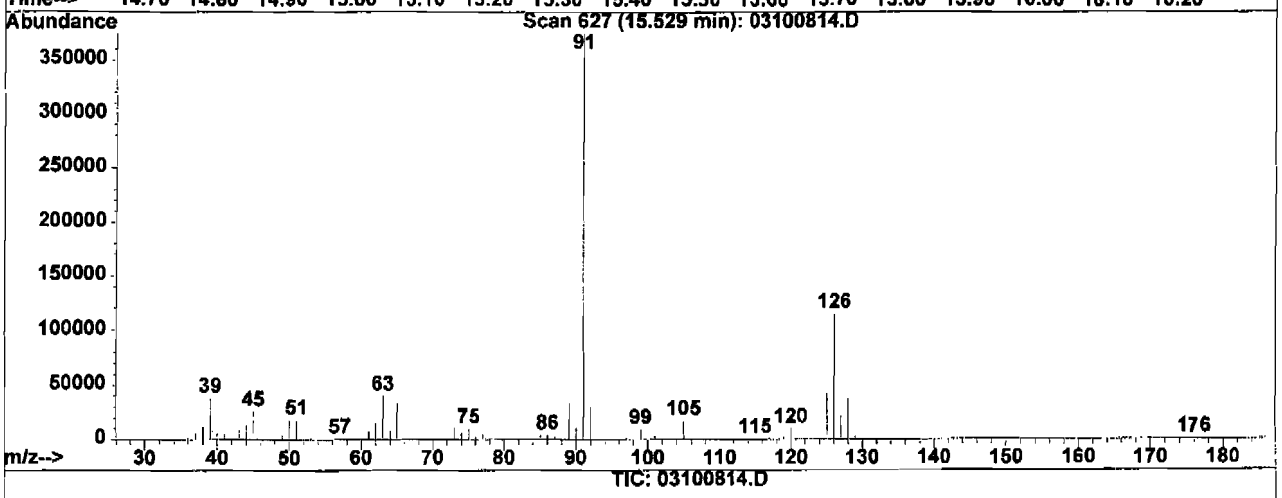
"A" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100814.D Vial: 1
Acq On : 10 Mar 08 19:52 Operator: csm
Sample : CCAL._82608003C03 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 15:09 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(59) 4-Chlorotoluene

15.53min 123.24ng m

response 375077

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

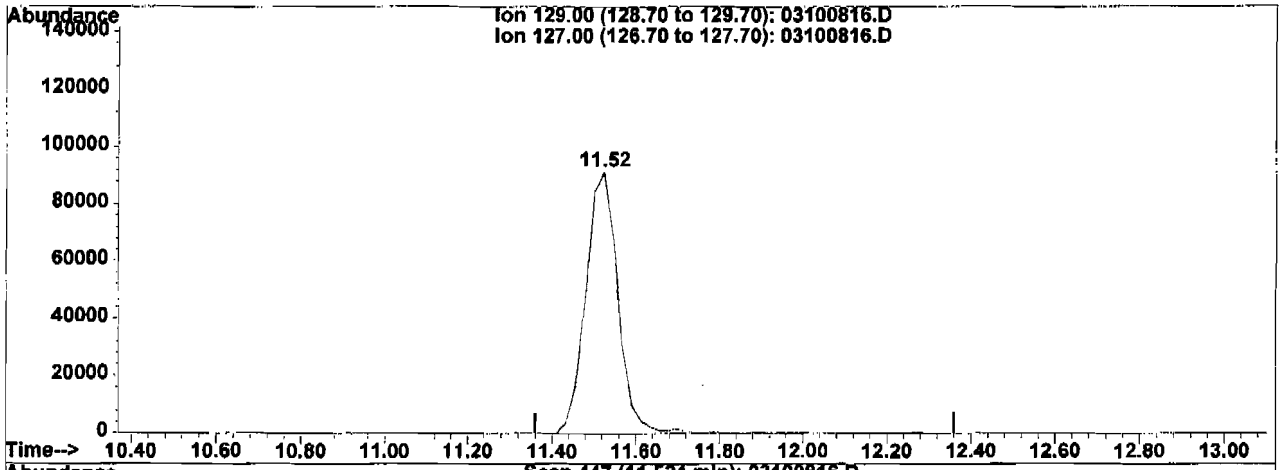
03100814.D 82608003.M Wed Mar 19 15:09:51 2008

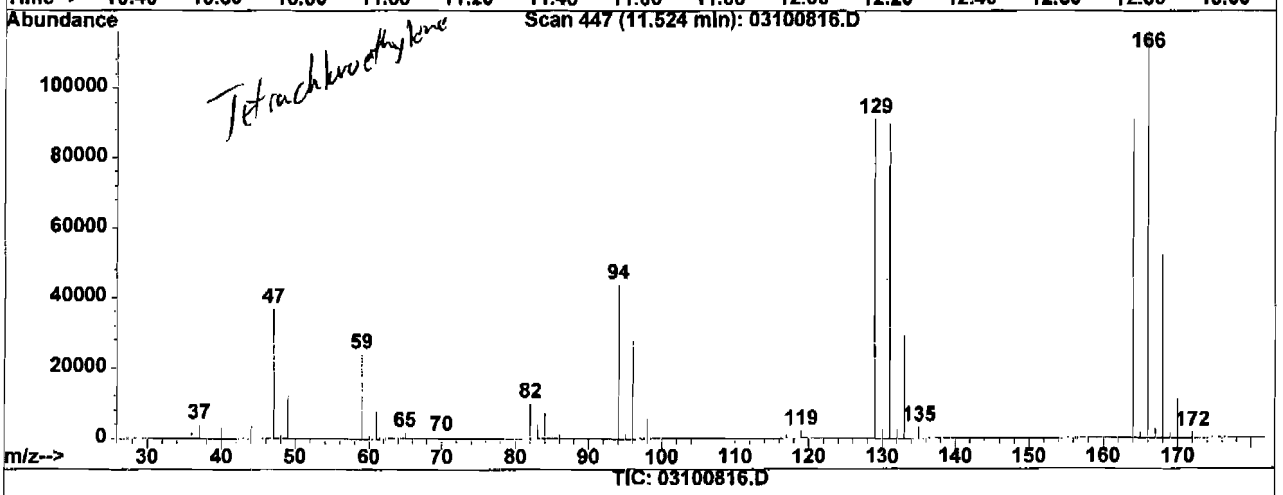
Deleted 6/3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100816.D Vial: 1
Acq On : 10 Mar 08 21:01 Operator: csm
Sample : 0208030-7 10uL Inst :
Misc : 1316074 Multiplr: 5000.00
Quant Time: Mar 19 15:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(41) Dibromochloromethane

11.53min 156.67ng

response 4839661

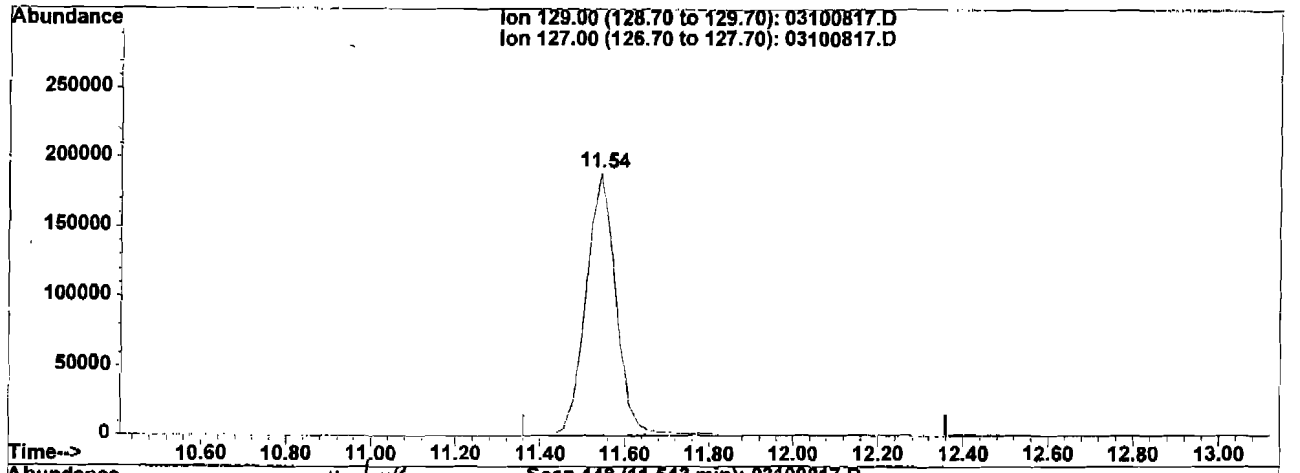
Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

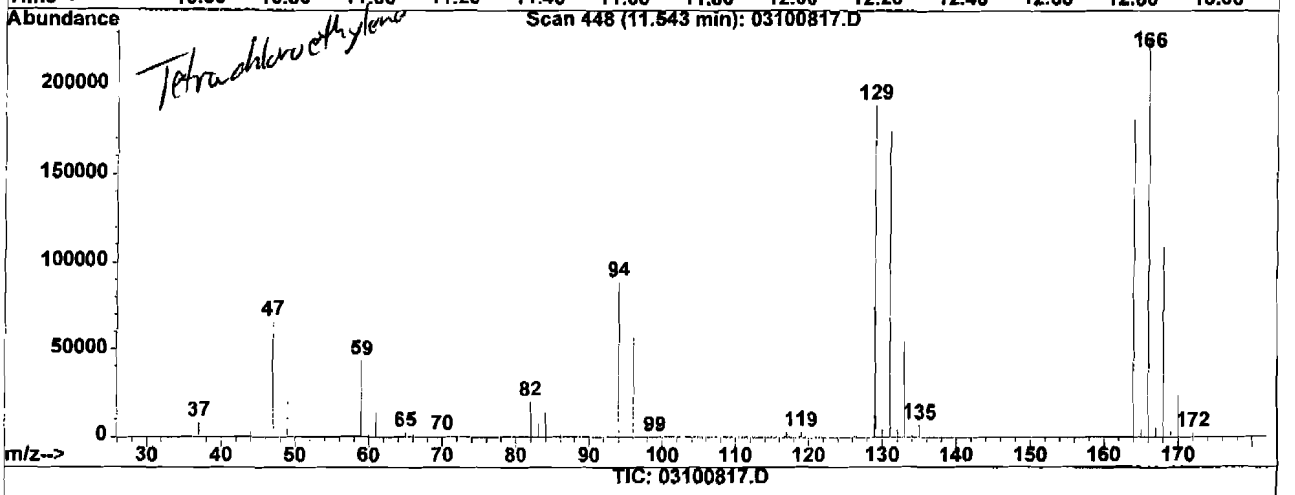
Deleted CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100817.D Vial: 1
Acq On : 10 Mar 08 21:33 Operator: csm
Sample : 0208030-18 10uL Inst :
Misc : 1316060 Multiplr: 5000.00
Quant Time: Mar 19 15:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(41) Dibromochloromethane

11.55min 309.84ng

response 9237973

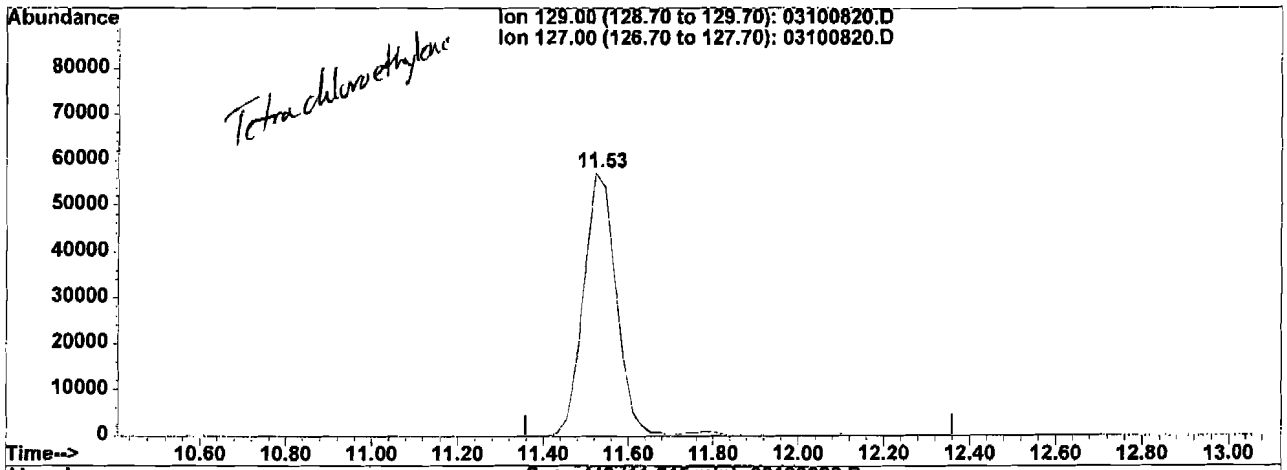
Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

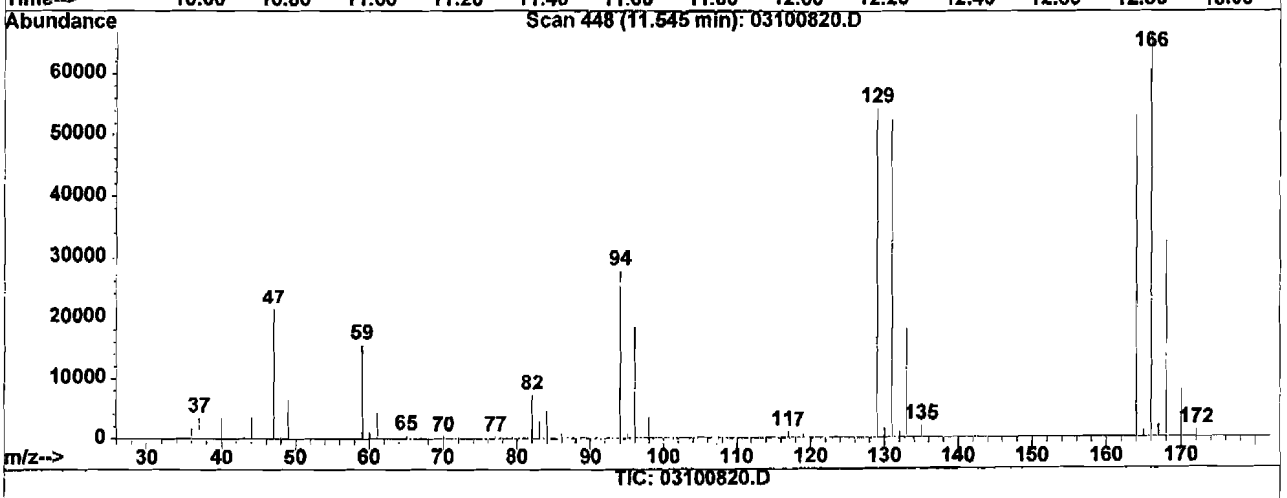
Deleted 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03100820.D Vial: 1
Acq On : 10 Mar 08 23:06 Operator: csm
Sample : 0208030-5 10uL Inst :
Misc : 131058 Multiplr: 5000.00
Quant Time: Mar 19 15:20 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03100820.D

(41) Dibromochloromethane

11.54min 110.13ng

response 3074054

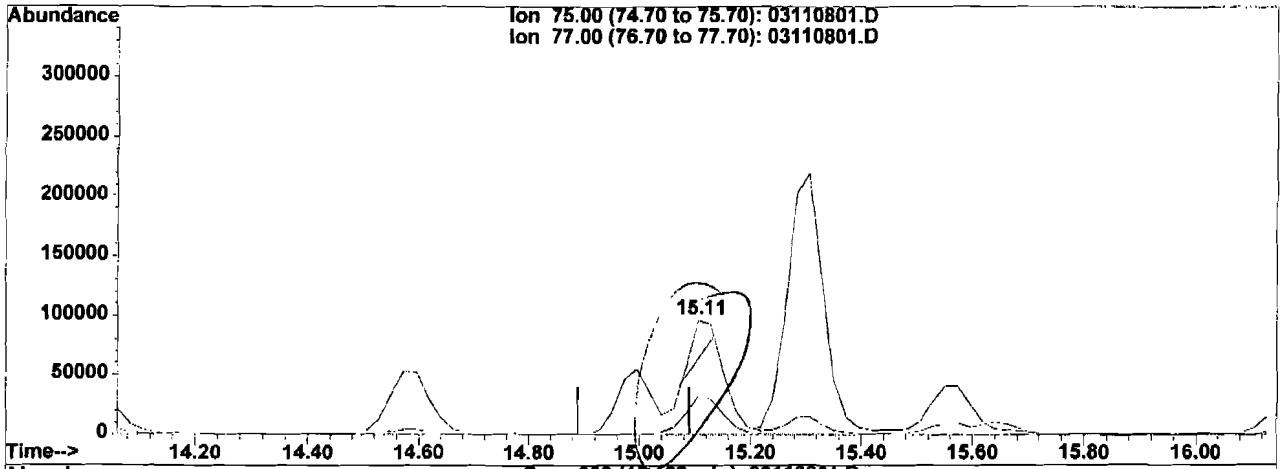
Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

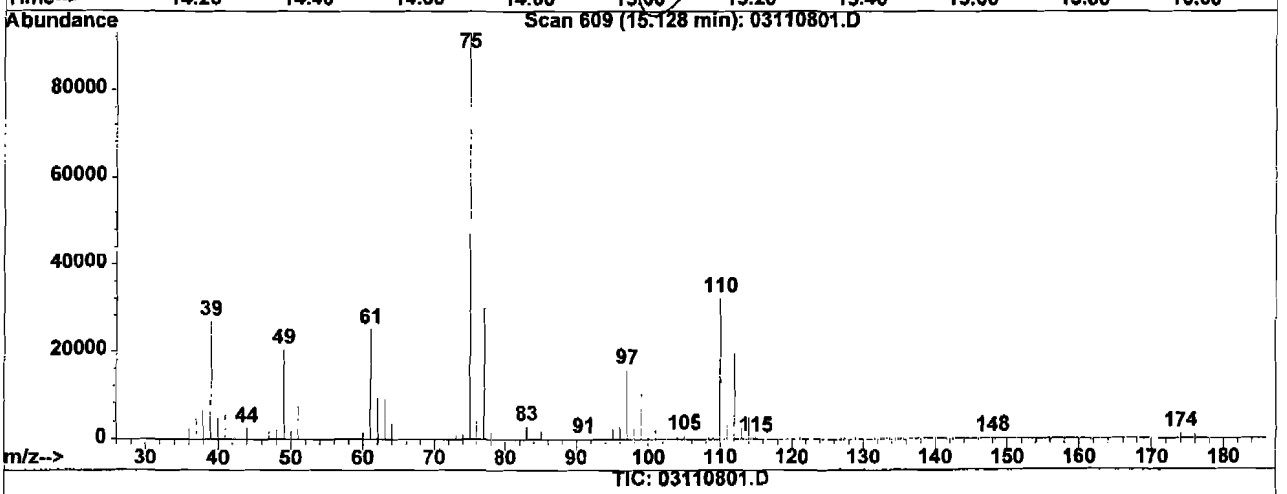
"D" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110801.D Vial: 1
Acq On : 11 Mar 08 07:45 Operator: csm
Sample : CCAL_82608003C04 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 16:01 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

15.12min 21.00ng

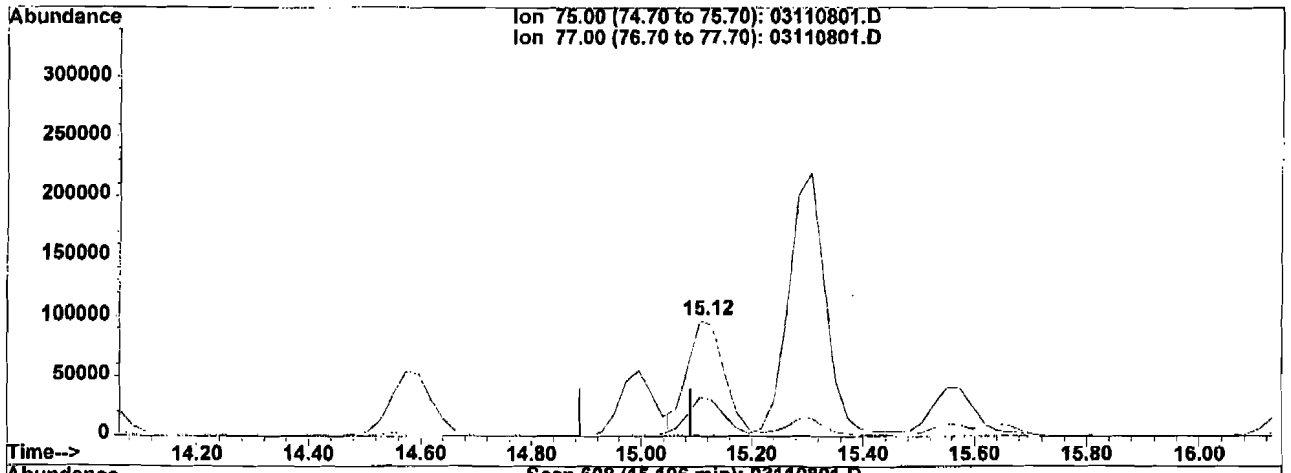
response 19871

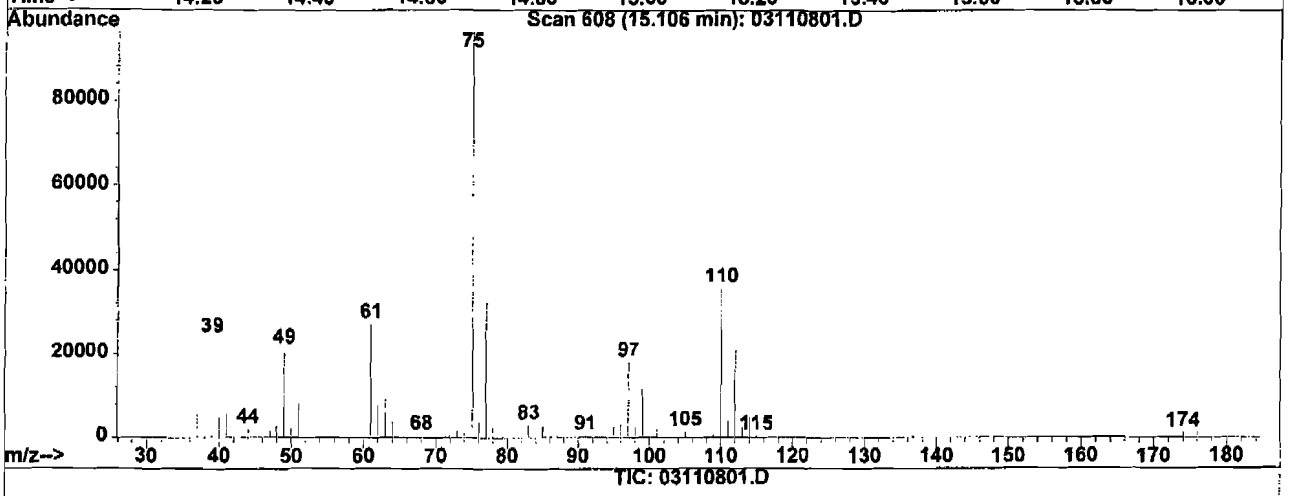
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	37.43#
0.00	0.00	0.00
0.00	0.00	0.00

"A" CS/3/14/04 I.C. Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110801.D Vial: 1
Acq On : 11 Mar 08 07:45 Operator: csm
Sample : CCAL_82608003C04 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 16:01 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03110801.D

(56) 1,2,3-Trichloropropane

15.11min 104.94ng m

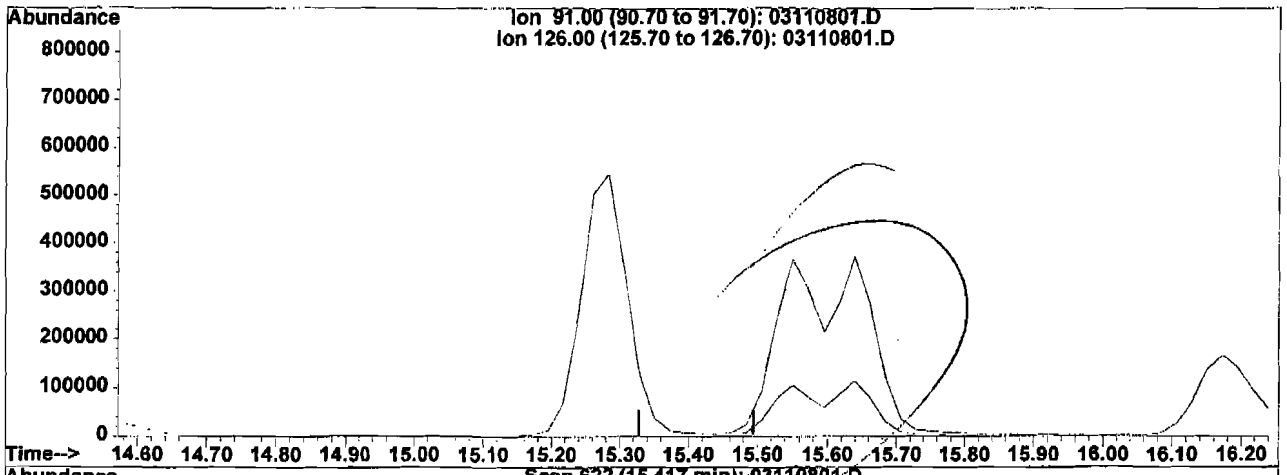
response 99292

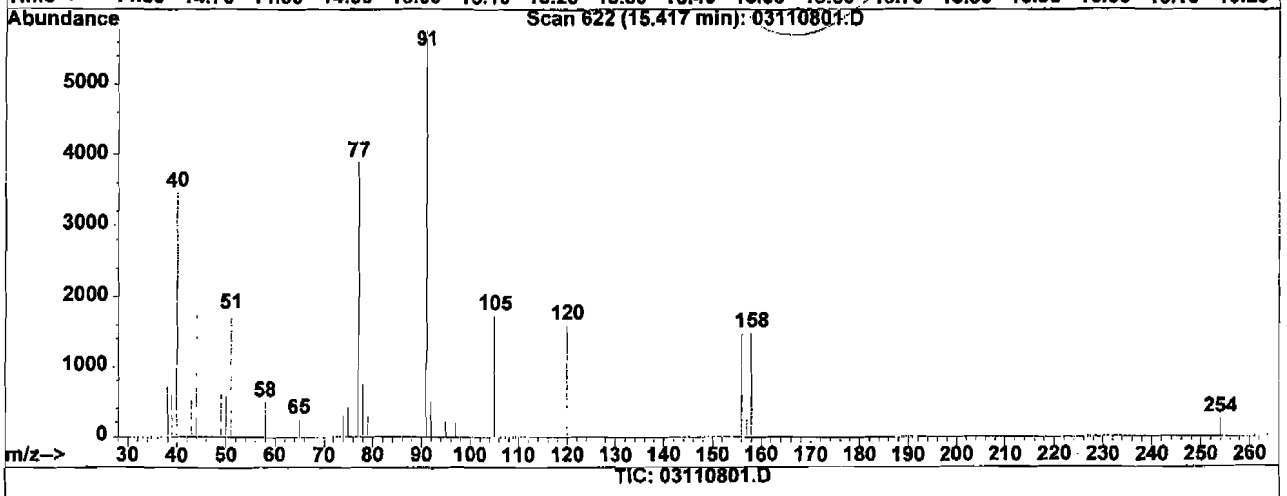
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	7.49
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110801.D Vial: 1
Acq On : 11 Mar 08 07:45 Operator: csm
Sample : CCAL_82608003C04 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 16:01 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03110801.D

(57) 2-Chlorotoluene

15.41min 0.00ng d

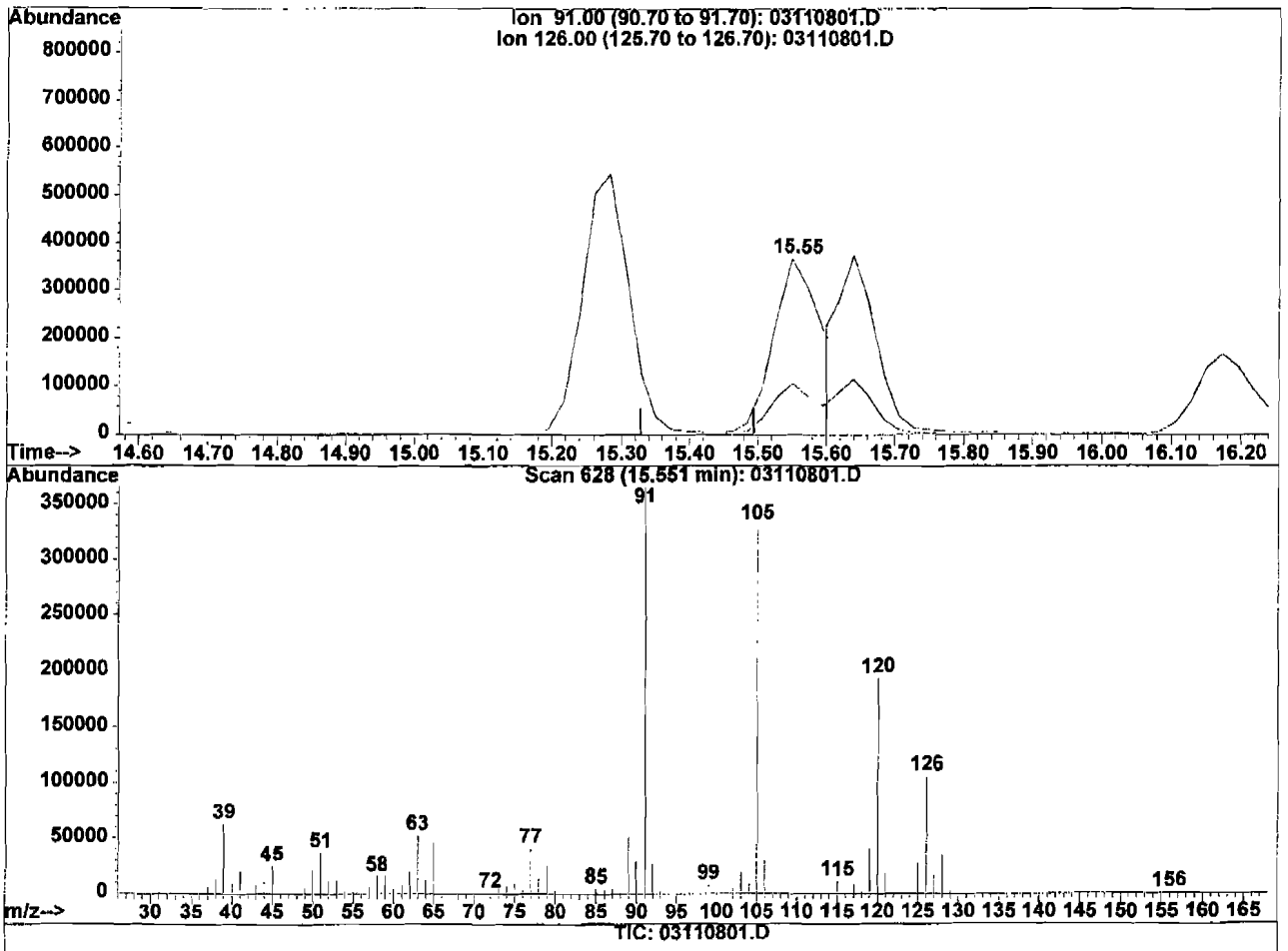
response 0

Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

"A" CSM 3/19/08 I.C. Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110801.D Vial: 1
Acq On : 11 Mar 08 07:45 Operator: csm
Sample : CCAL_82608003C04 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 16:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(57) 2-Chlorotoluene

15.55min 120.61ng m

response 368006

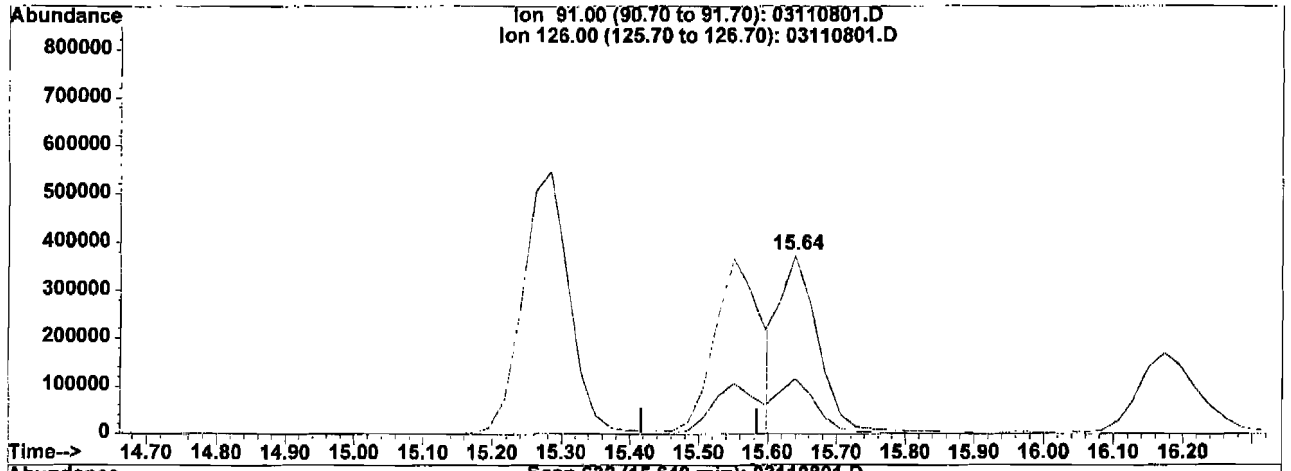
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

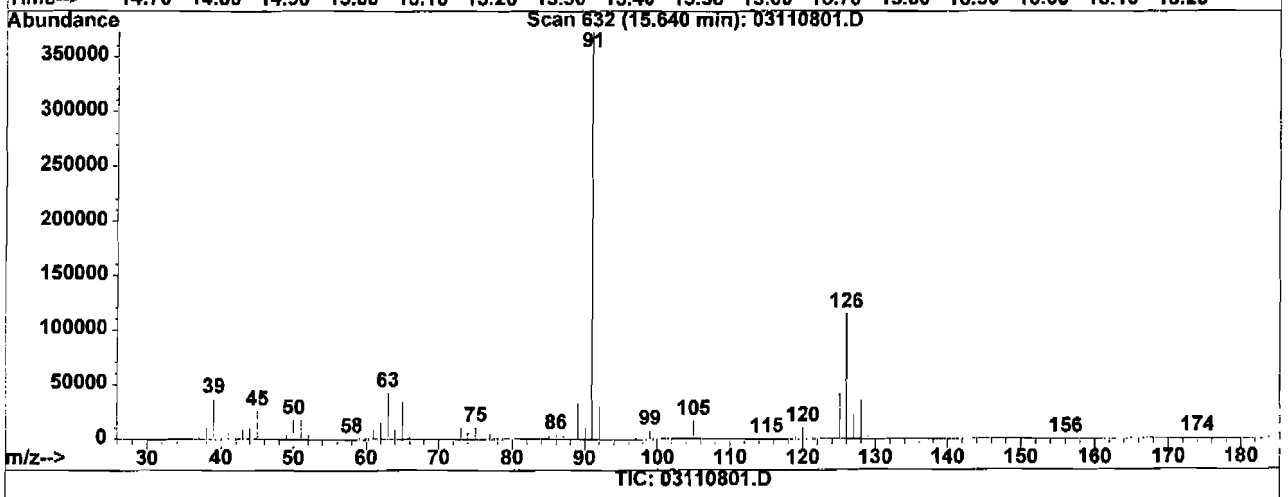
"A" CS 3/19/08 J.L.

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110801.D Vial: 1
Acq On : 11 Mar 08 07:45 Operator: csm
Sample : CCAL_82608003C04 Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 16:02 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03110801.D

(59) 4-Chlorotoluene

15.64min 119.44ng m

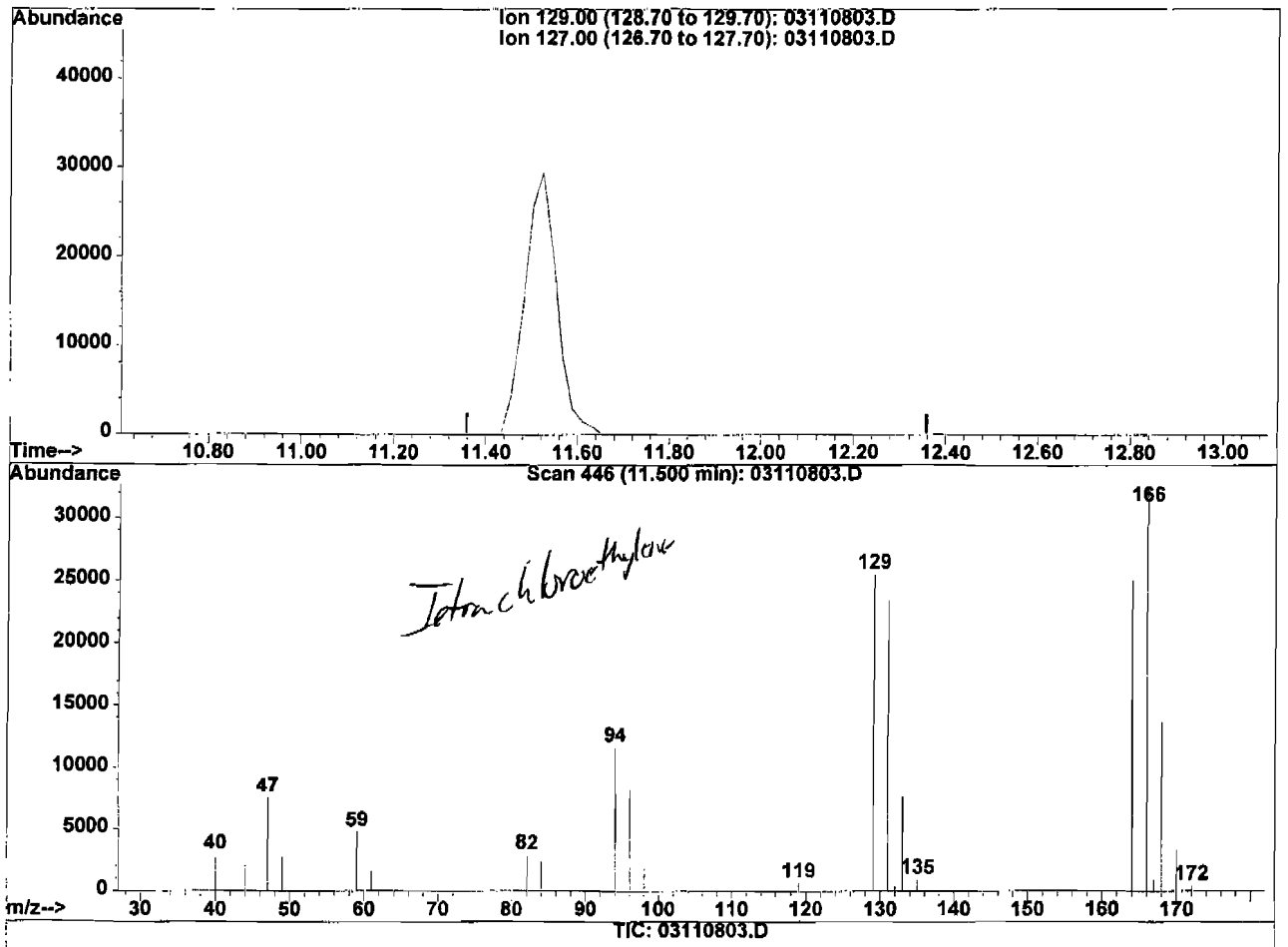
response 372352

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110803.D Vial: 1
Acq On : 11 Mar 08 11:04 Operator: csm
Sample : 0208030-20 100uL Inst :
Misc : 1316059 Multiplr: 1.00
Quant Time: Mar 19 16:06 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(41) Dibromochloromethane

11.86min 0.00ng d

response 0

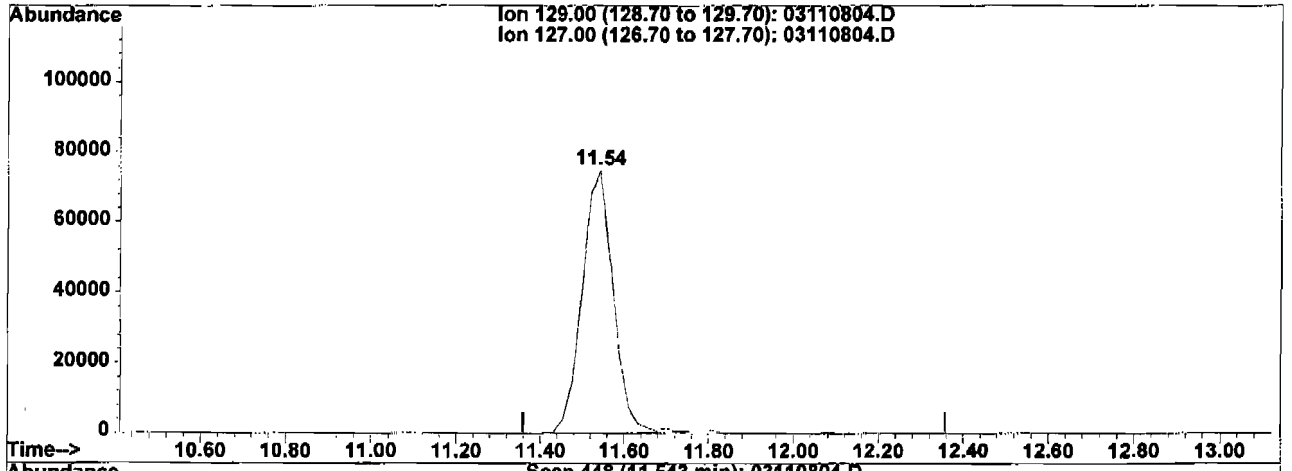
Ion	Exp%	Act%
129.00	100	0.00
127.00	80.50	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Deleted CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110804.D Vial: 1
Acq On : 11 Mar 08 11:53 Operator: csm
Sample : 0208030-2 1.0uL Inst :
Misc : 1316057 Multiplr: 5000.00
Quant Time: Mar 11 12:31 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(41) Dibromochloromethane

11.55min 126.69ng

response 3829185

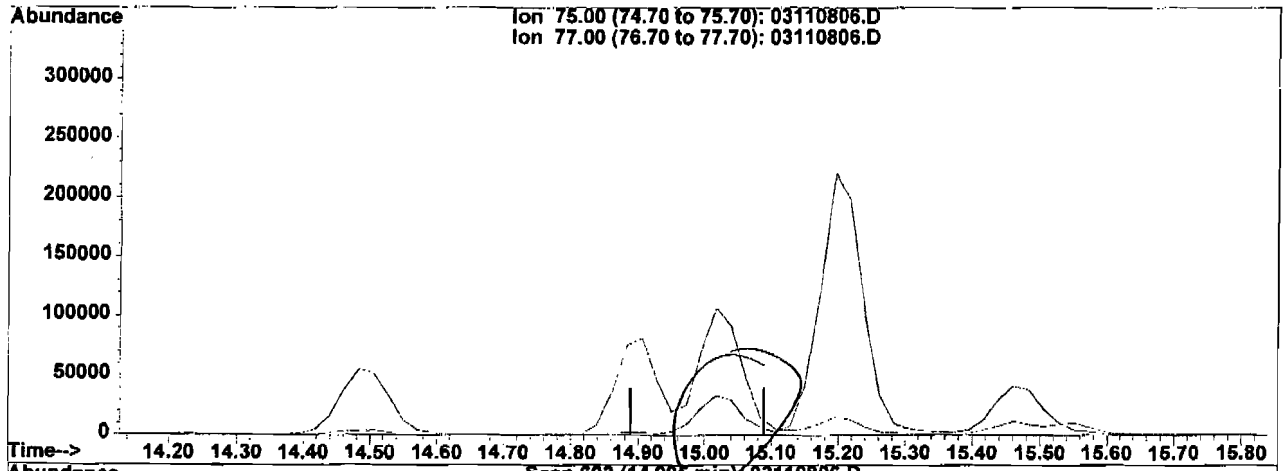
Ion	Exp%	Act%
129.00	100	100
127.00	80.50	0.00#
0.00	0.00	0.00
0.00	0.00	0.00

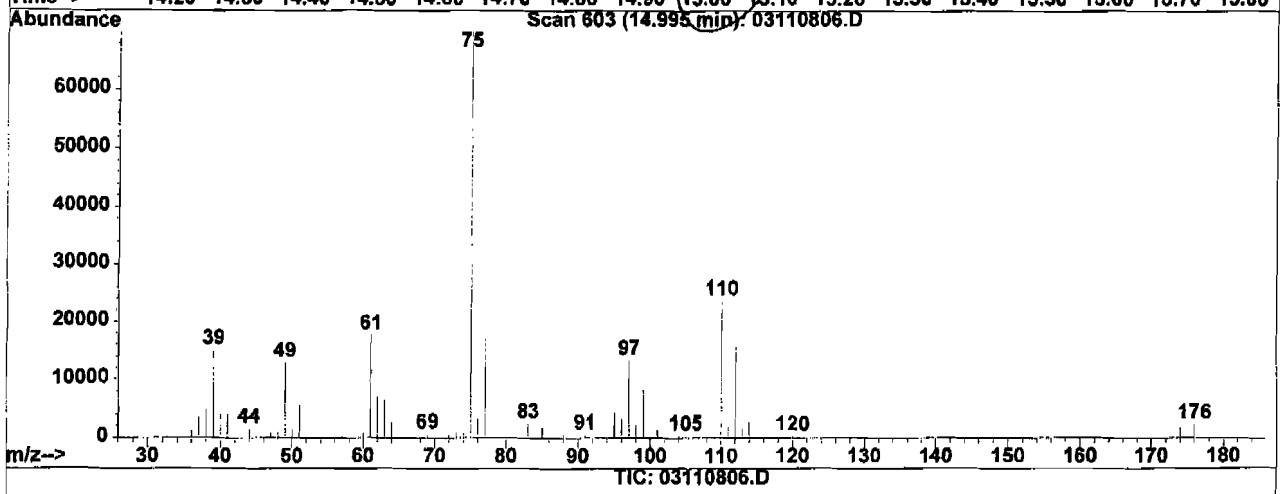
RCB 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110806.D Vial: 1
Acq On : 11 Mar 08 13:29 Operator: csm
Sample : 0208030-2 1.0uL MSD Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 11 15:53 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.99min 0.00ng d

response 0

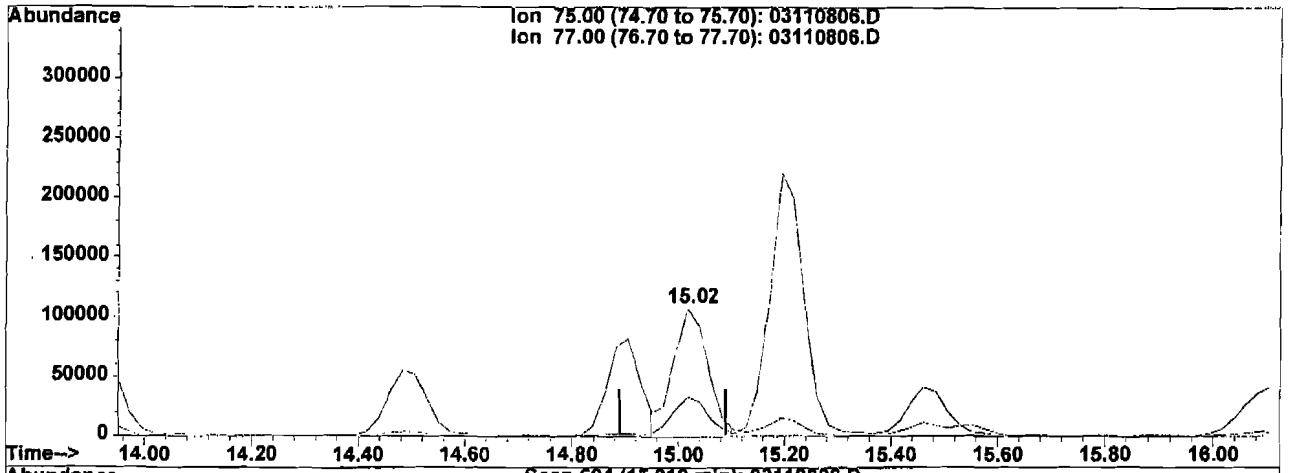
Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

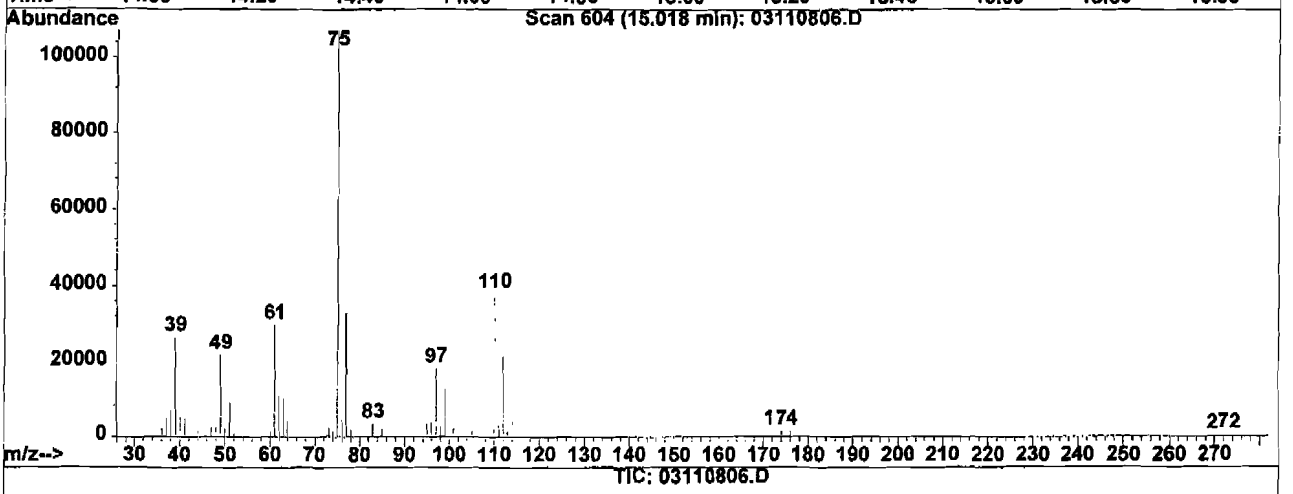
Ac 3/19/08 I.C

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110806.D Vial: 1
Acq On : 11 Mar 08 13:29 Operator: csm
Sample : 0208030-2 1.0uL MSD Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 16:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

15.02min 128.29ng m

response 108077

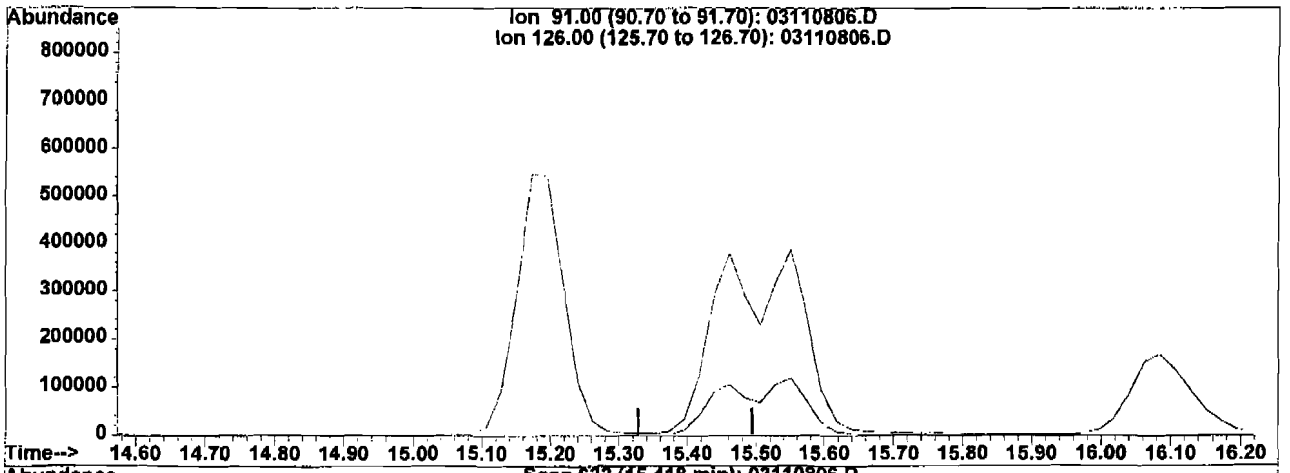
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

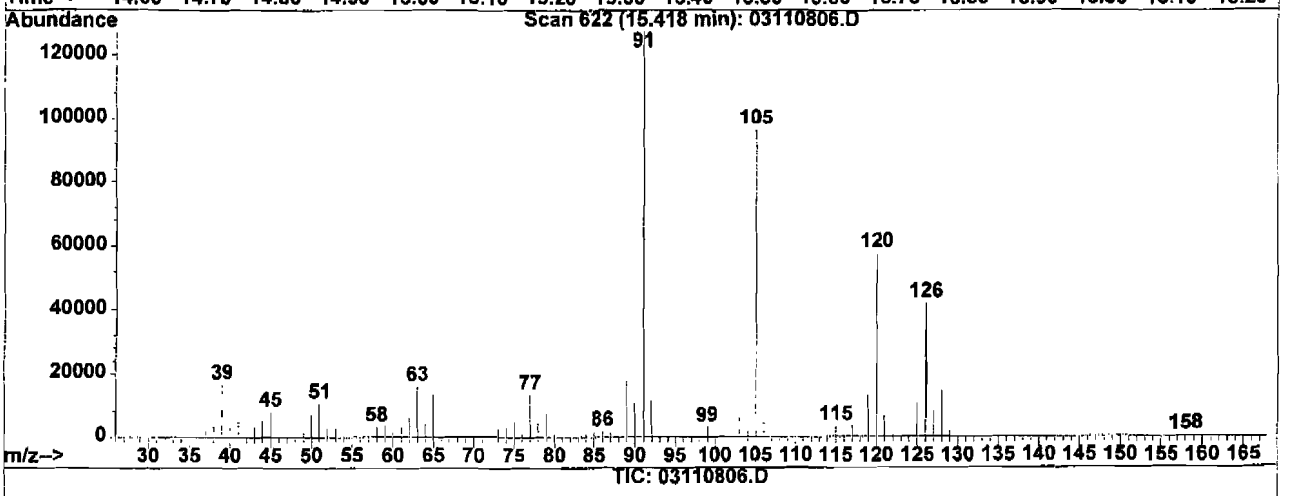
"B" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110806.D Vial: 1
Acq On : 11 Mar 08 13:29 Operator: csm
Sample : 0208030-2 1.0uL MSD Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 16:14 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.41min 0.00ng d

response 0

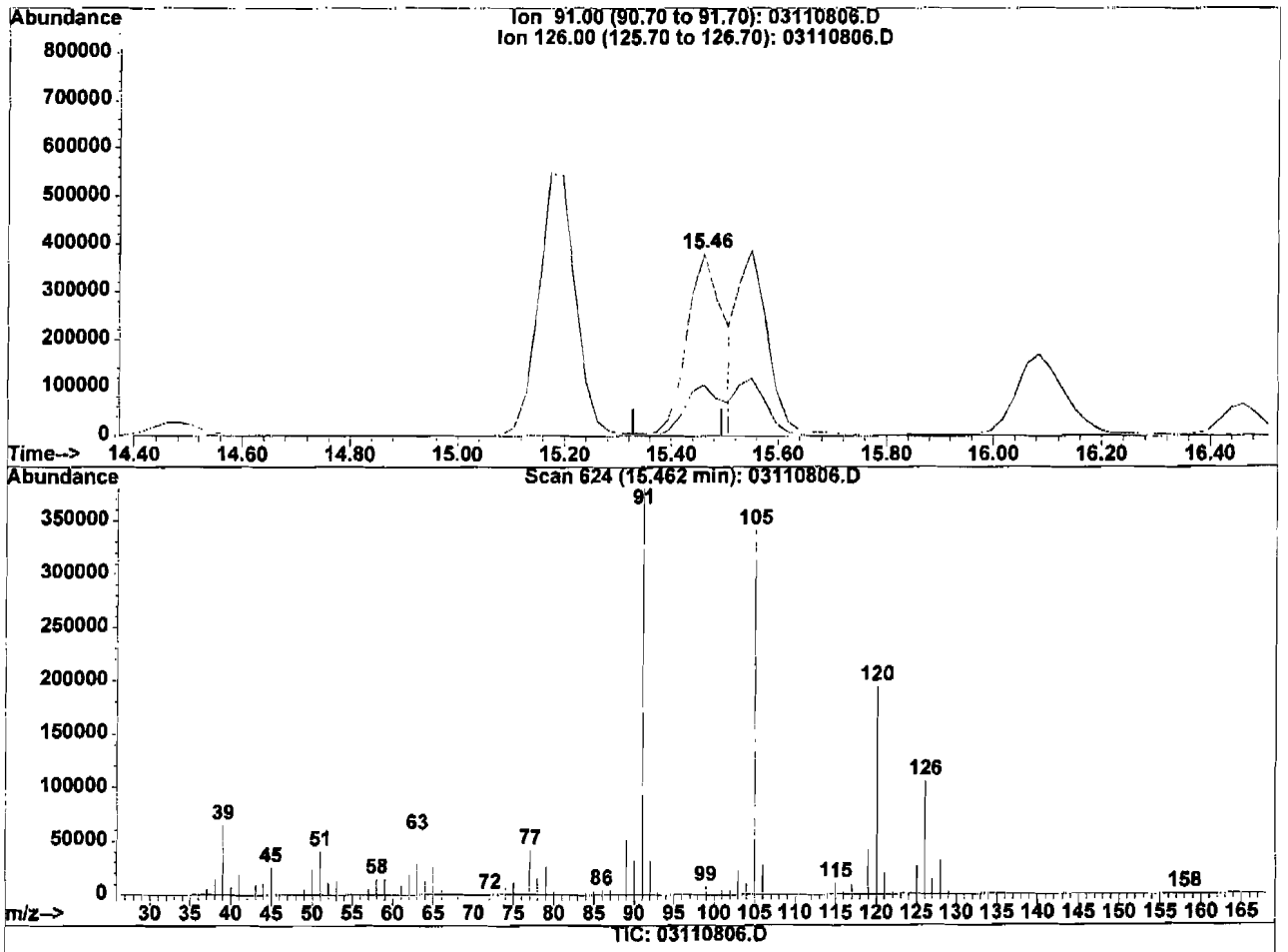
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

"A" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110806.D Vial: 1
Acq On : 11 Mar 08 13:29 Operator: csm
Sample : 0208030-2 1.0uL MSD Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 16:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(57) 2-Chlorotoluene

15.46min 148.40ng m

response 380096

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

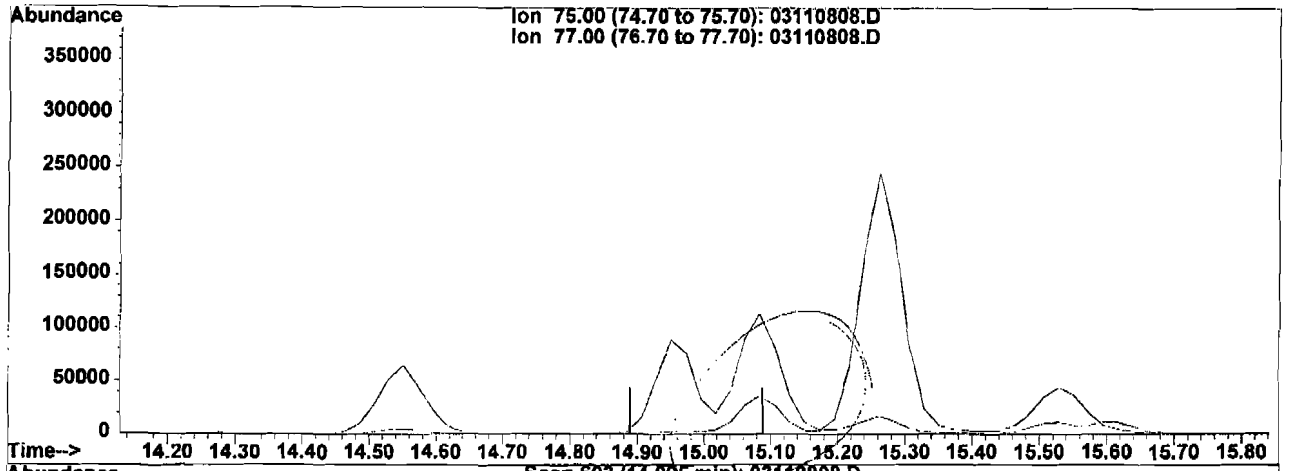
03110806.D 82608003.M Wed Mar 19 16:15:10 2008

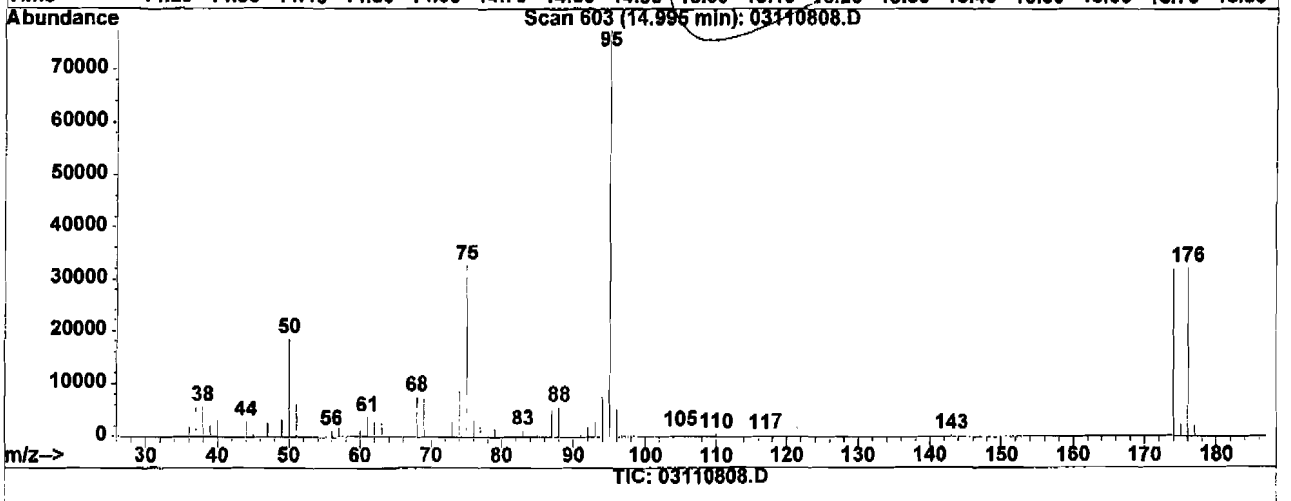
BCS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110808.D Vial: 1
Acq On : 11 Mar 08 16:04 Operator: csm
Sample : 0208030-2 1.0uL MS Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 16:16 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(56) 1,2,3-Trichloropropane

14.99min 0.00ng d

response 0

Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

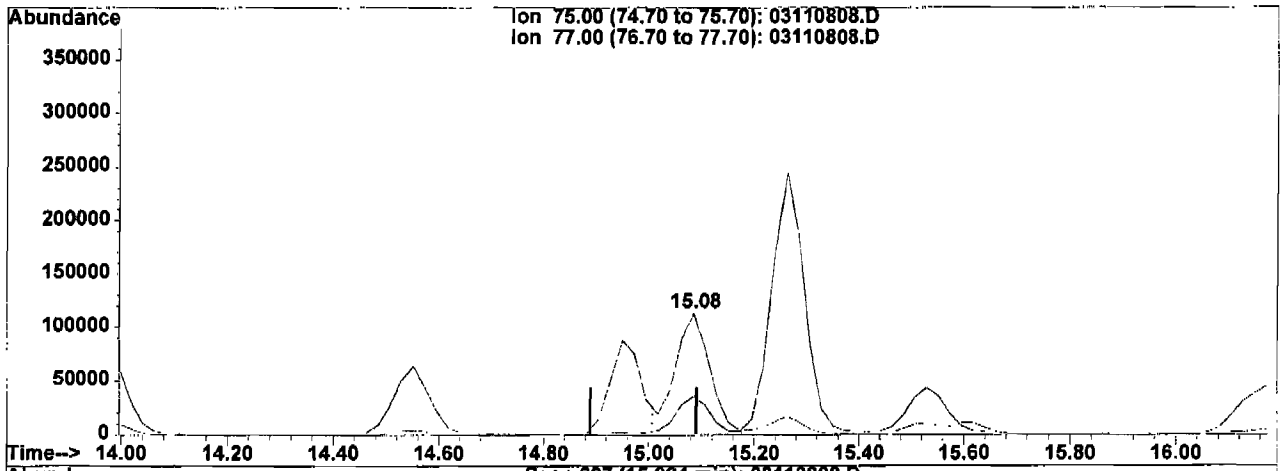
03110808.D 82608003.M Wed Mar 19 17:12:51 2008

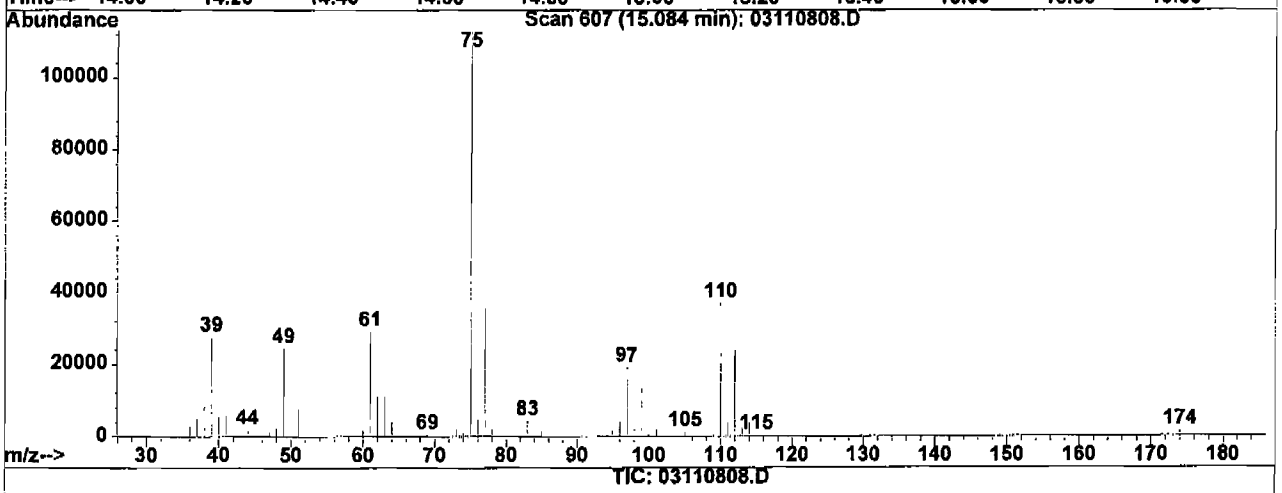
"A" C.S. 3/19/08 IC

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110808.D Vial: 1
Acq On : 11 Mar 08 16:04 Operator: csm
Sample : 0208030-2 1.0uL MS Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 17:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03110808.D

(56) 1,2,3-Trichloropropane

15.08min 132.05ng m

response 113040

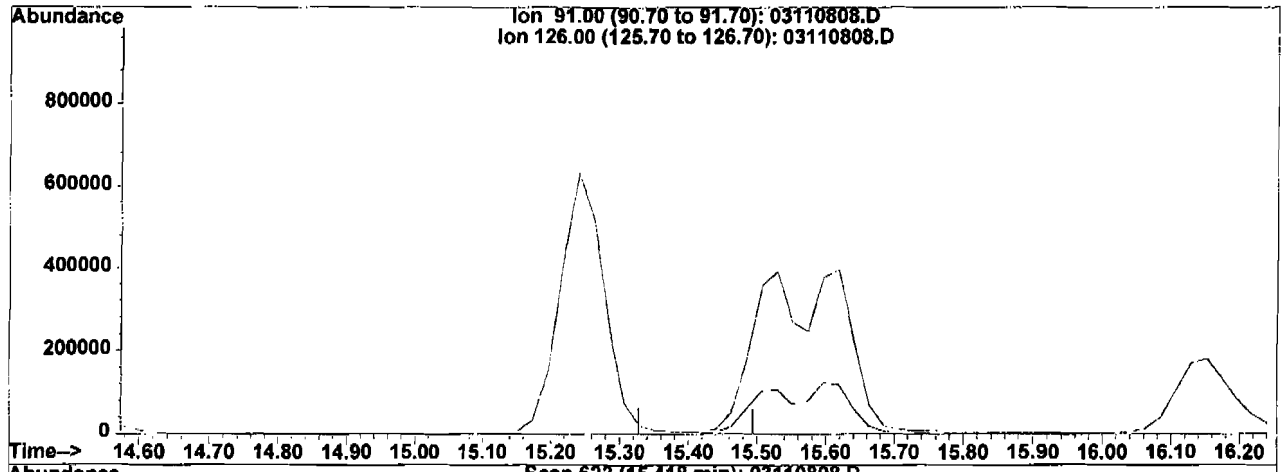
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

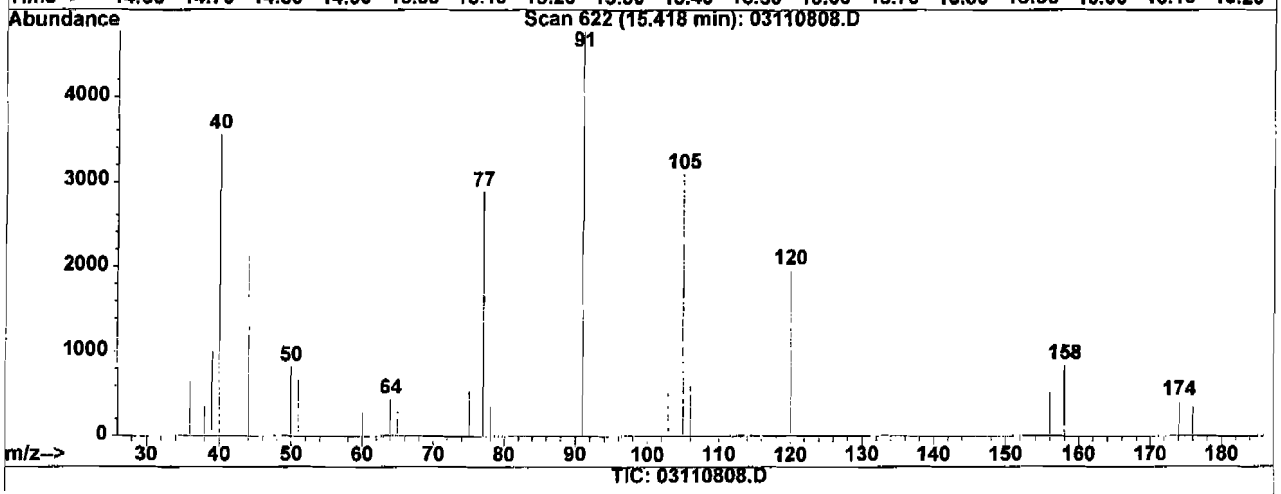
c B 03/23/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110808.D Vial: 1
Acq On : 11 Mar 08 16:04 Operator: csm
Sample : 0208030-2 1.0uL MS Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 17:12 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.41min 0.00ng d

response 0

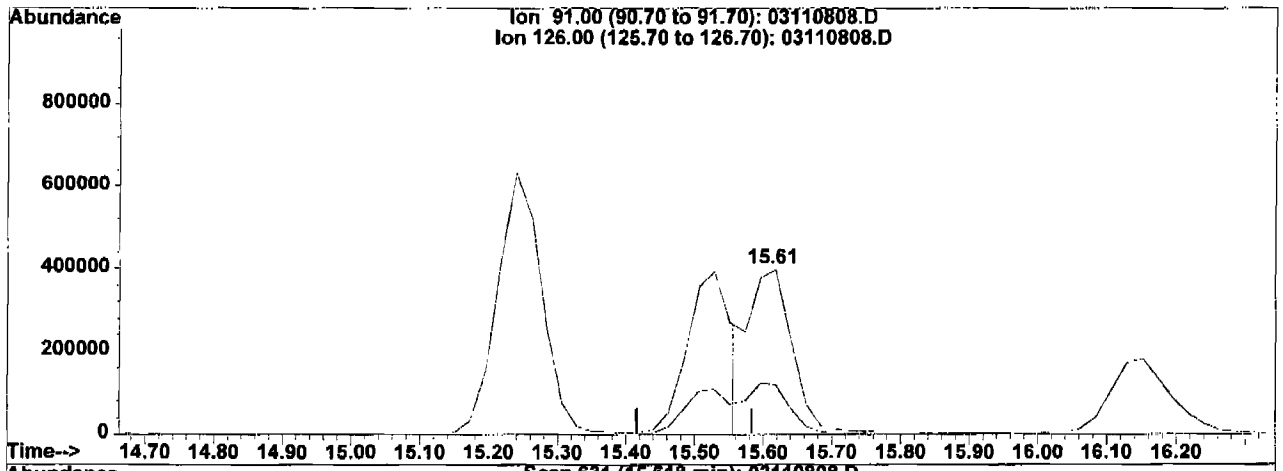
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

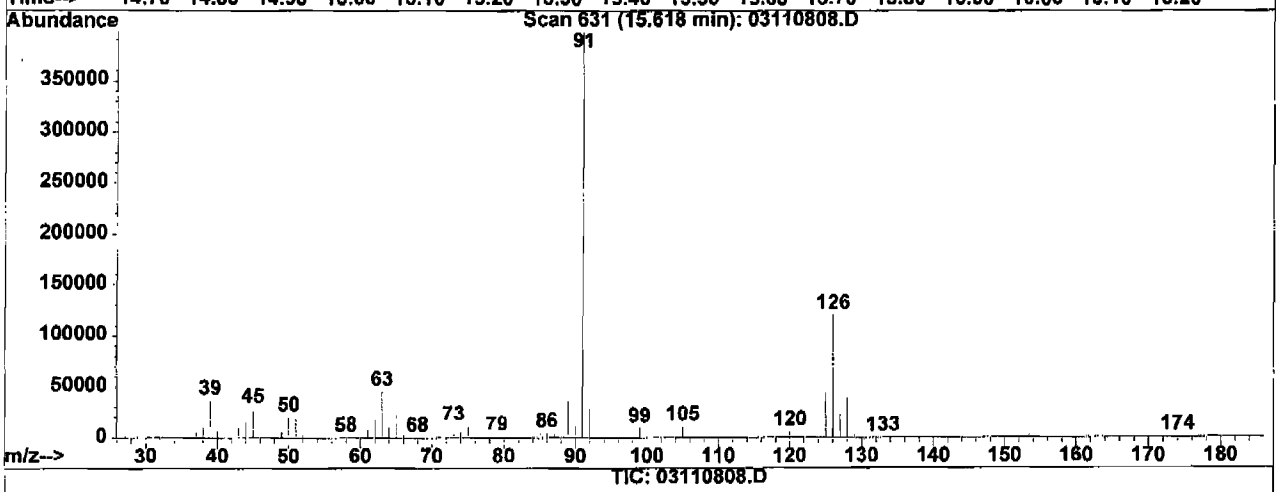
"A" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110808.D Vial: 1
Acq On : 11 Mar 08 16:04 Operator: csm
Sample : 0208030-2 1.0uL MS Inst :
Misc : 1316057 Multiplr: 1.00
Quant Time: Mar 19 17:13 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(59) 4-Chlorotoluene

15.62min 145.94ng m

response 411669

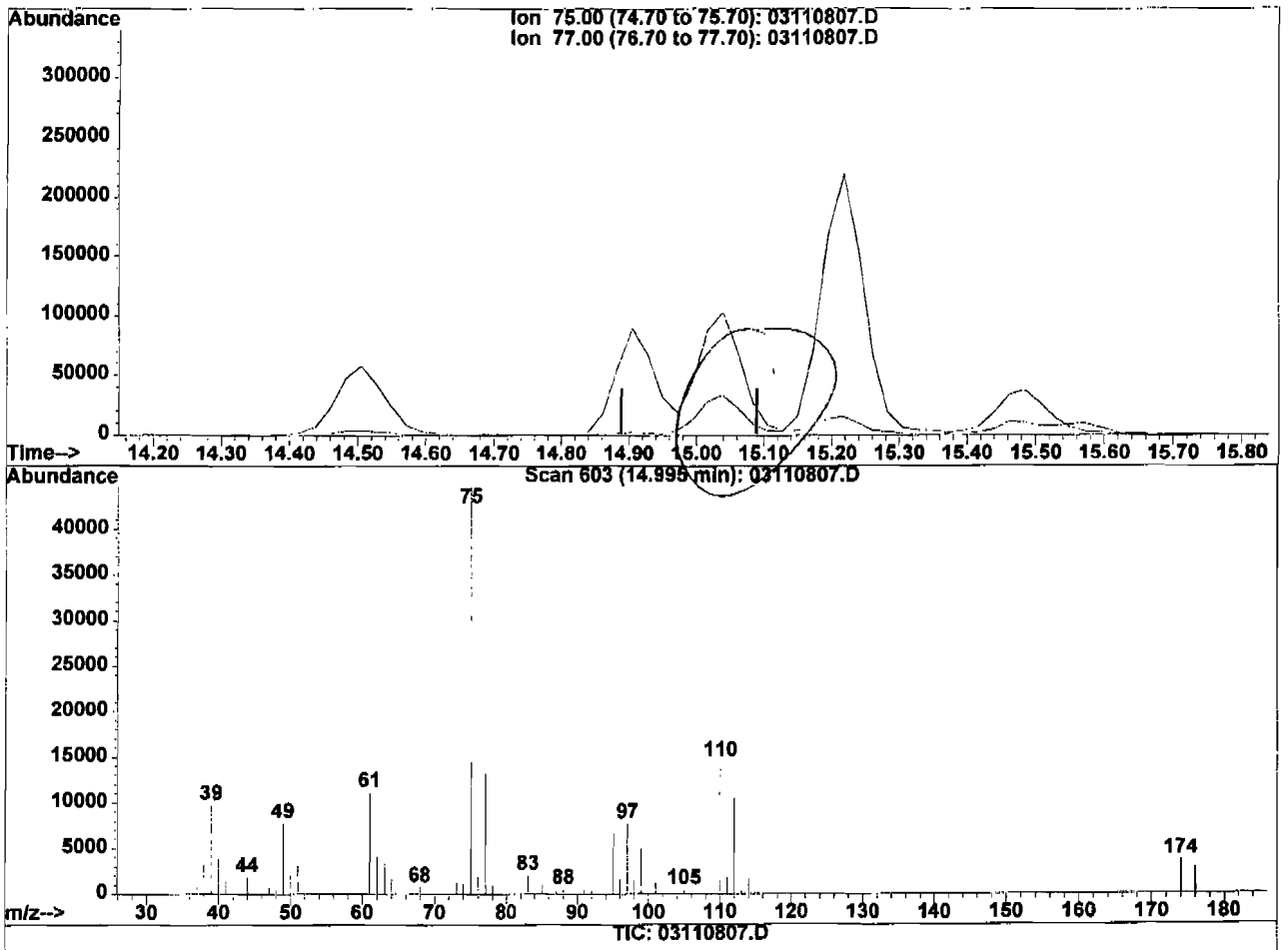
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

1-B(S)3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110807.D Vial: 1
Acq On : 11 Mar 08 14:05 Operator: csm
Sample : 0208030-LS Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 17:14 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(56) 1,2,3-Trichloropropane

14.99min 0.00ng d

response 0

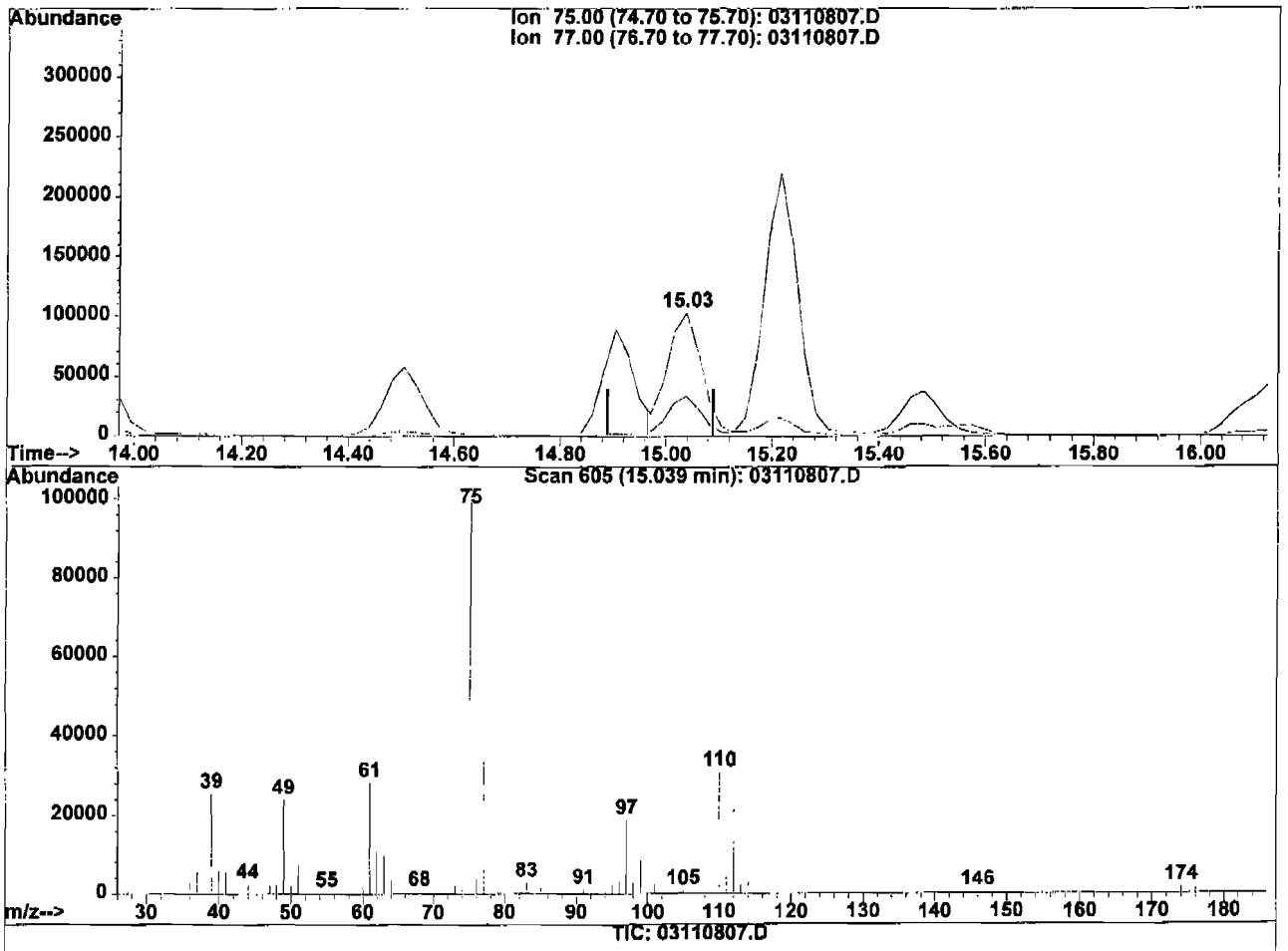
Ion	Exp%	Act%
75.00	100	0.00
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

"A" CS 3/19/08 I.C.

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110807.D Vial: 1
Acq On : 11 Mar 08 14:05 Operator: csm
Sample : 0208030-LS Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 17:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration



(56) 1,2,3-Trichloropropane

15.04min 115.46ng m

response 102897

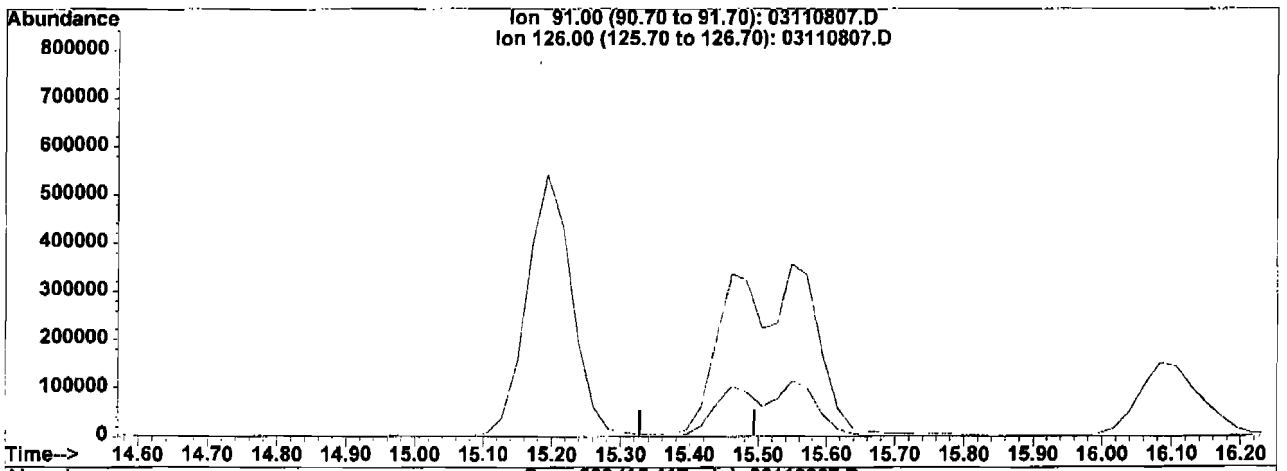
Ion	Exp%	Act%
75.00	100	100
77.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

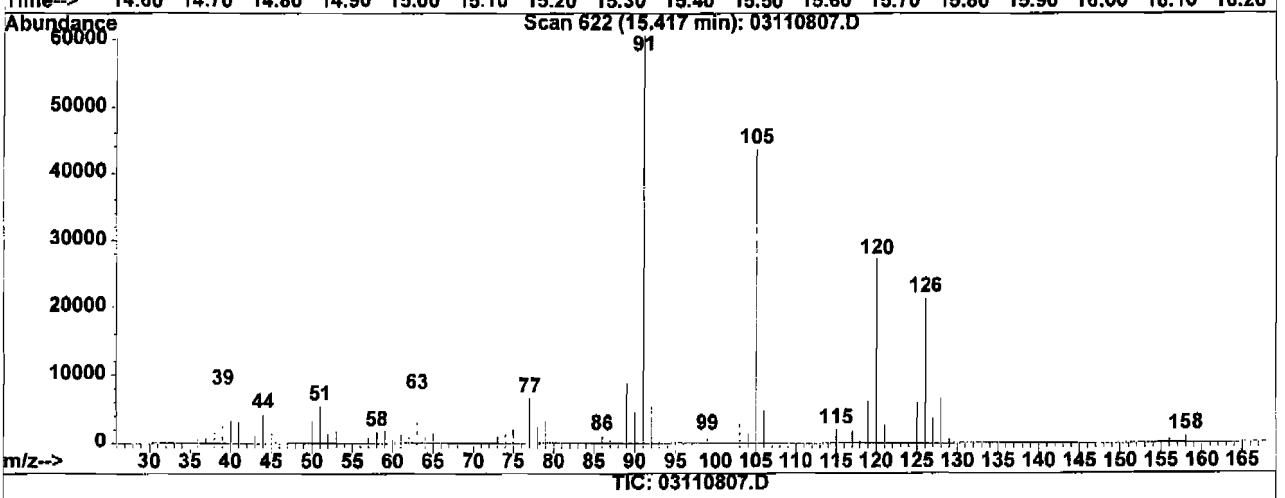
B 3/29/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110807.D Vial: 1
Acq On : 11 Mar 08 14:05 Operator: csm
Sample : 0208030-LS Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 17:14 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(57) 2-Chlorotoluene

15.41min 0.00ng d

response 0

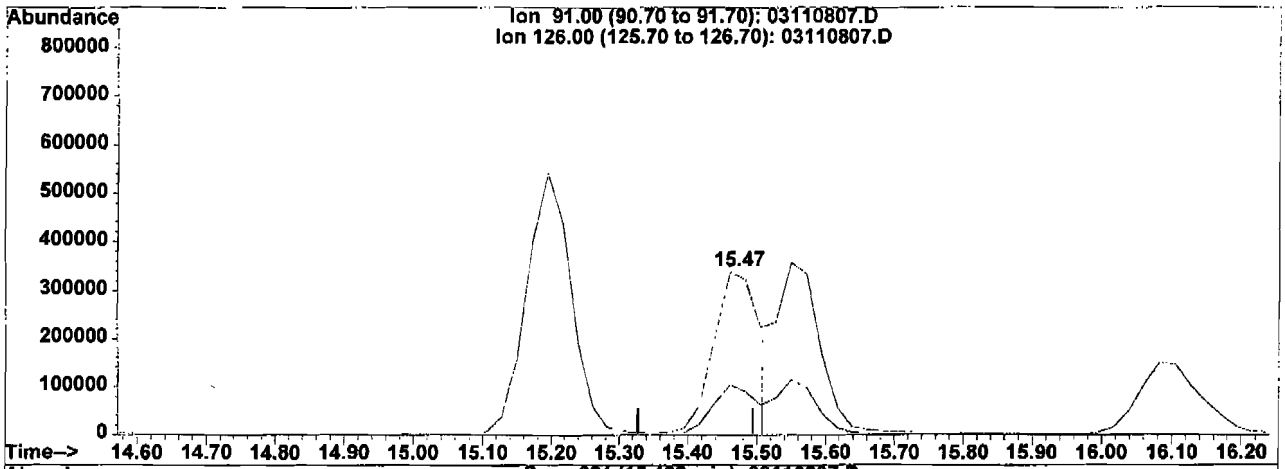
Ion	Exp%	Act%
91.00	100	0.00
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

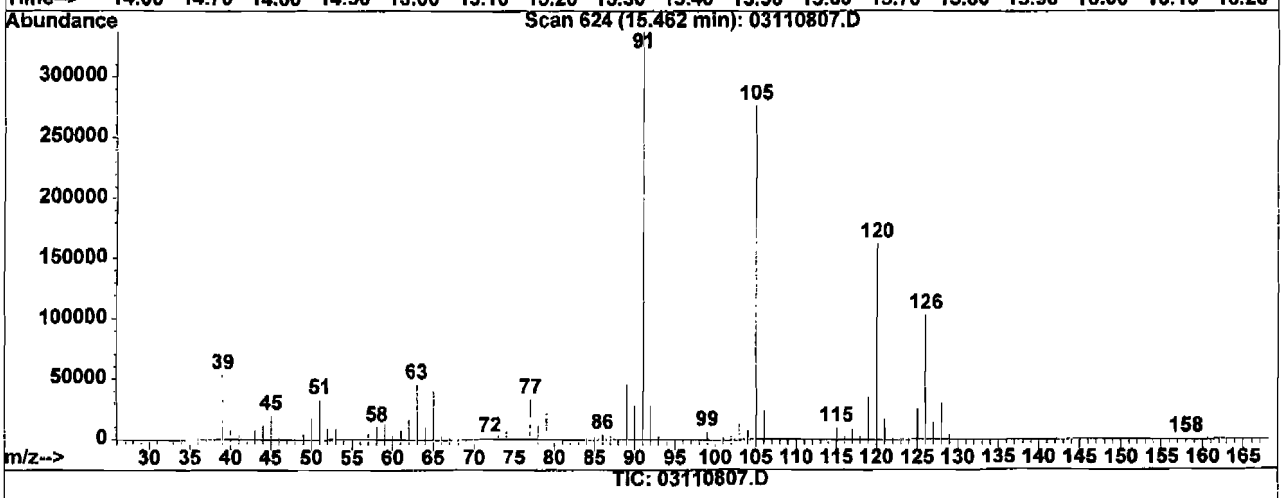
"A" 03/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110807.D Vial: 1
Acq On : 11 Mar 08 14:05 Operator: csm
Sample : 0208030-LS Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 17:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





TIC: 03110807.D

(57) 2-Chlorotoluene

15.46min 121.22ng m

response 348391

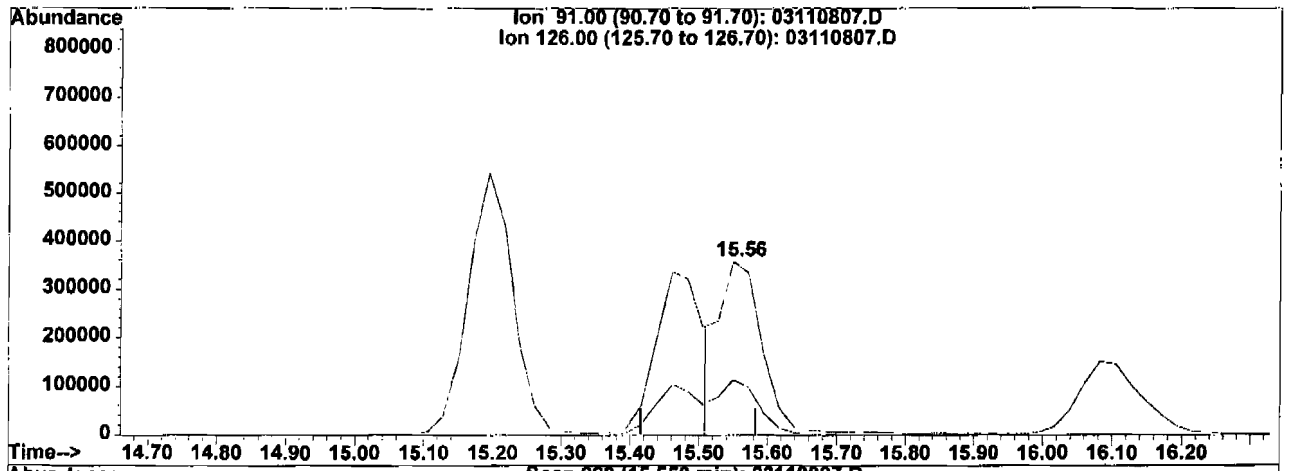
Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

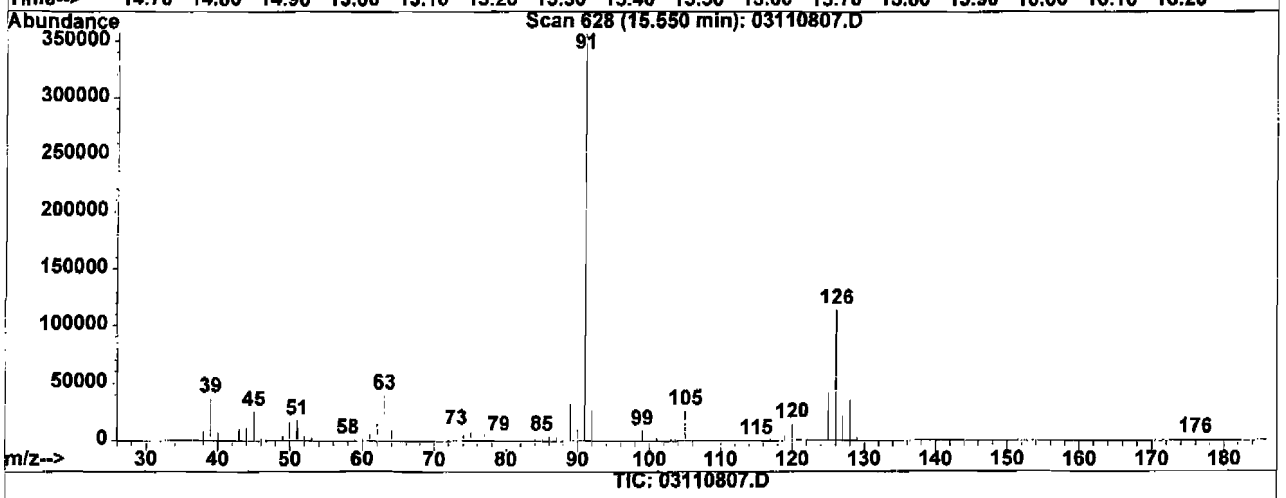
"A" CS 3/19/08

Quantitation Report

Data File : C:\GALWIN98\DATA\0208030B\03110807.D Vial: 1
Acq On : 11 Mar 08 14:05 Operator: csm
Sample : 0208030-LS Inst :
Misc : Multiplr: 1.00
Quant Time: Mar 19 17:15 19108 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\82608003.M (Chemstation Integrator)
Title : 8260
Last Update : Fri Mar 14 12:34:20 2008
Response via : Multiple Level Calibration





(59) 4-Chlorotoluene

15.55min 124.39ng m

response 365276

Ion	Exp%	Act%
91.00	100	100
126.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00

Kyle Clay

From: Ronald K. Mitchum [mailto:rkmitchum@midohio.twcbc.com]
Sent: Thursday, June 12, 2008 3:42 PM
To: Kyle Clay
Subject: Re: VOC Review

I have attached the Form Is with the 20 ng on column reporting limit. I also changed the way dilutions were reported to make it more straight forward. The factor remained the same. I have also enclosed, check the end of the PDF document, last 19 pages for the curves associated with positive responses. In addition I have checked the sample manual integrations and the calibration manual integrations and find that they were performed consistently.

If you have any further questions please give me a call.

Thank you.

Ronald K. Mitchum, Ph.D.
President----- Original Message -----

> **From:** Kyle Clay
> **To:** Ronald K. Mitchum
> **Cc:** David Blye ; David Scotti ; Pat Conlon
> **Sent:** Thursday, June 05, 2008 1:27 PM

Subject: RE: VOC Review

Dr. Mitchum,

From our call yesterday, David Scotti from Loureiro Engineering indicated that, DAT, Inc. is authorized to re-report the data using the low calibration standard as the reporting limit.

When will you be able to send us the reprocessed analysis reports? Also, I believe you indicated you would send the calibration curves for positive results observed in samples and review several of the manual integrations. Let us know what your timetable is for these items.

I did recieve the Dioxin Package today, Thanks.

Kyle R. Clay
Chemistry Department
Environmental Standards, Inc.
1140 Valley Forge Road • P.O. Box 810 • Valley Forge, PA 19482
610.935.5577 • Fax: 610.935.5583 • www.envstd.com • kclay@envstd.com

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From: Ronald K. Mitchum [mailto:rkmitchum@midohio.twcbc.com]
Sent: Tuesday, May 27, 2008 4:27 PM
To: Kyle Clay
Cc: David Scotti
Subject: VOC Review

I have enclosed the review response. If you have additional questions please contact me.

Thank you.

Ronald Mitchum

EPA – 8260C

NARRATIVE

VOC Analysis for
Samples #1316057, 1316059

April 8, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

This report shall not be reproduced except in full, with written approval of the laboratory.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110804.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	20000	U
74-87-3	Chloromethane	20000	U
75-01-4	Vinyl chloride	20000	U
74-83-9	Bromomethane	20000	U
75-00-3	Chloroethane	20000	U
75-69-4	Trichlorofluoromethane	20000	U
75-35-4	1,1-Dichloroethene	20000	U
67-64-1	Acetone	20000	U
79-20-9	Methyl Acetate	20000	U
75-15-0	Carbon disulfide	20000	U
75-09-2	Methylene Chloride	3600	JD
156-60-5	Trans-1,2-dichloroethene	20000	U
75-34-3	1,1-Dichloroethane	20000	U
78-93-3	2-Butanone	20000	U
594-20-7	Propane, 2,2-dichloro-	20000	U
540-59-0	cis-1,2-Dichloroethene	19000	JD
67-66-3	Chloroform	20000	U
74-97-5	Bromochloromethane	20000	U
110-82-7	Cyclohexane	20000	U
71-55-6	1,1,1,-Trichloroethane	20000	U
56-23-5	Carbon tetrachloride	20000	U
563-58-6	1,1-Dichloropropene	20000	U
71-43-2	Benzene	20000	U
75-34-3	1,2-Dichloroethane	20000	U
108-87-2	Methylcyclohexane	20000	U
127-18-4	Trichloroethene	28000	D
78-87-5	1,2-Dichloropropane	20000	U
108-10-1	4-Methyl-2-pentanone	20000	U
74-95-3	Dibromomethane	20000	U
75-27-4	Bromodichloromethane	20000	U
591-78-6	2-Hexanone	20000	U
108-88-3	Toluene	20000	U
71-55-6	1,1,2-Trichloroethane	20000	U
127-18-4	Tetrachloroethylene	160000	D
142-28-9	1,3-Dichloropropane	20000	U
124-48-1	Dibromochloromethane	120000	D
106-93-4	1,2-Dibromoethane	20000	U
108-90-7	Chlorobenzene	20000	U
100-41-4	Ethylbenzene	20000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110804.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
630-20-6	1,1,1,2-Tetrachloroethane	20000	U
106-42-3	m/p-Xylene	20000	U
95-47-6	o-Xylene	20000	U
100-42-5	Styrene	20000	U
75-25-2	Bromoform	20000	U
98-82-8	Isopropylbenzene	20000	U
108-86-1	Bromobenzene	20000	U
79-34-5	1,1,2,2-Tetrachloroethane	20000	U
103-65-1	n-Propylbenzene	20000	U
96-18-4	1,2,3-Trichloropropane	20000	U
95-49-8	2-Chlorotoluene	20000	U
108-67-8	1,3,5-Trimethylbenzene	20000	U
106-43-4	4-Chlorotoluene	20000	U
135-98-8	sec-Butylbenzene	20000	U
95-63-6	1,2,4-Trimethylbenzene	20000	U
98-06-6	tert-Butylbenzene	20000	U
541-73-1	1,3-Dichlorobenzene	20000	U
49-87-6	p-Isopropyltoluene	20000	U
105-51-8	n-Butylbenzene	20000	U
106-46-7	1,4-Dichlorobenzene	20000	U
95-50-1	1,2-Dichlorobenzene	20000	U
96-12-8	1,2-Dibromo-3-chloropropane	20000	U
120-82-1	1,2,4-Trichlorobenzene	20000	U
87-68-3	Hexachlorobutadiene	20000	U
91-20-3	Naphthalene	20000	U
87-61-6	1,2,3-Trichlorobenzene	20000	U

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3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120000	0.0	160000	133 *	70 - 80
Chloromethane	120000	0.0	190000	158 *	70 - 130
Vinyl chloride	120000	0.0	170000	142 *	70 - 130
Bromomethane	120000	0.0	160000	133 *	70 - 130
Chloroethane	120000	0.0	160000	133 *	70 - 130
Trichlorofluoromethane	120000	0.0	140000	117	70 - 130
1,1-Dichloroethene	120000	0.0	140000	117	70 - 130
Methylene Chloride	120000	3600	170000	142 *	70 - 130
Trans-1,2-dichloroethene	120000	0.0	130000	108	70 - 130
1,1-Dichloroethane	120000	0.0	140000	117	70 - 130
Propane, 2,2-dichloro-	120000	0.0	160000	133 *	70 - 130
cis-1,2-Dichloroethene	120000	19000	150000	108	70 - 130
Chloroform	120000	0.0	130000	108	70 - 130
Bromochloromethane	120000	0.0	150000	125	70 - 130
1,1,1,-Trichloroethane	120000	0.0	130000	108	70 - 130
Carbon tetrachloride	120000	0.0	130000	108	70 - 130
1,1-Dichloropropene	120000	0.0	140000	117	70 - 130
Benzene	120000	0.0	130000	108	70 - 130
1,2-Dichloroethane	120000	0.0	140000	117	70 - 130
Trichloroethene	120000	28000	150000	100	70 - 130
1,2-Dichloropropane	120000	0.0	140000	117	70 - 130
Dibromomethane	120000	0.0	140000	117	70 - 130
Bromodichloromethane	120000	0.0	130000	108	70 - 130
Toluene	120000	0.0	130000	108	70 - 130
1,1,2-Trichloroethane	120000	0.0	130000	108	70 - 130
Tetrachloroethylene	120000	160000	250000	73	70 - 130
1,3-Dichloropropane	120000	0.0	120000	100	70 - 130
Dibromochloromethane	120000	120000	120000	3 *	70 - 130
1,2-Dibromoethane	120000	0.0	120000	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 32 outside limits

Spike Recovery: 11 out of 64 outside limits

COMMENTS:

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120000	0.0	140000	117	70 - 130
Ethylbenzene	120000	0.0	130000	108	70 - 130
1,1,1,2-Tetrachloroethane	120000	0.0	130000	108	70 - 130
m/p-Xylene	240000	0.0	260000	108	70 - 130
o-Xylene	120000	0.0	140000	117	70 - 130
Styrene	120000	0.0	130000	108	70 - 130
Bromoform	120000	0.0	120000	100	70 - 130
Isopropylbenzene	120000	0.0	140000	117	70 - 130
Bromobenzene	120000	0.0	150000	125	70 - 130
1,1,2,2-Tetrachloroethane	120000	0.0	130000	108	70 - 130
n-Propylbenzene	120000	0.0	140000	117	70 - 130
1,2,3-Trichloropropane	120000	0.0	130000	108	70 - 130
2-Chlorotoluene	120000	0.0	140000	117	70 - 130
1,3,5-Trimethylbenzene	120000	0.0	140000	117	70 - 130
4-Chlorotoluene	120000	0.0	150000	125	70 - 130
sec-Butylbenzene	120000	0.0	100000	83	70 - 130
1,2,4-Trimethylbenzene	120000	0.0	140000	117	70 - 130
tert-Butylbenzene	120000	0.0	150000	125	70 - 130
1,3-Dichlorobenzene	120000	0.0	150000	125	70 - 130
p-Isopropyltoluene	120000	0.0	140000	117	70 - 130
n-Butylbenzene	120000	0.0	130000	108	70 - 130
1,4-Dichlorobenzene	120000	0.0	140000	117	70 - 130
1,2-Dichlorobenzene	120000	0.0	130000	108	70 - 130
1,2-Dibromo-3-chloropropane	120000	0.0	100000	83	70 - 130
1,2,4-Trichlorobenzene	120000	0.0	140000	117	70 - 130
Hexachlorobutadiene	120000	0.0	140000	117	70 - 130
Naphthalene	120000	0.0	120000	100	70 - 130
1,2,3-Trichlorobenzene	120000	0.0	130000	108	70 - 130
Acetone	120000	0.0	110000	92	70 - 130
Methyl Acetate	120000	0.0	110000	92	70 - 130
Carbon disulfide	120000	0.0	130000	108	70 - 130
2-Butanone	120000	0.0	110000	92	70 - 130
Cyclohexane	120000	0.0	120000	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 34 outside limits

Spike Recovery: 3 out of 67 outside limits

COMMENTS: _____

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120000	0.0	120000	100	70 - 130
4-Methyl-2-pentanone	120000	0.0	110000	92	70 - 130
2-Hexanone	120000	0.0	110000	92	70 - 130
Methyl Tert-butyl ether	120000	0.0	110000	92	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	120000	160000	133 *	0	30	70 - 80
Chloromethane	120000	190000	158 *	0	20	70 - 130
Vinyl chloride	120000	160000	133 *	7	20	70 - 130
Bromomethane	120000	140000	117	13	20	70 - 130
Chloroethane	120000	160000	133 *	0	20	70 - 130
Trichlorofluoromethane	120000	140000	117	0	20	70 - 130
1,1-Dichloroethene	120000	130000	108	8	20	70 - 130
Methylene Chloride	120000	130000	108	27 *	20	70 - 130
Trans-1,2-dichloroethene	120000	130000	108	0	20	70 - 130
1,1-Dichloroethane	120000	140000	117	0	20	70 - 130
Propane, 2,2-dichloro-	120000	160000	133 *	0	20	70 - 130
cis-1,2-Dichloroethene	120000	150000	108	0	20	70 - 130
Chloroform	120000	140000	117	8	20	70 - 130
Bromochloromethane	120000	150000	125	0	20	70 - 130
1,1,1,-Trichloroethane	120000	140000	117	8	20	70 - 130
Carbon tetrachloride	120000	140000	117	8	20	70 - 130
1,1-Dichloropropene	120000	130000	108	8	20	70 - 130
Benzene	120000	130000	108	0	20	70 - 130
1,2-Dichloroethane	120000	130000	108	8	20	70 - 130
Trichloroethene	120000	140000	92	8	20	70 - 130
1,2-Dichloropropane	120000	140000	117	0	20	70 - 130
Dibromomethane	120000	140000	117	0	20	70 - 130
Bromodichloromethane	120000	130000	108	0	20	70 - 130
Toluene	120000	130000	108	0	20	70 - 130
1,1,2-Trichloroethane	120000	130000	108	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 3 out of 4 outside limits

Spike Recovery: 6 out of 7 outside limits

COMMENTS: _____

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120000	290000	108	36 *	20	70 - 130
1,3-Dichloropropane	120000	130000	108	8	20	70 - 130
Dibromochloromethane	120000	130000	8 *	200 *	20	70 - 130
1,2-Dibromoethane	120000	120000	100	0	20	70 - 130
Chlorobenzene	120000	140000	117	0	20	70 - 130
Ethylbenzene	120000	130000	108	0	20	70 - 130
1,1,1,2-Tetrachloroethane	120000	140000	117	8	20	70 - 130
m/p-Xylene	240000	280000	117	8	20	70 - 130
o-Xylene	120000	150000	125	7	20	70 - 130
Styrene	120000	140000	117	8	20	70 - 130
Bromoform	120000	130000	108	8	20	70 - 130
Isopropylbenzene	120000	150000	125	7	20	70 - 130
Bromobenzene	120000	140000	117	7	20	70 - 130
1,1,2,2-Tetrachloroethane	120000	130000	108	0	20	70 - 130
n-Propylbenzene	120000	140000	117	0	20	70 - 130
1,2,3-Trichloropropane	120000	130000	108	0	20	70 - 130
2-Chlorotoluene	120000	150000	125	7	20	70 - 130
1,3,5-Trimethylbenzene	120000	140000	117	0	20	70 - 130
4-Chlorotoluene	120000	150000	125	0	20	70 - 130
sec-Butylbenzene	120000	100000	83	0	20	70 - 130
1,2,4-Trimethylbenzene	120000	150000	125	7	20	70 - 130
tert-Butylbenzene	120000	140000	117	7	20	70 - 130
1,3-Dichlorobenzene	120000	150000	125	0	20	70 - 130
p-Isopropyltoluene	120000	140000	117	0	20	70 - 130
n-Butylbenzene	120000	120000	100	8	20	70 - 130
1,4-Dichlorobenzene	120000	130000	108	8	20	70 - 130
1,2-Dichlorobenzene	120000	130000	108	0	20	70 - 130
1,2-Dibromo-3-chloropropane	120000	100000	83	0	20	70 - 130
1,2,4-Trichlorobenzene	120000	130000	108	8	20	70 - 130
Hexachlorobutadiene	120000	130000	108	8	20	70 - 130
Naphthalene	120000	120000	100	0	20	70 - 130
1,2,3-Trichlorobenzene	120000	120000	100	8	20	70 - 130
Acetone	120000	98000	82	11	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 0 outside limits

Spike Recovery: 1 out of 0 outside limits

COMMENTS: _____

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120000	94000	78	16	20	70 - 130
Carbon disulfide	120000	120000	100	8	20	70 - 130
2-Butanone	120000	96000	80	14	20	70 - 130
Cyclohexane	120000	110000	92	8	20	70 - 130
Methylcyclohexane	120000	120000	100	0	20	70 - 130
4-Methyl-2-pentanone	120000	110000	92	0	20	70 - 130
2-Hexanone	120000	110000	92	0	20	70 - 130
Methyl Tert-butyl ether	120000	110000	92	0	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 0 outside limits

COMMENTS: _____

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110806.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	160000	D
74-87-3	Chloromethane	190000	D
75-01-4	Vinyl chloride	160000	D
74-83-9	Bromomethane	140000	D
75-00-3	Chloroethane	160000	D
75-69-4	Trichlorofluoromethane	140000	D
75-35-4	1,1-Dichloroethene	130000	D
67-64-1	Acetone	98000	D
79-20-9	Methyl Acetate	94000	D
75-15-0	Carbon disulfide	120000	D
1634-04-4	Methyl Tert-butyl ether	110000	D
75-09-2	Methylene Chloride	130000	D
156-60-5	Trans-1,2-dichloroethene	130000	D
75-34-3	1,1-Dichloroethane	140000	D
78-93-3	2-Butanone	96000	D
594-20-7	Propane, 2,2-dichloro-	160000	D
540-59-0	cis-1,2-Dichloroethene	150000	D
67-66-3	Chloroform	140000	D
74-97-5	Bromochloromethane	150000	D
110-82-7	Cyclohexane	110000	D
71-55-6	1,1,1,-Trichloroethane	140000	D
56-23-5	Carbon tetrachloride	140000	D
563-58-6	1,1-Dichloropropene	130000	D
71-43-2	Benzene	130000	D
75-34-3	1,2-Dichloroethane	130000	D
108-87-2	Methylcyclohexane	120000	D
127-18-4	Trichloroethene	140000	D
78-87-5	1,2-Dichloropropane	140000	D
108-10-1	4-Methyl-2-pentanone	110000	D
74-95-3	Dibromomethane	140000	D
75-27-4	Bromodichloromethane	130000	D
591-78-6	2-Hexanone	110000	D
108-88-3	Toluene	130000	D
71-55-6	1,1,2-Trichloroethane	130000	D
127-18-4	Tetrachloroethylene	290000	D
142-28-9	1,3-Dichloropropane	130000	D
124-48-1	Dibromochloromethane	130000	D
106-93-4	1,2-Dibromoethane	120000	D
108-90-7	Chlorobenzene	140000	D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 1.0uL M

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03110806.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	130000	D
630-20-6	1,1,1,2-Tetrachloroethane	140000	D
106-42-3	m/p-Xylene	280000	D
95-47-6	o-Xylene	150000	D
100-42-5	Styrene	140000	D
75-25-2	Bromoform	130000	D
98-82-8	Isopropylbenzene	150000	D
108-86-1	Bromobenzene	140000	D
79-34-5	1,1,2,2-Tetrachloroethane	130000	D
103-65-1	n-Propylbenzene	140000	D
96-18-4	1,2,3-Trichloropropane	130000	D
95-49-8	2-Chlorotoluene	150000	D
108-67-8	1,3,5-Trimethylbenzene	140000	D
106-43-4	4-Chlorotoluene	150000	D
135-98-8	sec-Butylbenzene	100000	D
95-63-6	1,2,4-Trimethylbenzene	150000	D
98-06-6	tert-Butylbenzene	140000	D
541-73-1	1,3-Dichlorobenzene	150000	D
49-87-6	p-Isopropyltoluene	140000	D
105-51-8	n-Butylbenzene	120000	D
106-46-7	1,4-Dichlorobenzene	130000	D
95-50-1	1,2-Dichlorobenzene	130000	D
96-12-8	1,2-Dibromo-3-chloropropane	100000	D
120-82-1	1,2,4-Trichlorobenzene	130000	D
87-68-3	Hexachlorobutadiene	130000	D
91-20-3	Naphthalene	120000	D
87-61-6	1,2,3-Trichlorobenzene	120000	D

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6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	0.162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	0.443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	3.086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	2.579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	0.178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	2.197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	0.771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	0.076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	0.395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	0.266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	0.329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	44.899	5.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

EPA – 8260C

NARRATIVE

VOC Analysis for
Samples #1316057, 1316060, 1316058, 1316074

April 8, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

NELAP/LELAP Certification 03027
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316074

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-7 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100816.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	45000	D
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	2000	U
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	960	JD
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2600	D
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	20000	D
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316074

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-7 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100816.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	430	JBD
87-61-6	1,2,3-Trichlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316060

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-18 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100817.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1800	JD
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	2400	D
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	40000	D
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316060

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-18 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100817.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	480	JD
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	21000	D
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	10000	D
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	220000	ED
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100818.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100820.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	2000	U
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1500	JD
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	22000	D
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	15000	D
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100820.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	2000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

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3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix Spike - SAMPLE NO. 057

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Dichlorodifluoromethane	120000	0.0	180000	150 *	70 - 80
Chloromethane	120000	0.0	250000	208 *	70 - 130
Vinyl chloride	120000	480	180000	150 *	70 - 130
Bromomethane	120000	0.0	140000	117	70 - 130
Chloroethane	120000	0.0	170000	142 *	70 - 130
Trichlorofluoromethane	120000	0.0	140000	117	70 - 130
1,1-Dichloroethene	120000	0.0	140000	117	70 - 130
Methylene Chloride	120000	0.0	140000	117	70 - 130
Trans-1,2-dichloroethene	120000	0.0	140000	117	70 - 130
1,1-Dichloroethane	120000	0.0	150000	125	70 - 130
Propane, 2,2-dichloro-	120000	0.0	170000	142 *	70 - 130
cis-1,2-Dichloroethene	120000	21000	170000	117	70 - 130
Chloroform	120000	0.0	150000	125	70 - 130
Bromochloromethane	120000	0.0	160000	133 *	70 - 130
1,1,1,-Trichloroethane	120000	0.0	150000	125	70 - 130
Carbon tetrachloride	120000	0.0	150000	125	70 - 130
1,1-Dichloropropene	120000	0.0	160000	133 *	70 - 130
Benzene	120000	0.0	150000	125	70 - 130
1,2-Dichloroethane	120000	0.0	150000	125	70 - 130
Trichloroethene	120000	10000	160000	125	70 - 130
1,2-Dichloropropane	120000	0.0	150000	125	70 - 130
Dibromomethane	120000	0.0	140000	117	70 - 130
Bromodichloromethane	120000	0.0	140000	117	70 - 130
Toluene	120000	0.0	140000	117	70 - 130
1,1,2-Trichloroethane	120000	0.0	130000	108	70 - 130
Tetrachloroethylene	120000	220000	640000	350 *	70 - 130
1,3-Dichloropropane	120000	0.0	130000	108	70 - 130
Dibromochloromethane	120000	0.0	130000	108	70 - 130
1,2-Dibromoethane	120000	0.0	120000	100	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 32 outside limits

Spike Recovery: 10 out of 64 outside limits

COMMENTS:

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Chlorobenzene	120000	0.0	150000	125	70 - 130
Ethylbenzene	120000	0.0	140000	117	70 - 130
1,1,1,2-Tetrachloroethane	120000	0.0	140000	117	70 - 130
m/p-Xylene	240000	0.0	290000	121	70 - 130
o-Xylene	120000	0.0	150000	125	70 - 130
Styrene	120000	0.0	140000	117	70 - 130
Bromoform	120000	0.0	120000	100	70 - 130
Isopropylbenzene	120000	0.0	150000	125	70 - 130
Bromobenzene	120000	0.0	150000	125	70 - 130
1,1,2,2-Tetrachloroethane	120000	0.0	130000	108	70 - 130
n-Propylbenzene	120000	0.0	150000	125	70 - 130
1,2,3-Trichloropropane	120000	0.0	120000	100	70 - 130
2-Chlorotoluene	120000	0.0	140000	117	70 - 130
1,3,5-Trimethylbenzene	120000	0.0	140000	117	70 - 130
4-Chlorotoluene	120000	0.0	150000	125	70 - 130
sec-Butylbenzene	120000	0.0	140000	117	70 - 130
1,2,4-Trimethylbenzene	120000	0.0	150000	125	70 - 130
tert-Butylbenzene	120000	0.0	150000	125	70 - 130
1,3-Dichlorobenzene	120000	0.0	150000	125	70 - 130
p-Isopropyltoluene	120000	0.0	140000	117	70 - 130
n-Butylbenzene	120000	0.0	130000	108	70 - 130
1,4-Dichlorobenzene	120000	0.0	140000	117	70 - 130
1,2-Dichlorobenzene	120000	0.0	140000	117	70 - 130
1,2-Dibromo-3-chloropropane	120000	0.0	93000	78	70 - 130
1,2,4-Trichlorobenzene	120000	0.0	130000	108	70 - 130
Hexachlorobutadiene	120000	0.0	140000	117	70 - 130
Naphthalene	120000	0.0	94000	78	70 - 130
1,2,3-Trichlorobenzene	120000	0.0	130000	108	70 - 130
Acetone	120000	0.0	86000	72	70 - 130
Methyl Acetate	120000	0.0	91000	76	70 - 130
Carbon disulfide	120000	0.0	130000	108	70 - 130
2-Butanone	120000	0.0	94000	78	70 - 130
Cyclohexane	120000	0.0	140000	117	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 2 out of 34 outside limits

Spike Recovery: 2 out of 67 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Methylcyclohexane	120000	0.0	120000	100	70 - 130
4-Methyl-2-pentanone	120000	0.0	90000	75	70 - 130
2-Hexanone	120000	0.0	99000	83	70 - 130
Methyl Tert-butyl ether	120000	0.0	110000	92	70 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	120000	160000	133 *	12	30	70 - 80
Chloromethane	120000	220000	183 *	13	20	70 - 130
Vinyl chloride	120000	170000	142 *	5	20	70 - 130
Bromomethane	120000	130000	108	8	20	70 - 130
Chloroethane	120000	150000	125	13	20	70 - 130
Trichlorofluoromethane	120000	130000	108	8	20	70 - 130
1,1-Dichloroethene	120000	130000	108	8	20	70 - 130
Methylene Chloride	120000	120000	100	16	20	70 - 130
Trans-1,2-dichloroethene	120000	140000	117	0	20	70 - 130
1,1-Dichloroethane	120000	140000	117	7	20	70 - 130
Propane, 2,2-dichloro-	120000	150000	125	13	20	70 - 130
cis-1,2-Dichloroethene	120000	150000	108	15	20	70 - 130
Chloroform	120000	130000	108	15	20	70 - 130
Bromochloromethane	120000	130000	108	21 *	20	70 - 130
1,1,1,-Trichloroethane	120000	140000	117	7	20	70 - 130
Carbon tetrachloride	120000	140000	117	7	20	70 - 130
1,1-Dichloropropene	120000	140000	117	13	20	70 - 130
Benzene	120000	130000	108	15	20	70 - 130
1,2-Dichloroethane	120000	120000	100	22 *	20	70 - 130
Trichloroethene	120000	160000	125	0	20	70 - 130
1,2-Dichloropropane	120000	130000	108	15	20	70 - 130
Dibromomethane	120000	120000	100	16	20	70 - 130
Bromodichloromethane	120000	120000	100	16	20	70 - 130
Toluene	120000	120000	100	16	20	70 - 130
1,1,2-Trichloroethane	120000	110000	92	16	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 3 out of 4 outside limits

Spike Recovery: 4 out of 7 outside limits

COMMENTS: _____

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Tetrachloroethylene	120000	900000	567 *	47 *	20	70 - 130
1,3-Dichloropropane	120000	110000	92	16	20	70 - 130
Dibromochloromethane	120000	110000	92	16	20	70 - 130
1,2-Dibromoethane	120000	100000	83	19	20	70 - 130
Chlorobenzene	120000	140000	117	7	20	70 - 130
Ethylbenzene	120000	130000	108	8	20	70 - 130
1,1,1,2-Tetrachloroethane	120000	130000	108	8	20	70 - 130
m/p-Xylene	240000	270000	113	7	20	70 - 130
o-Xylene	120000	140000	117	7	20	70 - 130
Styrene	120000	130000	108	8	20	70 - 130
Bromoform	120000	100000	83	19	20	70 - 130
Isopropylbenzene	120000	150000	125	0	20	70 - 130
Bromobenzene	120000	130000	108	15	20	70 - 130
1,1,2,2-Tetrachloroethane	120000	100000	83	26 *	20	70 - 130
n-Propylbenzene	120000	150000	125	0	20	70 - 130
1,2,3-Trichloropropane	120000	100000	83	19	20	70 - 130
2-Chlorotoluene	120000	140000	117	0	20	70 - 130
1,3,5-Trimethylbenzene	120000	140000	117	0	20	70 - 130
4-Chlorotoluene	120000	140000	117	7	20	70 - 130
sec-Butylbenzene	120000	140000	117	0	20	70 - 130
1,2,4-Trimethylbenzene	120000	140000	117	7	20	70 - 130
tert-Butylbenzene	120000	140000	117	7	20	70 - 130
1,3-Dichlorobenzene	120000	140000	117	7	20	70 - 130
p-Isopropyltoluene	120000	140000	117	0	20	70 - 130
n-Butylbenzene	120000	140000	117	8	20	70 - 130
1,4-Dichlorobenzene	120000	140000	117	0	20	70 - 130
1,2-Dichlorobenzene	120000	130000	108	8	20	70 - 130
1,2-Dibromo-3-chloropropane	120000	79000	66 *	17	20	70 - 130
1,2,4-Trichlorobenzene	120000	130000	108	0	20	70 - 130
Hexachlorobutadiene	120000	160000	133 *	13	20	70 - 130
Naphthalene	120000	96000	80	3	20	70 - 130
1,2,3-Trichlorobenzene	120000	120000	100	8	20	70 - 130
Acetone	120000	64000	53 *	30 *	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 4 out of 0 outside limits

Spike Recovery: 5 out of 0 outside limits

COMMENTS: _____

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: _____ Case No.: Centredal SAS No.: _____ SDG No.: _____

Matrix Spike - SAMPLE NO. 057

Methyl Acetate	120000	69000	58 *	27 *	20	70 - 130
Carbon disulfide	120000	130000	108	0	20	70 - 130
2-Butanone	120000	57000	48 *	48 *	20	70 - 130
Cyclohexane	120000	110000	92	24 *	20	70 - 130
Methylcyclohexane	120000	120000	100	0	20	70 - 130
4-Methyl-2-pentanone	120000	76000	63 *	17	20	70 - 130
2-Hexanone	120000	77000	64 *	26 *	20	70 - 130
Methyl Tert-butyl ether	120000	98000	82	11	20	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 4 out of 0 outside limits

Spike Recovery: 4 out of 0 outside limits

COMMENTS: _____

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 ms 1.0u

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100821.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	180000	D
74-87-3	Chloromethane	250000	D
75-01-4	Vinyl chloride	180000	D
74-83-9	Bromomethane	140000	D
75-00-3	Chloroethane	170000	D
75-69-4	Trichlorofluoromethane	140000	D
75-35-4	1,1-Dichloroethene	140000	D
67-64-1	Acetone	86000	D
79-20-9	Methyl Acetate	91000	D
75-15-0	Carbon disulfide	130000	D
1634-04-4	Methyl Tert-butyl ether	110000	D
75-09-2	Methylene Chloride	140000	D
156-60-5	Trans-1,2-dichloroethene	140000	D
75-34-3	1,1-Dichloroethane	150000	D
78-93-3	2-Butanone	94000	D
594-20-7	Propane, 2,2-dichloro-	170000	D
540-59-0	cis-1,2-Dichloroethene	170000	D
67-66-3	Chloroform	150000	D
74-97-5	Bromochloromethane	160000	D
110-82-7	Cyclohexane	140000	D
71-55-6	1,1,1,-Trichloroethane	150000	D
56-23-5	Carbon tetrachloride	150000	D
563-58-6	1,1-Dichloropropene	160000	D
71-43-2	Benzene	150000	D
75-34-3	1,2-Dichloroethane	150000	D
108-87-2	Methylcyclohexane	120000	D
127-18-4	Trichloroethene	160000	D
78-87-5	1,2-Dichloropropane	150000	D
108-10-1	4-Methyl-2-pentanone	90000	D
74-95-3	Dibromomethane	140000	D
75-27-4	Bromodichloromethane	140000	D
591-78-6	2-Hexanone	99000	BD
108-88-3	Toluene	140000	D
71-55-6	1,1,2-Trichloroethane	130000	D
127-18-4	Tetrachloroethylene	640000	ED
142-28-9	1,3-Dichloropropane	130000	D
124-48-1	Dibromochloromethane	130000	D
106-93-4	1,2-Dibromoethane	120000	D
108-90-7	Chlorobenzene	150000	D

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

057MS

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 ms 1.0u

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100821.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	140000	D
630-20-6	1,1,1,2-Tetrachloroethane	140000	D
106-42-3	m/p-Xylene	290000	D
95-47-6	o-Xylene	150000	D
100-42-5	Styrene	140000	D
75-25-2	Bromoform	120000	D
98-82-8	Isopropylbenzene	150000	D
108-86-1	Bromobenzene	150000	D
79-34-5	1,1,2,2-Tetrachloroethane	130000	D
103-65-1	n-Propylbenzene	150000	D
96-18-4	1,2,3-Trichloropropane	120000	D
95-49-8	2-Chlorotoluene	140000	D
108-67-8	1,3,5-Trimethylbenzene	140000	D
106-43-4	4-Chlorotoluene	150000	D
135-98-8	sec-Butylbenzene	140000	D
95-63-6	1,2,4-Trimethylbenzene	150000	D
98-06-6	tert-Butylbenzene	150000	D
541-73-1	1,3-Dichlorobenzene	150000	D
49-87-6	p-Isopropyltoluene	140000	D
105-51-8	n-Butylbenzene	130000	D
106-46-7	1,4-Dichlorobenzene	140000	D
95-50-1	1,2-Dichlorobenzene	140000	D
96-12-8	1,2-Dibromo-3-chloropropane	93000	D
120-82-1	1,2,4-Trichlorobenzene	130000	D
87-68-3	Hexachlorobutadiene	140000	D
91-20-3	Naphthalene	94000	BD
87-61-6	1,2,3-Trichlorobenzene	130000	D

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 msd 1.0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100822.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	190000	D
74-87-3	Chloromethane	240000	D
75-01-4	Vinyl chloride	180000	D
74-83-9	Bromomethane	170000	D
75-00-3	Chloroethane	170000	D
75-69-4	Trichlorofluoromethane	130000	D
75-35-4	1,1-Dichloroethene	140000	D
67-64-1	Acetone	62000	D
79-20-9	Methyl Acetate	73000	D
75-15-0	Carbon disulfide	130000	D
1634-04-4	Methyl Tert-butyl ether	97000	D
75-09-2	Methylene Chloride	120000	D
156-60-5	Trans-1,2-dichloroethene	130000	D
75-34-3	1,1-Dichloroethane	140000	D
78-93-3	2-Butanone	62000	D
594-20-7	Propane, 2,2-dichloro-	160000	D
540-59-0	cis-1,2-Dichloroethene	160000	D
67-66-3	Chloroform	130000	D
74-97-5	Bromochloromethane	130000	D
110-82-7	Cyclohexane	130000	D
71-55-6	1,1,1,-Trichloroethane	140000	D
56-23-5	Carbon tetrachloride	140000	D
563-58-6	1,1-Dichloropropene	150000	D
71-43-2	Benzene	140000	D
75-34-3	1,2-Dichloroethane	120000	D
108-87-2	Methylcyclohexane	130000	D
127-18-4	Trichloroethene	150000	D
78-87-5	1,2-Dichloropropane	120000	D
108-10-1	4-Methyl-2-pentanone	75000	D
74-95-3	Dibromomethane	110000	D
75-27-4	Bromodichloromethane	120000	D
591-78-6	2-Hexanone	80000	BD
108-88-3	Toluene	130000	D
71-55-6	1,1,2-Trichloroethane	110000	D
127-18-4	Tetrachloroethylene	530000	ED
142-28-9	1,3-Dichloropropane	110000	D
124-48-1	Dibromochloromethane	110000	D
106-93-4	1,2-Dibromoethane	100000	D
108-90-7	Chlorobenzene	140000	D

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316057MSD

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-2 msd 1.0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100822.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 5000.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/L	Q
100-41-4	Ethylbenzene	140000	D
630-20-6	1,1,1,2-Tetrachloroethane	130000	D
106-42-3	m/p-Xylene	280000	D
95-47-6	o-Xylene	140000	D
100-42-5	Styrene	130000	D
75-25-2	Bromoform	100000	D
98-82-8	Isopropylbenzene	150000	D
108-86-1	Bromobenzene	130000	D
79-34-5	1,1,2,2-Tetrachloroethane	110000	D
103-65-1	n-Propylbenzene	150000	D
96-18-4	1,2,3-Trichloropropane	100000	D
95-49-8	2-Chlorotoluene	140000	D
108-67-8	1,3,5-Trimethylbenzene	140000	D
106-43-4	4-Chlorotoluene	150000	D
135-98-8	sec-Butylbenzene	150000	D
95-63-6	1,2,4-Trimethylbenzene	140000	D
98-06-6	tert-Butylbenzene	150000	D
541-73-1	1,3-Dichlorobenzene	140000	D
49-87-6	p-Isopropyltoluene	140000	D
105-51-8	n-Butylbenzene	140000	D
106-46-7	1,4-Dichlorobenzene	140000	D
95-50-1	1,2-Dichlorobenzene	130000	D
96-12-8	1,2-Dibromo-3-chloropropane	82000	D
120-82-1	1,2,4-Trichlorobenzene	130000	D
87-68-3	Hexachlorobutadiene	160000	D
91-20-3	Naphthalene	110000	BD
87-61-6	1,2,3-Trichlorobenzene	120000	D

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg) UG/L		Q
75-71-8	Dichlorodifluoromethane	33	
74-87-3	Chloromethane	45	
75-01-4	Vinyl chloride	32	
74-83-9	Bromomethane	28	
75-00-3	Chloroethane	33	
75-69-4	Trichlorofluoromethane	26	
75-35-4	1,1-Dichloroethene	26	
67-64-1	Acetone	17	
79-20-9	Methyl Acetate	16	
75-15-0	Carbon disulfide	24	
1634-04-4	Methyl Tert-butyl ether	22	
75-09-2	Methylene Chloride	26	
156-60-5	Trans-1,2-dichloroethene	26	
75-34-3	1,1-Dichloroethane	29	
78-93-3	2-Butanone	16	
594-20-7	Propane, 2,2-dichloro-	31	
540-59-0	cis-1,2-Dichloroethene	36	
67-66-3	Chloroform	28	
74-97-5	Bromochloromethane	31	
110-82-7	Cyclohexane	24	
71-55-6	1,1,1,-Trichloroethane	27	
56-23-5	Carbon tetrachloride	28	
563-58-6	1,1-Dichloropropene	28	
71-43-2	Benzene	28	
75-34-3	1,2-Dichloroethane	27	
108-87-2	Methylcyclohexane	25	
127-18-4	Trichloroethene	37	
78-87-5	1,2-Dichloropropane	28	
108-10-1	4-Methyl-2-pentanone	19	
74-95-3	Dibromomethane	28	
75-27-4	Bromodichloromethane	27	
591-78-6	2-Hexanone	20	B
108-88-3	Toluene	28	
71-55-6	1,1,2-Trichloroethane	26	
127-18-4	Tetrachloroethylene	270	E
142-28-9	1,3-Dichloropropane	26	
124-48-1	Dibromochloromethane	28	
106-93-4	1,2-Dibromoethane	24	
108-90-7	Chlorobenzene	28	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BSPK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-LS

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100824.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/11/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	26	
630-20-6	1,1,1,2-Tetrachloroethane	28	
106-42-3	m/p-Xylene	54	
95-47-6	o-Xylene	29	
100-42-5	Styrene	27	
75-25-2	Bromoform	23	
98-82-8	Isopropylbenzene	28	
108-86-1	Bromobenzene	28	
79-34-5	1,1,2,2-Tetrachloroethane	24	
103-65-1	n-Propylbenzene	28	
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	27	
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	27	
95-63-6	1,2,4-Trimethylbenzene	28	
98-06-6	tert-Butylbenzene	28	
541-73-1	1,3-Dichlorobenzene	28	
49-87-6	p-Isopropyltoluene	26	
105-51-8	n-Butylbenzene	26	
106-46-7	1,4-Dichlorobenzene	28	
95-50-1	1,2-Dichlorobenzene	27	
96-12-8	1,2-Dibromo-3-chloropropane	20	
120-82-1	1,2,4-Trichlorobenzene	27	
87-68-3	Hexachlorobutadiene	28	
91-20-3	Naphthalene	26	B
87-61-6	1,2,3-Trichlorobenzene	25	

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NARRATIVE

VOC Analysis for
Samples # 1316058, 1316059, 1316061, 1316063, 1316075

April 8, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

NELAP/LELAP Certification 03027
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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 100uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100812.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	200	U
74-87-3	Chloromethane	200	U
75-01-4	Vinyl chloride	30	JD
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	200	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	200	U
67-64-1	Acetone	200	U
79-20-9	Methyl Acetate	200	U
75-15-0	Carbon disulfide	200	U
1634-04-4	Methyl Tert-butyl ether	200	U
75-09-2	Methylene Chloride	200	U
156-60-5	Trans-1,2-dichloroethene	96	JD
75-34-3	1,1-Dichloroethane	200	U
78-93-3	2-Butanone	200	U
594-20-7	Propane, 2,2-dichloro-	200	U
540-59-0	cis-1,2-Dichloroethene	1100	D
67-66-3	Chloroform	200	U
74-97-5	Bromochloromethane	200	U
110-82-7	Cyclohexane	200	U
71-55-6	1,1,1,-Trichloroethane	200	U
56-23-5	Carbon tetrachloride	200	U
563-58-6	1,1-Dichloropropene	200	U
71-43-2	Benzene	200	U
75-34-3	1,2-Dichloroethane	200	U
108-87-2	Methylcyclohexane	100	JD
127-18-4	Trichloroethene	23000	ED
78-87-5	1,2-Dichloropropane	200	U
108-10-1	4-Methyl-2-pentanone	200	U
74-95-3	Dibromomethane	200	U
75-27-4	Bromodichloromethane	200	U
591-78-6	2-Hexanone	200	U
108-88-3	Toluene	200	U
71-55-6	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethylene	4400	D
142-28-9	1,3-Dichloropropane	200	U
124-48-1	Dibromochloromethane	200	U
106-93-4	1,2-Dibromoethane	200	U
108-90-7	Chlorobenzene	200	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316058

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-5 100uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100812.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	28	JD
630-20-6	1,1,1,2-Tetrachloroethane	200	U
106-42-3	m/p-Xylene	96	JD
95-47-6	o-Xylene	56	JD
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
98-82-8	Isopropylbenzene	200	U
108-86-1	Bromobenzene	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
103-65-1	n-Propylbenzene	200	U
96-18-4	1,2,3-Trichloropropane	200	U
95-49-8	2-Chlorotoluene	200	U
108-67-8	1,3,5-Trimethylbenzene	200	U
106-43-4	4-Chlorotoluene	200	U
135-98-8	sec-Butylbenzene	200	U
95-63-6	1,2,4-Trimethylbenzene	200	U
98-06-6	tert-Butylbenzene	200	U
541-73-1	1,3-Dichlorobenzene	200	U
49-87-6	p-Isopropyltoluene	200	U
105-51-8	n-Butylbenzene	200	U
106-46-7	1,4-Dichlorobenzene	200	U
95-50-1	1,2-Dichlorobenzene	200	U
96-12-8	1,2-Dibromo-3-chloropropane	200	U
120-82-1	1,2,4-Trichlorobenzene	200	U
87-68-3	Hexachlorobutadiene	200	U
91-20-3	Naphthalene	23	JD
87-61-6	1,2,3-Trichlorobenzene	200	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316061

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-6 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100813.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	2000	U
79-20-9	Methyl Acetate	2000	U
75-15-0	Carbon disulfide	2000	U
1634-04-4	Methyl Tert-butyl ether	2000	U
75-09-2	Methylene Chloride	520	JD
156-60-5	Trans-1,2-dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
594-20-7	Propane, 2,2-dichloro-	2000	U
540-59-0	cis-1,2-Dichloroethene	1900	JD
67-66-3	Chloroform	2000	U
74-97-5	Bromochloromethane	2000	U
110-82-7	Cyclohexane	2000	U
71-55-6	1,1,1,-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
563-58-6	1,1-Dichloropropene	2000	U
71-43-2	Benzene	2000	U
75-34-3	1,2-Dichloroethane	2000	U
108-87-2	Methylcyclohexane	2000	U
127-18-4	Trichloroethene	42000	D
78-87-5	1,2-Dichloropropane	2000	U
108-10-1	4-Methyl-2-pentanone	2000	U
74-95-3	Dibromomethane	2000	U
75-27-4	Bromodichloromethane	2000	U
591-78-6	2-Hexanone	2000	U
108-88-3	Toluene	2000	U
71-55-6	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethylene	11000	D
142-28-9	1,3-Dichloropropane	2000	U
124-48-1	Dibromochloromethane	2000	U
106-93-4	1,2-Dibromoethane	2000	U
108-90-7	Chlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316061

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-6 10uL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100813.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 500.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	2000	U
630-20-6	1,1,1,2-Tetrachloroethane	2000	U
106-42-3	m/p-Xylene	240	JD
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
98-82-8	Isopropylbenzene	2000	U
108-86-1	Bromobenzene	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
103-65-1	n-Propylbenzene	2000	U
96-18-4	1,2,3-Trichloropropane	2000	U
95-49-8	2-Chlorotoluene	2000	U
108-67-8	1,3,5-Trimethylbenzene	2000	U
106-43-4	4-Chlorotoluene	2000	U
135-98-8	sec-Butylbenzene	2000	U
95-63-6	1,2,4-Trimethylbenzene	2000	U
98-06-6	tert-Butylbenzene	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
49-87-6	p-Isopropyltoluene	2000	U
105-51-8	n-Butylbenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
96-12-8	1,2-Dibromo-3-chloropropane	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
87-68-3	Hexachlorobutadiene	2000	U
91-20-3	Naphthalene	2000	U
87-61-6	1,2,3-Trichlorobenzene	2000	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316063

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-4a 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100809.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	0	JB
75-01-4	Vinyl chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
67-64-1	Acetone	16	
79-20-9	Methyl Acetate	1	J
75-15-0	Carbon disulfide	4	U
1634-04-4	Methyl Tert-butyl ether	4	U
75-09-2	Methylene Chloride	1	J
156-60-5	Trans-1,2-dichloroethene	4	U
75-34-3	1,1-Dichloroethane	4	U
78-93-3	2-Butanone	4	U
594-20-7	Propane, 2,2-dichloro-	4	U
540-59-0	cis-1,2-Dichloroethene	4	U
67-66-3	Chloroform	4	U
74-97-5	Bromochloromethane	4	U
110-82-7	Cyclohexane	4	U
71-55-6	1,1,1,-Trichloroethane	4	U
56-23-5	Carbon tetrachloride	4	U
563-58-6	1,1-Dichloropropene	4	U
71-43-2	Benzene	4	U
75-34-3	1,2-Dichloroethane	4	U
108-87-2	Methylcyclohexane	4	U
127-18-4	Trichloroethene	4	U
78-87-5	1,2-Dichloropropane	4	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	4	U
75-27-4	Bromodichloromethane	4	U
591-78-6	2-Hexanone	4	U
108-88-3	Toluene	4	U
71-55-6	1,1,2-Trichloroethane	4	U
127-18-4	Tetrachloroethylene	2	J
142-28-9	1,3-Dichloropropane	4	U
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

1316063

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 0208030-4a 5.0mL

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100809.D

Level: (low/med) LOW Date Received: 02/28/08

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
100-41-4	Ethylbenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
106-42-3	m/p-Xylene	4	U
95-47-6	o-Xylene	4	U
100-42-5	Styrene	4	U
75-25-2	Bromoform	4	U
98-82-8	Isopropylbenzene	4	U
108-86-1	Bromobenzene	4	U
79-34-5	1,1,2,2-Tetrachloroethane	4	U
103-65-1	n-Propylbenzene	4	U
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	4	U
95-63-6	1,2,4-Trimethylbenzene	4	U
98-06-6	tert-Butylbenzene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
49-87-6	p-Isopropyltoluene	4	U
105-51-8	n-Butylbenzene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	0	J
87-61-6	1,2,3-Trichlorobenzene	4	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/10/0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100808.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	4	U
74-87-3	Chloromethane	0	J
75-01-4	Vinyl chloride	4	U
74-83-9	Bromomethane	4	U
75-00-3	Chloroethane	4	U
75-69-4	Trichlorofluoromethane	4	U
75-35-4	1,1-Dichloroethene	4	U
67-64-1	Acetone	4	U
79-20-9	Methyl Acetate	4	U
75-15-0	Carbon disulfide	4	U
1634-04-4	Methyl Tert-butyl ether	4	U
75-09-2	Methylene Chloride	4	U
156-60-5	Trans-1,2-dichloroethene	4	U
75-34-3	1,1-Dichloroethane	4	U
78-93-3	2-Butanone	4	U
594-20-7	Propane, 2,2-dichloro-	4	U
540-59-0	cis-1,2-Dichloroethene	4	U
67-66-3	Chloroform	4	U
74-97-5	Bromochloromethane	4	U
110-82-7	Cyclohexane	4	U
71-55-6	1,1,1,-Trichloroethane	4	U
56-23-5	Carbon tetrachloride	4	U
563-58-6	1,1-Dichloropropene	4	U
71-43-2	Benzene	4	U
75-34-3	1,2-Dichloroethane	4	U
108-87-2	Methylcyclohexane	4	U
127-18-4	Trichloroethene	4	U
78-87-5	1,2-Dichloropropane	4	U
108-10-1	4-Methyl-2-pentanone	4	U
74-95-3	Dibromomethane	4	U
75-27-4	Bromodichloromethane	4	U
591-78-6	2-Hexanone	4	U
108-88-3	Toluene	4	U
71-55-6	1,1,2-Trichloroethane	4	U
127-18-4	Tetrachloroethylene	4	U
142-28-9	1,3-Dichloropropane	4	U
124-48-1	Dibromochloromethane	4	U
106-93-4	1,2-Dibromoethane	4	U
108-90-7	Chlorobenzene	4	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

IBLK1

Lab Name: DAT Laboratory Contract: Loureiro En

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: INS._BLANK 3/10/0

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: 03100808.D

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/10/08

GC Column: RTX-502 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
100-41-4	Ethylbenzene	4	U
630-20-6	1,1,1,2-Tetrachloroethane	4	U
106-42-3	m/p-Xylene	4	U
95-47-6	o-Xylene	4	U
100-42-5	Styrene	4	U
75-25-2	Bromoform	4	U
98-82-8	Isopropylbenzene	4	U
108-86-1	Bromobenzene	4	U
79-34-5	1,1,2,2-Tetrachloroethane	4	U
103-65-1	n-Propylbenzene	4	U
96-18-4	1,2,3-Trichloropropane	4	U
95-49-8	2-Chlorotoluene	4	U
108-67-8	1,3,5-Trimethylbenzene	4	U
106-43-4	4-Chlorotoluene	4	U
135-98-8	sec-Butylbenzene	4	U
95-63-6	1,2,4-Trimethylbenzene	4	U
98-06-6	tert-Butylbenzene	4	U
541-73-1	1,3-Dichlorobenzene	4	U
49-87-6	p-Isopropyltoluene	4	U
105-51-8	n-Butylbenzene	4	U
106-46-7	1,4-Dichlorobenzene	4	U
95-50-1	1,2-Dichlorobenzene	4	U
96-12-8	1,2-Dibromo-3-chloropropane	4	U
120-82-1	1,2,4-Trichlorobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
91-20-3	Naphthalene	4	U
87-61-6	1,2,3-Trichlorobenzene	4	U

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6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 =
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D 03060809.D

COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	*	0.503	0.498	0.464	0.479	0.469	0.475	0.481	3.3
Chloromethane	*	1.544	1.310	1.181	1.226	1.036	1.027	1.220	15.8
Vinyl chloride	*	1.286	1.229	1.127	1.191	1.099	1.088	1.170	6.7
Bromomethane	*	0.243	0.374	0.390	0.377	0.390	0.369	0.357	15.8
Chloroethane	*	0.988	0.777	0.811	0.852	0.770	0.791	0.831	9.9
Trichlorofluoromethane	*	0.781	0.771	0.727	0.758	0.735	0.740	0.752	2.8
1,1-Dichloroethene	*	0.909	0.880	0.797	0.791	0.815	0.719	0.818	8.3
Acetone	*	0.166	0.165	0.165	0.168	0.155	0.153	0.162	3.9
Methyl Acetate	*	0.531	0.460	0.435	0.456	0.385	0.390	0.443	12.1
Carbon disulfide	*	3.231	3.034	2.926	3.238	3.058	3.029	3.086	4.0
Methyl Tert-butyl ether	*	2.843	2.557	2.464	2.539	2.507	2.566	2.579	5.2
Methylene Chloride	*	1.270	1.140	1.027	1.003	0.974	0.969	1.064	11.2
Trans-1,2-dichloroethene	*	0.950	0.979	0.915	0.910	0.885	0.868	0.918	4.5
1,1-Dichloroethane	*	1.376	1.551	1.537	1.661	1.614	1.615	1.559	6.5
2-Butanone	*	0.191	0.186	0.176	0.186	0.168	0.163	0.178	6.2
Propane, 2,2-dichloro-	*	0.772	0.777	0.819	0.877	0.689	0.788	0.787	7.9
cis-1,2-Dichloroethene	*	1.016	1.007	0.927	0.977	0.945	0.907	0.963	4.6
Chloroform	*	1.173	1.290	1.165	1.260	1.192	1.225	1.218	4.1
Bromochloromethane	*	0.271	0.302	0.333	0.355	0.298	0.308	0.311	9.3
Cyclohexane	*	2.415	2.128	2.121	2.171	2.132	2.217	2.197	5.1
1,1,1,-Trichloroethane	*	0.857	0.795	0.735	0.779	0.755	0.788	0.785	5.3
Carbon tetrachloride	*	0.556	0.564	0.554	0.593	0.593	0.573	0.572	3.1
1,1-Dichloropropene	*	1.138	1.143	1.081	1.099	1.079	1.103	1.107	2.5
Benzene	*	3.416	3.440	3.274	3.486	3.483	3.663	3.460	3.6
1,2-Dichloroethane	*	0.892	0.934	0.826	0.888	0.881	0.886	0.884	3.9
Methylcyclohexane	*	0.868	0.744	0.753	0.745	0.747	0.771	0.771	6.3
Trichloroethene	*	0.349	0.350	0.338	0.332	0.337	0.327	0.339	2.7
1,2-Dichloropropane	*	0.476	0.473	0.445	0.441	0.452	0.453	0.457	3.2
4-Methyl-2-pentanone	*	0.069	0.072	0.077	0.079	0.081	0.080	0.076	6.2
Dibromomethane	*	0.238	0.231	0.221	0.231	0.216	0.208	0.224	5.0
Bromodichloromethane	*	0.397	0.405	0.405	0.382	0.384	0.385	0.393	2.7
2-Hexanone	*	0.348	0.397	0.362	0.405	0.433	0.427	0.395	8.7
Toluene	*	0.896	0.947	0.919	0.929	0.941	0.953	0.931	2.3
1,1,2-Trichloroethane	*	0.304	0.306	0.292	0.291	0.292	0.282	0.294	3.1
Tetrachloroethylene	*	0.217	0.222	0.215	0.218	0.207	0.210	0.215	2.6
1,3-Dichloropropane	*	0.637	0.653	0.628	0.629	0.651	0.652	0.642	1.8
Dibromochloromethane	*	0.245	0.277	0.269	0.263	0.273	0.268	0.266	4.2
1,2-Dibromoethane	*	0.325	0.338	0.328	0.320	0.337	0.329	0.329	2.1
Chlorobenzene	*	49.248	46.368	42.479	42.727	44.618	43.954	44.899	5.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: DAT Laboratory Contract: Loureiro Engineeri

Lab Code: Case No.: Centredal SAS No.: SDG No.:

Instrument ID: F4500 Calibration Date(s): 03/06/08 03/06/08

Heated Purge (Y/N): N Calibration Times: 19:20 23:14

GC Column: RTX-502.2 ID: 0.53 (mm)

LAB FILE ID: RRF1 = 03060804.D RRF2 = 03060805.D RRF6 = 03060809.D
RRF3 = 03060806.D RRF4 = 03060807.D RRF5 = 03060808.D

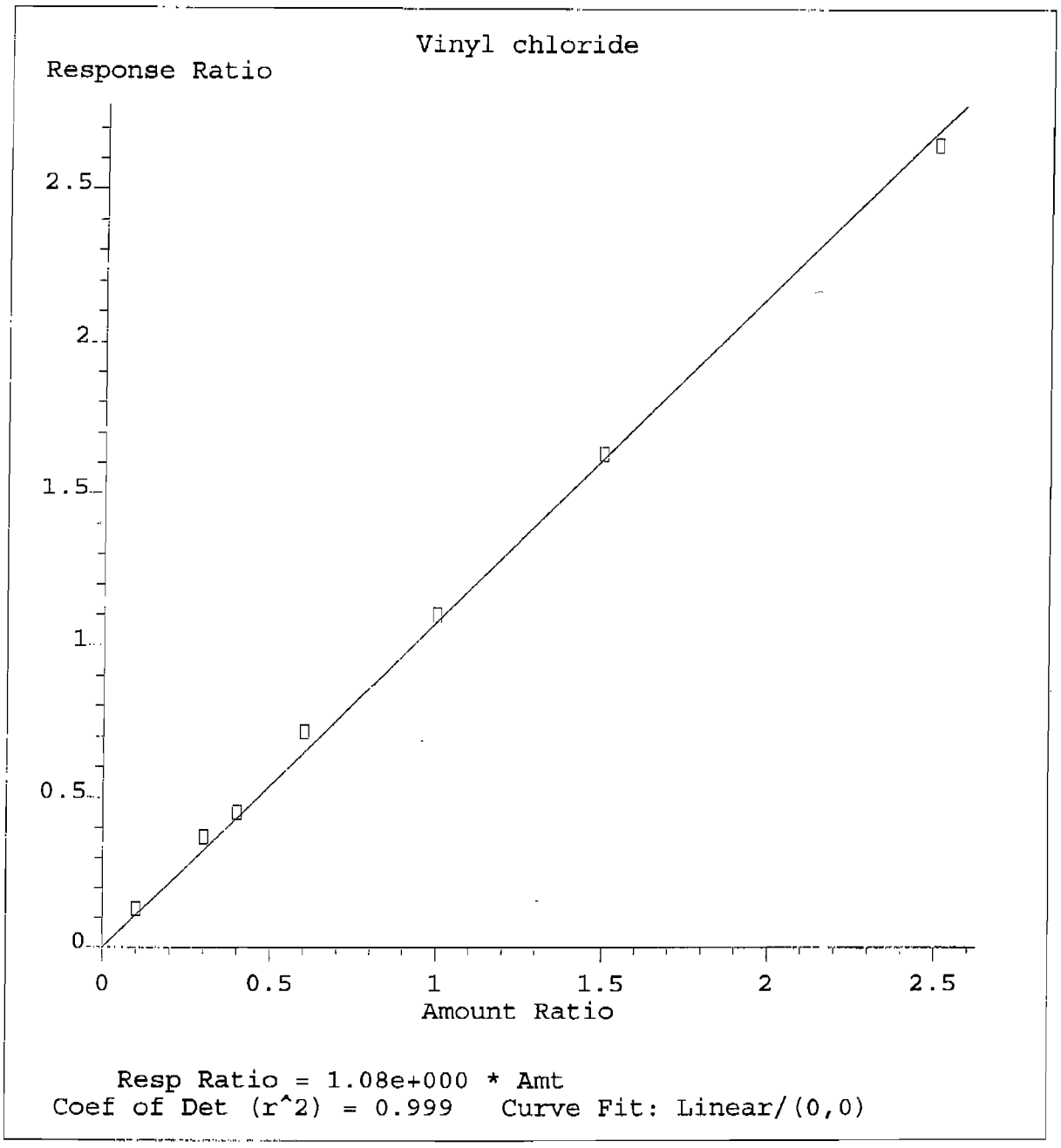
COMPOUND		RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	$\overline{RRF}$	% RSD
Ethylbenzene	*	80.479	80.632	70.664	71.635	86.531	83.653	78.932	8.2
1,1,1,2-Tetrachloroethane	*	13.740	13.140	12.199	12.063	12.059	12.102	12.550	5.7
m/p-Xylene	*	35.058	32.752	31.717	32.105	33.490	34.216	33.223	3.8
o-Xylene	*	32.260	32.147	28.207	28.830	29.480	29.101	30.004	5.8
Styrene	*	53.351	53.106	50.680	51.424	53.811	54.545	52.820	2.8
Bromoform	*	7.899	8.362	7.382	7.966	8.085	7.881	7.929	4.0
Isopropylbenzene	*	70.083	70.696	65.566	66.013	68.587	70.547	68.582	3.3
Bromobenzene	*	15.808	15.729	14.239	14.376	14.886	14.178	14.869	5.0
1,1,2,2-Tetrachloroethane	*	27.481	24.859	24.387	24.614	24.781	24.136	25.043	4.9
n-Propylbenzene	*	87.009	88.241	82.364	87.167	87.845	91.119	87.291	3.2
1,2,3-Trichloropropane	*	0.385	0.411	0.413	0.416	0.427	0.427	0.413	3.8
2-Chlorotoluene	*	1.161	1.217	1.164	1.193	1.222	1.261	1.203	3.2
1,3,5-Trimethylbenzene	*	59.992	59.019	53.270	53.244	55.900	55.974	56.233	5.0
4-Chlorotoluene	*	1.133	1.205	1.202	1.247	1.248	1.278	1.219	4.2
sec-Butylbenzene	*	84.397	77.953	75.348	76.039	78.625	79.582	78.657	4.1
1,2,4-Trimethylbenzene	*	53.302	54.080	50.973	52.498	53.743	54.282	53.146	2.3
tert-Butylbenzene	*	56.758	55.229	50.988	52.367	53.447	53.559	53.725	3.8
1,3-Dichlorobenzene	*	29.640	28.623	27.011	27.450	27.530	27.270	27.921	3.6
p-Isopropyltoluene	*	62.276	64.254	60.949	62.107	63.597	64.040	62.870	2.1
n-Butylbenzene	*	3.326	3.419	3.542	3.656	3.620	3.651	3.536	3.8
1,4-Dichlorobenzene	*	1.737	1.670	1.618	1.749	1.700	1.671	1.691	2.9
1,2-Dichlorobenzene	*	1.574	1.486	1.549	1.539	1.508	1.498	1.526	2.2
1,2-Dibromo-3-chloropropane	*	0.230	0.223	0.249	0.247	0.241	0.217	0.235	5.7
1,2,4-Trichlorobenzene	*	0.779	0.876	0.951	0.994	0.901	0.888	0.898	8.1
Hexachlorobutadiene	*	0.389	0.378	0.400	0.402	0.363	0.343	0.379	6.1
Naphthalene	*	2.269	2.086	3.328	3.782	2.688	2.997	2.858	22.5
1,2,3-Trichlorobenzene	*	0.799	0.828	0.914	0.963	0.833	0.833	0.862	7.3
Dibromofluoromethane(surr)		0.084	0.109	0.101	0.095	0.099	0.105	0.099	8.6
Toluene-d8(surr)		1.011	1.046	1.030	1.022	1.052	1.068	1.038	2.0
BFB(surr)		14.445	13.443	12.189	12.146	12.434	11.975	12.772	7.6

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

Compound List for Environmental Reporting Method: 0208030.ERM

ERM Path: C:\HPCHEM\ENVFORMS\

	Name	Method name is different	Fraction	Abbreviation	Type	CAS #	Surrogate Amount Water	Surrogate Amount Soil	Surrogate Limits Water Low	Surrogate Limits Water High	Surrogate Limits Soil Low	Surrogate Limits Soil High	Matrix Spike Amount Water	Matrix Spike Limits Water Low	Matrix Spike Limits Water High	Matrix Spike Limits Water RPD	Matrix Spike Amount Soil	Matrix Spike Limits Soil Low	Matrix Spike Limits Soil High	Matrix Spike Limits Soil RPD	Response Factor Minimum	Response Factor Max RSD	Response Factor Max Dev	MDL On Column
32	4-Methyl-2-pentanone	*	V1		M	108-10-1							120	70	130	20	120				0.1	20	20	20
33	Dibromomethane		V1		M	74-95-3							120	70	130	20	120	50	150	20	0.1	20	20	20
34	Bromodichloromethane		V1		M	75-27-4							120	70	130	20	120	50	150	20	0.2	20	20	20
35	Toluene-d8(surr)		V1		S		200	200													0	0	0	0
36	2-Hexanone		V1		M	591-78-6							120	70	130	20	120				0.1	20	20	20
37	Toluene		V1		M	108-88-3							120	70	130	20	120	50	150	20	0.1	20	20	20
38	1,1,2-Trichloroethane		V1		M	71-55-6							120	70	130	20	120				0.1	20	20	20
39	Tetrachloroethylene		V1		M	127-18-4							120	70	130	20	120	50	150	20	0.2	20	20	20
40	1,3-Dichloropropane		V1		M	142-28-9							120	70	130	20	120				0.1	20	20	20
41	Dibromochloromethane		V1		M	124-48-1							120	70	130	20	120				0.1	20	20	20
42	1,2-Dibromoethane		V1		M	106-93-4							120	70	130	20	120				0.1	20	20	20
43	Chlorobenzene-d5 (ins)		V1		I																0	0	0	0
44	Chlorobenzene		V1		M	108-90-7							120	70	130	20	120				0.5	20	20	20
45	Ethylbenzene		V1		M	100-41-4							120	70	130	20	120				0.1	20	20	20
46	1,1,1,2-Tetrachloroethane		V1		M	630-20-6							120	70	130	20	120				0.1	20	20	20
47	m/p-Xylene		V1		M	106-42-3							240	70	130	20	240				0.1	20	20	20
48	o-Xylene		V1		M	95-47-6							120	70	130	20	120				0.3	20	20	20
49	Styrene		V1		M	100-42-5							120	70	130	20	120				0.3	20	20	20
50	Bromoform		V1		M	75-25-2							120	70	130	20	120				0.1	20	20	20
51	isopropylbenzene		V1		M	98-82-8							120	70	130	20	120				0.1	20	20	20
52	BFB(surr)		V1		S		200	200													0	0	0	0
53	Bromobenzene		V1		M	108-86-1							120	70	130	20	120				0.1	20	20	20
54	1,1,2,2-Tetrachloroethane		V1		M	79-34-5							120	70	130	20	120				0.3	20	20	20
55	n-Propylbenzene		V1		M	103-65-1							120	70	130	20	120				0.1	20	20	20
56	1,2,3-Trichloropropane		V1		M	96-18-4							120	70	130	20	120				0.1	20	20	20
57	2-Chlorotoluene		V1		M	95-49-8							120	70	130	20	120				0.1	20	20	20
58	1,3,5-Trimethylbenzene		V1		M	108-67-8							120	70	130	20	120				0.1	20	20	20
59	4-Chlorotoluene		V1		M	106-43-4							120	70	130	20	120				0.1	20	20	20
60	sec-Butylbenzene		V1		M	135-98-8							120	70	130	20	120				0.1	20	20	20
61	1,2,4-Trimethylbenzene		V1		M	95-63-6							120	70	130	20	120				0.1	20	20	20
62	tert-Butylbenzene		V1		M	98-06-6							120	70	130	20	120				0.1	20	20	20



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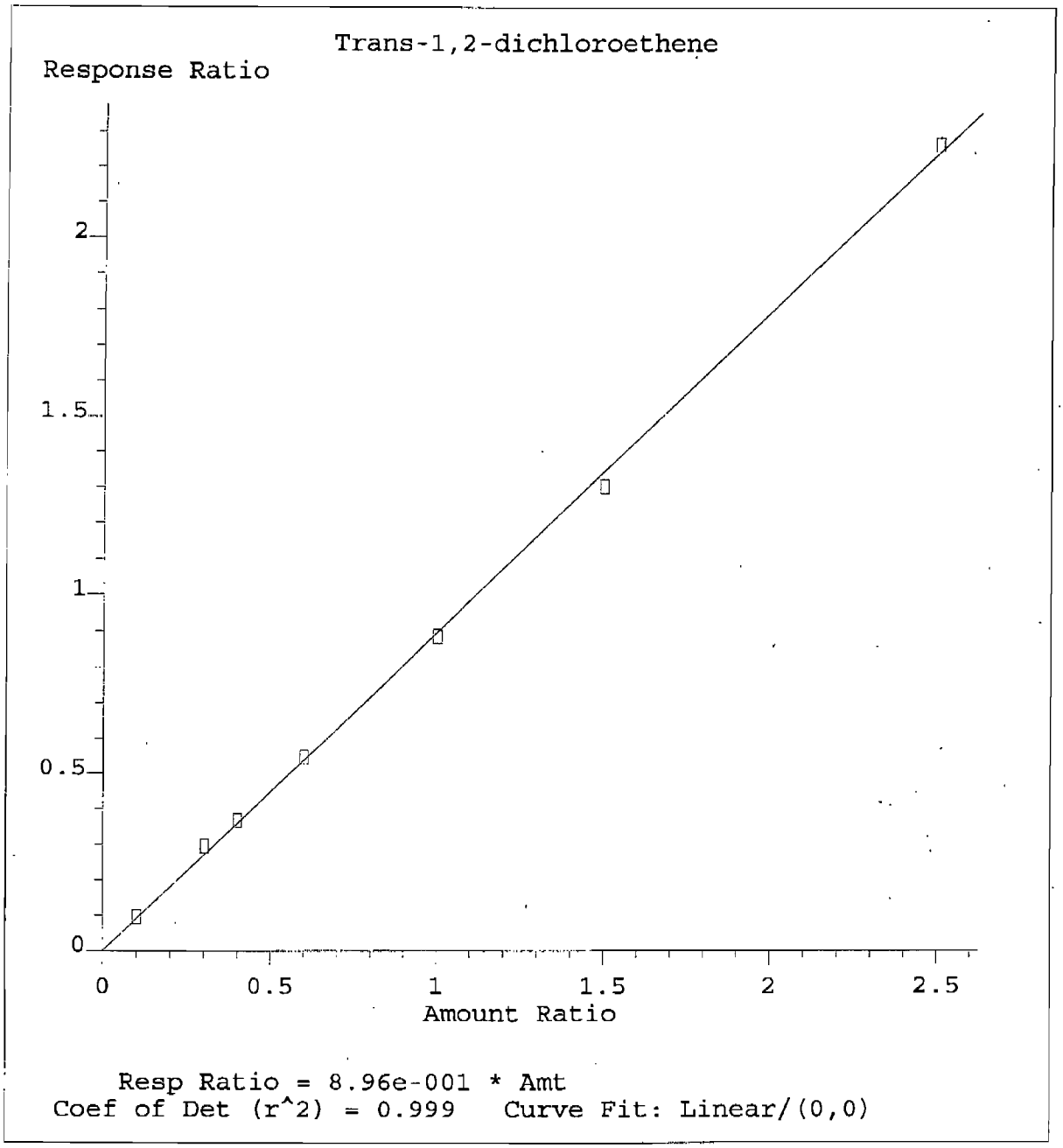
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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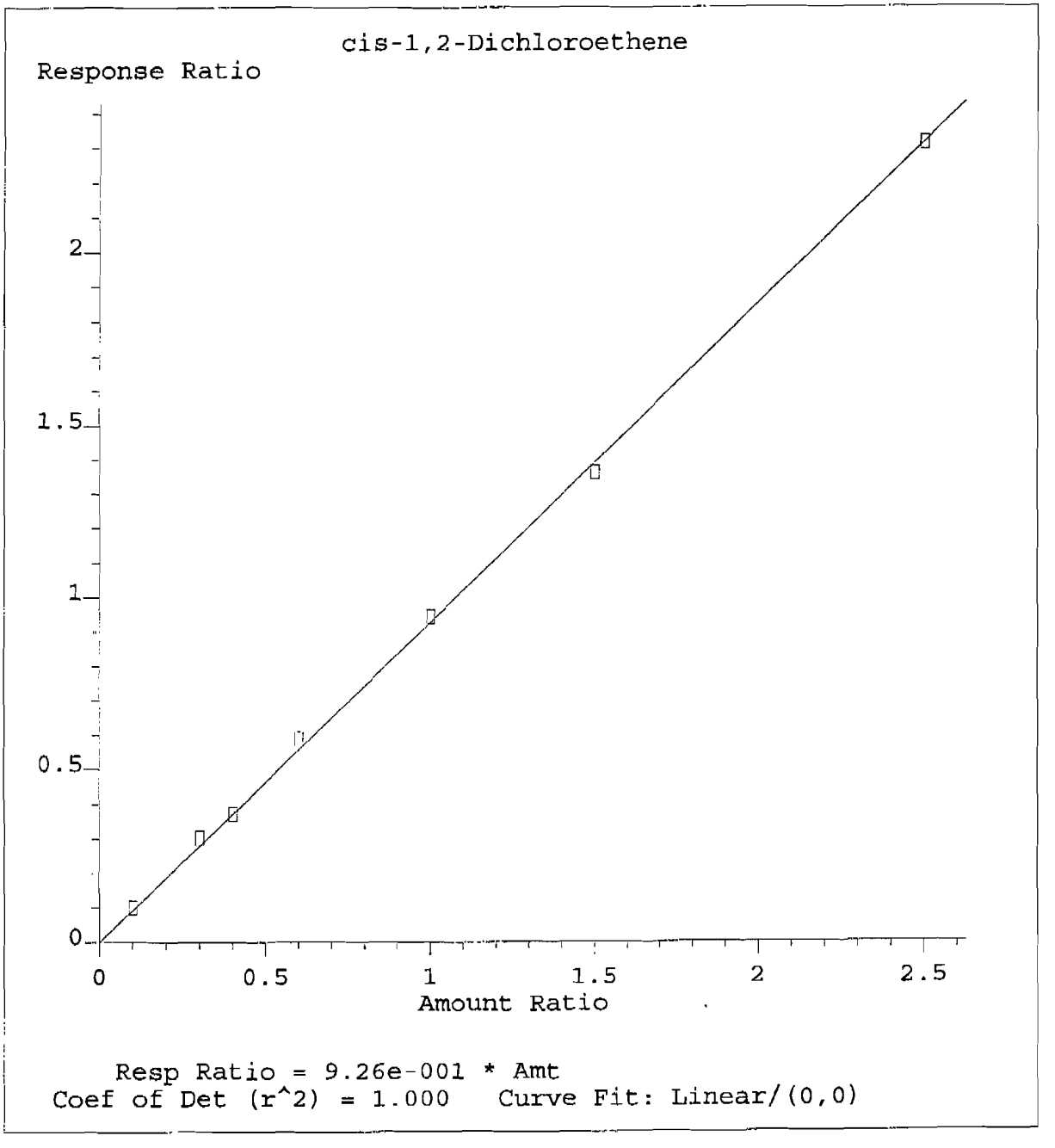

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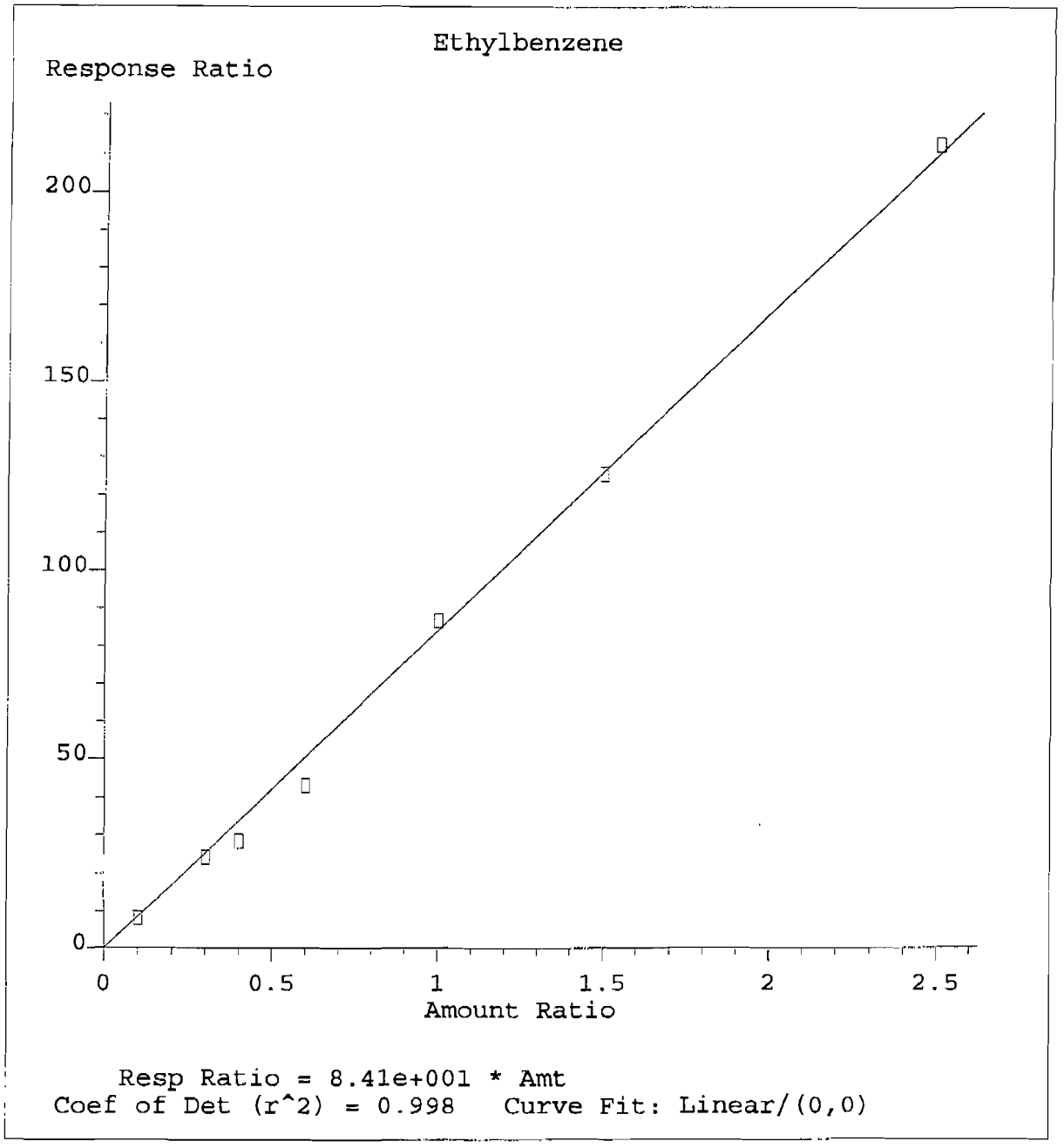

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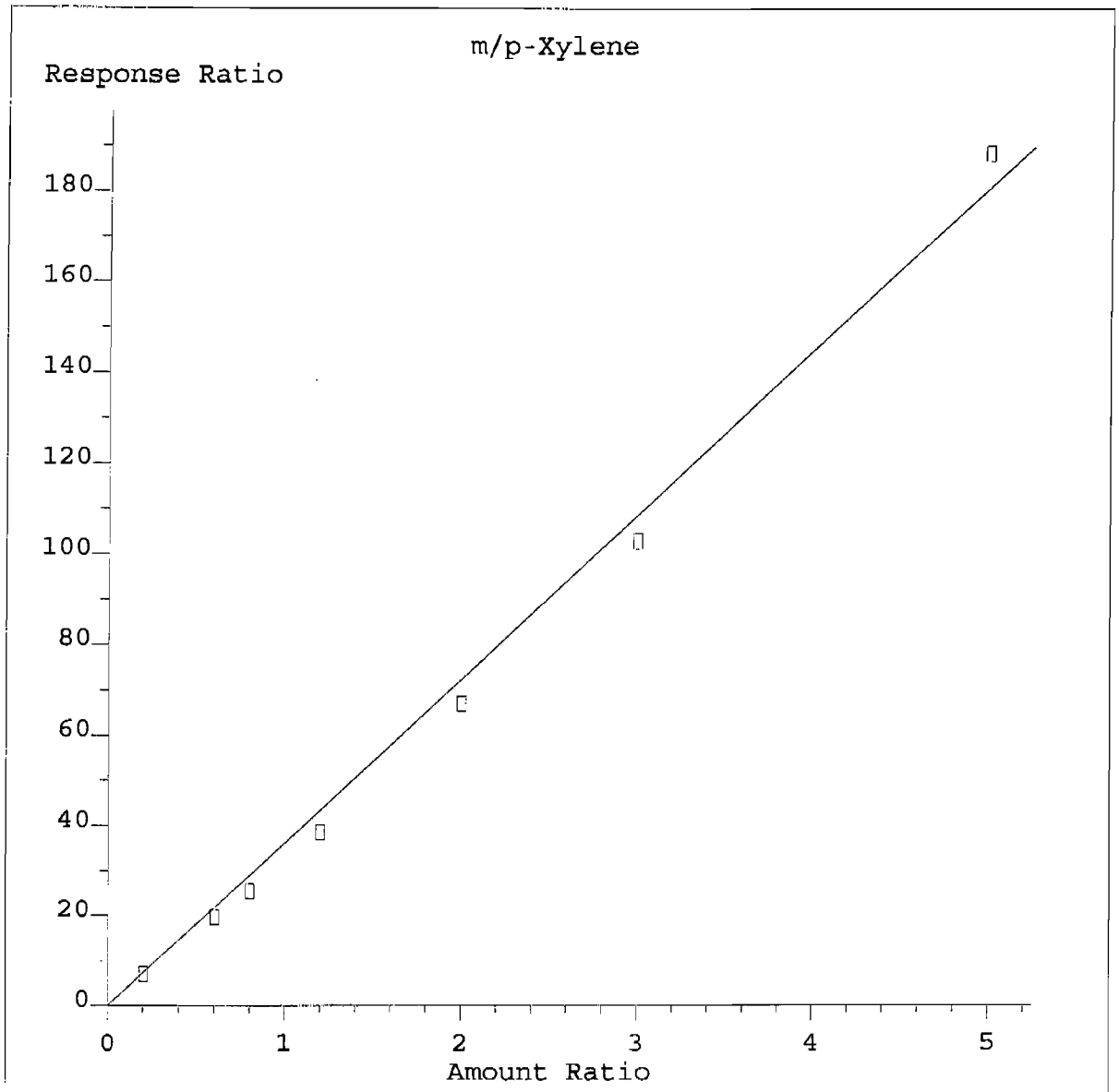
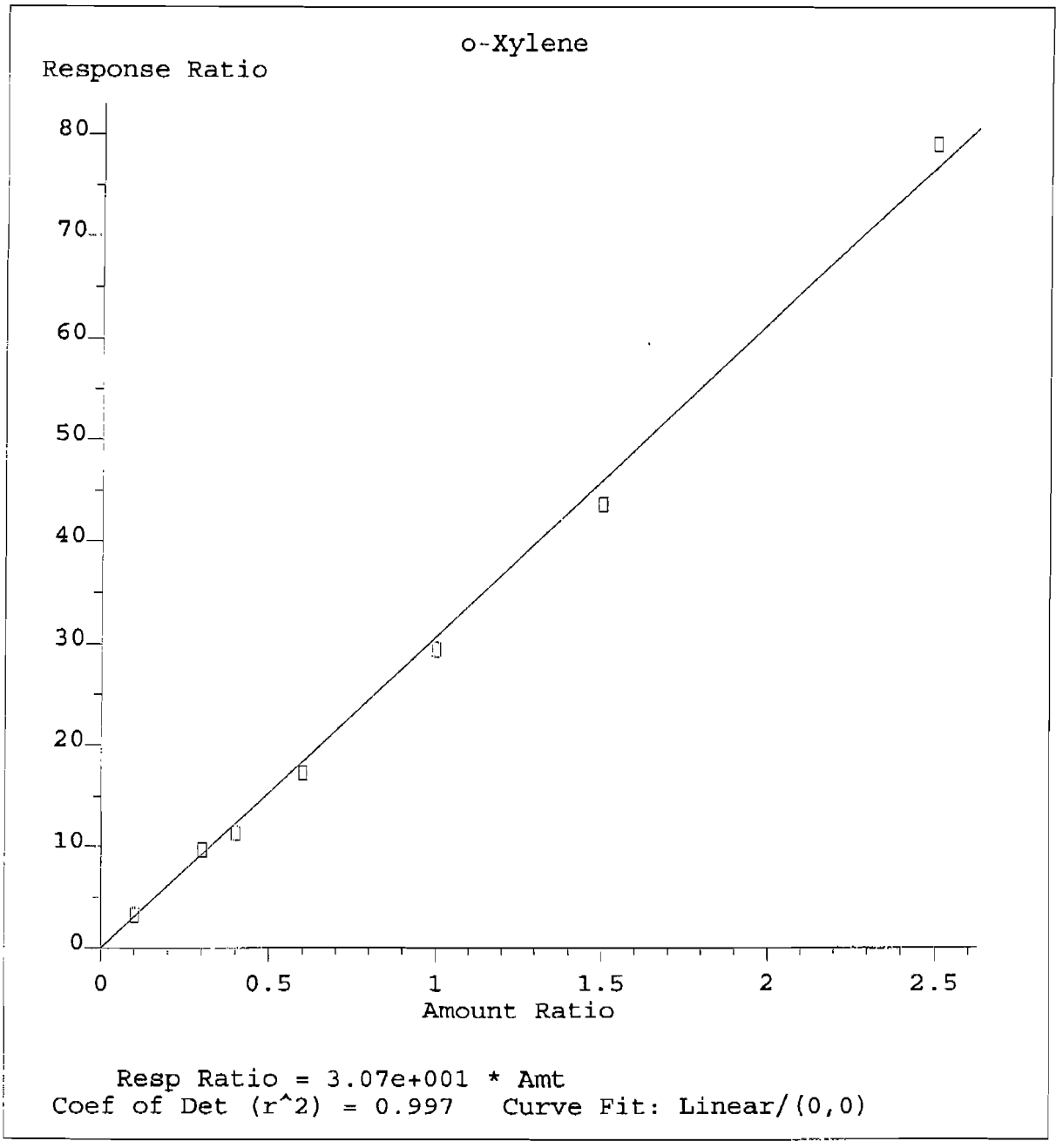
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Resp Ratio = 3.61e+001 * Amt
Coef of Det (r^2) = 0.996 Curve Fit: Linear/(0,0)

Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

Compound #47: m/p-Xylene (Page 3)

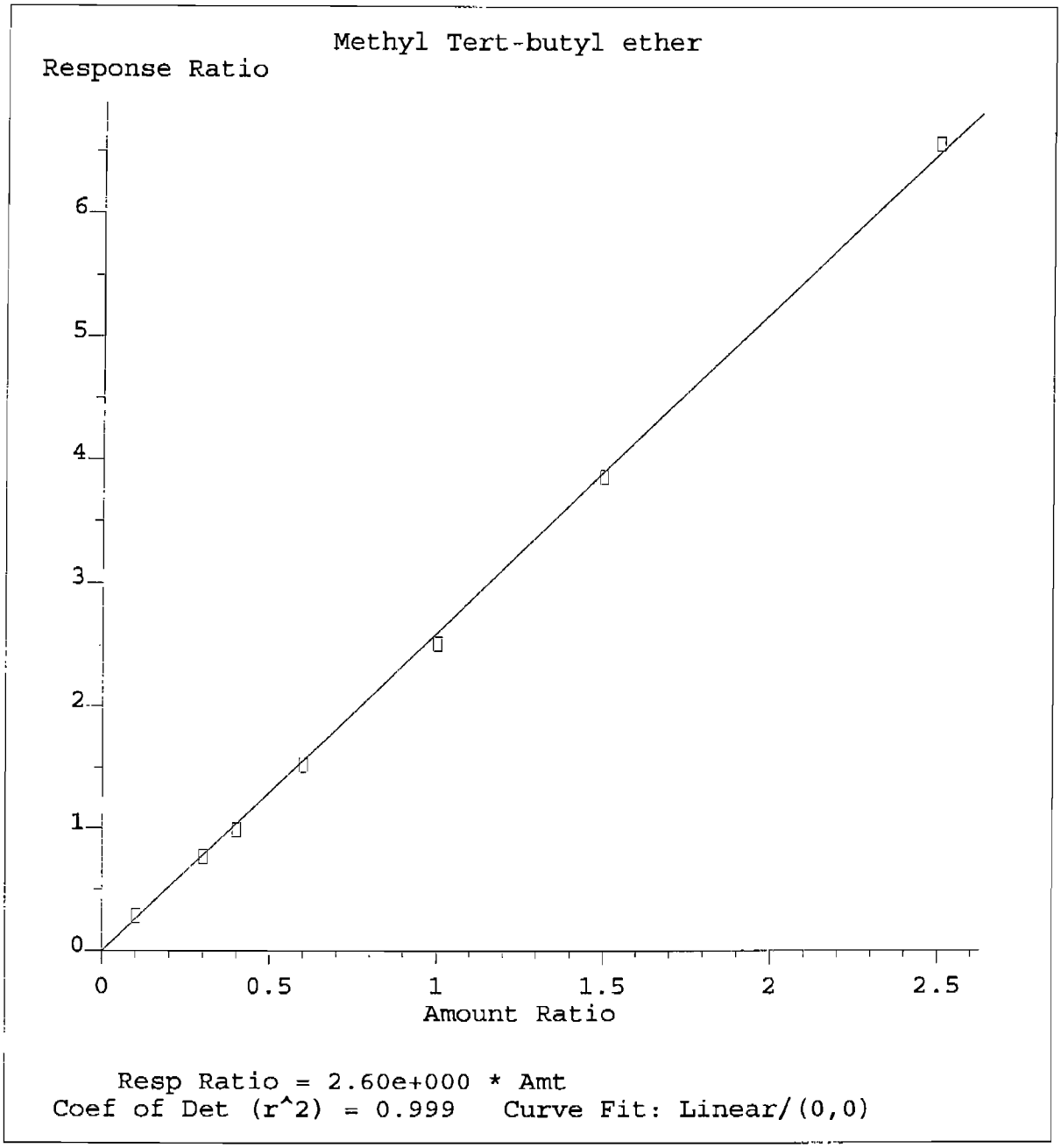
Lvl ID	Conc	Response	Lvl ID	Conc	Response
1	40.000	2688706			
2	120.000	6971480			
3	160.000	11249195			
4	240.000	17305492			
5	400.000	28311224			
6	600.000	46112762			
7	1000.000	79839419			

	Integration Parameter File	Sum?
Tgt		
Q1		☐
Q2		☐
Q3		☐

Area Correction Mass: 0.00

Correction Factor: 0.000

Prev | Next | Plot | Page 1 | Page 2 | OK | Cancel | Help



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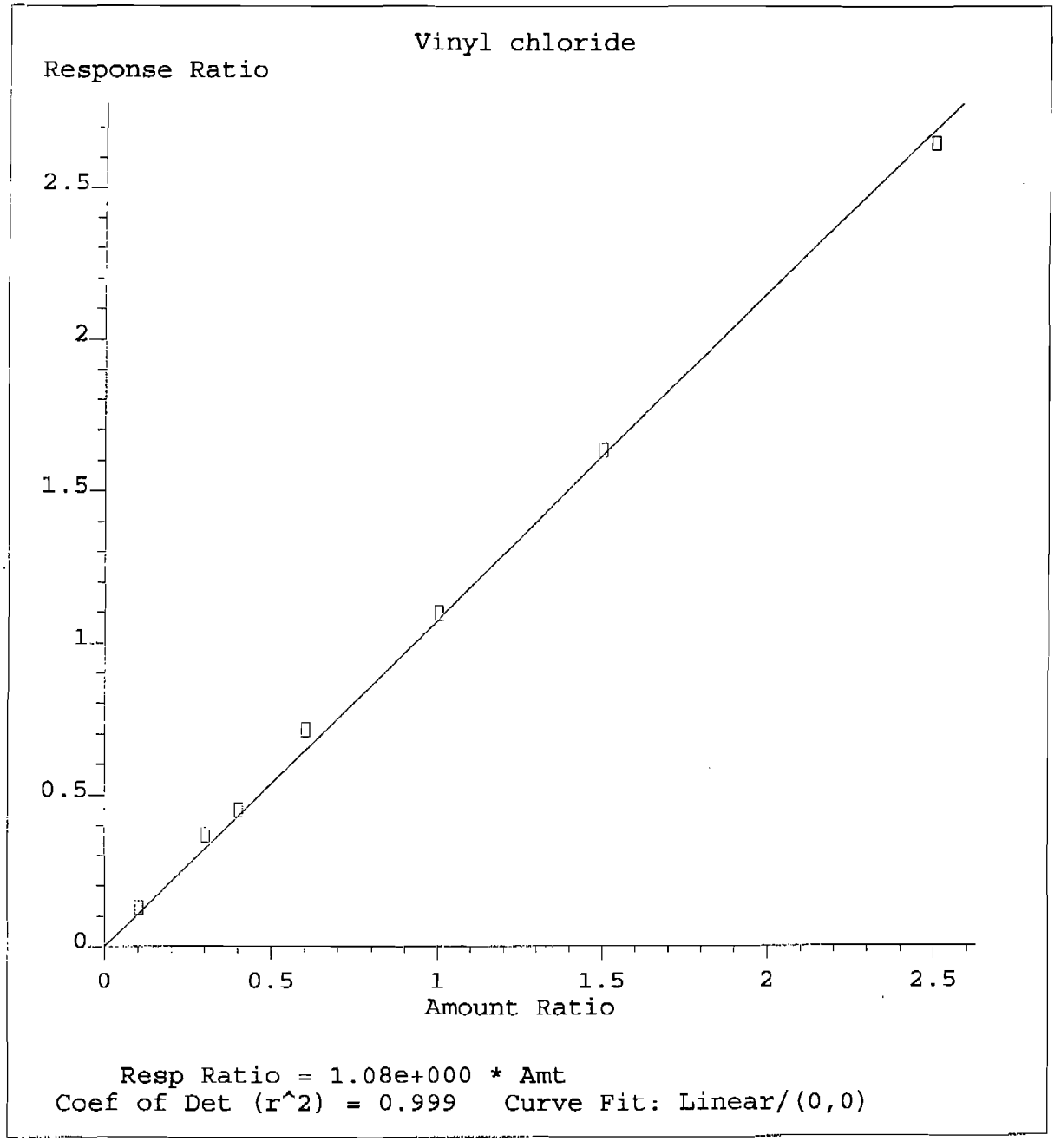
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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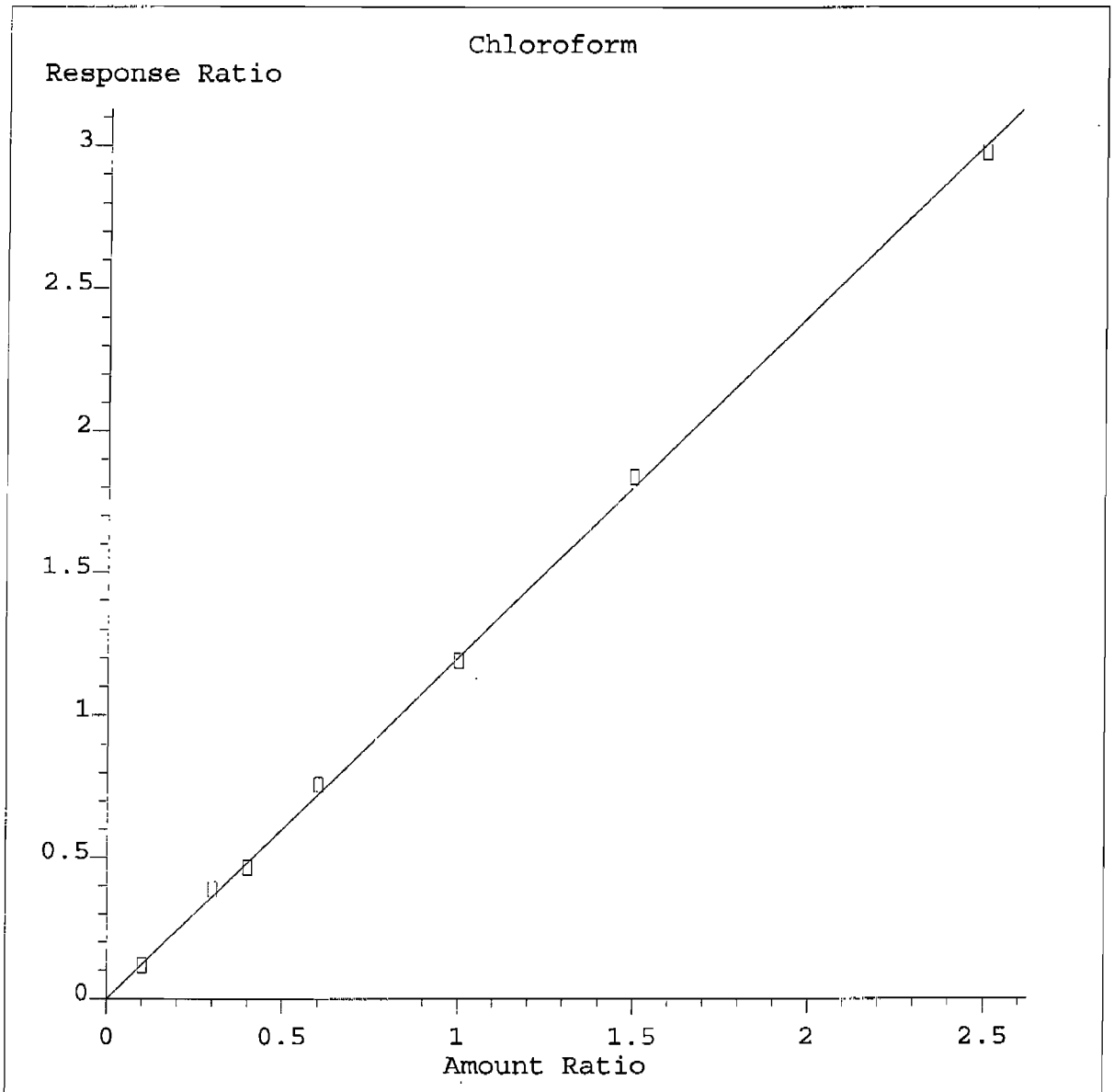
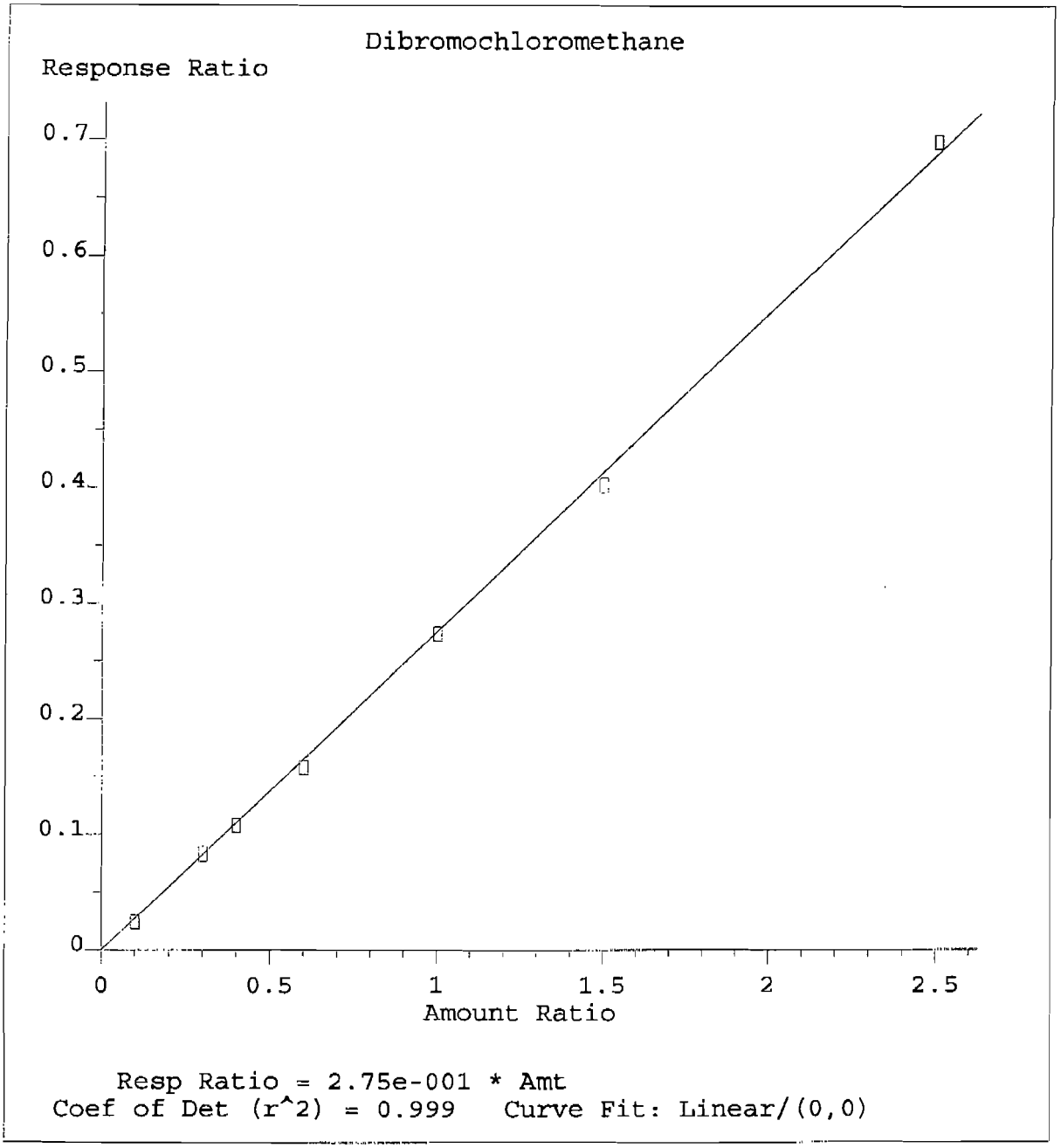
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



Resp Ratio = 1.20e+000 * Amt
Coef of Det (r^2) = 0.999 Curve Fit: Linear/(0,0)

Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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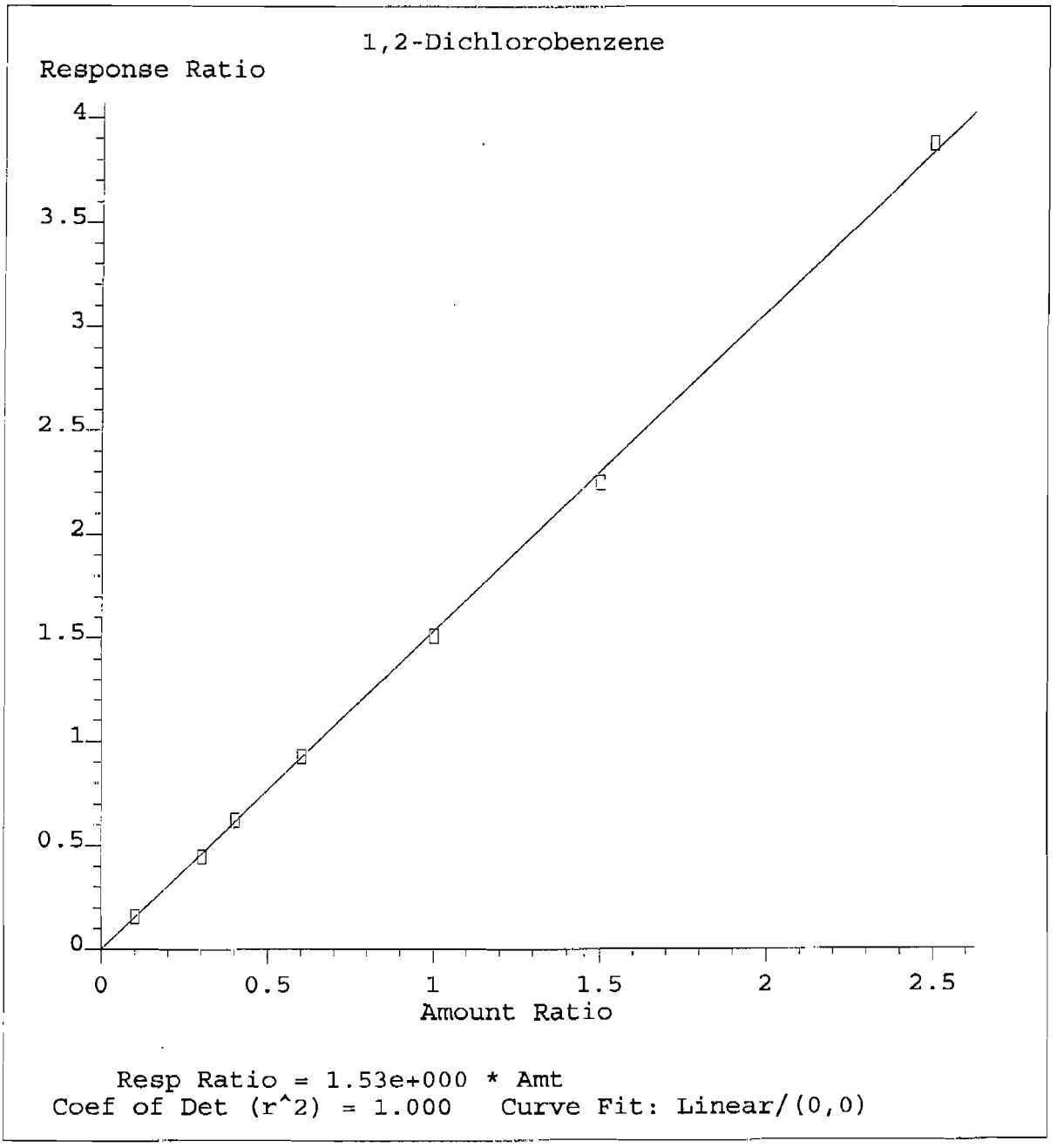

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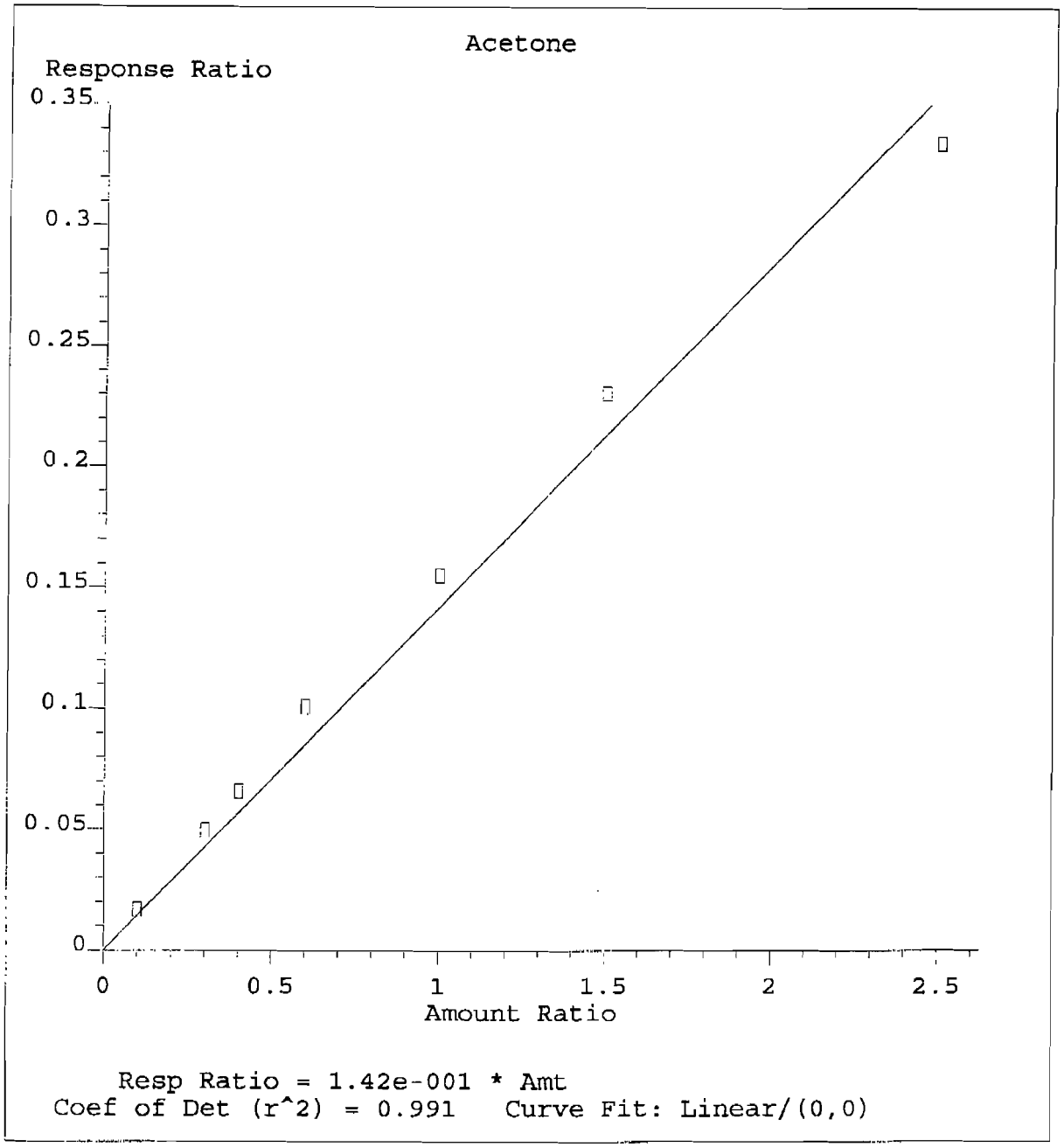

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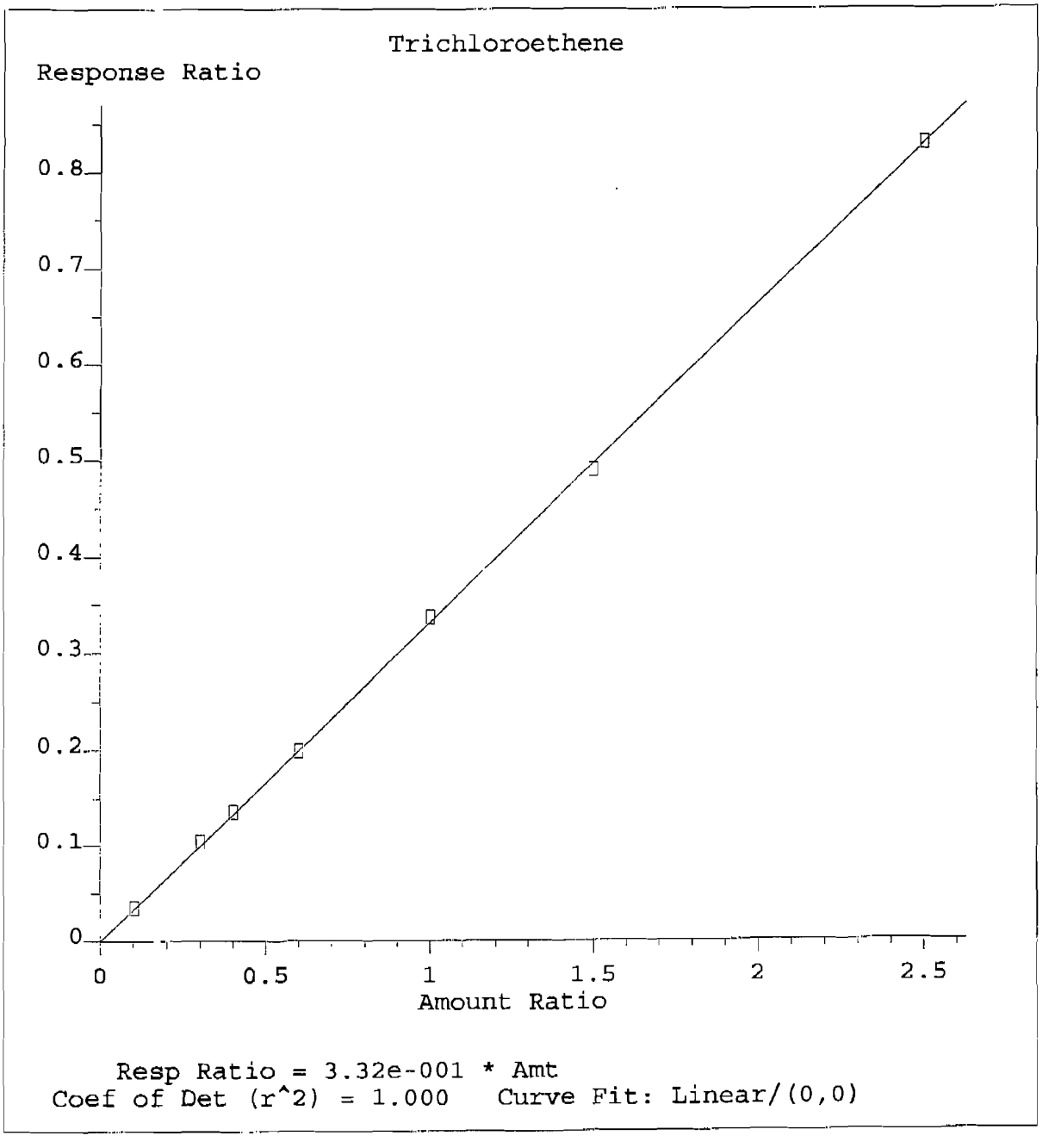

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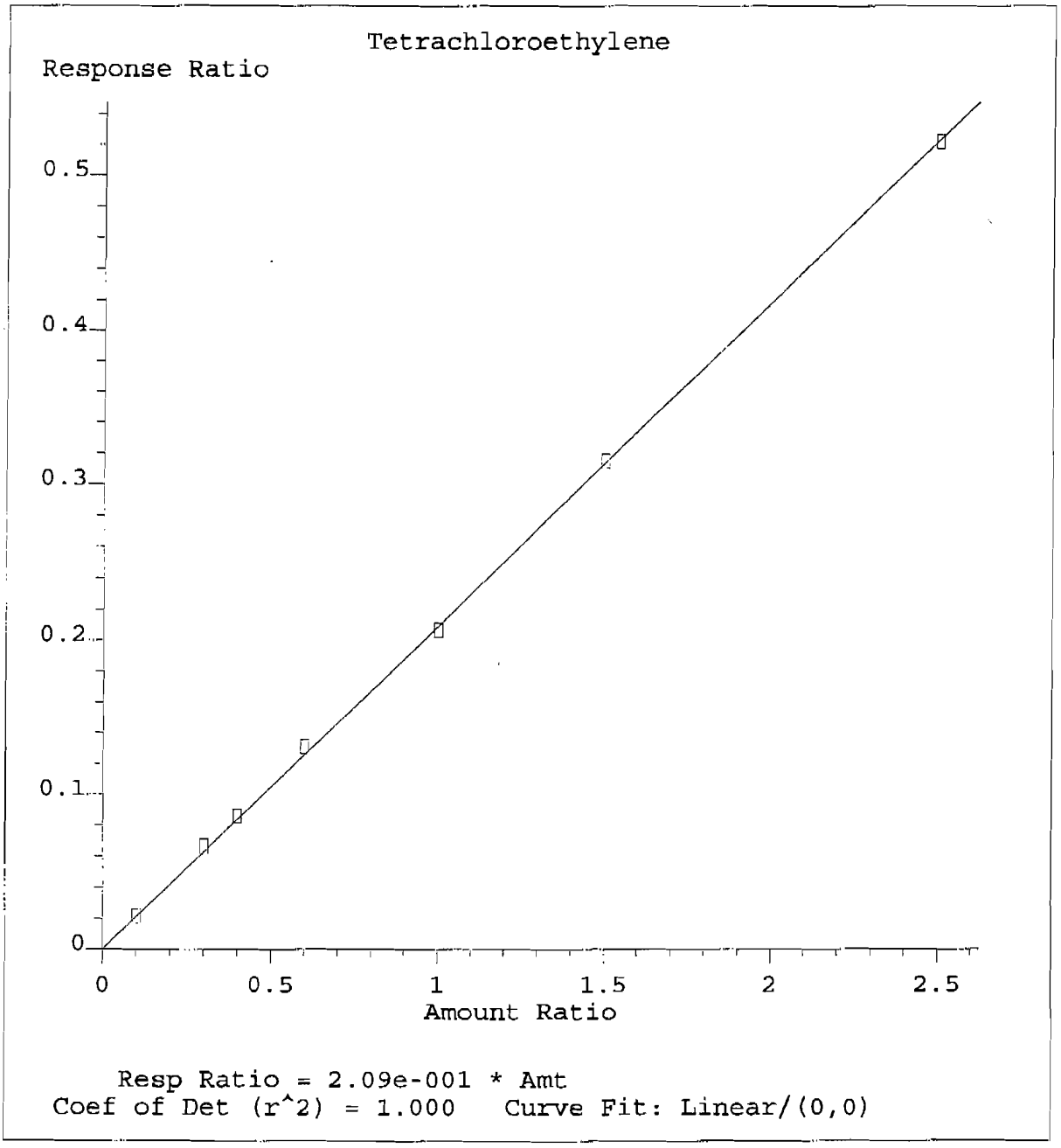
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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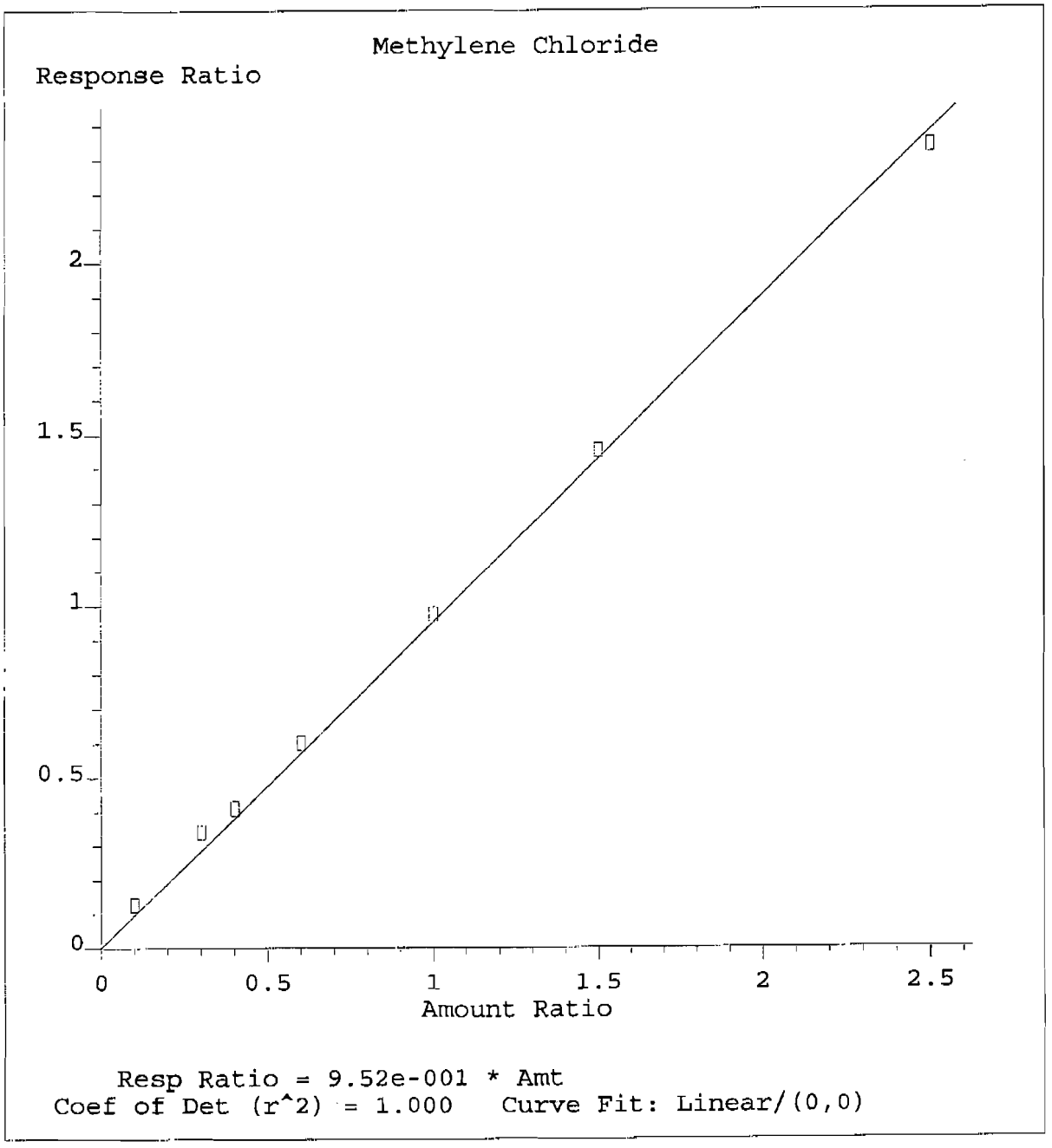
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008



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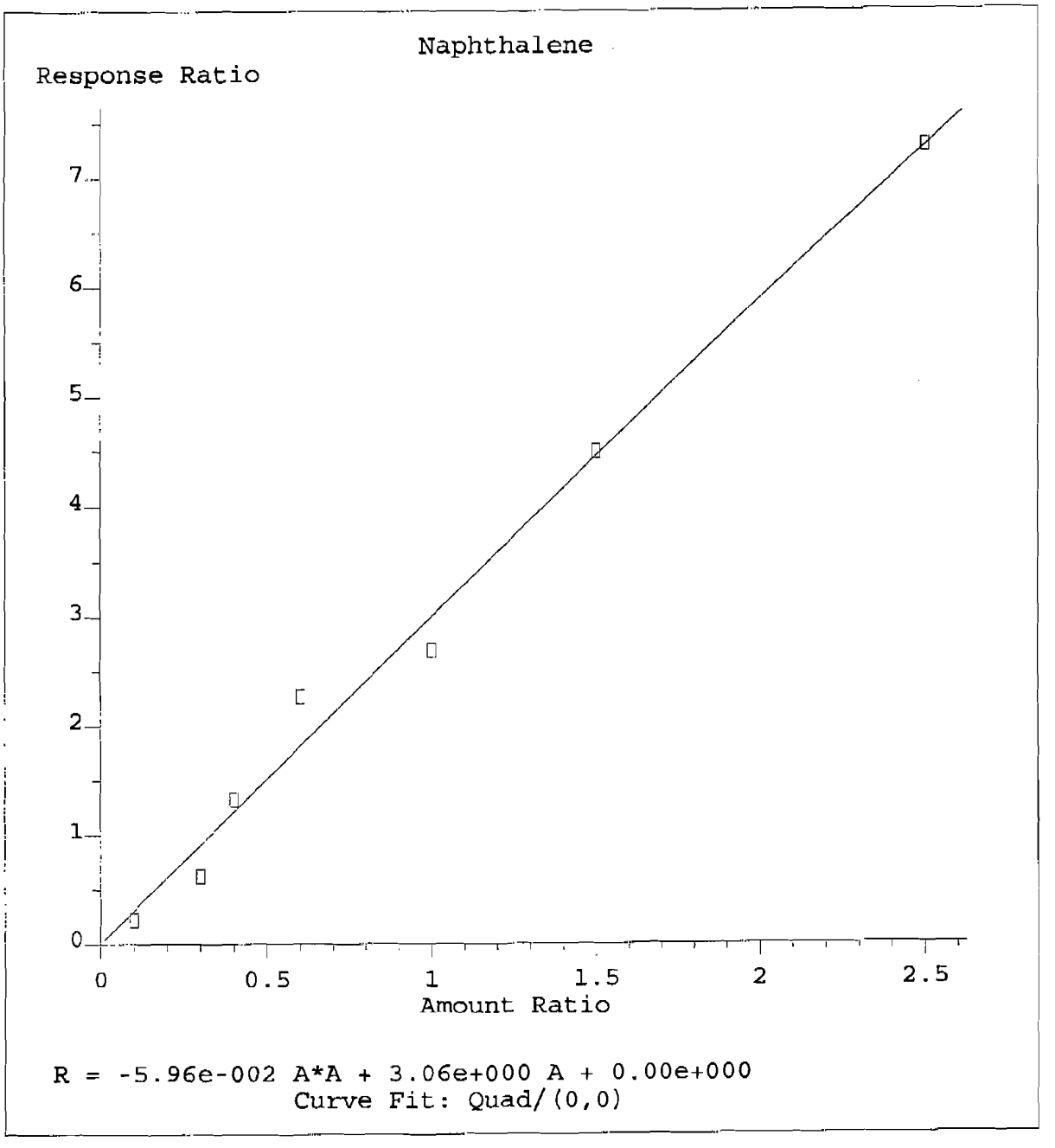

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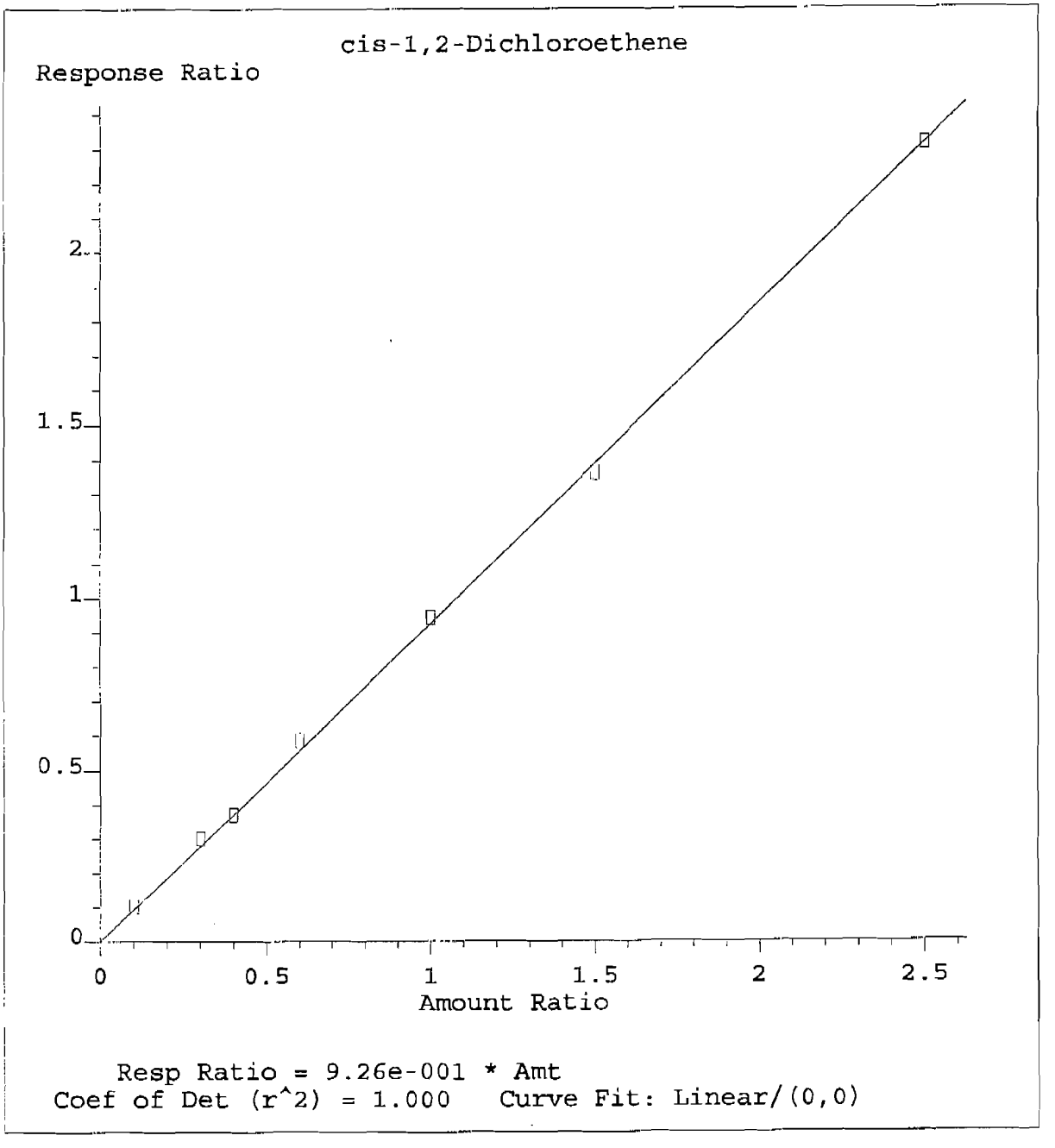

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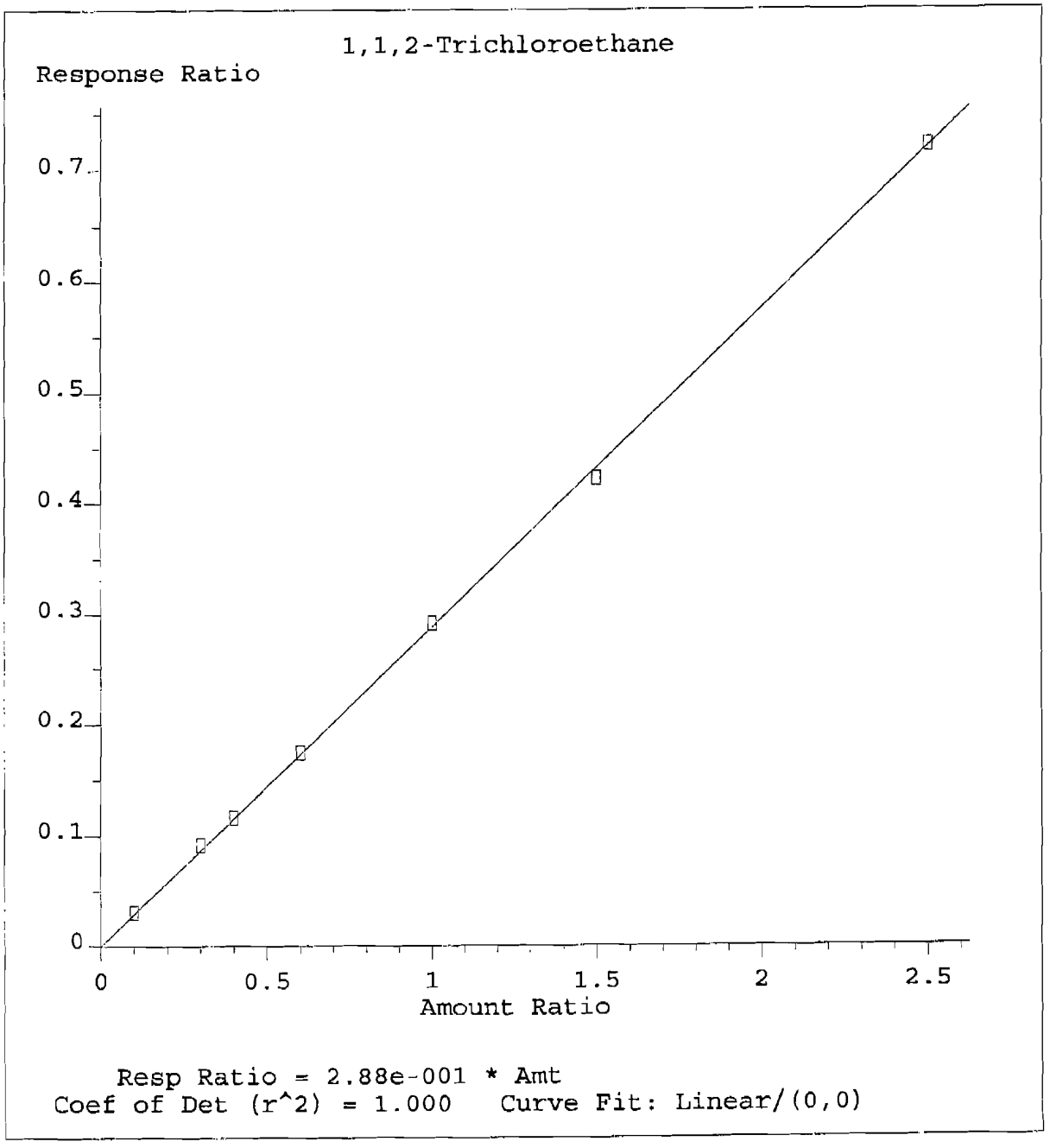

Method Name: C:\HPCHEM\1\METHODS\82608003.M
Calibration Table Last Updated: Mon Apr 07 10:19:12 2008

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

Inc. 5000

June 23, 2008

Mr. David N. Scotti, P.G.
Loureiro Engineering Associates, Inc.
100 Northwest Drive
Plainville, CT 06062

Dear Mr. Scotti:

Enclosed is the quality assurance review for the aqueous samples collected on February 25, 2008, for the Centredale Manor Restoration Project Site in North Providence, Rhode Island. These samples were analyzed for polychlorinated dibenzodioxin/polychlorinated dibenzofuran (PCDD/PCDF) compounds.

The data quality for PCDD/PCDF compounds in all samples was generally acceptable; however, the following qualifications were made.

- The results for a few PCDDs/PCDFs in several unfiltered samples were qualified due to blank contamination.
- The results for 2,3,7,8-TCDF in all filtered samples were qualified as estimated due to low recoveries in the laboratory control sample and matrix spike/matrix spike duplicate analyses.
- The results for 2,3,7,8-TCDD in all unfiltered samples were qualified as estimated due to a high performance evaluation sample result.
- The results for 2,3,7,8-TCDD in the filtered and unfiltered field duplicate pair were qualified as estimated due to field duplicate imprecision.
- The results for several PCDD/PCDFs in several samples were qualified as estimated due to high continuing calibration percent differences coupled with decreasing instrument sensitivity.
- All positive results reported with concentrations less than the concentration of the lowest level calibration standard were qualified as estimated.

1140 Valley Forge Road P.O. Box 810 Valley Forge, PA 19482 Tel: 610.935.5577 Fax: 610.935.5583 Web: www.envstd.com

If you have any questions or comments, please do not hesitate to call.

Sincerely,

Patrick A. Conlon
Senior Quality Assurance Chemist

Sincerely,

David R. Blye, CEAC
Quality Assurance Specialist/
Principal

PAC/DRB:hm
Enc.

ENVIRONMENTAL STANDARDS
Setting the Standards for Innovative Environmental Solutions

Inc. 5000

QUALITY ASSURANCE REVIEW

OF THE AQUEOUS SAMPLES

COLLECTED ON FEBRUARY 25, 2008

FOR CENTREDALE MANOR RESTORATION PROJECT

NORTH PROVIDENCE, RHODE ISLAND

June 23, 2008

Prepared for:

LOUREIRO ENGINEERING ASSOCIATES, INC.
100 Northwest Drive
Plainville, CT 06062

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1140 Valley Forge Road
P.O. Box 810
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Executive Summary

An analytical quality assurance (QA) review was performed on data generated from the analyses of six unfiltered and filtered aqueous samples and eight associated quality control (QC) samples collected in association with the Centredale Manor Restoration Project Site on February 25, 2008, by Loureiro Engineering Associates Inc. All organic analyses were performed by US EPA Method 8290A. Two comprehensive Contract Laboratory Program (CLP)-like raw data packages were prepared by the laboratory and were reviewed by Environmental Standards, Inc.

The data quality for polychlorinated dibenzodioxin/polychlorinated dibenzofuran (PCDD/PCDF) compounds in all samples was generally acceptable; however, the following qualifications were made.

- The results for a few PCDDs/PCDFs in several unfiltered samples were qualified due to blank contamination.
- The results for 2,3,7,8-TCDF in all filtered samples were qualified as estimated due to low recoveries in the laboratory control sample and matrix spike/matrix spike duplicate samples.
- The results for 2,3,7,8-TCDD in all unfiltered samples were qualified as estimated due to a high performance evaluation sample result.
- The results for 2,3,7,8-TCDD in the filtered and unfiltered field duplicate pair were qualified as estimated due to field duplicate imprecision.
- The results for several PCDD/PCDFs in several samples were qualified as estimated due to high continuing calibration percent differences coupled with decreasing instrument sensitivity.
- All positive results reported with concentrations less than the concentration of the lowest level calibration standard were qualified as estimated.

Introduction

This quality assurance (QA) review is based upon a rigorous examination of data generated from the analyses of seven unfiltered and filtered aqueous samples and associated quality control (QC) samples collected in association with the Centredale Manor Restoration Project Site in North Providence, Rhode Island, on February 25, 2008, by Loureiro Engineering Associates, Inc. The samples that have undergone a QA review are listed on Table 1. Table 1 presents the field sample number, laboratory sample number, sample delivery group (SDG), matrix, collection date, and parameter analyzed and reviewed for each sample.

This review has been performed with guidance from the "National Functional Guidelines for Chlorinated Dioxin and Furan Data Review" (US EPA, September 2005).

The reported analytical results are presented on the data tables included in Section 2, "Target Analyte Summary." These data tables were generated from the electronic data deliverables (EDDs) provided by the laboratory and include all final data validation qualifiers and results. Data were examined to determine the usability of the analytical results and compliance relative to requirements specified in SW-846 Method 8290A. In addition, the deliverables prepared according to a Contract Laboratory Program (CLP)-like data package were evaluated. Qualifier codes have been placed in the "Validation Qualifier" field on the data tables where necessary to enable the data user to quickly assess the qualitative and/or quantitative reliability of any result based on the criteria evaluated. Details of this QA review are presented in Section 1 of this report.

This critical QA review identifies data quality issues for specific samples and specific evaluation criteria. The data qualifications allow the data end-user to best understand the usability of the analysis results. Data not qualified in this report should be considered valid based on the QC criteria that have been reviewed.

TABLE 1

SUMMARY OF SAMPLE DATA REVIEWED

CENTERDALE MANOR SITE RESTORATION PROJECT SITE

Loureiro Engineering Associates, Inc. Sample Identification	Laboratory Sample Number	Sample Delivery Group	Matrix	Date of Sample Collection	Parameter Analyzed and Reviewed
1316057	0208030-1	1316057	Aq	2/25/08	D/F
1316057_MS (Matrix Spike)	0208030-1_MS	1316057	Aq	2/25/08	D/F
1316057_MSD (Matrix Spike Duplicate)	0208030-1_MSD	1316057	Aq	2/25/08	D/F
1316058	0208030-10	1316057	Aq	2/25/08	D/F
1316059	0208030-21	1316057	Aq	2/25/08	D/F
1316060	0208030-17	1316057	Aq	2/25/08	D/F
1316061 (Field Duplicate of 1316058)	0208030-12	1316057	Aq	2/25/08	D/F
1316062 (Performance Evaluation)	0208030-8	1316057	Aq	2/25/08	D/F
1316074	0208030-14	1316057	Aq	2/25/08	D/F
1316057_uf	0208030-3	1316057	Aq	2/25/08	D/F
1316057_uf_MS (Matrix Spike)	0208030-3_MS	1316057	Aq	2/25/08	D/F
1316057_uf_MSD (Matrix Spike Duplicate)	0208030-3_MSD	1316057	Aq	2/25/08	D/F
1316058_uf	0208030-11	1316057	Aq	2/25/08	D/F
1316059_uf	0208030-22	1316057	Aq	2/25/08	D/F
1316060_uf	0208030-19	1316057	Aq	2/25/08	D/F
1316061_uf (Field Duplicate of 1316058uf)	0208030-13	1316057	Aq	2/25/08	D/F
1316062_uf (Performance Evaluation)	0208030-9	1316057	Aq	2/25/08	D/F
1316074_uf	0208030-15	1316057	Aq	2/25/08	D/F

TABLE 1 (Cont.)

NOTES:

D/F - Polychlorinated Dibenzo-*p*-dioxins and Polychlorinated Dibenzofurans by US EPA Method 8290A. (18 analyses)

Aq - Aqueous.

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 18 filtered and unfiltered aqueous samples (including QC samples) collected as part of the Centredale Manor Restoration Project Site in North Providence, Rhode Island, were performed by Data/Analytical Technologies Inc. (DAT) of Plain City, Ohio. All samples were analyzed for polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) according to SW-846 Method 8290A. The samples and analyses reviewed for all samples are identified on Table 1. The data were presented in two Contract Laboratory Program (CLP)-like data packages.

The findings offered in this report are based upon a rigorous review of the following:

- sample holding times
- blank analysis results
- analytical sequence
- laboratory control sample (LCS) recoveries
- matrix spike (MS) and matrix spike duplicate (MSD) accuracy and precision
- qualitative identification
- ion abundance ratios
- retention times (RTs)
- filtered vs. unfiltered result comparison
- sample condition upon laboratory receipt
- initial calibration and continuing calibration verifications (CCVs)
- quantitation of results
- gas chromatogram/mass spectral (GC/MS) tuning and system performance
- performance evaluation accuracy
- labeled standard recoveries
- signal-to-noise (S/N) ratios
- field duplicate precision

The qualified analytical results for the organic compounds are provided as a summary of the data in Section 2 of this report.

Several issues were identified as detailed below. Issues are presented in two categories – reporting issues and procedural issues. Reporting issues are data deliverable issues that can easily be corrected and that may or may not impact the usability of the reported results. Procedural issues are issues that cannot be corrected and address method compliance issues; these issues may or may not impact the usability of the reported results. One comment is presented. Comments address issues for which the data reviewer has provided information in order to clarify issues relating to the data. The data reviewer has included copies of relevant raw data, QC forms, and other documentation needed to support any changes made to the data package in the Organic Data Support Documentation (Section 3) of this review. The following issues and comment do not necessarily affect data usability (*viz.,* items necessitating data qualification).

Reporting Issues

1. The result and estimated detection limit (EDL)/estimated maximum potential concentration (EMPC) values reported in the laboratory electronic data deliverable (EDD), which was utilized to produce the data tables in Section 2, were not rounded to the correct number of significant figures. The result and EDL/EMPC values reported on the CDD/CDF Sample Data Summary High Resolution forms (Forms 1 DFA-Form I-HR CDD-1) and CDD/CDF Total Homologue Concentration Summary High Resolution forms (Forms 2DF-Form II HRCDD) were reported to the correct number of significant figures and have been included in Section 3. The laboratory did not include the "U" qualifier for "not-detected" results for total homologues in the EDD. The data reviewer added the 'U" qualifier in the "Validator Qualifier" field in the data tables in Section 2.

2. The laboratory did not include the Form 2DF-Form II HR CDD for sample 1316061uf in the data package provided for the unfiltered samples. The total homologue results were included in the laboratory EDD, which was utilized to produce the data tables in Section 2.

Procedural Issues

1. The Chain-of-Custody documentation for SDG 1316057 indicates that the samples were received at temperature of "6.9°C." Aqueous samples collected for PCDDs/PCDFs analyses are required to be preserved at a temperature of < 6°C as indicated in Method SW-846 8290A. In the data reviewer's opinion, data qualification of the PCDD/PCDF compound results due to elevated sample temperature was not warranted because of the minor exceedance at the time of receipt and due to the known stability of the PCDD/PCDF compounds.

2. High percent differences (%Ds > 20%) were obtained between the relative response factors (RRFs) for 1,2,3,4,7,8,9-HpCDF and 1,2,3,4,7,8-HpCDD in the CCV standard analyzed at the end of the analytical sequence for the filtered samples and the mean RRFs in the associated initial calibration. In addition, more than 12 hours elapsed between the analysis of CCV standards. According to SW-846 Method 8290A (Sections 7.7.3 and 7.7.4), a CCV standard is required at the end of each 12-hour shift and the measured RRFs must be within ± 20% of the mean value established during the initial calibration. Qualification of data due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

3. A low recovery (< 75%) was obtained for 2,3,7,8-TCDF in the LCS (and MS/MSD) associated with the filtered samples. Qualification of data due to the low LCS (and MS/MSD) recovery is addressed in the subsequent Organic Data Qualifiers section.

Comment

- In order to be reported as a positive PCDD/PCDF concentration, the two quantitation ions must be present with signal-to-noise (S/N) ratios of at least 2.5 to 1 at the correct retention time; these ions must maximize simultaneously (within ± 2 seconds); the ion abundance ratio for the two quantitation ions must fall within the SW-846 Method 8290A acceptance limits (Table 8); the GC peaks must appear within the retention time window for a given homologous series (class of isomers; *e.g., penta d*ioxins) established prior to the analysis. If a peak meets all of these criteria, the result is reported as positive; if a peak meets none of the criteria, the result is reported "ND" at the calculated EDL (Section 7.9.5). According to SW-846 Method 8290A (Section 7.9.5.2), when all qualitative criteria are met except the ion abundance ratio criteria or when a peak representing a polychlorinated diphenyl ether (PCDPE) has been detected, an estimated maximum possible concentration (EMPC) is reported. The laboratory reported several results as EMPC results. For the 2,3,7,8-PCDD/PCDFs, the laboratory reported the EMPC values (calculated in the same manner as positive results) in the detection limit field in the EDD without the "U" qualifier in the qualifier field associated with the "ND" result. The laboratory did not include EMPC results in the reported total CDD/CDF homologue results. Qualification of data due to ion abundance ratios outside of acceptance criteria is addressed in the subsequent Organic Data Qualifiers section.

With respect to data usability, the principal areas of concern are blank contamination, quantitation below the concentration of the lowest calibration standard, low LCS and MS/MSD recoveries, high CCV %Ds, and a high PE result. Based on a rigorous review of the data provided, the following organic data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Organic Data Qualifiers

- Due to the trace-level presence of the following compounds in the associated method blank, the reported positive and "EMPC" results for these compounds in the samples listed below should be considered "not-detected" and have been flagged "U" on the data tables. Sample volumes were taken into consideration when evaluating blank contamination.

Compound(s)	SDG Number	Sample(s)
1,2,3,4,6,7,8-HpCDF	1316057	1316057_uf, 1316059_uf, and 1316061_uf
OCDF	1316057	1316057_uf
1,2,3,4,6,7,8-HpCDD	1316057	1316057_uf and 1316058_uf

Compound(s)	SDG Number	Sample(s)
OCDD	1316057	1316057_uf
1,2,3,4,7,8,9-HpCDF	1316057	1316074_uf

- Although there is no direct reason to question the reported positive result for OCDD in sample 1316061_uf, a similar concentration of OCDD was observed in an associated laboratory blank and the blank result was an EMPC (see Comment). The blank result that is an "EMPC" was not used to qualify this sample result; however, caution should be exercised when using this result in a decision-making process, such as risk assessment.

- Results reported as "EMPC" by the laboratory due to out-of-criteria ion abundance ratios (see Comment) have been flagged "EMPC" (unless previously flagged "U" due to blank contamination) on the data tables. For this data set, all results reported by the laboratory as "EMPC" were flagged "U" due to blank contamination.

- The detection limits for 2,3,7,8-TCDF in all filtered samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (< 75%) were obtained for 2,3,7,8-TCDF in the associated LCS and MS/MSD analyses of sample 1316057.

- The positive results for 2,3,7,8-TCDD in all unfiltered samples should be considered estimated and have been flagged "J" on the data tables. The result for 2,3,7,8-TCDD in the associated PE sample 1316062_uf (5101 pg/L) was above the upper control limit (> 3460 pg/L).

- The detection limits for 1,2,3,4,7,8,9-HpCDF and 1,2,3,4,7,8-HxCDD in samples 1316061, 1316074, 1316060, and 1316059 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. High %Ds (> 20%), coupled with a decrease in instrument sensitivity, were observed for these compounds in the associated CCV standard.

- One field duplicate pair (sample 1316058 and its field duplicate, sample 1316061 and sample 1316058_uf and its field duplicate, sample 1316061_uf) was collected and analyzed for PCDDs/PCDFs with this data set. Unacceptable precision (*i.e.,* both results were ≥ 5× the lowest calibration standard concentration and the relative percent difference [RPD] was > 20%) was observed between the results for 2,3,7,8-TCDD in the filtered and unfiltered field duplicate pairs. The positive results for 2,3,7,8-TCDD in the field duplicate pairs should be considered estimated and have been flagged "J" on the data tables.

- Reported positive total homologue results summed from qualified PCDD/PCDF isomer concentrations qualified as estimated ("J") should be considered estimated and have been flagged "J" on the data tables.

- Reported positive and “EMPC” results less than the concentration of the lowest calibration standard should be considered estimated and have been flagged “J” (unless flagged “U” due to blank contamination) on the data tables.

A complete support documentation of this organic QA review is provided in Section 3 of this report.

B. Conclusions

This QA review has identified several aspects of the data that required qualification. Overall, the majority of the analytical data is acceptable for use as reported by the laboratory. A portion of the results was qualified for reasons that include blank contamination, low LCS and MS/MSD recoveries, high CCV %Ds, a high PE result, and quantitation below the concentration of the lowest calibration standard. In order to use any of the data, the data user should understand the qualifications and limitations as specified in this QA review. The Project Chain-of-Custody Records are presented in Section 4 of this report.

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SECTION 2

TARGET ANALYTE SUMMARY

ORGANIC DATA QUALIFIERS

ND The compound was not detected at or above the associated numerical value.

U This compound should be considered “not-detected” because it was detected in a blank at a similar level.

R Unusable result; compound may or may not be present in the sample.

J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).

UJ This compound was analyzed for but was not detected. The associated detection limit is probably higher due to a low bias identified during the quality assurance review.

MPC Chromatographic peaks are present in the expected retention time window; however, chlorinated diphenyl interferences were noted. The reported result represents the estimated maximum possible concentration if PCDF were present.

0208030_EDD_Filtered_4_16_08 with final results_2a.xls

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316057	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-1	12.260000		UJ
1316057	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-1	13.760000		U
1316057	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-1	13.040000		U
1316057	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-1	23.540000		U
1316057	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-1	19.610000		U
1316057	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-1	24.570000		U
1316057	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-1	27.080000		U
1316057	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-1	20.340000		U
1316057	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-1	25.590000		U
1316057	OCDF	39001-02-0		U	pg/L	0208030-1	35.390000		U
1316057	2,3,7,8-TCDD	1746-01-6		U	pg/L	0208030-1	14.920000		U
1316057	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-1	17.150000		U
1316057	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-1	28.330000		U
1316057	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-1	24.150000		U
1316057	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-1	23.960000		U
1316057	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-1	29.290000		U
1316057	OCDD	3268-87-9		U	pg/L	0208030-1	41.400000		U
1316057	Total TCDD	41903-57-5			pg/L	0208030-1	14.920000		U
1316057	Total PeCDD	36088-22-9	114.295000		pg/L	0208030-1	17.130000	114.295000	
1316057	Total HxCDD	34465-46-8			pg/L	0208030-1	16.800000		U
1316057	Total HpCDD	37871-00-4			pg/L	0208030-1	28.900000		U
1316057	Total TCDF	55722-27-5			pg/L	0208030-1	12.220000		U
1316057	Total PeCDF	30402-15-4	220.272000		pg/L	0208030-1	13.270000	220.272000	
1316057	Total HxCDF	55684-94-1			pg/L	0208030-1	23.340000		U
1316057	Total HpCDF	38998-75-3			pg/L	0208030-1	22.510000		U
1316058	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-10	5.028000		UJ
1316058	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-10	8.613000		U
1316058	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-10	8.162000		U
1316058	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-10	17.620000		U
1316058	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-10	14.680000		U
1316058	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-10	18.400000		U
1316058	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-10	20.280000		U
1316058	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-10	13.250000		U
1316058	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-10	16.670000		U

0208030_EDD_Filtered_4_16_08 with final results_2a.xls

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316058	OCDF	39001-02-0		U	pg/L	0208030-10	22.500000		U
1316058	2,3,7,8-TCDD	1746-01-6	726.823000		pg/L	0208030-10	9.602000	726.823000	J
1316058	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-10	16.180000		U
1316058	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-10	18.560000		U
1316058	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-10	15.820000		U
1316058	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-10	15.700000		U
1316058	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-10	17.100000		U
1316058	OCDD	3268-87-9		U	pg/L	0208030-10	25.070000		U
1316058	Total TCDD	41903-57-5	726.823000		pg/L	0208030-10	9.602000	726.823000	J
1316058	Total PeCDD	36088-22-9			pg/L	0208030-10	16.160000		U
1316058	Total HxCDD	34465-46-8			pg/L	0208030-10	11.010000		U
1316058	Total HpCDD	37871-00-4			pg/L	0208030-10	16.870000		U
1316058	Total TCDF	55722-27-5			pg/L	0208030-10	5.011000		U
1316058	Total PeCDF	30402-15-4			pg/L	0208030-10	8.310000		U
1316058	Total HxCDF	55684-94-1			pg/L	0208030-10	17.480000		U
1316058	Total HpCDF	38998-75-3			pg/L	0208030-10	14.670000		U
1316061	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-12	3.247000		UJ
1316061	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-12	3.062000		U
1316061	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-12	2.901000		U
1316061	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-12	9.158000		U
1316061	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-12	7.629000		U
1316061	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-12	9.561000		U
1316061	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-12	10.530000		U
1316061	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-12	4.901000		U
1316061	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-12	6.165000		UJ
1316061	OCDF	39001-02-0		U	pg/L	0208030-12	9.910000		U
1316061	2,3,7,8-TCDD	1746-01-6	288.775000		pg/L	0208030-12	2.867000	288.775000	J
1316061	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-12	4.360000		U
1316061	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-12	7.700000		UJ
1316061	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-12	6.565000		U
1316061	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-12	6.514000		U
1316061	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-12	7.331000		U
1316061	OCDD	3268-87-9		U	pg/L	0208030-12	10.420000		U
1316061	Total TCDD	41903-57-5	288.775000		pg/L	0208030-12	2.867000	288.775000	J

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316061	Total PeCDD	36088-22-9			pg/L	0208030-12	4.355000		U
1316061	Total HxCDD	34465-46-8			pg/L	0208030-12	4.568000		U
1316061	Total HpCDD	37871-00-4			pg/L	0208030-12	7.233000		U
1316061	Total TCDF	55722-27-5			pg/L	0208030-12	3.236000		U
1316061	Total PeCDF	30402-15-4			pg/L	0208030-12	2.954000		U
1316061	Total HxCDF	55684-94-1			pg/L	0208030-12	9.082000		U
1316061	Total HpCDF	38998-75-3			pg/L	0208030-12	5.425000		U
1316074	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-14	1.984000		UJ
1316074	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-14	2.832000		U
1316074	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-14	2.684000		U
1316074	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-14	6.712000		U
1316074	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-14	5.591000		U
1316074	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-14	7.008000		U
1316074	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-14	7.723000		U
1316074	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-14	3.968000		U
1316074	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-14	4.991000		UJ
1316074	OCDF	39001-02-0		U	pg/L	0208030-14	6.826000		U
1316074	2,3,7,8-TCDD	1746-01-6		U	pg/L	0208030-14	2.328000		U
1316074	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-14	4.270000		U
1316074	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-14	5.213000		UJ
1316074	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-14	4.445000		U
1316074	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-14	4.410000		U
1316074	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-14	6.052000		U
1316074	OCDD	3268-87-9		U	pg/L	0208030-14	6.849000		U
1316074	Total TCDD	41903-57-5			pg/L	0208030-14	2.328000		U
1316074	Total PeCDD	36088-22-9			pg/L	0208030-14	4.265000		U
1316074	Total HxCDD	34465-46-8			pg/L	0208030-14	3.093000		U
1316074	Total HpCDD	37871-00-4			pg/L	0208030-14	5.971000		U
1316074	Total TCDF	55722-27-5			pg/L	0208030-14	1.977000		U
1316074	Total PeCDF	30402-15-4			pg/L	0208030-14	2.732000		U
1316074	Total HxCDF	55684-94-1			pg/L	0208030-14	6.657000		U
1316074	Total HpCDF	38998-75-3			pg/L	0208030-14	4.391000		U
1316060	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-17	1.949000		UJ
1316060	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-17	2.769000		U

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316060	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-17	2.624000		U
1316060	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-17	5.467000		U
1316060	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-17	4.554000		U
1316060	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-17	5.708000		U
1316060	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-17	6.291000		U
1316060	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-17	3.457000		U
1316060	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-17	4.348000		UJ
1316060	OCDF	39001-02-0		U	pg/L	0208030-17	4.866000		U
1316060	2,3,7,8-TCDD	1746-01-6		U	pg/L	0208030-17	2.604000		U
1316060	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-17	3.625000		U
1316060	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-17	5.734000		UJ
1316060	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-17	4.889000		U
1316060	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-17	4.851000		U
1316060	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-17	4.253000		U
1316060	OCDD	3268-87-9		U	pg/L	0208030-17	4.465000		U
1316060	Total TCDD	41903-57-5			pg/L	0208030-17	2.604000		U
1316060	Total PeCDD	36088-22-9			pg/L	0208030-17	3.621000		U
1316060	Total HxCDD	34465-46-8			pg/L	0208030-17	3.402000		U
1316060	Total HpCDD	37871-00-4			pg/L	0208030-17	4.196000		U
1316060	Total TCDF	55722-27-5			pg/L	0208030-17	1.943000		U
1316060	Total PeCDF	30402-15-4			pg/L	0208030-17	2.671000		U
1316060	Total HxCDF	55684-94-1			pg/L	0208030-17	5.422000		U
1316060	Total HpCDF	38998-75-3			pg/L	0208030-17	3.826000		U
1316059	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-21	2.135000		UJ
1316059	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-21	1.953000		U
1316059	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-21	1.851000		U
1316059	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-21	4.717000		U
1316059	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-21	3.929000		U
1316059	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-21	4.924000		U
1316059	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-21	5.427000		U
1316059	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-21	2.469000		U
1316059	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-21	3.105000		UJ
1316059	OCDF	39001-02-0		U	pg/L	0208030-21	2.700000		U
1316059	2,3,7,8-TCDD	1746-01-6		U	pg/L	0208030-21	1.899000		U

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316059	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-21	2.443000		U
1316059	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-21	3.283000		UJ
1316059	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-21	2.799000		U
1316059	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-21	2.778000		U
1316059	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-21	2.270000		U
1316059	OCDD	3268-87-9		U	pg/L	0208030-21	2.814000		U
1316059	Total TCDD	41903-57-5			pg/L	0208030-21	1.899000		U
1316059	Total PeCDD	36088-22-9			pg/L	0208030-21	2.440000		U
1316059	Total HxCDD	34465-46-8			pg/L	0208030-21	1.948000		U
1316059	Total HpCDD	37871-00-4			pg/L	0208030-21	2.240000		U
1316059	Total TCDF	55722-27-5			pg/L	0208030-21	2.128000		U
1316059	Total PeCDF	30402-15-4			pg/L	0208030-21	1.884000		U
1316059	Total HxCDF	55684-94-1			pg/L	0208030-21	4.678000		U
1316059	Total HpCDF	38998-75-3			pg/L	0208030-21	2.732000		U

0208030EDD with final results_2b.xls

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316057_uf	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-3	0.336000		U
1316057_uf	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-3	2.740000		U
1316057_uf	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-3	2.687000		U
1316057_uf	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-3	21.920000		U
1316057_uf	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-3	19.760000		U
1316057_uf	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-3	23.260000		U
1316057_uf	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-3	26.440000		U
1316057_uf	1,2,3,4,6,7,8-HpCDF	67562-39-4		B	pg/L	0208030-3	11.148000		U
1316057_uf	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-3	0.472000		U
1316057_uf	OCDF	39001-02-0	20.836000	B	pg/L	0208030-3	0.603000	20.836000	U
1316057_uf	2,3,7,8-TCDD	1746-01-6	68.043000		pg/L	0208030-3	0.369000	68.043000	J
1316057_uf	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-3	3.641000		U
1316057_uf	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-3	18.110000		U
1316057_uf	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-3	17.290000		U
1316057_uf	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-3	17.210000		U
1316057_uf	1,2,3,4,6,7,8-HpCDD	35822-46-9		B	pg/L	0208030-3	9.020000		U
1316057_uf	OCDD	3268-87-9		B	pg/L	0208030-3	21.823000		U
1316057_uf	Total TCDD	41903-57-5	142.463000		pg/L	0208030-3	0.369000	142.463000	J
1316057_uf	Total PeCDD	36088-22-9	9786.429000		pg/L	0208030-3	3.641000	9786.429000	
1316057_uf	Total HxCDD	34465-46-8			pg/L	0208030-3	11.680000		U
1316057_uf	Total HpCDD	37871-00-4			pg/L	0208030-3	9.020000		U
1316057_uf	Total TCDF	55722-27-5	199.032000		pg/L	0208030-3	0.336000	199.032000	
1316057_uf	Total PeCDF	30402-15-4	1026.516000		pg/L	0208030-3	2.702000	1026.516000	
1316057_uf	Total HxCDF	55684-94-1	60.022000		pg/L	0208030-3	22.590000	60.022000	
1316057_uf	Total HpCDF	38998-75-3			pg/L	0208030-3	11.148000		U
1316058_uf	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-11	0.747000		U
1316058_uf	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-11	0.950000		U
1316058_uf	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-11	0.931000		U
1316058_uf	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-11	1.586000		U
1316058_uf	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-11	1.429000		U
1316058_uf	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-11	1.682000		U
1316058_uf	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-11	1.912000		U
1316058_uf	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-11	0.182000		U
1316058_uf	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-11	0.212000		U

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316058_uf	OCDF	39001-02-0		U	pg/L	0208030-11	0.309000		U
1316058_uf	2,3,7,8-TCDD	1746-01-6	2742.723000		pg/L	0208030-11	0.983000	2742.723000	J
1316058_uf	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-11	0.973000		U
1316058_uf	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-11	0.481000		U
1316058_uf	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-11	0.459000		U
1316058_uf	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-11	0.457000		U
1316058_uf	1,2,3,4,6,7,8-HpCDD	35822-46-9		B	pg/L	0208030-11	2.237000		U
1316058_uf	OCDD	3268-87-9		U	pg/L	0208030-11	0.365000		U
1316058_uf	Total TCDD	41903-57-5	2742.723000		pg/L	0208030-11	0.983000	2742.723000	J
1316058_uf	Total PeCDD	36088-22-9			pg/L	0208030-11	0.973000		U
1316058_uf	Total HxCDD	34465-46-8			pg/L	0208030-11	0.310000		U
1316058_uf	Total HpCDD	37871-00-4	7.214000		pg/L	0208030-11	2.237000	7.214000	J
1316058_uf	Total TCDF	55722-27-5			pg/L	0208030-11	0.747000		U
1316058_uf	Total PeCDF	30402-15-4			pg/L	0208030-11	0.937000		U
1316058_uf	Total HxCDF	55684-94-1			pg/L	0208030-11	1.634000		U
1316058_uf	Total HpCDF	38998-75-3			pg/L	0208030-11	0.196000		U
1316061_uf	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-13	1.060000		U
1316061_uf	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-13	0.664000		U
1316061_uf	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-13	0.651000		U
1316061_uf	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-13	0.771000		U
1316061_uf	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-13	0.694000		U
1316061_uf	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-13	0.817000		U
1316061_uf	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-13	0.929000		U
1316061_uf	1,2,3,4,6,7,8-HpCDF	67562-39-4		B	pg/L	0208030-13	3.214000		U
1316061_uf	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-13	0.457000		U
1316061_uf	OCDF	39001-02-0		U	pg/L	0208030-13	0.636000		U
1316061_uf	2,3,7,8-TCDD	1746-01-6	6154.176000		pg/L	0208030-13	1.203000	6154.176000	J
1316061_uf	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-13	1.065000		U
1316061_uf	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-13	0.446000		U
1316061_uf	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-13	0.426000		U
1316061_uf	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-13	0.424000		U
1316061_uf	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-13	0.436000		U
1316061_uf	OCDD	3268-87-9	9.510000	B	pg/L	0208030-13	0.515000	9.510000	J
1316061_uf	Total TCDD	41903-57-5	6334.076000		pg/L	0208030-13	1.203000	6334.076000	J

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316061_uf	Total PeCDD	36088-22-9			pg/L	0208030-13	1.065000		U
1316061_uf	Total HxCDD	34465-46-8			pg/L	0208030-13	0.288000		U
1316061_uf	Total HpCDD	37871-00-4			pg/L	0208030-13	0.436000		U
1316061_uf	Total TCDF	55722-27-5			pg/L	0208030-13	1.060000		U
1316061_uf	Total PeCDF	30402-15-4	52.994000		pg/L	0208030-13	0.655000	52.994000	
1316061_uf	Total HxCDF	55684-94-1	66.015000		pg/L	0208030-13	0.794000	66.015000	
1316061_uf	Total HpCDF	38998-75-3			pg/L	0208030-13	3.214000		U
1316074_uf	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-15	0.742000		U
1316074_uf	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-15	0.663000		U
1316074_uf	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-15	0.651000		U
1316074_uf	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-15	0.675000		U
1316074_uf	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-15	0.609000		U
1316074_uf	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-15	0.716000		U
1316074_uf	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-15	0.814000		U
1316074_uf	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-15	0.495000		U
1316074_uf	1,2,3,4,7,8,9-HpCDF	55673-89-7		B	pg/L	0208030-15	1.397000		U
1316074_uf	OCDF	39001-02-0		U	pg/L	0208030-15	0.715000		U
1316074_uf	2,3,7,8-TCDD	1746-01-6	9.993000		pg/L	0208030-15	1.323000	9.993000	J
1316074_uf	1,2,3,7,8-PeCDD	40321-76-4		U	pg/L	0208030-15	0.563000		U
1316074_uf	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-15	0.754000		U
1316074_uf	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-15	0.719000		U
1316074_uf	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-15	0.716000		U
1316074_uf	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-15	0.596000		U
1316074_uf	OCDD	3268-87-9		U	pg/L	0208030-15	0.767000		U
1316074_uf	Total TCDD	41903-57-5	9.993000		pg/L	0208030-15	1.323000	9.993000	J
1316074_uf	Total PeCDD	36088-22-9			pg/L	0208030-15	0.563000		U
1316074_uf	Total HxCDD	34465-46-8			pg/L	0208030-15	0.486000		U
1316074_uf	Total HpCDD	37871-00-4			pg/L	0208030-15	0.596000		U
1316074_uf	Total TCDF	55722-27-5			pg/L	0208030-15	0.742000		U
1316074_uf	Total PeCDF	30402-15-4			pg/L	0208030-15	0.654000		U
1316074_uf	Total HxCDF	55684-94-1			pg/L	0208030-15	0.696000		U
1316074_uf	Total HpCDF	38998-75-3			pg/L	0208030-15	1.397000		U
1316060_uf	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-19	0.441000		U
1316060_uf	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-19	2.053000		U

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316060_uf	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-19	2.013000		U
1316060_uf	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-19	11.240000		U
1316060_uf	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-19	10.130000		U
1316060_uf	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-19	11.920000		U
1316060_uf	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-19	13.560000		U
1316060_uf	1,2,3,4,6,7,8-HpCDF	67562-39-4		U	pg/L	0208030-19	0.607000		U
1316060_uf	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-19	0.709000		U
1316060_uf	OCDF	39001-02-0		U	pg/L	0208030-19	0.995000		U
1316060_uf	2,3,7,8-TCDD	1746-01-6	338.874000		pg/L	0208030-19	0.868000	338.874000	J
1316060_uf	1,2,3,7,8-PeCDD	40321-76-4	424.418000		pg/L	0208030-19	2.679000	424.418000	
1316060_uf	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-19	5.474000		U
1316060_uf	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-19	5.223000		U
1316060_uf	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-19	5.200000		U
1316060_uf	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-19	0.803000		U
1316060_uf	OCDD	3268-87-9		U	pg/L	0208030-19	0.902000		U
1316060_uf	Total TCDD	41903-57-5	338.874000		pg/L	0208030-19	0.868000	338.874000	J
1316060_uf	Total PeCDD	36088-22-9	1979.688000		pg/L	0208030-19	2.679000	1979.688000	
1316060_uf	Total HxCDD	34465-46-8			pg/L	0208030-19	3.531000		U
1316060_uf	Total HpCDD	37871-00-4			pg/L	0208030-19	0.803000		U
1316060_uf	Total TCDF	55722-27-5	541.784000		pg/L	0208030-19	0.441000	541.784000	
1316060_uf	Total PeCDF	30402-15-4	556.593000		pg/L	0208030-19	2.025000	556.593000	
1316060_uf	Total HxCDF	55684-94-1	188.874000		pg/L	0208030-19	11.580000	188.874000	
1316060_uf	Total HpCDF	38998-75-3			pg/L	0208030-19	0.654000		U
1316059_uf	2,3,7,8-TCDF	51207-31-9		U	pg/L	0208030-22	0.372000		U
1316059_uf	1,2,3,7,8-PeCDF	57117-41-6		U	pg/L	0208030-22	1.520000		U
1316059_uf	2,3,4,7,8-PeCDF	57117-31-4		U	pg/L	0208030-22	1.490000		U
1316059_uf	1,2,3,4,7,8-HxCDF	70648-26-9		U	pg/L	0208030-22	5.454000		U
1316059_uf	1,2,3,6,7,8-HxCDF	57117-44-9		U	pg/L	0208030-22	4.915000		U
1316059_uf	2,3,4,6,7,8-HxCDF	60851-34-5		U	pg/L	0208030-22	5.785000		U
1316059_uf	1,2,3,7,8,9-HxCDF	72918-21-9		U	pg/L	0208030-22	6.577000		U
1316059_uf	1,2,3,4,6,7,8-HpCDF	67562-39-4		B	pg/L	0208030-22	4.021000		U
1316059_uf	1,2,3,4,7,8,9-HpCDF	55673-89-7		U	pg/L	0208030-22	0.696000		U
1316059_uf	OCDF	39001-02-0		U	pg/L	0208030-22	0.953000		U
1316059_uf	2,3,7,8-TCDD	1746-01-6	233.874000		pg/L	0208030-22	2.133000	233.874000	J

Sample Identification	Parameter	CAS No.	Lab Result	Lab Qualifier	Units	Laboratory Identification	EDL/ EMPC	Validation Result	Validation Qualifier
1316059_uf	1,2,3,7,8-PeCDD	40321-76-4	102.306000		pg/L	0208030-22	3.937000	102.306000	
1316059_uf	1,2,3,4,7,8-HxCDD	39227-28-6		U	pg/L	0208030-22	0.743000		U
1316059_uf	1,2,3,6,7,8-HxCDD	57653-85-7		U	pg/L	0208030-22	0.709000		U
1316059_uf	1,2,3,7,8,9-HxCDD	19408-74-3		U	pg/L	0208030-22	0.706000		U
1316059_uf	1,2,3,4,6,7,8-HpCDD	35822-46-9		U	pg/L	0208030-22	0.641000		U
1316059_uf	OCDD	3268-87-9		U	pg/L	0208030-22	0.660000		U
1316059_uf	Total TCDD	41903-57-5	233.874000		pg/L	0208030-22	2.133000	233.874000	J
1316059_uf	Total PeCDD	36088-22-9	436.273000		pg/L	0208030-22	3.937000	436.273000	
1316059_uf	Total HxCDD	34465-46-8			pg/L	0208030-22	0.480000		U
1316059_uf	Total HpCDD	37871-00-4			pg/L	0208030-22	0.641000		U
1316059_uf	Total TCDF	55722-27-5	38.679000		pg/L	0208030-22	0.372000	38.679000	
1316059_uf	Total PeCDF	30402-15-4	473.756000		pg/L	0208030-22	1.499000	473.756000	
1316059_uf	Total HxCDF	55684-94-1	81.812000		pg/L	0208030-22	5.620000	81.812000	
1316059_uf	Total HpCDF	38998-75-3			pg/L	0208030-22	4.021000		U

SECTION 3

ORGANIC DATA SUPPORT DOCUMENTATION

A. FILTERED SAMPLES

ORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: Loureiro Centradale Manor
Sample Collection Dates: 2/25/09
Job Number: 20085078
Project Manager: Kyle Clay
Laboratory: DAT

Reviewed by: PR, MM
Approved by: MM
Completion Date: 6/24/08

Applicable Sample No's (✓) Refer to Table 1 in the Quality Assurance Review

Deliverable:			Sample No.	Lab Control No.
	CLP	(X)	1316057 +(MS/MSD)	D208030-1 (MS/MSD) + WF
	Tier I	( )	1316058	0208030-10
	Tier II	( )	1316059	0208030-21
	Limited	( )	1316060	0208030-17
	Other:		1316061	0208030-12
			1316062	0208030-8
			1316074	0208030-14

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail: Check (√) if Yes or Footnote Letter for Comments Below					Problems Identified: Check (√) if Yes or Footnote Letter for Comments Below					Support Documentation Attachments: Check (√) if Yes or Footnote Letter for Comments Below				
	8290A					8290A					8290A				
Holding Times	✓										✓				
Blank Analysis: Target Cmpds	✓					✓					✓				
Sys Montr Cmps/Surrogates	✓										✓				
Matrix Spike/Matrix Spike Duplicate	✓					✓					✓				
Blank Spike	✓					✓					✓				
Duplicate Analysis (X) Field ( ) Lab	✓					✓					✓				
Qualitative Identification: Target Cmpds	✓														
Qualitative Identification: TICs															
~~DFTPP & BFB~~ Mass Tuning	✓										✓				
GC Instrument Performance															
Initial Calibrations	✓										✓				
Continuing Calibrations	✓					✓					✓				
Quantitation of Results	✓														
DDT/Endrin Breakdown															
Surrogate Retention Time Shifts															
Internal Standards Performance	✓										✓				
Resolution Check Standards	✓										✓				
Analytical Sequence	✓										✓				
Florisil Cartridge & GPC Calibration															
GC Column Agreement															
Condition Upon Receipt	✓										✓				
Percent Solids															
Others: PE Sample Result	✓					✓					✓				

Comments:

BLANK ANALYSIS RESULTS FOR ORGANIC PARAMETERS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (pg/L, mg/L, mg/Kg)	Qualification limit 5×	Qualification limit 10×	
S	Aq	MB	0208030-MB	1,2,3,4,6,7,8,HpCDF	6.39	31.95		
S	"	"	"	OCDF	13.09	65.45		
S	"	MB	"	1,2,3,7,8,PeCDF	4.37	21.85		EMPC
S	"	"	"	1,2,3,4,7,8-HxCDF	4.48	22.40		EMPC
S	"	MB	"	1,2,3,4,7,8,9-HpCDF	2.94	14.70		EMPC
S	"	"	"	1,2,3,4,6,7,8,HpCDD	5.44	27.20		EMPC
S	"	MB	"	OCDD	17.36	86.80		EMPC

1 – V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: _____

2 – MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: _____

EVALAUTION OF ORGANIC DUPLICATE ANALYSIS PRECISION

Units pg/L	PRECISION OBJECTIVES*		
	Analyte > or = 5 X RL	RPD < or =	20
	Analyte < 5 X RL	Difference < or = RL Times	1

* Enter the project-specific or default acceptance criteria

ANALYTE	1316058 Analyte Concentration	Qual	RL	1316061 Analyte Concentration	Qual	RL	Difference	RPD	Notes
2,3,7,8-TCDD	726.82		10	288.78		10	NA	86.26%	1
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!

NOTES:

Qual) Column to enter J, U, U*, or B

RPD) Relative Percent Difference

RL) Reporting Limit

J) The analyte concentration should be considered estimated.

U) The analyte was not-detected in the sample. The half of the numerical value will be used for comparison purposes.

U* or B) The result was blank qualified. The numerical value will be used for comparison purposes.

NA) The RPD or Difference is not applicable.

1) Both results are > or = 5 X RL and RPD over acceptance limit, flag positive results "J".

2) At least one of the results is < 5 X RL and difference is over acceptance limit, flag positive results "J" and "not-detected" results "UJ".

Comments:

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316057

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005S:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 7:57

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	12.26
1,2,3,7,8-PeCDF					U	13.76
2,3,4,7,8-PeCDF					U	13.04
1,2,3,4,7,8-HxCDF					U	23.54
1,2,3,6,7,8-HxCDF					U	19.61
2,3,4,6,7,8-HxCDF					U	24.57
1,2,3,7,8,9-HxCDF					U	27.08
1,2,3,4,6,7,8-HpCDF					U	20.34
1,2,3,4,7,8,9-HpCDF					U	25.59
OCDF					U	35.39
2,3,7,8-TCDD					U	14.92
1,2,3,7,8-PeCDD					U	17.15
1,2,3,4,7,8-HxCDD					U	28.33
1,2,3,6,7,8-HxCDD					U	24.15
1,2,3,7,8,9-HxCDD					U	23.96
1,2,3,4,6,7,8-HpCDD					U	29.29
OCDD					U	41.40

J

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:31	0.84	0.65	0.89	82	40	135
13C-1,2,3,7,8-PeCDF	IS	31:53	1.58	1.32	1.78	72	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:53	0.50	0.43	0.59	79	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:41	0.47	0.37	0.51	79	40	135
13C-2,3,7,8-TCDD	IS	28:18	0.83	0.65	0.89	79	40	135
13C-1,2,3,7,8-PeCDD	IS	33:08	1.59	1.32	1.78	75	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.27	1.05	1.43	81	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.15	0.88	1.2	80	40	135
13C-OCDD	IS	44:24	0.90	0.76	1.02	70	40	135
37C12-2,3,7,8-TCDD	Surr	28:20	1.00	1	1	107	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.48	1.32	1.78	99	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:53	0.50	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.35	1.05	1.43	92	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:04	0.44	0.37	0.51	96	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:46	0.50	0.43	0.59	158 *	40	135
13C-1,2,3,4-TCDD	RS	28:07	0.82	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:27	1.37	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316057

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316057

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	14.92
Total PeCDD	1	114.30		17.13
Total HxCDD	0		U	16.80
Total HpCDD	0		U	28.90
FURANS				
Total TCDF	0		U	12.22
Total PeCDF	1	220.27		13.27
Total HxCDF	0		U	23.34
Total HpCDF	0		U	22.51

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No. 1316062

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-8

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005S:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 8:47

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	11.98 J
1,2,3,7,8-PeCDF					U	14.69
2,3,4,7,8-PeCDF					U	13.92
1,2,3,4,7,8-HxCDF					U	36.38
1,2,3,6,7,8-HxCDF					U	30.31
2,3,4,6,7,8-HxCDF					U	37.98
1,2,3,7,8,9-HxCDF					U	41.86
1,2,3,4,6,7,8-HpCDF					U	22.02
1,2,3,4,7,8,9-HpCDF					U	27.69
OCDF					U	49.27
2,3,7,8-TCDD		28:20	0.81	2850.55		17.15
1,2,3,7,8-PeCDD					U	21.79
1,2,3,4,7,8-HxCDD					U	35.13
1,2,3,6,7,8-HxCDD					U	29.95
1,2,3,7,8,9-HxCDD					U	29.71
1,2,3,4,6,7,8-HpCDD					U	35.51
OCDD					U	54.59

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:31	0.81	0.65	0.89	81	40	135
13C-1,2,3,7,8-PeCDF	IS	31:53	1.56	1.32	1.78	75	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:52	0.54	0.43	0.59	71	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:41	0.41	0.37	0.51	79	40	135
13C-2,3,7,8-TCDD	IS	28:19	0.80	0.65	0.89	79	40	135
13C-1,2,3,7,8-PeCDD	IS	33:08	1.63	1.32	1.78	74	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.42	1.05	1.43	72	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.02	0.88	1.2	63	40	135
13C-OCDD	IS	44:24	0.87	0.76	1.02	57	40	135
37C12-2,3,7,8-TCDD	Surr	28:20	1.00	1	1	102	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.60	1.32	1.78	89	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:52	0.54	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:54	1.33	1.05	1.43	91	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:03	0.44	0.37	0.51	109	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:45	0.50	0.43	0.59	141 *	40	135
13C-1,2,3,4-TCDD	RS	28:07	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:27	1.36	1.05	1.43	NA	NA	NA

Alt not used

Column to be used to flag values outside QC limits.

PE True Value for 2,3,78-TCDD is 3010 pg/L
& acceptable Range is
2290-3460 pg/L Ok

lmm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316062

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-8

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	2850.55	x 1.00 =	2850.55
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	2850.55

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316062

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-8

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	2850.55		17.15
Total PeCDD	0		U	21.76
Total HxCDD	0		U	20.84
Total HpCDD	0		U	35.03
FURANS				
Total TCDF	0		U	11.94
Total PeCDF	0		U	14.17
Total HxCDF	0		U	36.08
Total HpCDF	0		U	24.37

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1316058

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-10

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005S:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 9:37

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	5.03
1,2,3,7,8-PeCDF					U	8.61
2,3,4,7,8-PeCDF					U	8.16
1,2,3,4,7,8-HxCDF					U	17.62
1,2,3,6,7,8-HxCDF					U	14.68
2,3,4,6,7,8-HxCDF					U	18.40
1,2,3,7,8,9-HxCDF					U	20.28
1,2,3,4,6,7,8-HpCDF					U	13.25
1,2,3,4,7,8,9-HpCDF					U	16.67
OCDF					U	22.50
2,3,7,8-TCDD		28:20	0.73	726.82		9.60
1,2,3,7,8-PeCDD					U	16.18
1,2,3,4,7,8-HxCDD					U	18.56
1,2,3,6,7,8-HxCDD					U	15.82
1,2,3,7,8,9-HxCDD					U	15.70
1,2,3,4,6,7,8-HpCDD					U	17.10
OCDD					U	25.07

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:31	0.78	0.65	0.89	78	40	135
13C-1,2,3,7,8-PeCDF	IS	31:53	1.60	1.32	1.78	70	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:53	0.53	0.43	0.59	70	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:42	0.41	0.37	0.51	75	40	135
13C-2,3,7,8-TCDD	IS	28:19	0.78	0.65	0.89	75	40	135
13C-1,2,3,7,8-PeCDD	IS	33:08	1.63	1.32	1.78	71	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.34	1.05	1.43	75	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.10	0.88	1.2	73	40	135
13C-OCDD	IS	44:24	0.86	0.76	1.02	71	40	135
37C12-2,3,7,8-TCDD	Surr	28:20	1.00	1	1	102	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.54	1.32	1.78	97	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:53	0.53	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:54	1.29	1.05	1.43	90	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:04	0.46	0.37	0.51	96	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:45	0.53	0.43	0.59	97	40	135
13C-1,2,3,4-TCDD	RS	28:07	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:27	1.22	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316058

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-10

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	726.82	x 1.00 =	726.82
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	726.82

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316058

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-10

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	726.82		9.60
Total PeCDD	0		U	16.16
Total HxCDD	0		U	11.01
Total HpCDD	0		U	16.87
FURANS				
Total TCDF	0		U	5.01
Total PeCDF	0		U	8.31
Total HxCDF	0		U	17.48
Total HpCDF	0		U	14.67

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316061

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-12

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 17:04

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	3.25
1,2,3,7,8-PeCDF					U	3.06
2,3,4,7,8-PeCDF					U	2.90
1,2,3,4,7,8-HxCDF					U	9.16
1,2,3,6,7,8-HxCDF					U	7.63
2,3,4,6,7,8-HxCDF					U	9.56
1,2,3,7,8,9-HxCDF					U	10.53
1,2,3,4,6,7,8-HpCDF					U	4.90
1,2,3,4,7,8,9-HpCDF					U	6.17
OCDF					U	9.91
2,3,7,8-TCDD		28:20	0.74	288.78		2.87
1,2,3,7,8-PeCDD					U	4.36
1,2,3,4,7,8-HxCDD					U	7.70
1,2,3,6,7,8-HxCDD					U	6.57
1,2,3,7,8,9-HxCDD					U	6.51
1,2,3,4,6,7,8-HpCDD					U	7.33
OCDD					U	10.42

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:32	0.74	0.65	0.89	68	40	135
13C-1,2,3,7,8-PeCDF	IS	31:54	1.56	1.32	1.78	65	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:54	0.55	0.43	0.59	69	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:42	0.45	0.37	0.51	79	40	135
13C-2,3,7,8-TCDD	IS	28:19	0.85	0.65	0.89	81	40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.61	1.32	1.78	73	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.35	1.05	1.43	92	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:42	0.98	0.88	1.2	82	40	135
13C-OCDD	IS	44:25	0.90	0.76	1.02	71	40	135
37C12-2,3,7,8-TCDD	Surr	28:21	1.00	1	1	93	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.59	1.32	1.78	92	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:54	0.55	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.30	1.05	1.43	79	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:05	0.44	0.37	0.51	83	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:45	0.57	0.43	0.59	100	40	135
13C-1,2,3,4-TCDD	RS	28:07	0.84	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.39	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316061

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-12

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	288.78	x 1.00 =	288.78
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	288.78

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

fm18290Arev2

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316061

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-12

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	288.78		2.87
Total PeCDD	0		U	4.36
Total HxCDD	0		U	4.57
Total HpCDD	0		U	7.23
FURANS				
Total TCDF	0		U	3.24
Total PeCDF	0		U	2.95
Total HxCDF	0		U	9.08
Total HpCDF	0		U	5.43

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316074

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-14

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 17:54

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	1.98
1,2,3,7,8-PeCDF					U	2.83
2,3,4,7,8-PeCDF					U	2.68
1,2,3,4,7,8-HxCDF					U	6.71
1,2,3,6,7,8-HxCDF					U	5.59
2,3,4,6,7,8-HxCDF					U	7.01
1,2,3,7,8,9-HxCDF					U	7.72
1,2,3,4,6,7,8-HpCDF					U	3.97
1,2,3,4,7,8,9-HpCDF					U	4.99
OCDF					U	6.83
2,3,7,8-TCDD					U	2.33
1,2,3,7,8-PeCDD					U	4.27
1,2,3,4,7,8-HxCDD					U	5.21
1,2,3,6,7,8-HxCDD					U	4.45
1,2,3,7,8,9-HxCDD					U	4.41
1,2,3,4,6,7,8-HpCDD					U	6.05
OCDD					U	6.85

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:32	0.71	0.65	0.89	63	40	135
13C-1,2,3,7,8-PeCDF	IS	31:54	1.58	1.32	1.78	64	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:53	0.55	0.43	0.59	56	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:42	0.43	0.37	0.51	68	40	135
13C-2,3,7,8-TCDD	IS	28:20	0.86	0.65	0.89	77	40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.62	1.32	1.78	71	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.32	1.05	1.43	78	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	0.97	0.88	1.2	75	40	135
13C-OCDD	IS	44:24	0.88	0.76	1.02	70	40	135
37C12-2,3,7,8-TCDD	Surr	28:21	1.00	1	1	98	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:44	1.62	1.32	1.78	96	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:53	0.55	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.31	1.05	1.43	80	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:04	0.45	0.37	0.51	79	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:45	0.55	0.43	0.59	112	40	135
13C-1,2,3,4-TCDD	RS	28:08	0.82	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.26	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316074

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-14

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316074

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-14

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	2.33
Total PeCDD	0		U	4.27
Total HxCDD	0		U	3.09
Total HpCDD	0		U	5.97
FURANS				
Total TCDF	0		U	1.98
Total PeCDF	0		U	2.73
Total HxCDF	0		U	6.66
Total HpCDF	0		U	4.39

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316060

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-17

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 18:44

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	1.95
1,2,3,7,8-PeCDF					U	2.77
2,3,4,7,8-PeCDF					U	2.62
1,2,3,4,7,8-HxCDF					U	5.47
1,2,3,6,7,8-HxCDF					U	4.55
2,3,4,6,7,8-HxCDF					U	5.71
1,2,3,7,8,9-HxCDF					U	6.29
1,2,3,4,6,7,8-HpCDF					U	3.46
1,2,3,4,7,8,9-HpCDF					U	4.35
OCDF					U	4.87
2,3,7,8-TCDD					U	2.60
1,2,3,7,8-PeCDD					U	3.63
1,2,3,4,7,8-HxCDD					U	5.73
1,2,3,6,7,8-HxCDD					U	4.89
1,2,3,7,8,9-HxCDD					U	4.85
1,2,3,4,6,7,8-HpCDD					U	4.25
OCDD					U	4.47

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:32	0.73	0.65	0.89	63	40	135
13C-1,2,3,7,8-PeCDF	IS	31:54	1.54	1.32	1.78	70	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:54	0.54	0.43	0.59	52	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:41	0.43	0.37	0.51	64	40	135
13C-2,3,7,8-TCDD	IS	28:19	0.80	0.65	0.89	76	40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.62	1.32	1.78	84	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:03	1.28	1.05	1.43	76	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.19	0.88	1.2	74	40	135
13C-OCDD	IS	44:24	0.88	0.76	1.02	69	40	135
37C12-2,3,7,8-TCDD	Surr	28:21	1.00	1	1	99	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.56	1.32	1.78	93	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:54	0.54	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.26	1.05	1.43	102	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:04	0.43	0.37	0.51	78	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:46	0.55	0.43	0.59	101	40	135
13C-1,2,3,4-TCDD	RS	28:07	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.28	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316060

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-17

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316060

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-17

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	2.60
Total PeCDD	0		U	3.62
Total HxCDD	0		U	3.40
Total HpCDD	0		U	4.20
FURANS				
Total TCDF	0		U	1.94
Total PeCDF	0		U	2.67
Total HxCDF	0		U	5.42
Total HpCDF	0		U	3.83

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

fm18290Arev2

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1316059

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-21

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 19:34

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	2.14
1,2,3,7,8-PeCDF					U	1.95
2,3,4,7,8-PeCDF					U	1.85
1,2,3,4,7,8-HxCDF					U	4.72
1,2,3,6,7,8-HxCDF					U	3.93
2,3,4,6,7,8-HxCDF					U	4.92
1,2,3,7,8,9-HxCDF					U	5.43
1,2,3,4,6,7,8-HpCDF					U	2.47
1,2,3,4,7,8,9-HpCDF					U	3.11
OCDF					U	2.70
2,3,7,8-TCDD					U	1.90
1,2,3,7,8-PeCDD					U	2.44
1,2,3,4,7,8-HxCDD					U	3.28
1,2,3,6,7,8-HxCDD					U	2.80
1,2,3,7,8,9-HxCDD					U	2.78
1,2,3,4,6,7,8-HpCDD					U	2.27
OCDD					U	2.81

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	ION RATIO LIMITS HIGH	% REC #	RECOVERY LIMITS LOW	RECOVERY LIMITS HIGH
13C-2,3,7,8-TCDF	IS	27:32	0.74	0.65	0.89	59	40	135
13C-1,2,3,7,8-PeCDF	IS	31:54	1.59	1.32	1.78	67	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:54	0.55	0.43	0.59	49	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:42	0.44	0.37	0.51	83	40	135
13C-2,3,7,8-TCDD	IS	28:19	0.81	0.65	0.89	72	40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.58	1.32	1.78	79	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.23	1.05	1.43	73	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:42	1.06	0.88	1.2	96	40	135
13C-OCDD	IS	44:25	0.88	0.76	1.02	102	40	135
37C12-2,3,7,8-TCDD	Surr	28:20	1.00	1	1	99	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.61	1.32	1.78	102	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:54	0.55	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.37	1.05	1.43	90	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:05	0.42	0.37	0.51	77	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:46	0.56	0.43	0.59	71	40	135
13C-1,2,3,4-TCDD	RS	28:08	0.84	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.28	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316059

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-21

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316059

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-21

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	1.90
Total PeCDD	0		U	2.44
Total HxCDD	0		U	1.95
Total HpCDD	0		U	2.24
FURANS				
Total TCDF	0		U	2.13
Total PeCDF	0		U	1.88
Total HxCDF	0		U	4.68
Total HpCDF	0		U	2.73

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

fm18290Arev2

USEPA

4DF - Form IV - HR CDD
CDD/CDF METHOD BLANK SUMMARY
HIGH RESOLUTION

Sample No.
METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

Water Sample Prep: SEPF (SEPF/SPE) Lab File ID: 8290005S:9

Date Extracted: 27_02_08

Date Analyzed: 4/15/2008

GC Column: JWS-DB-5 ID: 0.25 (mm)

Instrument ID: :Autospec

THIS METHOD BLANK APPLIES TO LABORATORY CONTROL SAMPLES (LCSs)

EPA Sample ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1316057	0208030-1	8290005 S:10	4/15/2008
1316062	0208030-8	8290005 S:11	4/15/2008
1316058	0208030-10	8290005 S:12	4/15/2008
1316061	0208030-12	8290005E S:4	4/15/2008
1316074	0208030-14	8290005E S:5	4/15/2008
1316060	0208030-17	8290005E S:6	4/15/2008
1316059	0208030-21	8290005E S:7	4/15/2008
1316057_MS	0208030-1_ms	8290005E S:8	4/15/2008
1316057_MSD	0208030-1_msd	8290005E S:9	4/15/2008
LAB_SPIKE	0208030-LS	8290005E S:10	4/15/2008

frm4diox040505

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

QC Code: MB

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005S:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 7:07

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	7.12
1,2,3,7,8-PeCDF					U	8.69
2,3,4,7,8-PeCDF					U	8.24
1,2,3,4,7,8-HxCDF					U	12.83
1,2,3,6,7,8-HxCDF					U	10.69
2,3,4,6,7,8-HxCDF					U	13.40
1,2,3,7,8,9-HxCDF					U	14.77
1,2,3,4,6,7,8-HpCDF					U	9.38
1,2,3,4,7,8,9-HpCDF					U	11.80
OCDF					U	16.48
2,3,7,8-TCDD					U	11.23
1,2,3,7,8-PeCDD					U	13.47
1,2,3,4,7,8-HxCDD					U	15.72
1,2,3,6,7,8-HxCDD					U	13.40
1,2,3,7,8,9-HxCDD					U	13.29
1,2,3,4,6,7,8-HpCDD					U	14.44
OCDD					U	18.37

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:32	0.77	0.65	0.89	80	40	135
13C-1,2,3,7,8-PeCDF	IS	31:54	1.58	1.32	1.78	85	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:54	0.52	0.43	0.59	76	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:43	0.44	0.37	0.51	76	40	135
13C-2,3,7,8-TCDD	IS	28:20	0.78	0.65	0.89	82	40	135
13C-1,2,3,7,8-PeCDD	IS	33:10	1.59	1.32	1.78	87	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:03	1.27	1.05	1.43	85	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.02	0.88	1.2	78	40	135
13C-OCDD	IS	44:25	0.85	0.76	1.02	71	40	135
37C12-2,3,7,8-TCDD	Surr	28:21	1.00	1	1	101	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:44	1.57	1.32	1.78	96	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:54	0.52	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.26	1.05	1.43	85	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:06	0.43	0.37	0.51	95	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:46	0.49	0.43	0.59	81	40	135
13C-1,2,3,4-TCDD	RS	28:08	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.37	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

USEPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD		x 1.00 =	
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	0.00

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

USEPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
METHOD_BLANK

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005S:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	11.23
Total PeCDD	0		U	13.46
Total HxCDD	0		U	9.33
Total HpCDD	0		U	14.24
FURANS				
Total TCDF	0		U	7.09
Total PeCDF	0		U	8.39
Total HxCDF	0		U	12.73
Total HpCDF	0		U	10.38

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
LAB_SPIKE

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

Sample wt/vol: 1 g / L L Lab File ID: 8290005ES:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received:

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 2 (uL) % Solids/Lipids Date Analyzed: 04/15/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	QC LIMITS HIGH
2,3,7,8-TCDF	4000	2705		68	*	75	158
1,2,3,7,8-PeCDF	10000	8379		84		80	134
2,3,4,7,8-PeCDF	10000	8238		82		68	160
1,2,3,4,7,8-HxCDF	10000	10097		101		72	134
1,2,3,6,7,8-HxCDF	10000	8732		87		84	130
2,3,4,6,7,8-HxCDF	10000	11926		119		70	156
1,2,3,7,8,9-HxCDF	10000	9160		92		78	130
1,2,3,4,6,7,8-HpCDF	10000	8844		88		82	132
1,2,3,4,7,8,9-HpCDF	10000	9355		94		78	138
OCDF	20000	17690		88		63	170
2,3,7,8-TCDD	4000	3459		86		67	158
1,2,3,7,8-PeCDD	10000	9621		96		70	142
1,2,3,4,7,8-HxCDD	10000	10236		102		70	164
1,2,3,6,7,8-HxCDD	10000	8837		88		76	134
1,2,3,7,8,9-HxCDD	10000	9107		91		64	162
1,2,3,4,6,7,8-HpCDD	10000	8646		86		70	140
OCDD	20000	19259		96		78	144

+ E mpc

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 1 Outside limits out of 17 total.

frm3diox040505

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: LAB_SPIKE

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

QC Code: LCS

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 22:04

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		27:33	0.62 *			2705.38
1,2,3,7,8-PeCDF		31:55	1.68	8378.76		3.22
2,3,4,7,8-PeCDF		32:44	1.69	8237.56		3.05
1,2,3,4,7,8-HxCDF		36:44	1.18	10096.50		10.10
1,2,3,6,7,8-HxCDF		36:55	1.20	8731.57		8.42
2,3,4,6,7,8-HxCDF		37:44	1.17	11925.52		10.55
1,2,3,7,8,9-HxCDF		38:47	1.16	9160.25		11.63
1,2,3,4,6,7,8-HpCDF		40:43	1.01	8843.55		6.62
1,2,3,4,7,8,9-HpCDF		42:06	1.00	9354.58		8.32
OCDF		44:32	0.89	17689.59		2.75
2,3,7,8-TCDD		28:21	0.79	3459.13		4.28
1,2,3,7,8-PeCDD		33:10	1.59	9620.76		6.88
1,2,3,4,7,8-HxCDD		37:56	1.31	10236.12		7.30
1,2,3,6,7,8-HxCDD		38:04	1.33	8837.26		6.23
1,2,3,7,8,9-HxCDD		38:29	1.31	9106.97		6.18
1,2,3,4,6,7,8-HpCDD		41:42	1.04	8645.86		3.08
OCDD		44:25	0.84	19258.83		2.95

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:32	0.69	0.65	0.89	55	40	135
13C-1,2,3,7,8-PeCDF	IS	31:54	1.57	1.32	1.78	68	40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:54	0.55	0.43	0.59	43	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:42	0.42	0.37	0.51	64	40	135
13C-2,3,7,8-TCDD	IS	28:19	0.82	0.65	0.89	68	40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.61	1.32	1.78	81	40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.33	1.05	1.43	67	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:42	1.05	0.88	1.2	76	40	135
13C-OCDD	IS	44:25	0.88	0.76	1.02	77	40	135
37C12-2,3,7,8-TCDD	Surr	28:21	1.00	1	1	100	40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.57	1.32	1.78	95	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:54	0.55	0.43	0.59	118	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.30	1.05	1.43	119	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:05	0.44	0.37	0.51	83	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:46	0.55	0.43	0.59	61	40	135
13C-1,2,3,4-TCDD	RS	28:07	0.82	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.31	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: LAB_SPIKE

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x	0.10	=	
1,2,3,7,8-PeCDF	8378.76	x	0.05	=	418.94
2,3,4,7,8-PeCDF	8237.56	x	0.50	=	4118.78
1,2,3,4,7,8-HxCDF	10096.50	x	0.10	=	1009.65
1,2,3,6,7,8-HxCDF	8731.57	x	0.10	=	873.16
2,3,4,6,7,8-HxCDF	11925.52	x	0.10	=	1192.55
1,2,3,7,8,9-HxCDF	9160.25	x	0.10	=	916.02
1,2,3,4,6,7,8-HpCDF	8843.55	x	0.01	=	88.44
1,2,3,4,7,8,9-HpCDF	9354.58	x	0.01	=	93.55
OCDF	17689.59	x	0.001	=	17.69
2,3,7,8-TCDD	3459.13	x	1.00	=	3459.13
1,2,3,7,8-PeCDD	9620.76	x	0.50	=	4810.38
1,2,3,4,7,8-HxCDD	10236.12	x	0.10	=	1023.61
1,2,3,6,7,8-HxCDD	8837.26	x	0.10	=	883.73
1,2,3,7,8,9-HxCDD	9106.97	x	0.10	=	910.70
1,2,3,4,6,7,8-HpCDD	8645.86	x	0.01	=	86.46
OCDD	19258.83	x	0.001	=	19.26
		Total		=	19922.03

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
1316057_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1_ms

Sample wt/vol: 1 g / L L Lab File ID: 8290005ES:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received:

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 2 (uL) % Solids/Lipids Date Analyzed: 04/15/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TEMPC

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	QC LIMITS HIGH
2,3,7,8-TCDF	4000	2709		68	*	75	158
1,2,3,7,8-PeCDF	10000	8648		86		80	134
2,3,4,7,8-PeCDF	10000	8461		85		68	160
1,2,3,4,7,8-HxCDF	10000	9128		91		72	134
1,2,3,6,7,8-HxCDF	10000	8721		87		84	130
2,3,4,6,7,8-HxCDF	10000	10269		103		70	156
1,2,3,7,8,9-HxCDF	10000	10735		107		78	130
1,2,3,4,6,7,8-HpCDF	10000	8701		87		82	132
1,2,3,4,7,8,9-HpCDF	10000	9649		96		78	138
OCDF	20000	16866		84		63	170
2,3,7,8-TCDD	4000	3310		83		67	158
1,2,3,7,8-PeCDD	10000	9346		93		70	142
1,2,3,4,7,8-HxCDD	10000	7549		75		70	164
1,2,3,6,7,8-HxCDD	10000	9246		92		76	134
1,2,3,7,8,9-HxCDD	10000	9547		95		64	162
1,2,3,4,6,7,8-HpCDD	10000	8789		88		70	140
OCDD	20000	18174		91		78	144

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 1 Outside limits out of 17 total.

fm3diox040505

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316057_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1_ms

QC Code: MS

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 20:24

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO	#	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		27:33	0.64	*			2708.75
1,2,3,7,8-PeCDF		31:54	1.68		8647.75		3.27
2,3,4,7,8-PeCDF		32:44	1.73		8461.02		3.10
1,2,3,4,7,8-HxCDF		36:44	1.17		9128.17		6.98
1,2,3,6,7,8-HxCDF		36:54	1.19		8720.92		5.82
2,3,4,6,7,8-HxCDF		37:43	1.15		10269.14		7.29
1,2,3,7,8,9-HxCDF		38:46	1.16		10735.45		8.04
1,2,3,4,6,7,8-HpCDF		40:42	0.98		8701.22		8.14
1,2,3,4,7,8,9-HpCDF		42:04	1.01		9648.87		10.23
OCDF		44:32	0.88		16865.68		5.11
2,3,7,8-TCDD		28:20	0.80		3309.56		2.91
1,2,3,7,8-PeCDD		33:10	1.59		9345.58		3.65
1,2,3,4,7,8-HxCDD		37:55	1.30		7549.06		4.78
1,2,3,6,7,8-HxCDD		38:03	1.34		9245.83		4.08
1,2,3,7,8,9-HxCDD		38:28	1.32		9547.26		4.04
1,2,3,4,6,7,8-HpCDD		41:42	1.05		8788.86		2.92
OCDD		44:24	0.84		18173.55		4.73

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO	#	ION RATIO LIMITS LOW	HIGH	% REC	#	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:31	0.70		0.65	0.89	61		40	135
13C-1,2,3,7,8-PeCDF	IS	31:53	1.57		1.32	1.78	64		40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:53	0.56		0.43	0.59	33	*	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:42	0.44		0.37	0.51	51		40	135
13C-2,3,7,8-TCDD	IS	28:19	0.84		0.65	0.89	74		40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.57		1.32	1.78	81		40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.31		1.05	1.43	67		40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.06		0.88	1.2	60		40	135
13C-OCDD	IS	44:24	0.88		0.76	1.02	59		40	135
37C12-2,3,7,8-TCDD	Surr	28:20	1.00		1	1	100		40	135
13C-2,3,4,7,8-PeCDF	Surr	32:43	1.60		1.32	1.78	98		40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:53	0.56		0.43	0.59	118		40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:54	1.33		1.05	1.43	87		40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:04	0.43		0.37	0.51	84		40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:45	0.56		0.43	0.59	51		40	135
13C-1,2,3,4-TCDD	RS	28:07	0.83		0.65	0.89	NA		NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.29		1.05	1.43	NA		NA	NA

Column to be used to flag values outside QC limits.

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316057_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1_ms

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x	0.10	=	
1,2,3,7,8-PeCDF	8647.75	x	0.05	=	432.39
2,3,4,7,8-PeCDF	8461.02	x	0.50	=	4230.51
1,2,3,4,7,8-HxCDF	9128.17	x	0.10	=	912.82
1,2,3,6,7,8-HxCDF	8720.92	x	0.10	=	872.09
2,3,4,6,7,8-HxCDF	10269.14	x	0.10	=	1026.91
1,2,3,7,8,9-HxCDF	10735.45	x	0.10	=	1073.54
1,2,3,4,6,7,8-HpCDF	8701.22	x	0.01	=	87.01
1,2,3,4,7,8,9-HpCDF	9648.87	x	0.01	=	96.49
OCDF	16865.68	x	0.001	=	16.87
2,3,7,8-TCDD	3309.56	x	1.00	=	3309.56
1,2,3,7,8-PeCDD	9345.58	x	0.50	=	4672.79
1,2,3,4,7,8-HxCDD	7549.06	x	0.10	=	754.91
1,2,3,6,7,8-HxCDD	9245.83	x	0.10	=	924.58
1,2,3,7,8,9-HxCDD	9547.26	x	0.10	=	954.73
1,2,3,4,6,7,8-HpCDD	8788.86	x	0.01	=	87.89
OCDD	18173.55	x	0.001	=	18.17
		Total		=	19471.25

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
1316057_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1_msd

Sample wt/vol: 1 g / L L Lab File ID: 8290005ES:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received:

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 2 (uL) % Solids/Lipids Date Analyzed: 04/15/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	QC LIMITS HIGH
2,3,7,8-TCDF	4000	2635		66	*	75	158
1,2,3,7,8-PeCDF	10000	8454		85		80	134
2,3,4,7,8-PeCDF	10000	8812		88		68	160
1,2,3,4,7,8-HxCDF	10000	9271		93		72	134
1,2,3,6,7,8-HxCDF	10000	8897		89		84	130
2,3,4,6,7,8-HxCDF	10000	9397		94		70	156
1,2,3,7,8,9-HxCDF	10000	8509		85		78	130
1,2,3,4,6,7,8-HpCDF	10000	8742		87		82	132
1,2,3,4,7,8,9-HpCDF	10000	9456		95		78	138
OCDF	20000	17121		86		63	170
2,3,7,8-TCDD	4000	3392		85		67	158
1,2,3,7,8-PeCDD	10000	9801		98		70	142
1,2,3,4,7,8-HxCDD	10000	8781		88		70	164
1,2,3,6,7,8-HxCDD	10000	8872		89		76	134
1,2,3,7,8,9-HxCDD	10000	8436		84		64	162
1,2,3,4,6,7,8-HpCDD	10000	8650		86		70	140
OCDD	20000	18591		93		78	144

+EMPC

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 1 Outside limits out of 17 total.

frm3diox040505

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316057_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1_msd

QC Code: MSD

Sample wt/vol: 1.0 g / L L Lab File ID: 8290005ES:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 15-04-08 21:14

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO	#	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		27:32	0.62	*			2634.78
1,2,3,7,8-PeCDF		31:54	1.69		8454.01		4.43
2,3,4,7,8-PeCDF		32:44	1.70		8812.14		4.20
1,2,3,4,7,8-HxCDF		36:43	1.16		9271.35		18.24
1,2,3,6,7,8-HxCDF		36:55	1.19		8897.41		15.20
2,3,4,6,7,8-HxCDF		37:43	1.21		9396.74		19.04
1,2,3,7,8,9-HxCDF		38:46	1.16		8509.20		20.99
1,2,3,4,6,7,8-HpCDF		40:42	0.99		8741.85		9.34
1,2,3,4,7,8,9-HpCDF		42:05	1.01		9455.72		11.75
OCDF		44:33	0.90		17120.98		2.90
2,3,7,8-TCDD		28:21	0.77		3391.99		2.99
1,2,3,7,8-PeCDD		33:10	1.62		9801.42		5.59
1,2,3,4,7,8-HxCDD		37:56	1.32		8781.43		6.97
1,2,3,6,7,8-HxCDD		38:02	1.36		8872.01		5.94
1,2,3,7,8,9-HxCDD		38:29	1.39		8436.39		5.90
1,2,3,4,6,7,8-HpCDD		41:42	1.04		8649.83		3.81
OCDD		44:25	0.83		18591.15		3.26

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO	#	ION RATIO LIMITS LOW	HIGH	% REC	#	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	27:31	0.70		0.65	0.89	54		40	135
13C-1,2,3,7,8-PeCDF	IS	31:53	1.56		1.32	1.78	69		40	135
13C-1,2,3,6,7,8-HxCDF	IS	36:53	0.54		0.43	0.59	48		40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	40:41	0.42		0.37	0.51	76		40	135
13C-2,3,7,8-TCDD	IS	28:20	0.84		0.65	0.89	71		40	135
13C-1,2,3,7,8-PeCDD	IS	33:09	1.60		1.32	1.78	82		40	135
13C-1,2,3,6,7,8-HxCDD	IS	38:02	1.27		1.05	1.43	71		40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	41:41	1.06		0.88	1.2	89		40	135
13C-OCDD	IS	44:24	0.88		0.76	1.02	92		40	135
37C12-2,3,7,8-TCDD	Surr	28:21	1.00		1	1	102		40	135
13C-2,3,4,7,8-PeCDF	Surr	32:44	1.61		1.32	1.78	98		40	135
13C-1,2,3,4,7,8-HxCDF	Surr	36:53	0.54		0.43	0.59	118		40	135
13C-1,2,3,4,7,8-HxCDD	Surr	37:55	1.31		1.05	1.43	105		40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	42:04	0.41		0.37	0.51	88		40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	38:46	0.57		0.43	0.59	62		40	135
13C-1,2,3,4-TCDD	RS	28:07	0.82		0.65	0.89	NA		NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	38:28	1.32		1.05	1.43	NA		NA	NA

Column to be used to flag values outside QC limits.

lsm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316057_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-1_msd

Sample wt/vol: 1.00 g / L L Lab File ID: 8290005ES:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 15-04-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x	0.10	=	
1,2,3,7,8-PeCDF	8454.01	x	0.05	=	422.70
2,3,4,7,8-PeCDF	8812.14	x	0.50	=	4406.07
1,2,3,4,7,8-HxCDF	9271.35	x	0.10	=	927.13
1,2,3,6,7,8-HxCDF	8897.41	x	0.10	=	889.74
2,3,4,6,7,8-HxCDF	9396.74	x	0.10	=	939.67
1,2,3,7,8,9-HxCDF	8509.20	x	0.10	=	850.92
1,2,3,4,6,7,8-HpCDF	8741.85	x	0.01	=	87.42
1,2,3,4,7,8,9-HpCDF	9455.72	x	0.01	=	94.56
OCDF	17120.98	x	0.001	=	17.12
2,3,7,8-TCDD	3391.99	x	1.00	=	3391.99
1,2,3,7,8-PeCDD	9801.42	x	0.50	=	4900.71
1,2,3,4,7,8-HxCDD	8781.43	x	0.10	=	878.14
1,2,3,6,7,8-HxCDD	8872.01	x	0.10	=	887.20
1,2,3,7,8,9-HxCDD	8436.39	x	0.10	=	843.64
1,2,3,4,6,7,8-HpCDD	8649.83	x	0.01	=	86.50
OCDD	18591.15	x	0.001	=	18.59
		Total		=	19642.11

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

USEPA

5DFA-Form V-HR-CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_04130801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Lab File ID: 8290005 S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 04/15/2008

Instrument ID: :AutoSpec

Time Analyzed: 0:27

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD	25.65	29.45
TCDF	24.20	29.45
PeCDD	31.12	33.78
PeCDF	29.72	33.97
HxCDD	36.00	38.45
HxCDF	35.22	38.90
HpCDD	41.03	41.73
HpCDF	40.72	42.10

USEPA

5DFB-Form V-HR-CDD-2
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_04130801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: _____ SDG No.: 1316057

Lab File ID: 8290005 S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 04/15/2008

Instrument ID: :AutoSpec

Time Analyzed: 0:27

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD / 2378-TCDD: 10

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

2347-TCDF / 2378-TCDF: NA

QC LIMITS:

Percent Valley between the TCDD / TCDF isomers must be less than or equal to 25%.

frm5diox040505

USEPA

5DFA-Form V-HR-CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_04150802

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Lab File ID: 8290005E S:2

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 04/15/2008

Instrument ID: :AutoSpec Time Analyzed: 15:24

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD	25.62	29.43
TCDF	24.17	29.43
PeCDD	31.10	33.77
PeCDF	29.70	33.95
HxCDD	35.98	38.43
HxCDF	35.20	38.88
HpCDD	41.02	41.72
HpCDF	40.70	42.08

fm5diox040505

USEPA

5DFB-Form V-HR-CDD-2
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_04150802

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: SDG No.: 1316057

Lab File ID: 8290005E S:2

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 04/15/2008

Instrument ID: :AutoSpec Time Analyzed: 15:24

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD / 2378-TCDD: 20

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

2347-TCDF / 2378-TCDF: NA

QC LIMITS:

Percent Valley between the TCDD / TCDF isomers must be less than or equal to 25%.

frm5diox040505

USEPA

5DFC-Form V-HR CDD-3
CDD/CDF ANALYTICAL SEQUENCE SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES **Contract:** Loureio Engineering

Lab Code: OH01241 **Case No.:** Centredale Manor **TO No.:** NA **SDG No.:** 1316057

GC Column: JWS-DB-5 **ID:** 0.25 (mm) **Instrument ID:** AutoSpec

Initial Calib. Date(s): 3/19/2008 3/19/2008

Initial Calib. Times: 18:52 22:13

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

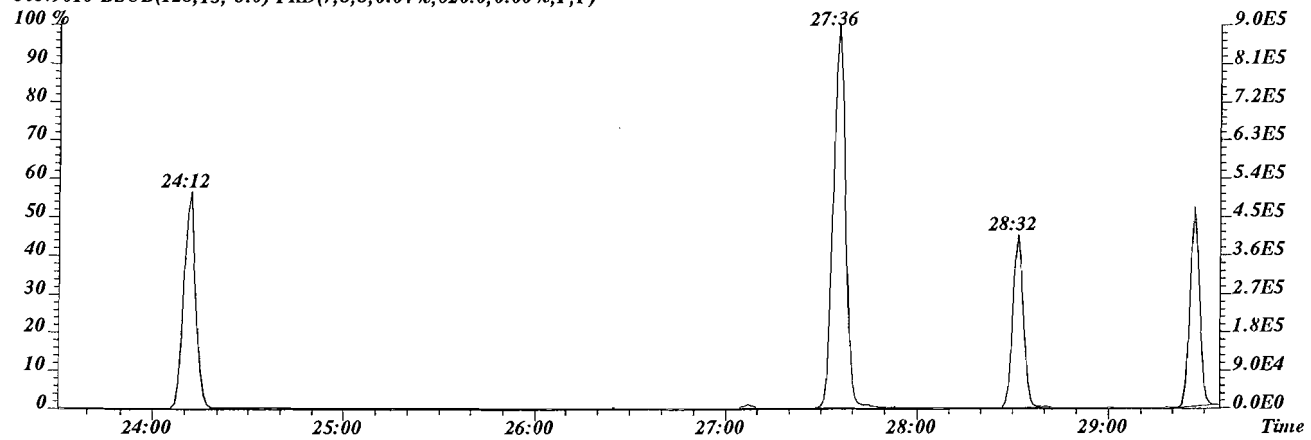
LAB SAMPLE ID	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
CS1_A829005	CAL._A829005	8290005 S:2	4/15/2008	1:17
CS2_A829005	CAL._A829005	8290005 S:3	4/15/2008	2:07
CS3_A829005	CAL._A829005	8290005 S:4	4/15/2008	2:57
CS4_A829005	CAL._A829005	8290005 S:5	4/15/2008	3:47
CS5_A829005	CAL._A829005	8290005 S:6	4/15/2008	4:37
CCAL._A829005C01	CCAL._A829005C01	8290005E S:1	4/15/2008	14:34
CCAL._A829005C02	CCAL._A829005C02	8290005EE S:1	4/16/2008	8:06
INS._BLANK	INS._BLANK	8290005 S:8	4/15/2008	6:17
0208030-MB	METHOD_BLANK	8290005 S:9	4/15/2008	7:07
0208030-1	1316057	8290005 S:10	4/15/2008	7:57
0208030-8	1316062	8290005 S:11	4/15/2008	8:47
0208030-10	1316058	8290005 S:12	4/15/2008	9:37
0208030-12	1316061	8290005E S:4	4/15/2008	17:04
0208030-14	1316074	8290005E S:5	4/15/2008	17:54
0208030-17	1316060	8290005E S:6	4/15/2008	18:44
0208030-21	1316059	8290005E S:7	4/15/2008	19:34
0208030-1_ms	1316057_MS	8290005E S:8	4/15/2008	20:24
0208030-1_msd	1316057_MSD	8290005E S:9	4/15/2008	21:14
0208030-LS	LAB_SPIKE	8290005E S:10	4/15/2008	22:04

12 hours

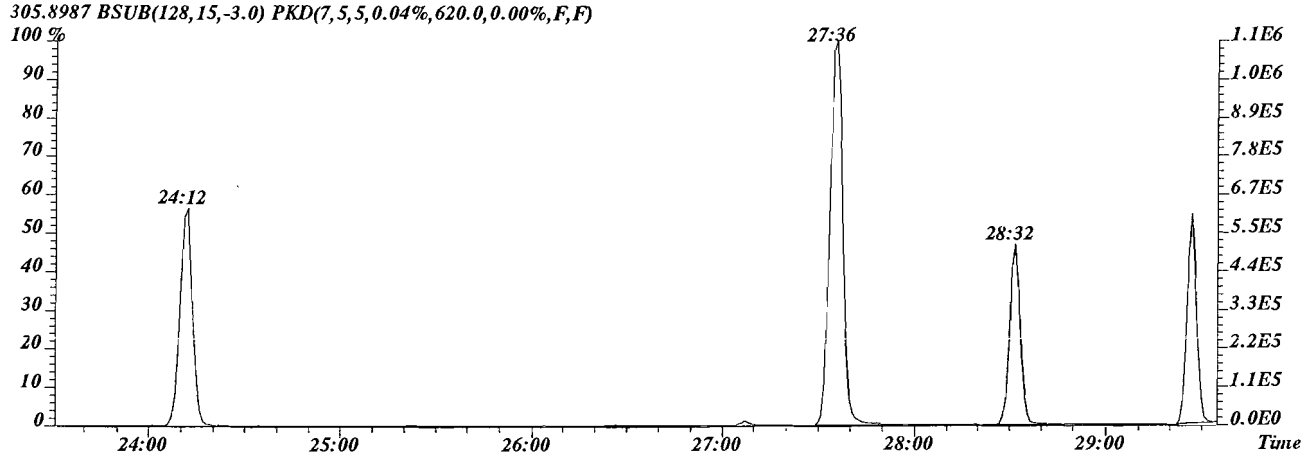
lm5cdiox040505

WDM
&
Res Chk

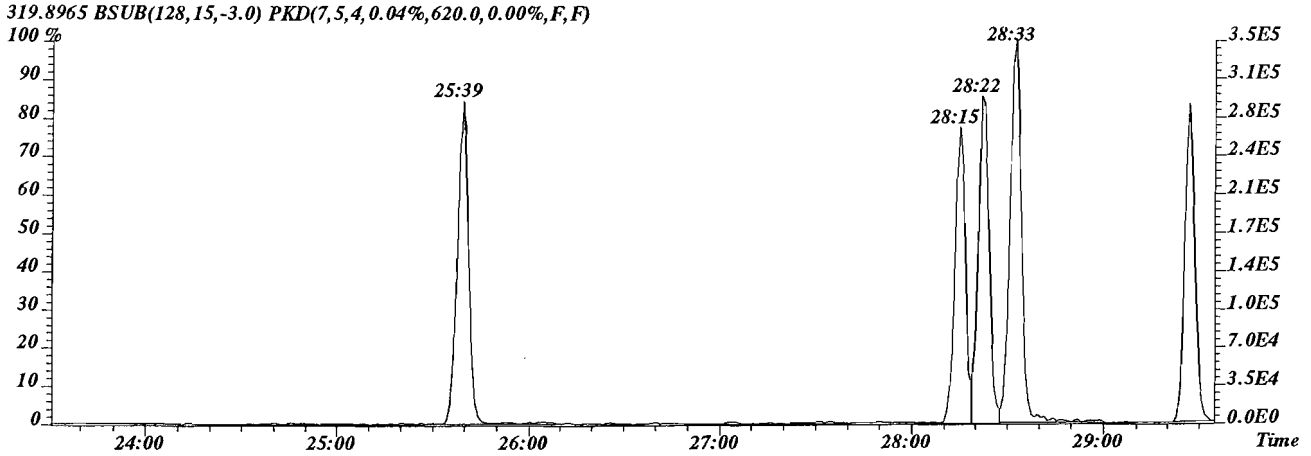
File:8290005 #1-370 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
303.9016 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



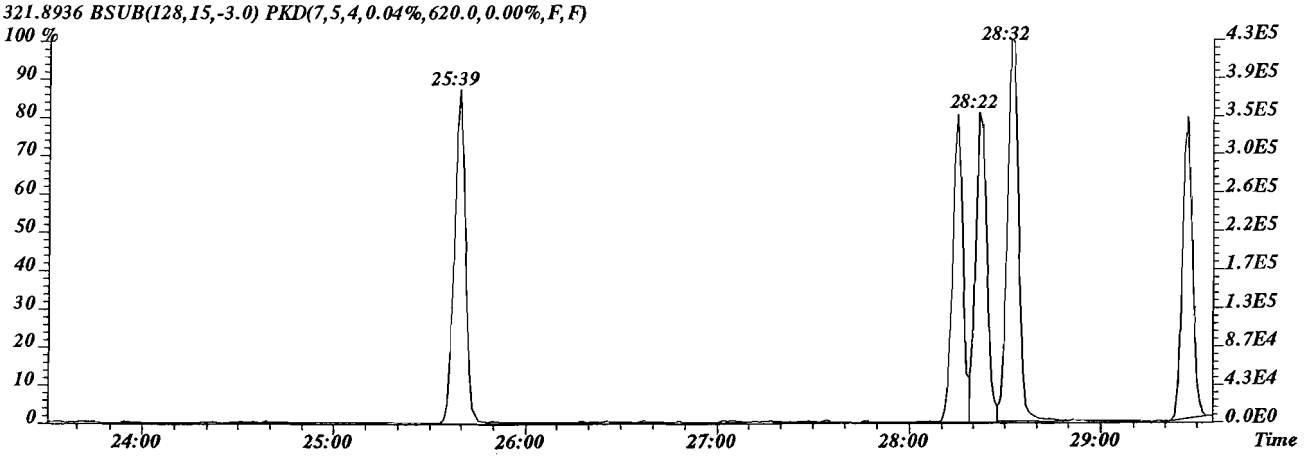
305.8987 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



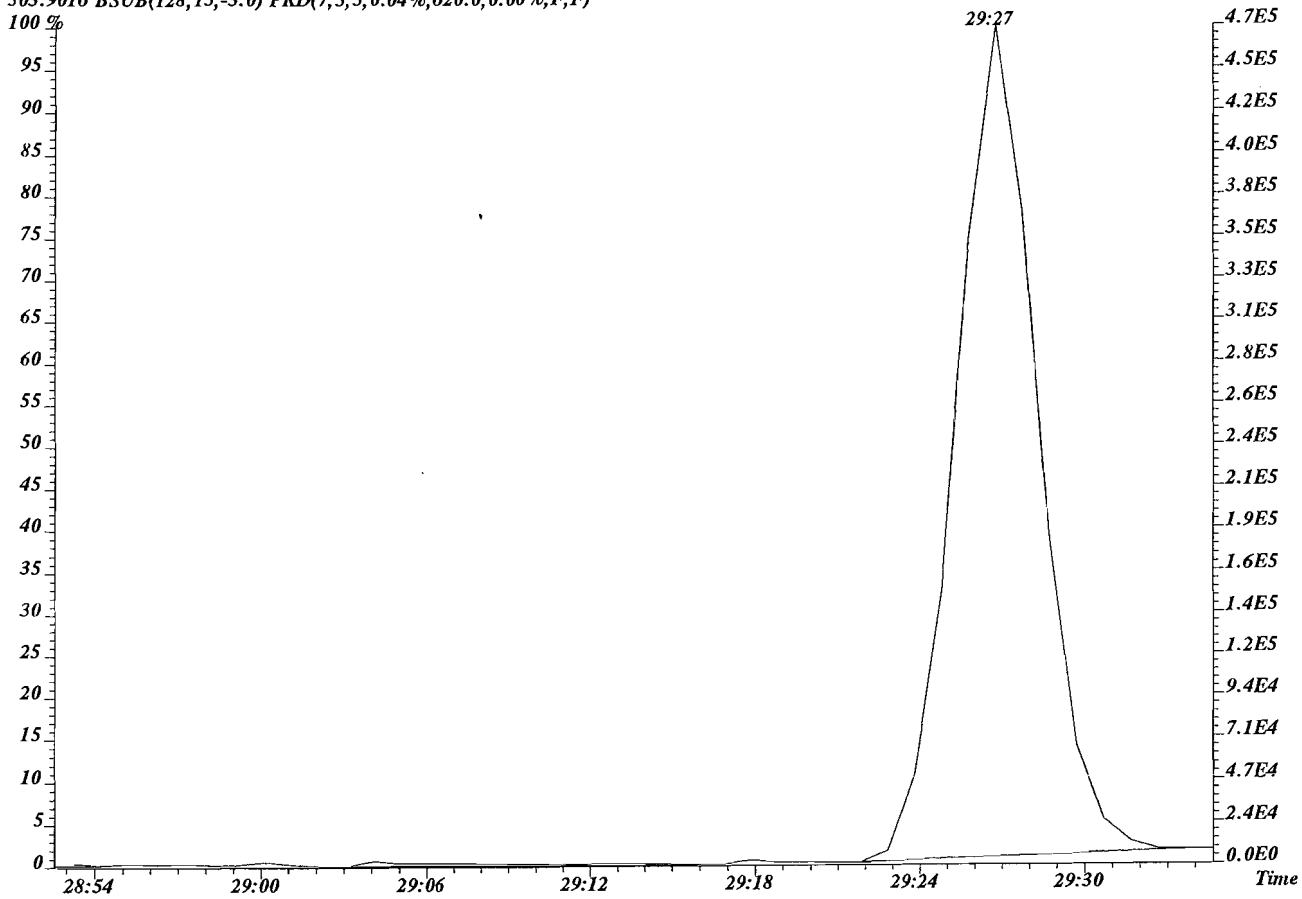
319.8965 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



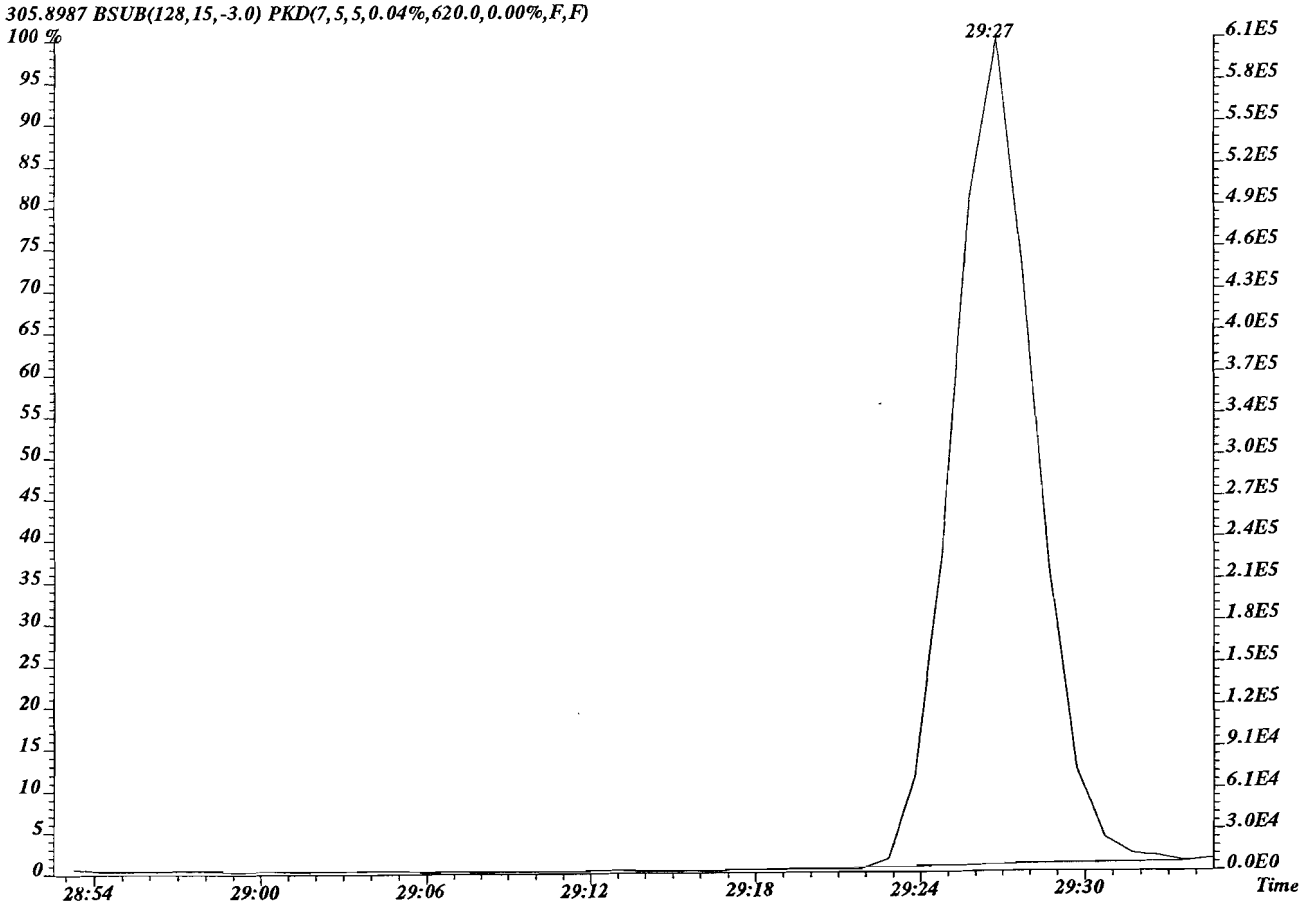
321.8936 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



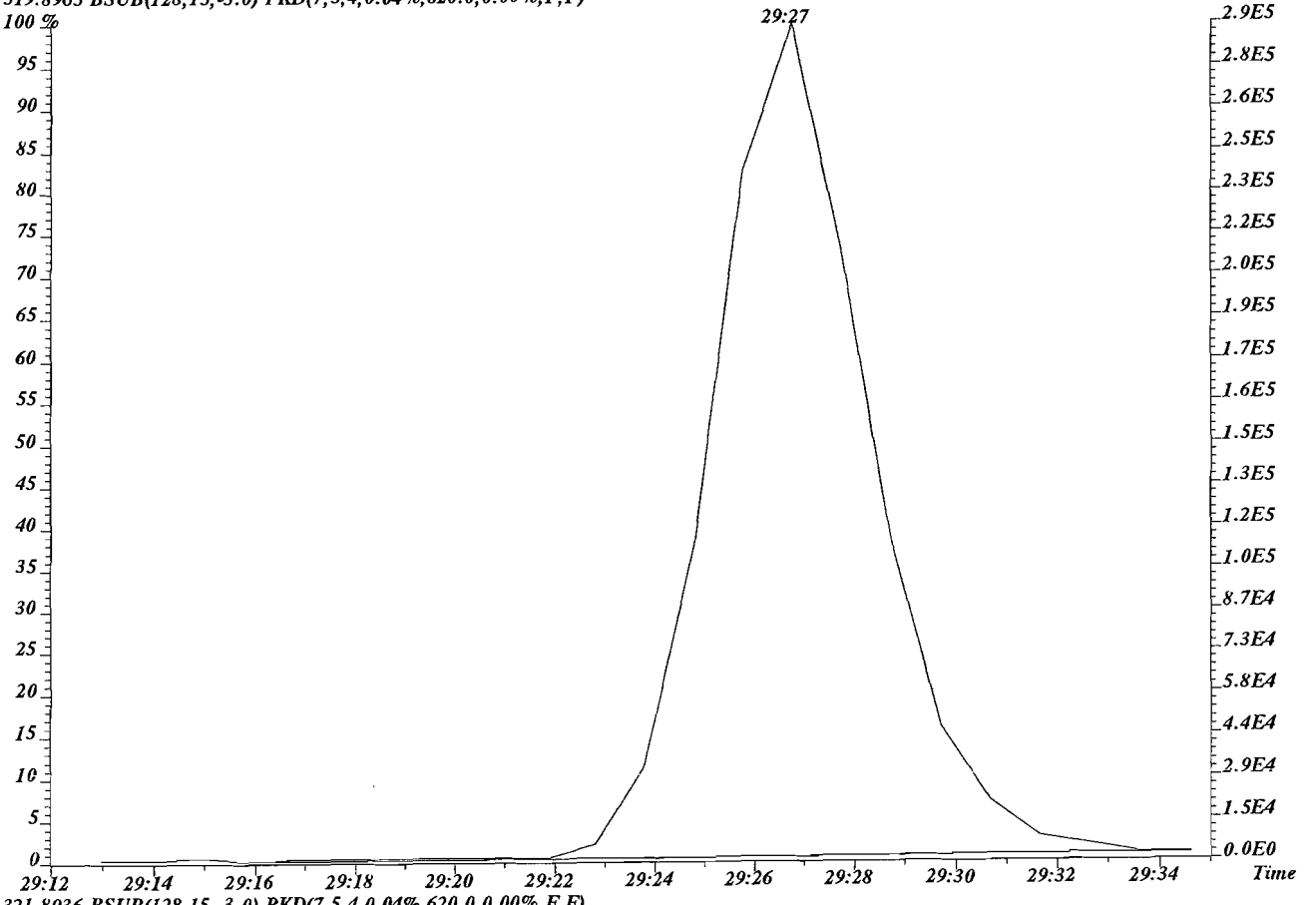
File:8290005 #I-370 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
303.9016 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



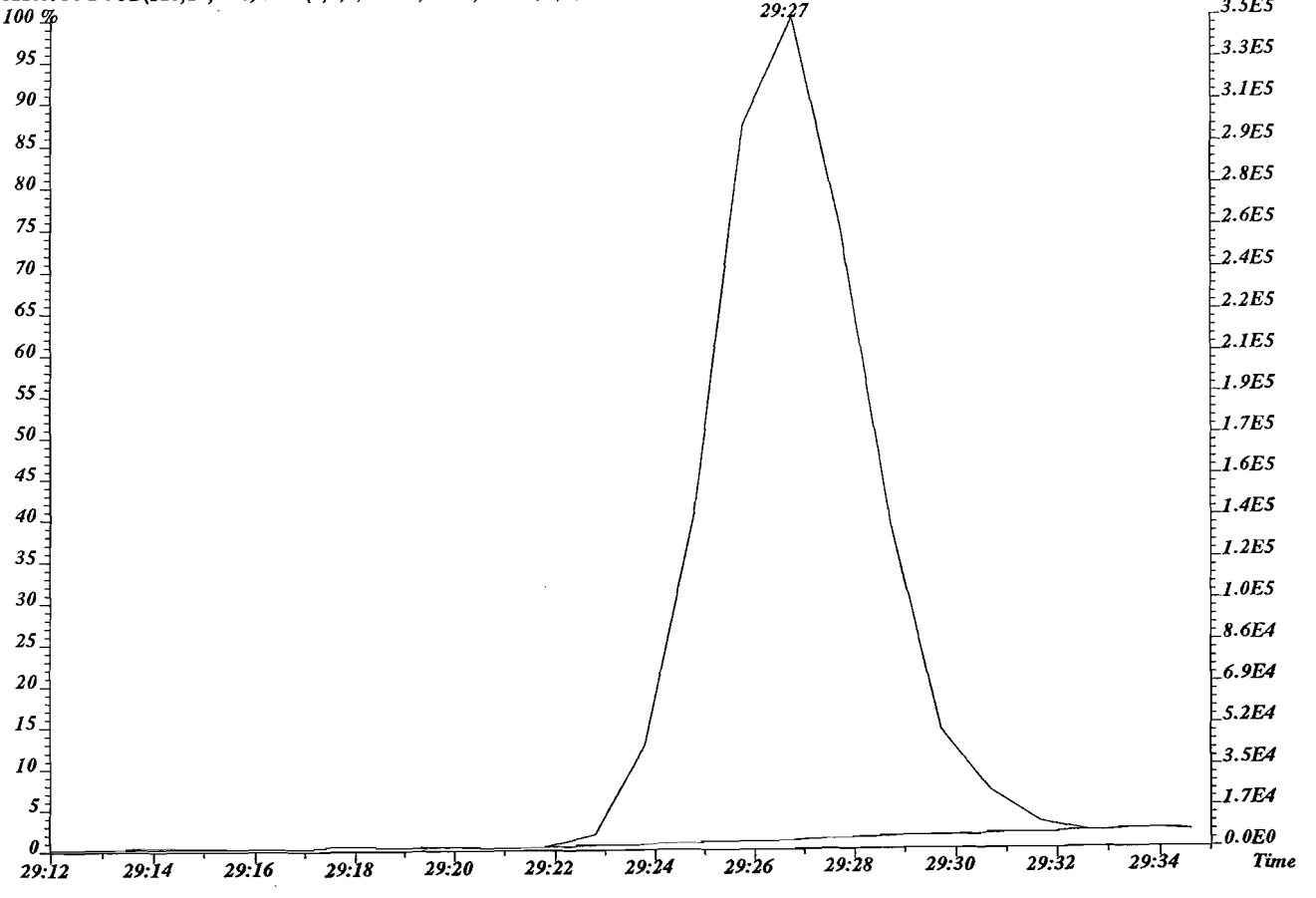
305.8987 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



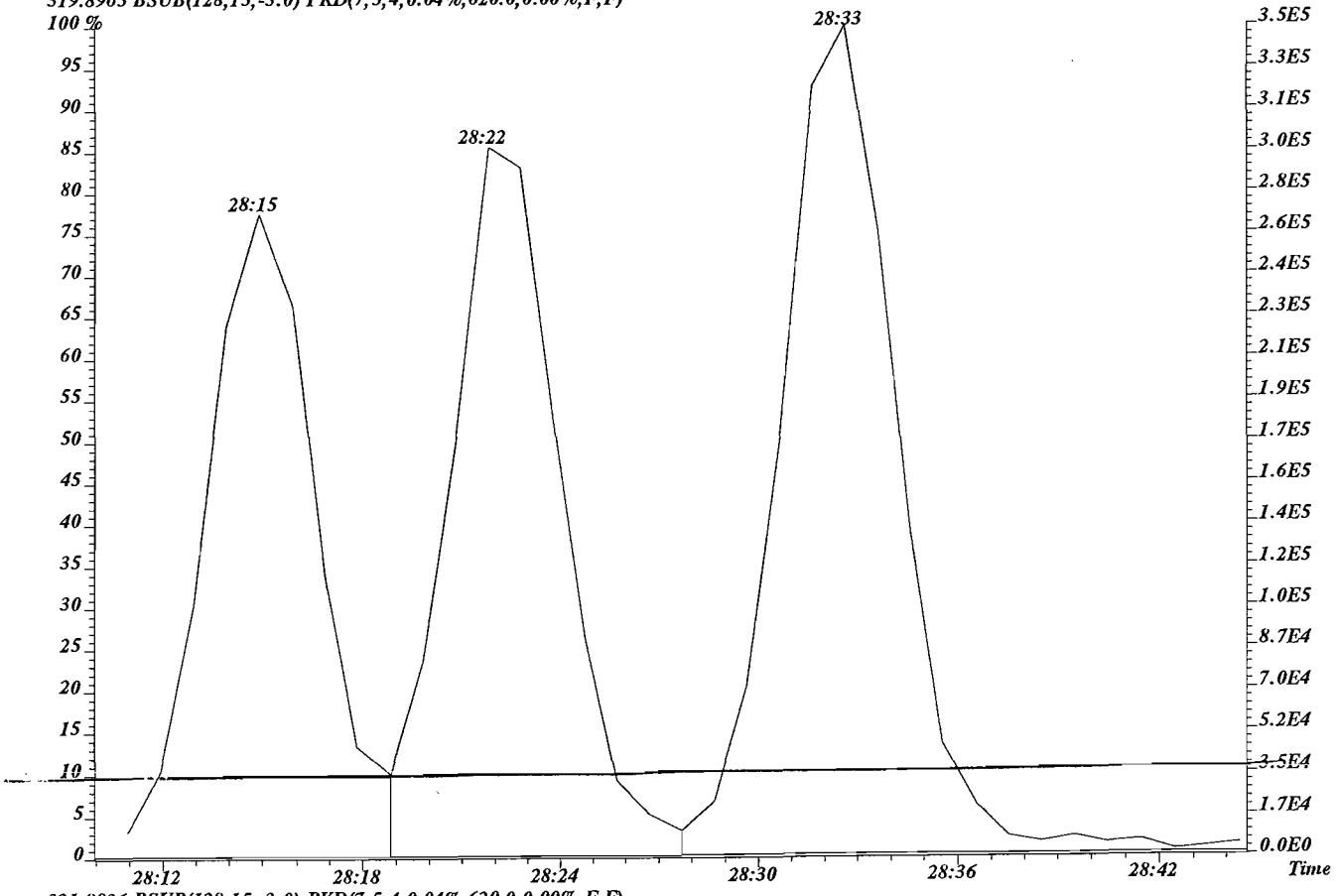
File:8290005 #1-370 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
319.8965 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



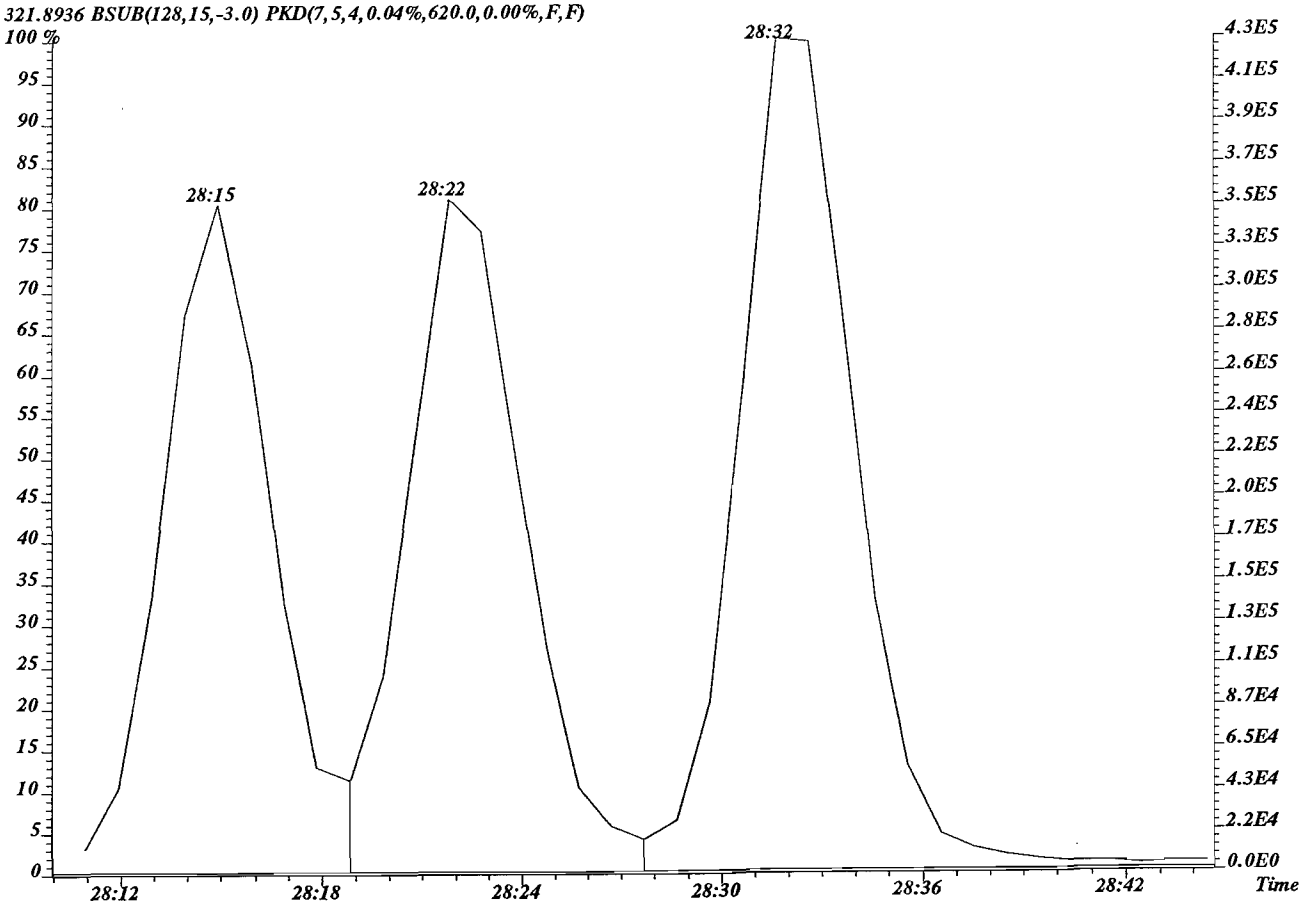
321.8936 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



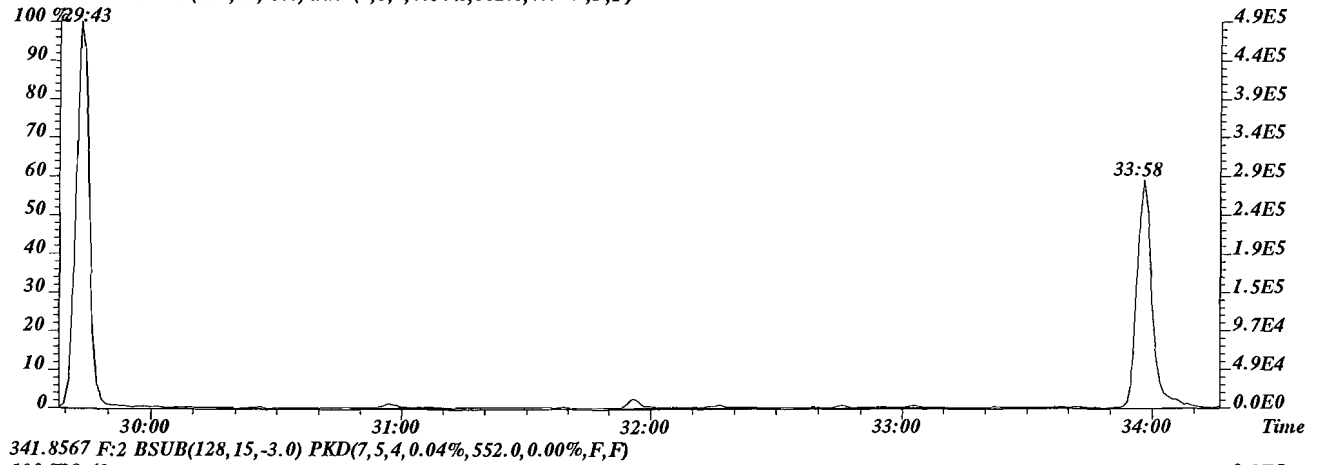
File:8290005 #1-370 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
319.8965 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



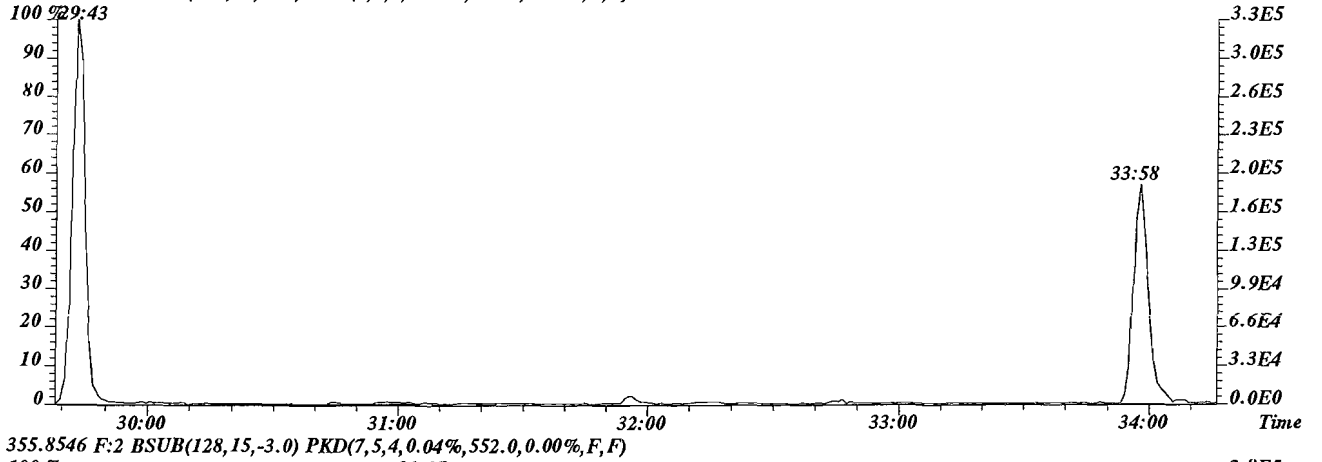
321.8936 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



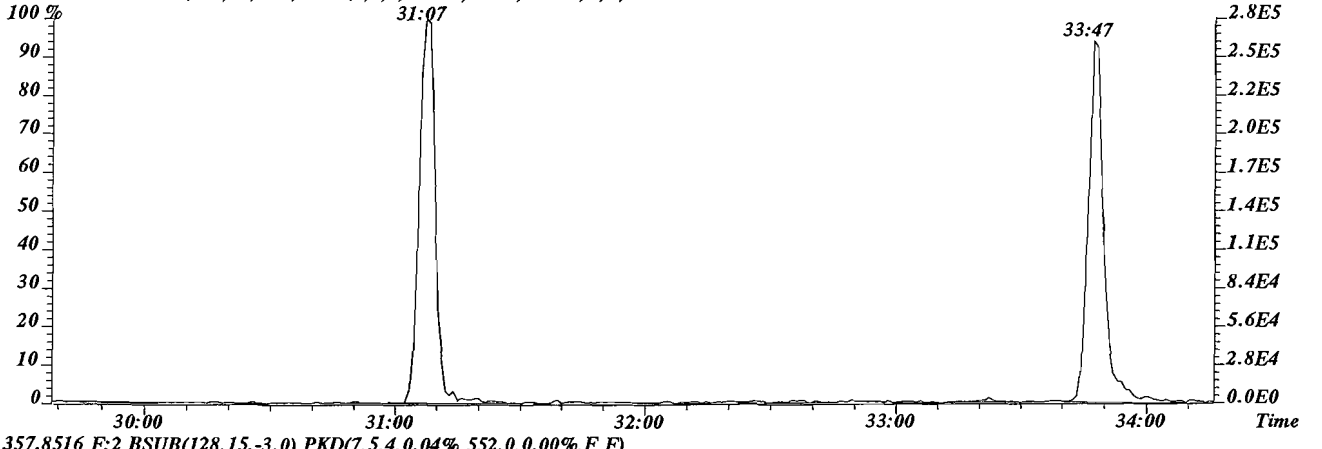
File:8290005 #1-289 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
339.8597 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



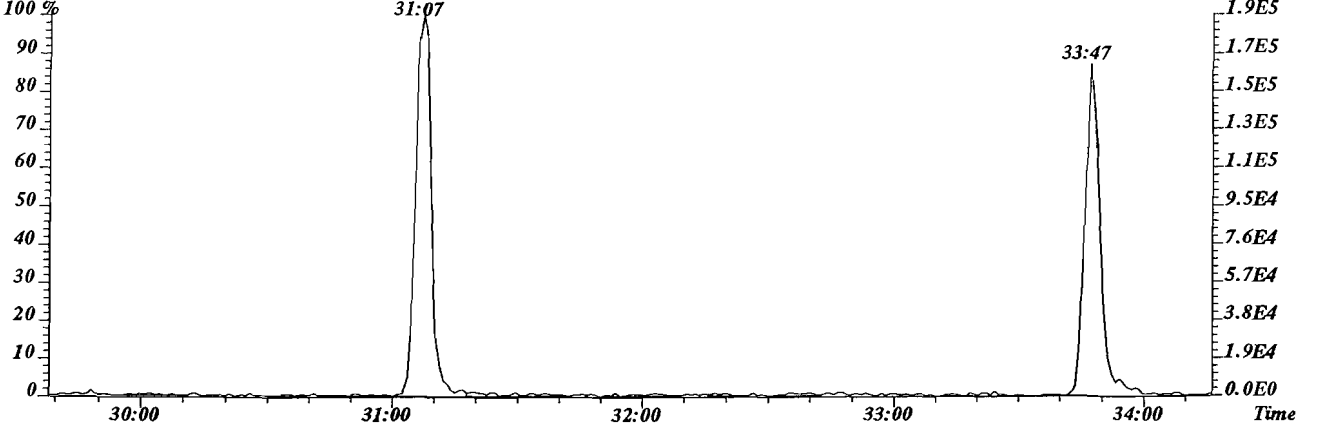
341.8567 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



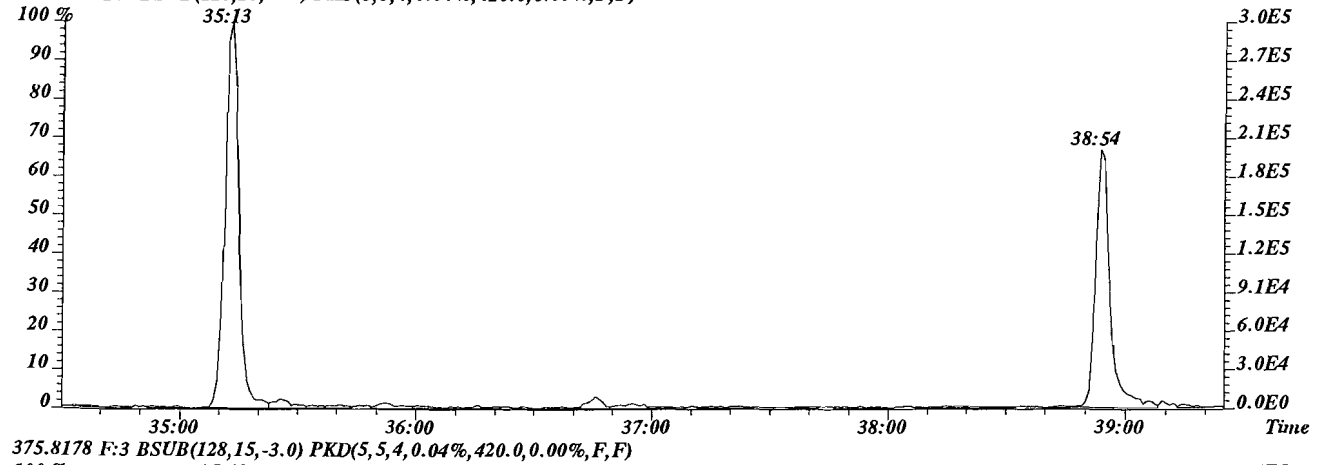
355.8546 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



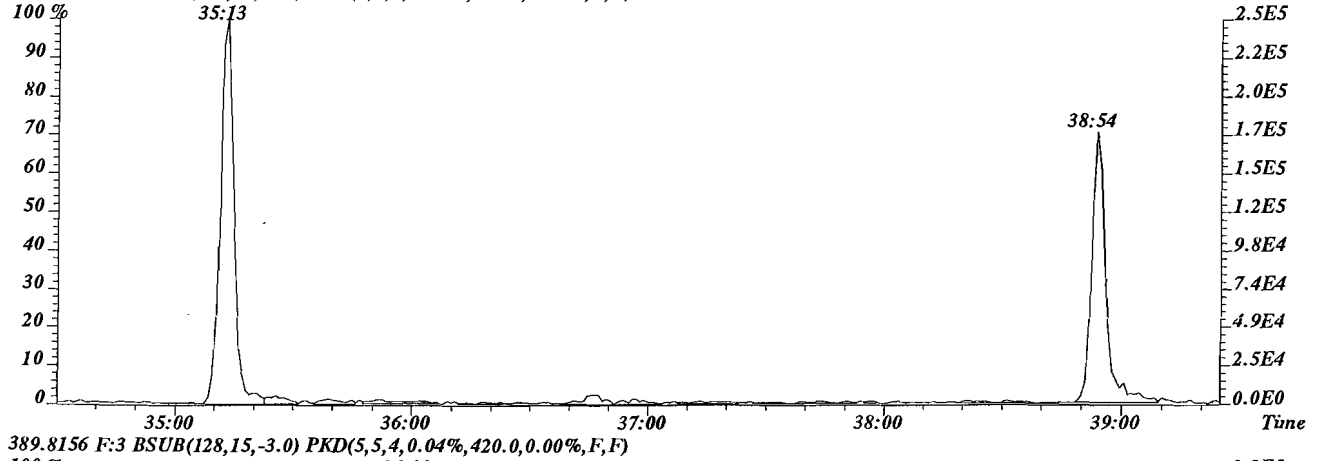
357.8516 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



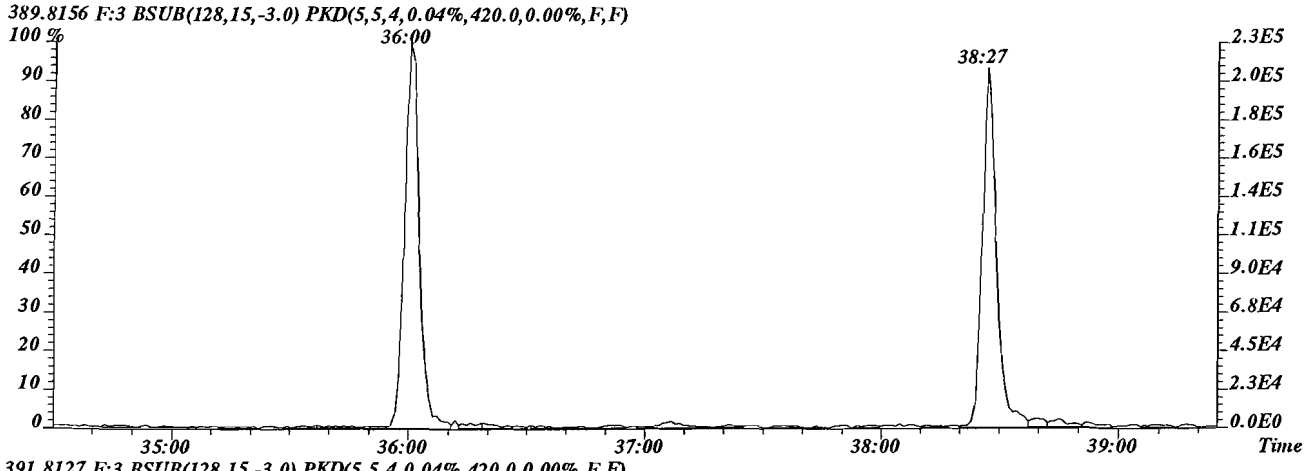
File:8290005 #1-306 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
373.8208 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



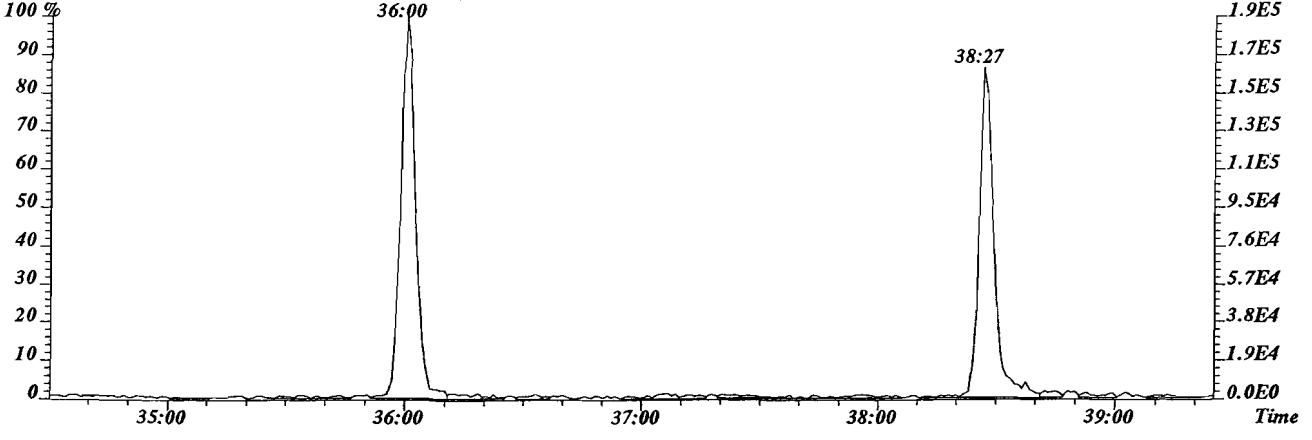
375.8178 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



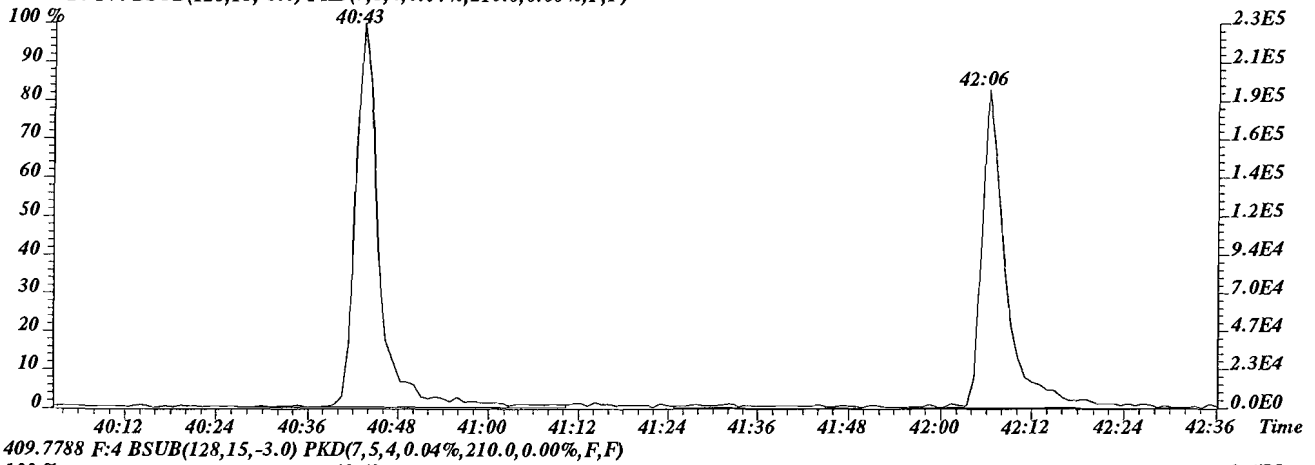
389.8156 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



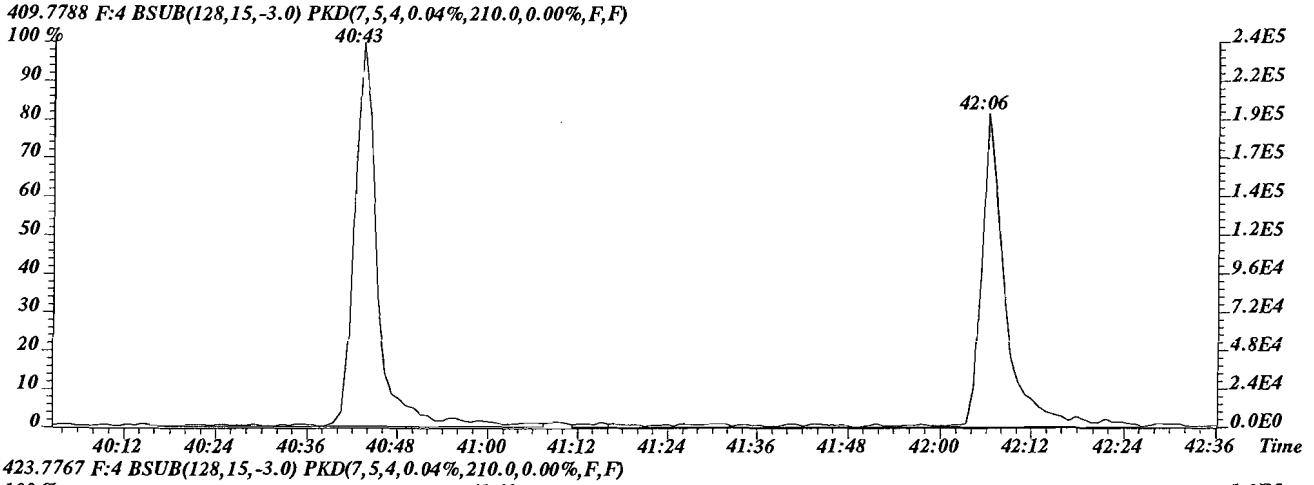
391.8127 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



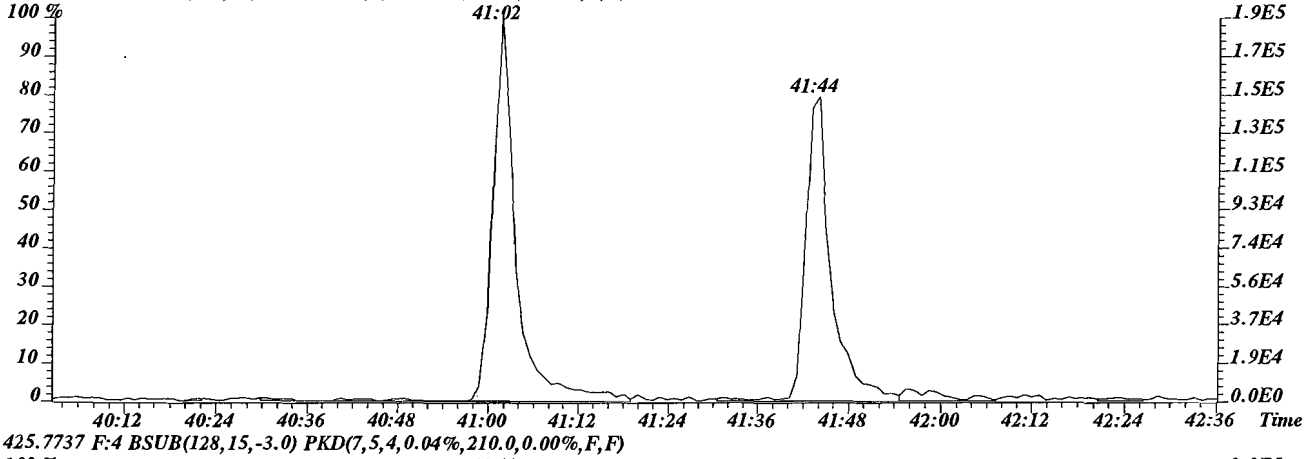
File:8290005 #1-160 Acq:15-APR-2008 00:27:22 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_04130801 Exp:8290
407.7818 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



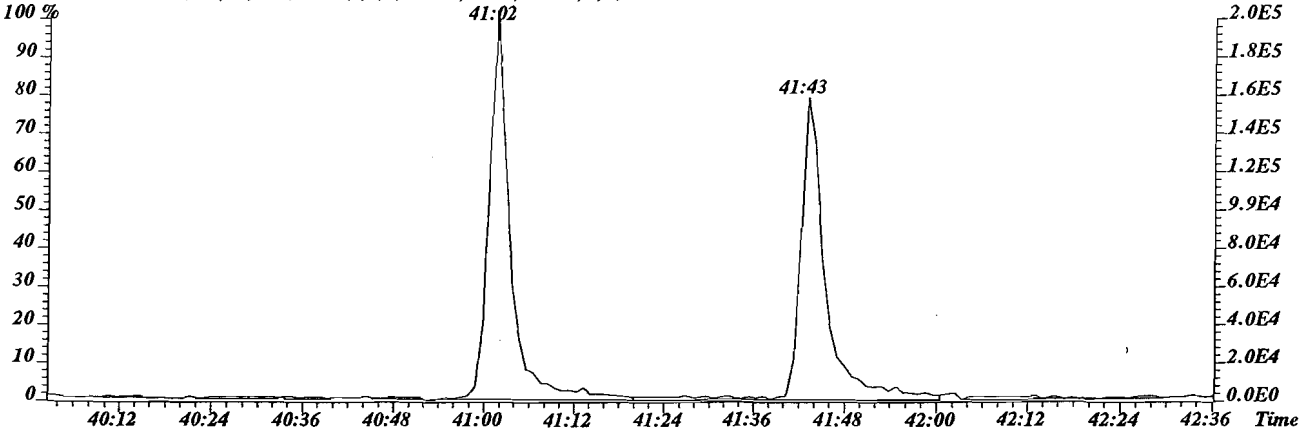
409.7788 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



423.7767 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



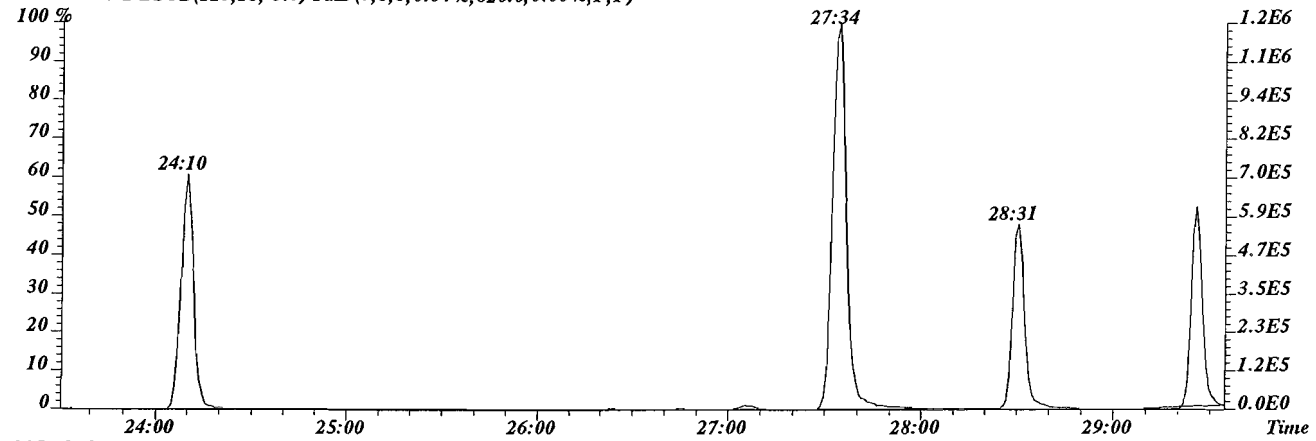
425.7737 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



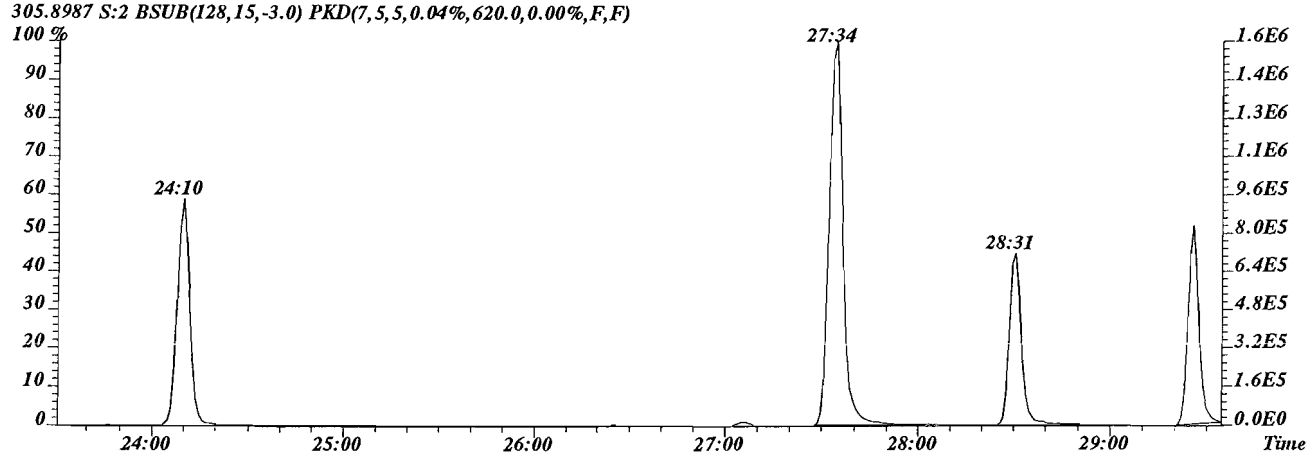
Run #2 Filename 8290005E S: 2 I: 1 Acquired: 15-APR-08 15:24:26 Processed: 16-APR-08 12:36:23
Run: Analyte: WDM Cal: Results: Version: V3.6 19-OCT-2005 15:45:13
Sample text: WDM_04150802 Analyst: ANALYST:CSM Instrument : AutoSpec
Comments: 20 0.000

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	1,3,6,8-TCDF	1	7.434e+06	0.75	y	24:10	*	*	*	-	n
2	Unk	1,2,8,9-TCDF	1	5.576e+06	0.75	y	29:26	*	*	*	-	n
3	Unk	1,3,6,8-TCDD	1	4.739e+06	0.80	y	25:37	*	*	*	-	n
4	Unk	1,2,8,9-TCDD	1	3.623e+06	0.81	y	29:26	*	*	*	-	n
5	Unk	1,3,4,6,8-PeCDF	1	4.303e+06	1.53	y	29:42	*	*	*	-	y
6	Unk	1,2,3,8,9-PeCDF	1	2.451e+06	1.68	y	33:57	*	*	*	-	n
7	Unk	1,2,4,7,9-PeCDD	1	3.143e+06	1.64	y	31:06	*	*	*	-	n
8	Unk	1,2,3,8,9-PeCDD	1	2.574e+06	1.55	y	33:46	*	*	*	-	n
9	Unk	1,2,3,4,6,8-HxCDF	1	3.220e+06	1.23	y	35:12	*	*	*	-	n
10	Unk	1,2,3,7,8,9-HxCDF	1	1.927e+06	1.25	y	38:53	*	*	*	-	n
11	Unk	1,2,4,6,7,9-HxCDD	1	2.814e+06	1.20	y	35:59	*	*	*	-	n
12	Unk	1,2,3,7,8,9-HxCDD	1	2.180e+06	1.21	y	38:26	*	*	*	-	n
13	Unk	1,2,3,4,6,7,9-HpCDF	1	2.207e+06	1.04	y	40:42	*	*	*	-	n
14	Unk	1,2,3,4,7,8,9-HpCDF	1	1.648e+06	1.01	y	42:05	*	*	*	-	n
15	Unk	1,2,3,4,6,7,9-HpCDD	1	1.866e+06	1.06	y	41:01	*	*	*	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	1.677e+06	0.99	y	41:43	*	*	*	-	n
17	IS	13C-2,3,7,8-TCDF	1	7.014e+06	0.78	y	27:32	*	-	*	*	n
18	IS	13C-2,3,7,8-TCDD	1	4.121e+06	0.81	y	28:20	*	-	*	*	n

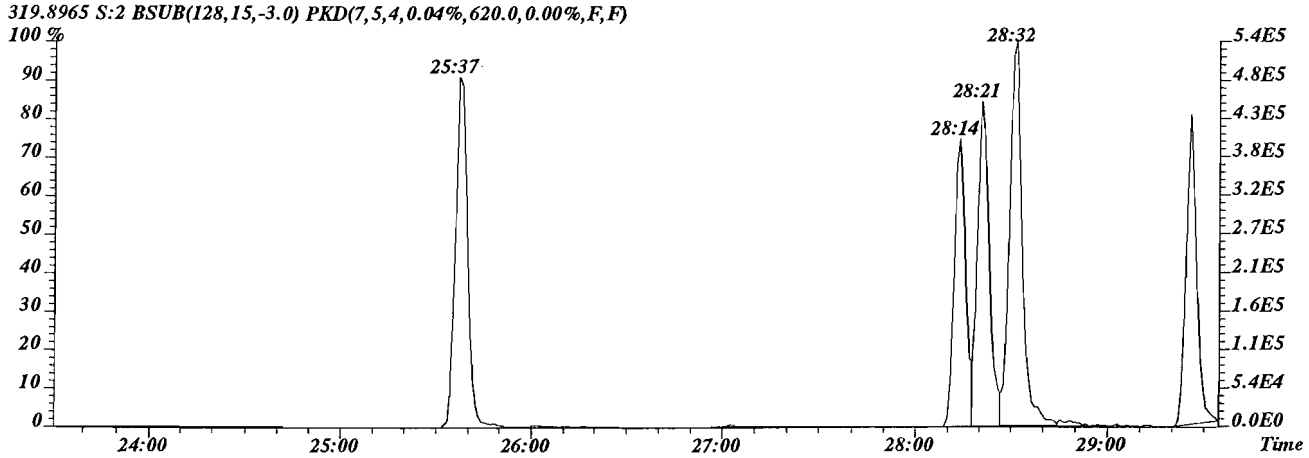
File:8290005E #1-370 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
303.9016 S:2 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



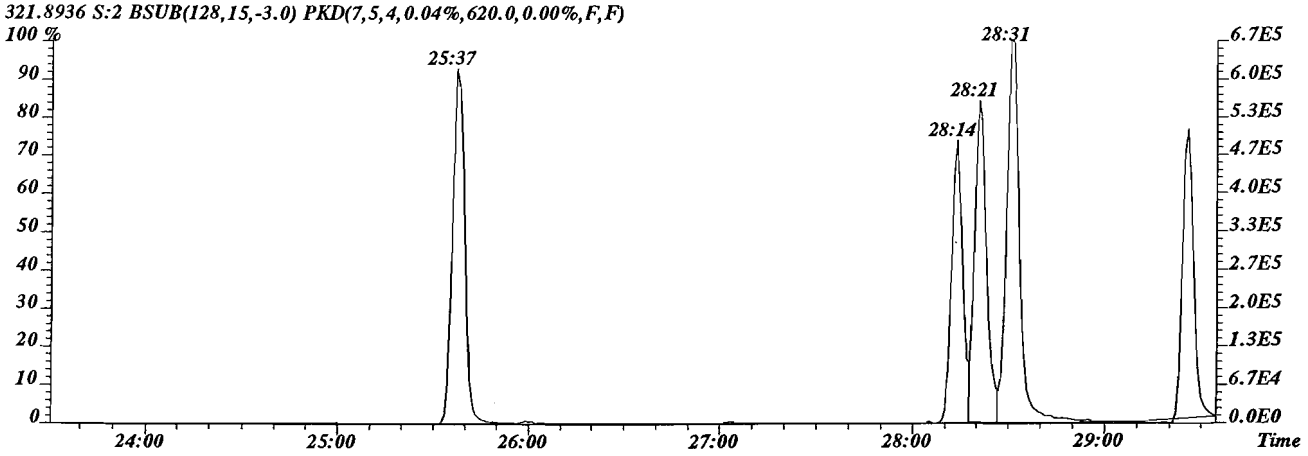
305.8987 S:2 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



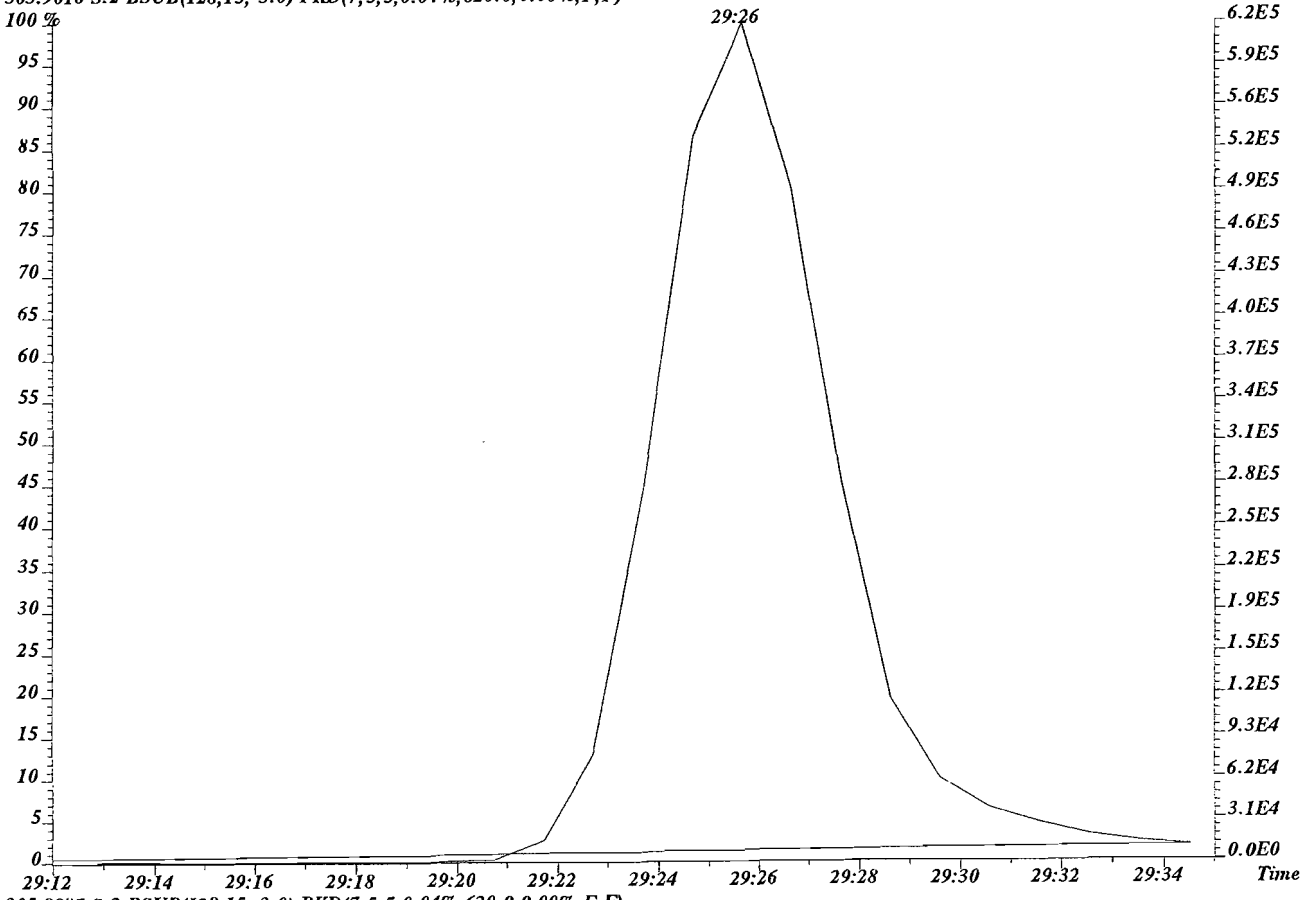
319.8965 S:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



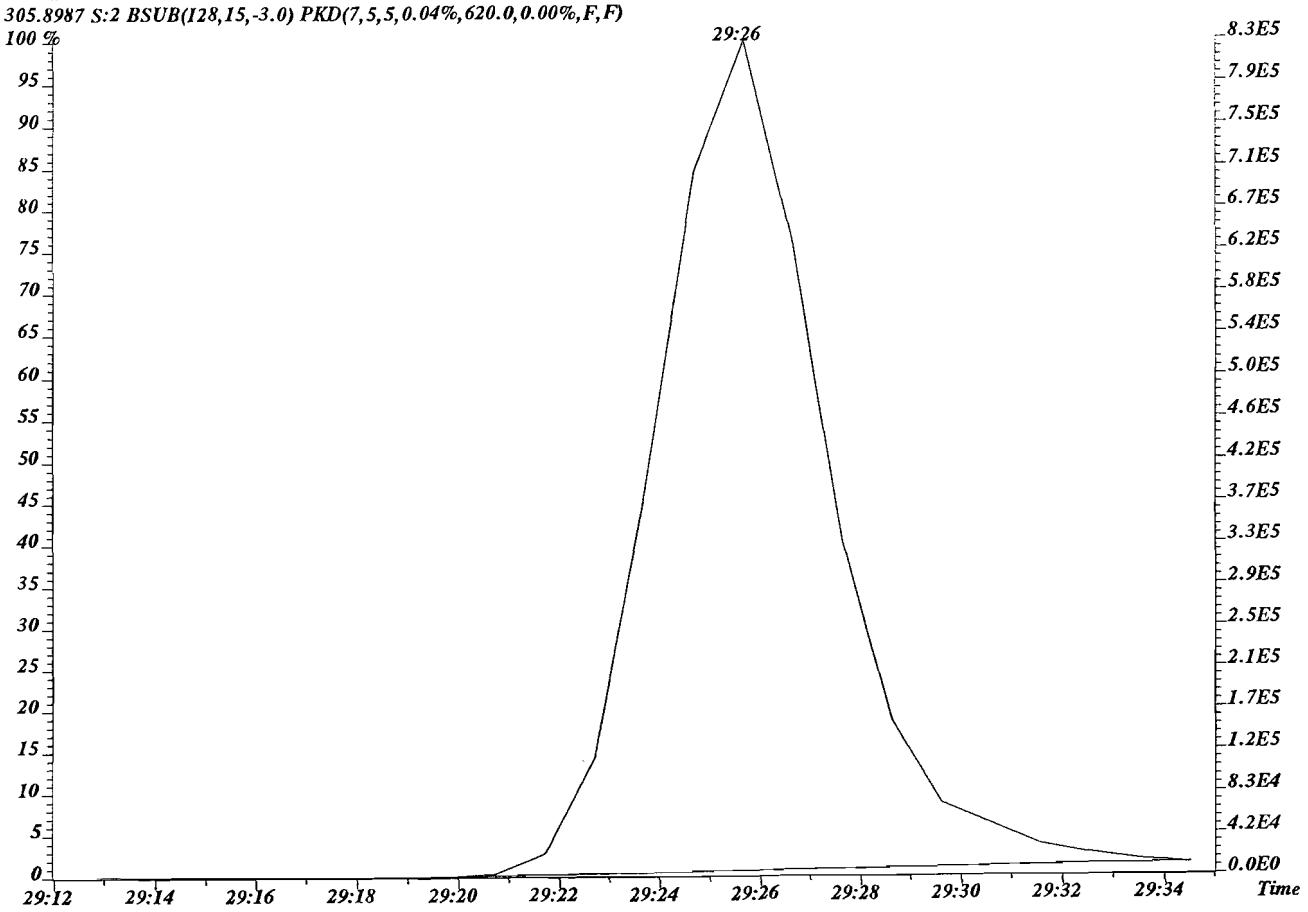
321.8936 S:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



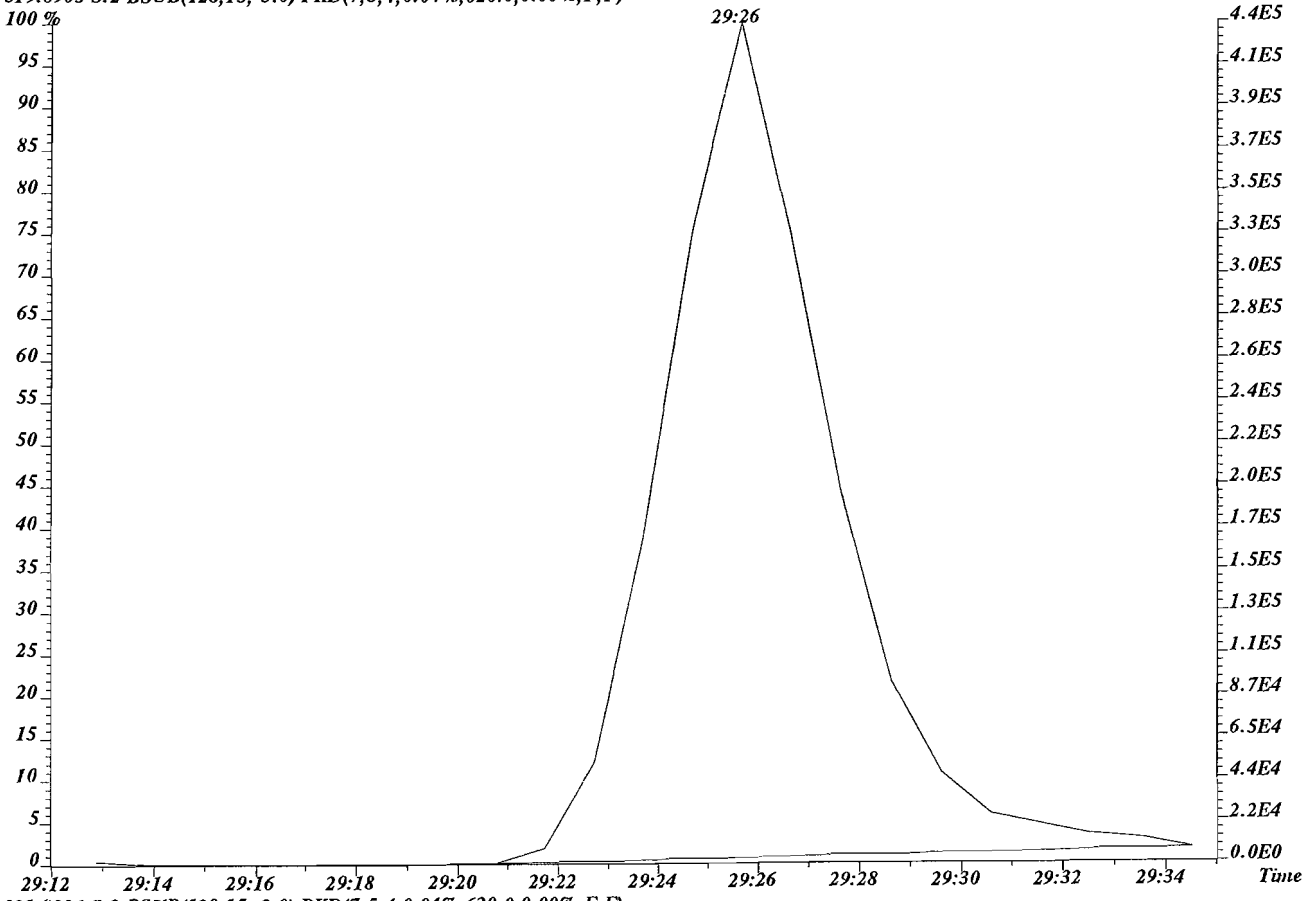
File:8290005E #1-370 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
303.9016 S:2 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



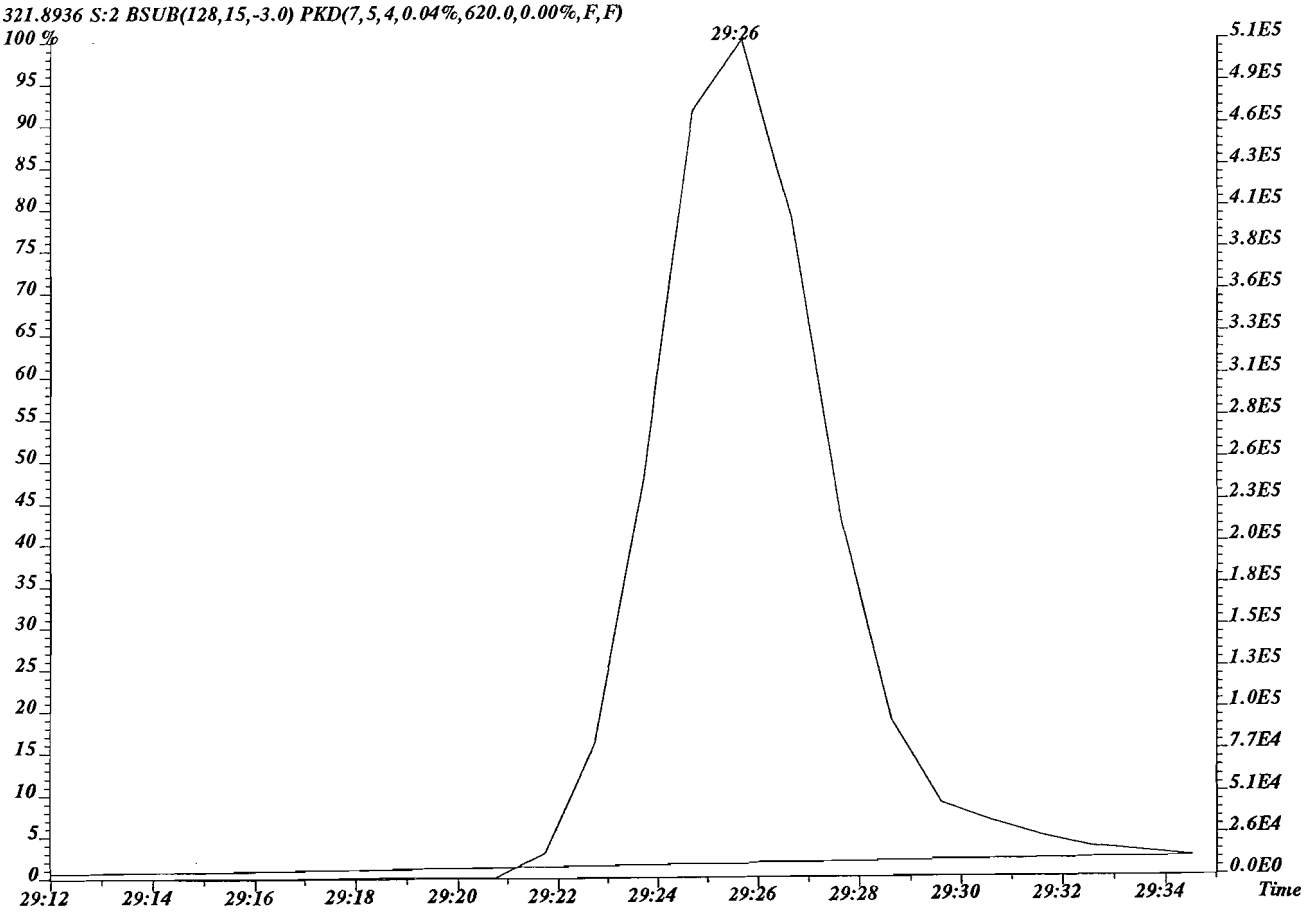
305.8987 S:2 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



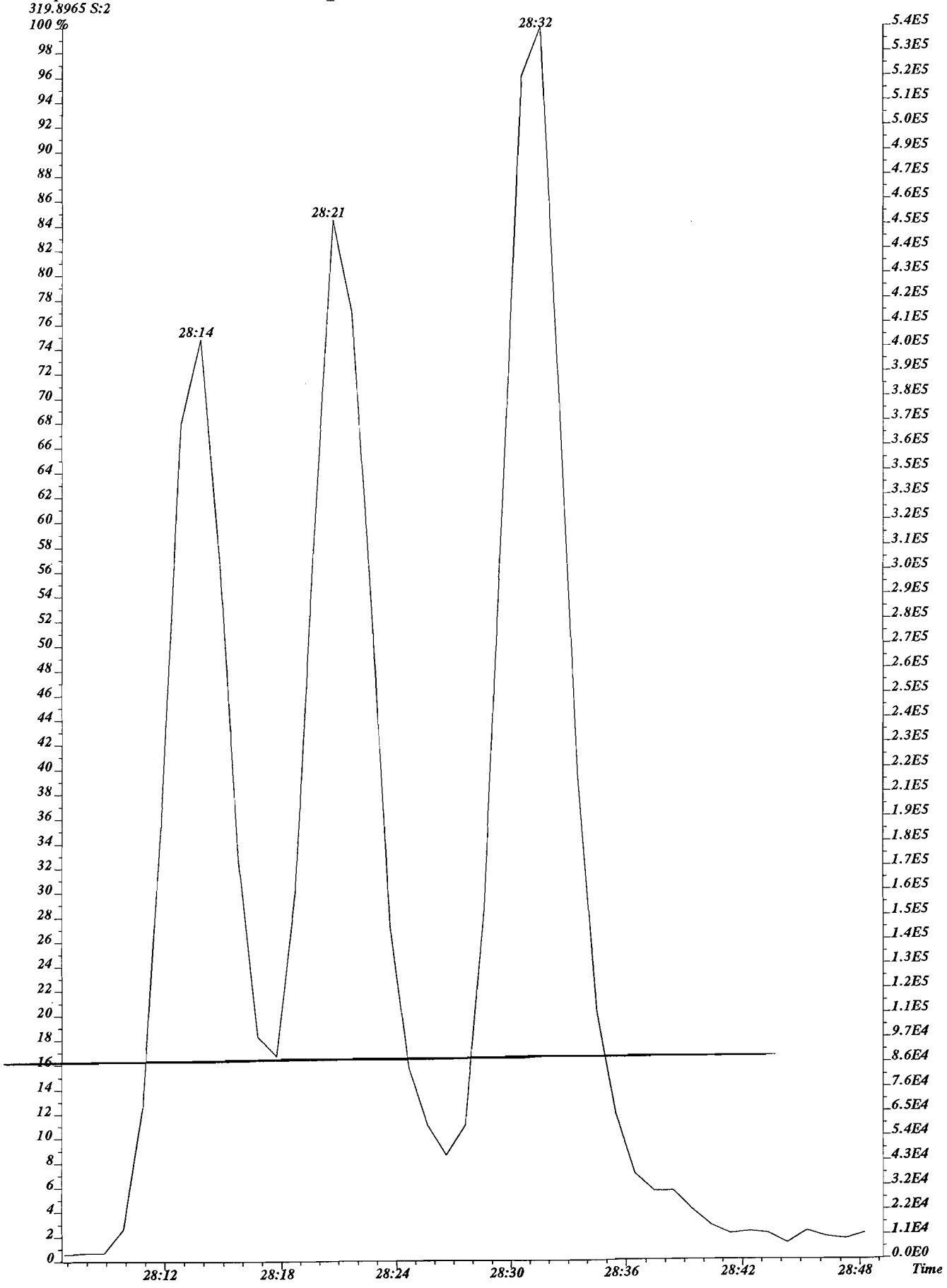
File:8290005E #1-370 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
319.8965 S:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



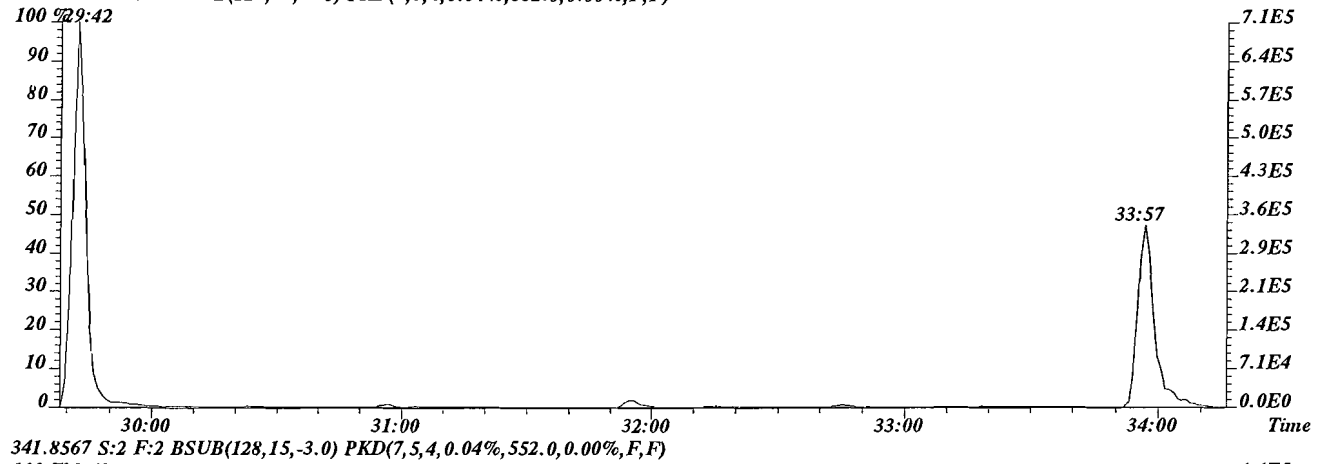
321.8936 S:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



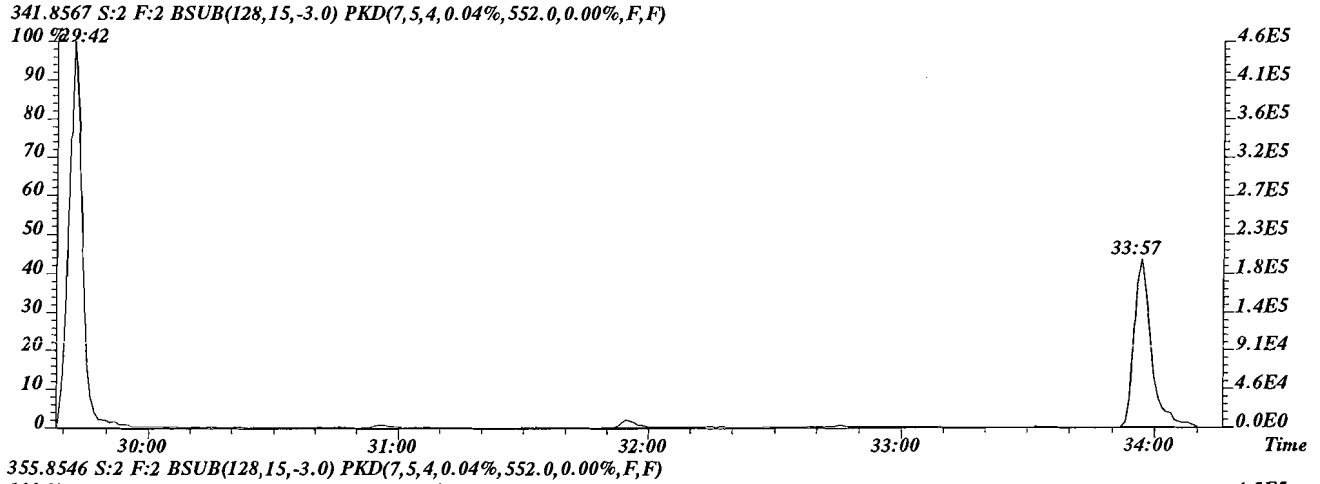
File:8290005E #1-370 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
319.8965 S:2



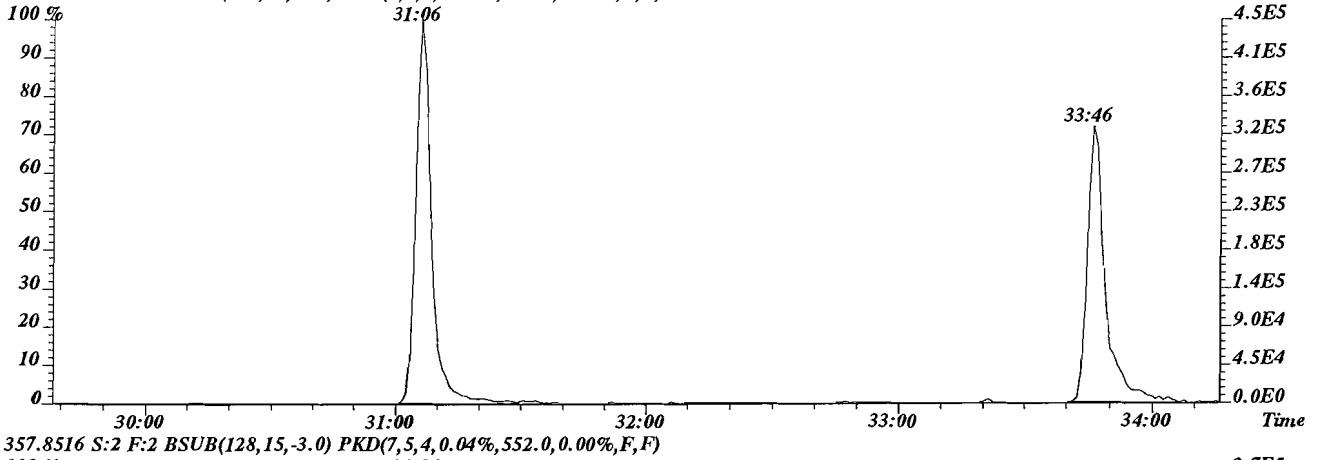
File:8290005E #1-289 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
339.8597 S:2 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



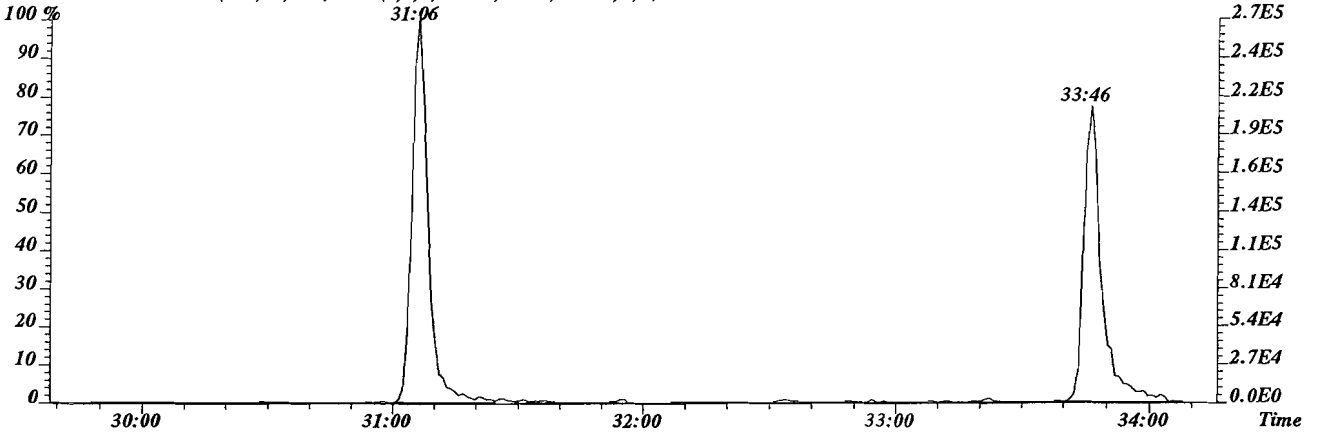
341.8567 S:2 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



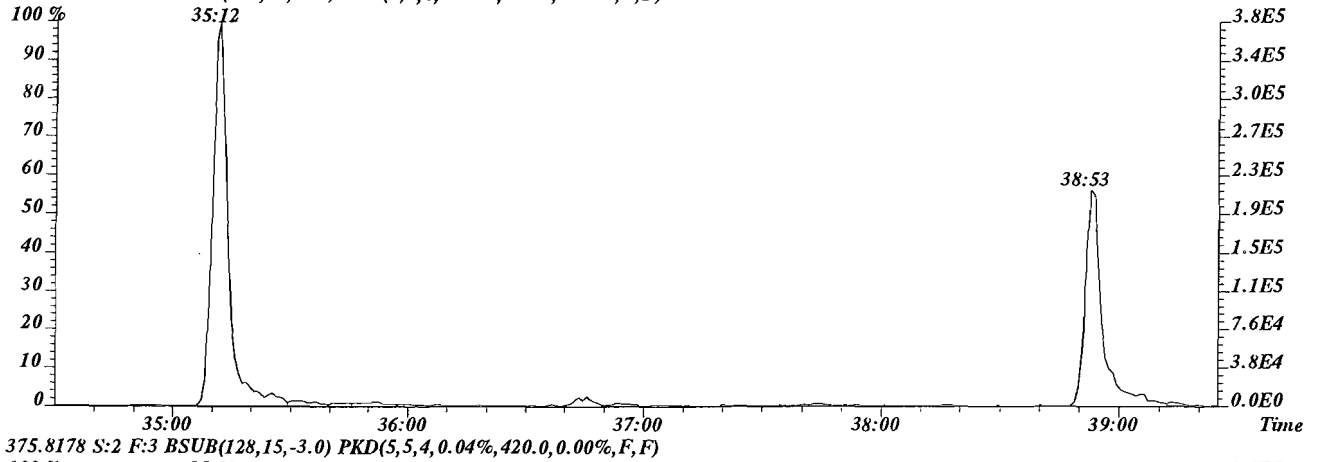
355.8546 S:2 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



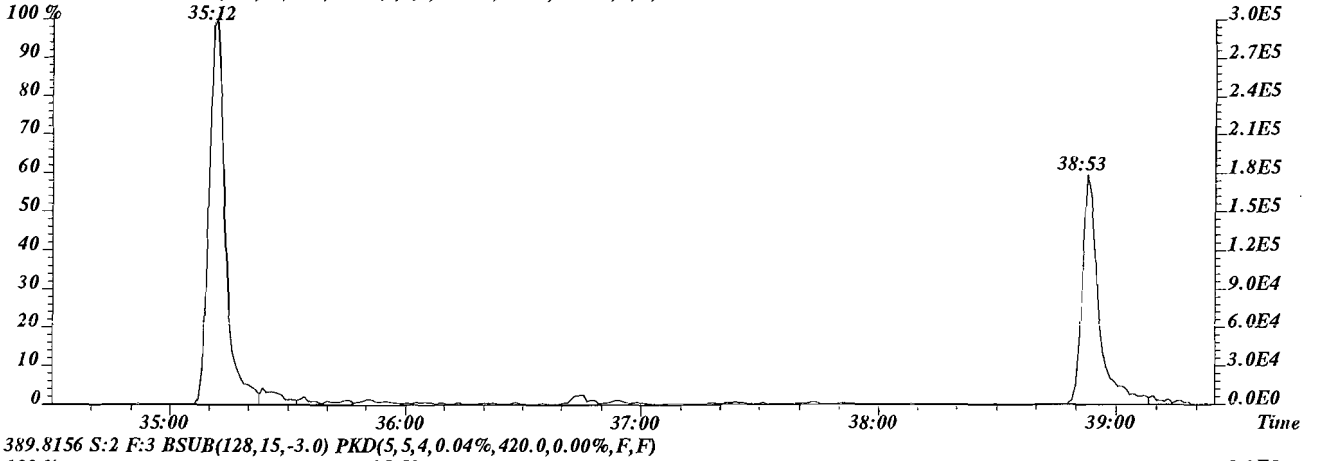
357.8516 S:2 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



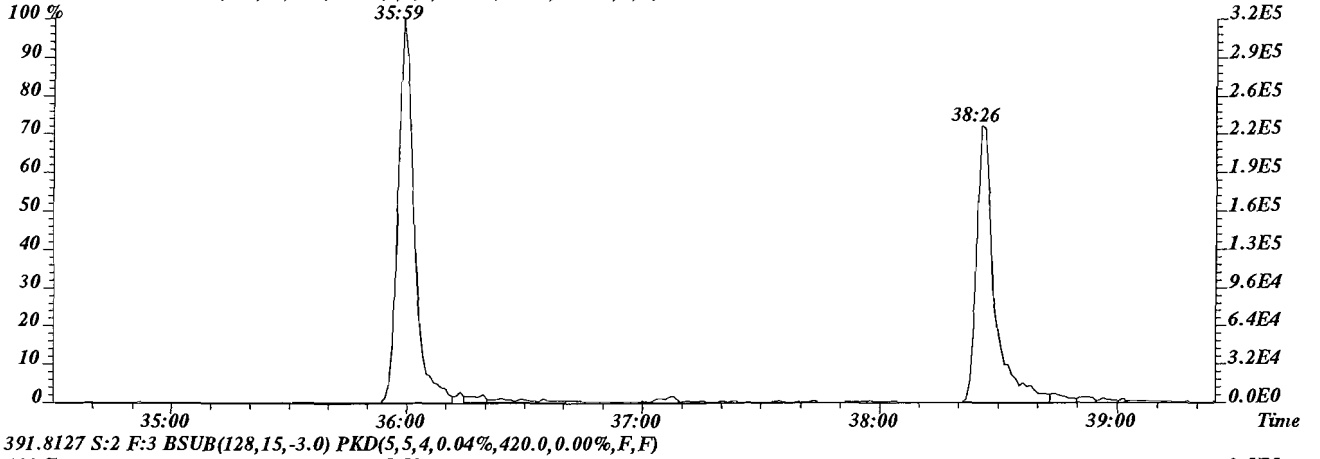
File:8290005E #1-306 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
373.8208 S:2 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



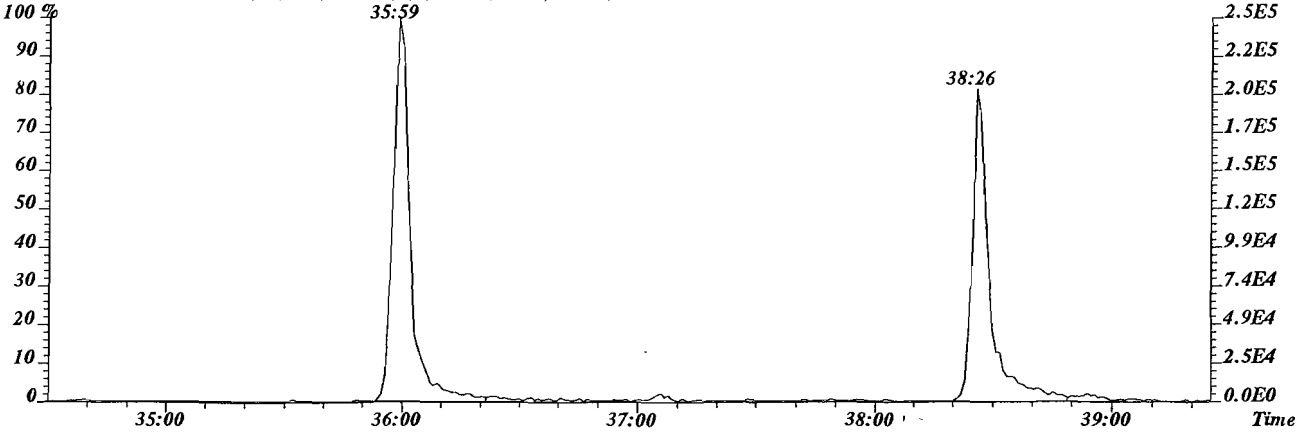
375.8178 S:2 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



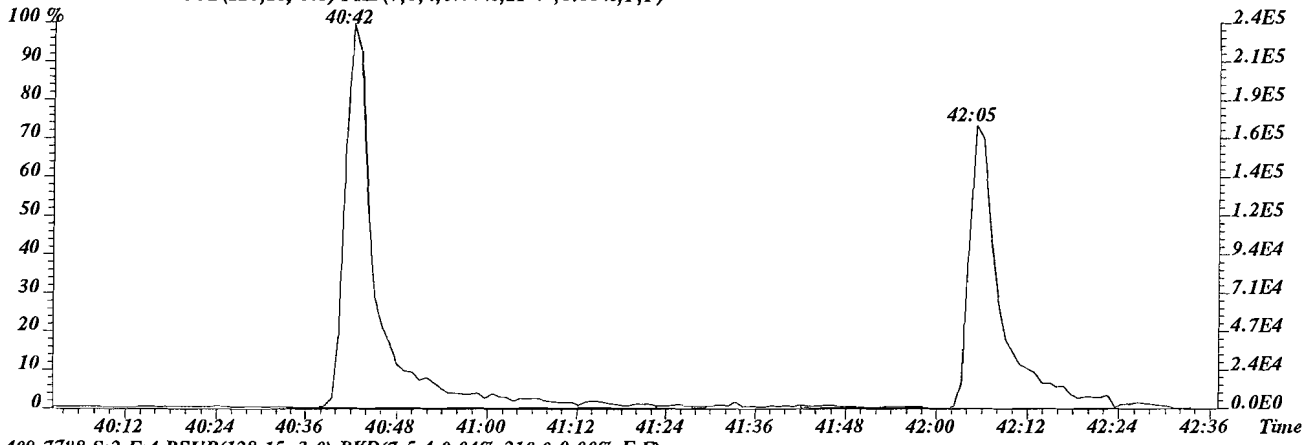
389.8156 S:2 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



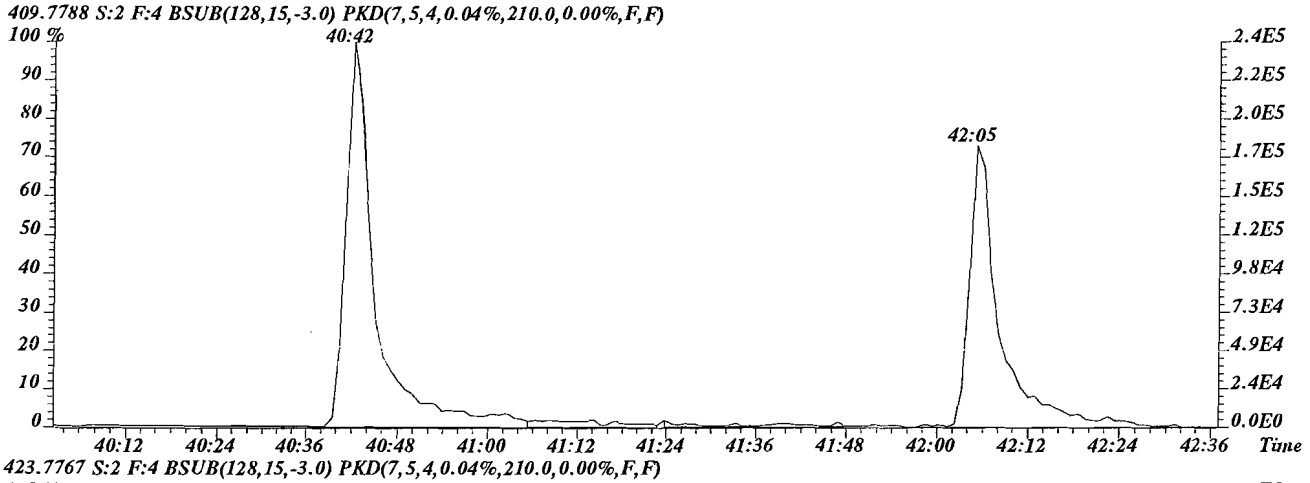
391.8127 S:2 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



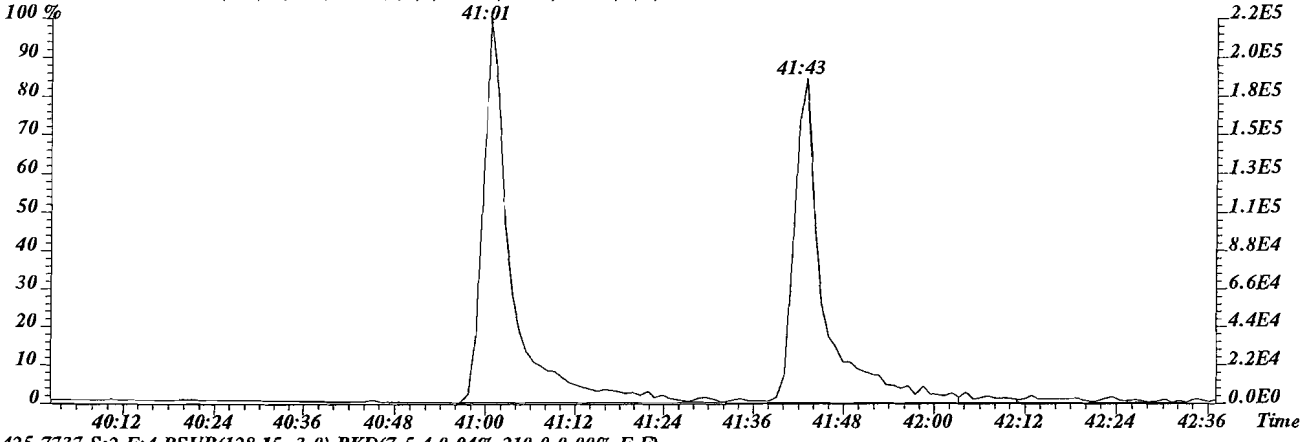
File:8290005E #1-161 Acq:15-APR-2008 15:24:26 GC EI+ Voltage SIR AutoSpec
Sample#2 File Text:ANALYST:CSM Text:WDM_04150802 Exp:8290
407.7818 S:2 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



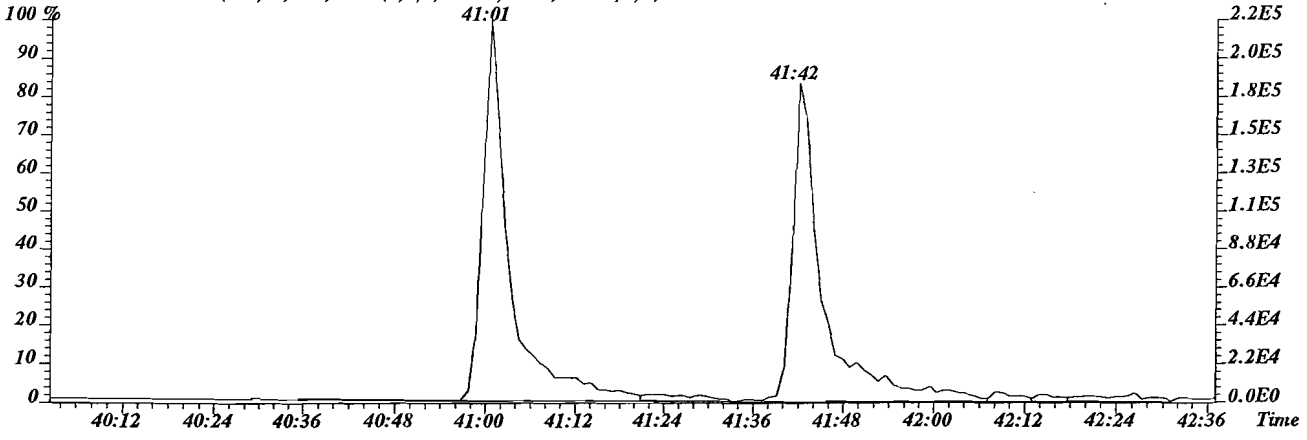
409.7788 S:2 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



423.7767 S:2 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



425.7737 S:2 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



Sequence Acquisition Parameters
Run: 0208030

	c/q	Data file	S	I	File text	Sample Text	Expt file	Bot	O/w	Inlet meth	Inlet file	Done?
1	c	8290005	1	1	ANALYST:CSM	WDM_04130801	8290	1	n	GC	8290GC	n
2	c	8290005	2	1	ANALYST:CSM	CS1_A829005	8290	1	n	GC	8290GC	n
3	c	8290005	3	1	ANALYST:CSM	CS2_A829005	8290	1	n	GC	8290GC	n
4	c	8290005	4	1	ANALYST:CSM	CS3_A829005	8290	1	n	GC	8290GC	n
5	c	8290005	5	1	ANALYST:CSM	CS4_A829005	8290	1	n	GC	8290GC	n
6	c	8290005	6	1	ANALYST:CSM	CS5_A829005	8290	1	n	GC	8290GC	n
7	q	8290005	7	1	ANALYST:CSM	INS._BLANK	8290	1	n	GC	8290GC	n
8	q	8290005	8	1	ANALYST:CSM	INS._BLANK	8290	1	n	GC	8290GC	n
9	q	8290005	9	1	ANALYST:CSM	0208030-MB	8290	1	n	GC	8290GC	n
10	q	8290005	10	1	ANALYST:CSM	0208030-1	8290	1	n	GC	8290GC	n
11	q	8290005	11	1	ANALYST:CSM	0208030-8	8290	1	n	GC	8290GC	n
12	q	8290005	12	1	ANALYST:CSM	0208030-10	8290	1	n	GC	8290GC	n
13	q	8290005E	1	1	ANALYST:CSM	CCAL._A829005C01	8290	1	n	GC	8290GC	n
14	q	8290005E	2	1	ANALYST:CSM	WDM._04150801	8290	1	n	GC	8290GC	n
15	q	8290005E	3	1	ANALYST:CSM	INS._BLANK	8290	1	n	GC	8290GC	n
16	q	8290005E	4	1	ANALYST:CSM	0208030-12	8290	1	n	GC	8290GC	n
17	q	8290005E	5	1	ANALYST:CSM	0208030-14	8290	1	n	GC	8290GC	n
18	q	8290005E	6	1	ANALYST:CSM	0208030-17	8290	1	n	GC	8290GC	n
19	q	8290005E	7	1	ANALYST:CSM	0208030-21	8290	1	n	GC	8290GC	n
20	q	8290005E	8	1	ANALYST:CSM	0208030-1_MS	8290	1	n	GC	8290GC	n
21	q	8290005E	9	1	ANALYST:CSM	0208030-1_MSD	8290	1	n	GC	8290GC	n
22	q	8290005E	10	1	ANALYST:CSM	0208030-LS	8290	1	n	GC	8290GC	n
23	q	8290005EE	1	1	ANALYST:CSM	CCAL._A829005C02	8290	1	n	GC	8290GC	n

5/05

1234789-HpCDF
123478-HxCDD

Filtered

Sequence Acquisition Parameters
Run: a829005

	c/q	Data file	S	I	File text	Sample Text	Expt file	Bot	O/w	Inlet meth	Inlet file	Done?
1	c	8290005	2	1	ANALYST:CSM	CS1_A829005	default	1	n	GC	default	y
2	c	8290005	3	1	ANALYST:CSM	CS2_A829005	default	1	n	GC	default	y
3	c	8290005	4	1	ANALYST:CSM	CS3_A829005	default	1	n	GC	default	y
4	c	8290005	5	1	ANALYST:CSM	CS4_A829005	default	1	n	GC	default	y
5	c	8290005	6	1	ANALYST:CSM	CS5_A829005	default	1	n	GC	default	y
6	q	8290005E	1	1	ANALYST:CSM	CCAL._A829005C01	default	1	n	GC	default	y
7	q	8290005EE	1	1	ANALYST:CSM	CCAL._A829005C02	default	1	n	GC	default	y
8	q	8290005	8	1	ANALYST:CSM	INS._BLANK	default	1	n	GC	default	y
9	q	8290005	9	1	ANALYST:CSM	0208030-MB	default	1	n	GC	default	y
10	q	8290005	10	1	ANALYST:CSM	0208030-1	default	1	n	GC	default	y
11	q	8290005	11	1	ANALYST:CSM	0208030-8	default	1	n	GC	default	y
12	q	8290005	12	1	ANALYST:CSM	0208030-10	default	1	n	GC	default	y
13	q	8290005E	4	1	ANALYST:CSM	0208030-12	default	1	n	GC	default	y
14	q	8290005E	5	1	ANALYST:CSM	0208030-14	default	1	n	GC	default	y
15	q	8290005E	6	1	ANALYST:CSM	0208030-17	default	1	n	GC	default	y
16	q	8290005E	7	1	ANALYST:CSM	0208030-21	default	1	n	GC	default	y
17	q	8290005E	8	1	ANALYST:CSM	0208030-1_ms	default	1	n	GC	default	y
18	q	8290005E	9	1	ANALYST:CSM	0208030-1_msd	default	1	n	GC	default	y
19	q	8290005E	10	1	ANALYST:CSM	0208030-LS	default	1	n	GC	default	y

Sequence Summary Table
Run: a829005

	c/q	Data Area	Data File	S	I	AnalyteTable	Factr #1	Factr #2	Size	MP	DLFac	HC	Sample Text	Done
1	c	0208030	8290005	2	1	a829005	1.000	1.000	1.00	n	1.00	y	CS1_A829005	y
2	c	0208030	8290005	3	1	A829005	2.000	1.000	1.00	n	1.00	y	CS2_A829005	y
3	c	0208030	8290005	4	1	A829005	10.000	1.000	1.00	n	1.00	y	CS3_A829005	y
4	c	0208030	8290005	5	1	A829005	100.000	1.000	1.00	n	1.00	y	CS4_A829005	y
5	c	0208030	8290005	6	1	A829005	200.000	1.000	1.00	n	1.00	y	CS5_A829005	y
6	q	0208030	8290005E	1	1	A829005	10.000	1.000	1.00	n	1.00	y	CCAL._A829005C01	y
7	q	0208030	8290005EE	1	1	A829005	10.000	1.000	1.00	n	1.00	y	CCAL._A829005C02	y
8	q	0208030	8290005	8	1	A829005	1.000	1.000	1.00	n	1.00	y	INS._BLANK	y
9	q	0208030	8290005	9	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-MB	y
10	q	0208030	8290005	10	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-1	y
11	q	0208030	8290005	11	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-8	y
12	q	0208030	8290005	12	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-10	y
13	q	0208030	8290005E	4	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-12	y
14	q	0208030	8290005E	5	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-14	y
15	q	0208030	8290005E	6	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-17	y
16	q	0208030	8290005E	7	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-21	y
17	q	0208030	8290005E	8	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-1_ms	y
18	q	0208030	8290005E	9	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-1_msd	y
19	q	0208030	8290005E	10	1	0208030	1.000	1.000	1.00	n	1.00	y	0208030-LS	y

PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY HIGH RESOLUTION

LAB Sample ID	CLIENT SAMPLE ID	LAB FILE ID		DATE ANALYZED	TIME AI
CS1_A829005	CAL._A829005	8290005	S:2	15-APR-08	01:17::
CS2_A829005	CAL._A829005	8290005	S:3	15-APR-08	02:07::
CS3_A829005	CAL._A829005	8290005	S:4	15-APR-08	02:57::
CS4_A829005	CAL._A829005	8290005	S:5	15-APR-08	03:47::
CS5_A829005	CAL._A829005	8290005	S:6	15-APR-08	04:37::
CCAL._A829005C01	CCAL._A829005C01	8290005E	S:1	15-APR-08	14:34::
CCAL._A829005C02	CCAL._A829005C02	8290005EE	S:1	16-APR-08	08:06:(
INS._BLANK	INS._BLANK	8290005	S:8	15-APR-08	06:17::
0208030-MB	METHOD_BLANK	8290005	S:9	15-APR-08	07:07::
0208030-1	1316057	8290005	S:10	15-APR-08	07:57:4
0208030-8	1316062	8290005	S:11	15-APR-08	08:47:5
0208030-10	1316058	8290005	S:12	15-APR-08	09:37:5
0208030-12	1316061	8290005E	S:4	15-APR-08	17:04::
0208030-14	1316074	8290005E	S:5	15-APR-08	17:54::
0208030-17	1316060	8290005E	S:6	15-APR-08	18:44::
0208030-21	1316059	8290005E	S:7	15-APR-08	19:34::
0208030-1_ms	1316057_MS	8290005E	S:8	15-APR-08	20:24::
0208030-1_msd	1316057_MSD	8290005E	S:9	15-APR-08	21:14::
0208030-LS	LAB_SPIKE	8290005E	S:10	15-APR-08	22:04::

Unfiltered

USEPA - 8290

6DFA - Form VI_HR CDD-1
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: Autospec

Initial Calib. Date(s): 04/15/2008 04/15/2008 File_RRF CAL._A829005

Initial Calib. Times: 1:17 4:37 File_RSD 208030

TARGET ANALYTES	RR/RRF CS1_A829005	CS2_A829005	CS3_A829005	CS4_A829005	CS5_A829005	MEAN RR/RRF	%RSD	QC LIMITS
2,3,7,8-TCDF	1.099	1.014	1.051	0.989	0.996	1.030	4.421	± 20%
1,2,3,7,8-PeCDF	0.867	0.854	0.905	0.894	0.894	0.883	2.418	± 20%
2,3,4,7,8-PeCDF	0.906	0.867	0.905	0.975	1.006	0.932	6.093	± 20%
1,2,3,4,7,8-HxCDF	0.94	0.964	0.976	0.932	0.875	0.937	4.149	± 20%
1,2,3,6,7,8-HxCDF	1.17	1.223	1.240	1.046	0.946	1.125	11.166	± 20%
2,3,4,6,7,8-HxCDF	1	0.954	0.924	0.840	0.770	0.898	10.257	± 20%
1,2,3,7,8,9-HxCDF	0.784	0.844	0.844	0.830	0.771	0.815	4.255	± 20%
1,2,3,4,6,7,8-HpCDF	1.42	1.402	1.428	1.414	1.424	1.417	0.719	± 20%
1,2,3,4,7,8,9-HpCDF	0.86	1.114	1.091	1.260	1.309	1.127	15.579	± 20%
OCDF	1.043	1.054	1.160	1.195	1.224	1.135	7.258	± 20%
2,3,7,8-TCDD	1.237	1.149	1.116	1.184	1.146	1.167	3.967	± 20%
1,2,3,7,8-PeCDD	0.937	1.061	1.082	1.091	1.104	1.055	6.446	± 20%
1,2,3,4,7,8-HxCDD	0.907	0.843	0.874	0.875	0.850	0.870	2.923	± 20%
1,2,3,6,7,8-HxCDD	1.04	1.151	1.110	0.923	0.878	1.020	11.527	± 20%
1,2,3,7,8,9-HxCDD	1.127	1.182	1.065	0.914	0.853	1.028	13.636	± 20%
1,2,3,4,6,7,8-HpCDD	1.016	0.920	0.949	0.937	0.926	0.950	4.07	± 20%
OCDD	1.009	0.975	0.995	1.005	1.016	1.000	1.603	± 20%
LABELED COMPOUNDS								
13C-2,3,7,8-TCDF	1.575	1.664	1.630	1.670	1.721	1.652	3.275	± 35%
13C-1,2,3,7,8-PeCDF	1.169	1.266	1.255	1.371	1.443	1.301	8.213	± 35%
13C-1,2,3,6,7,8-HxCDF	1.237	1.214	1.280	1.484	1.628	1.369	13.146	± 35%
13C-1,2,3,4,6,7,8-HpCDF	0.913	0.877	0.868	0.870	0.870	0.880	2.147	± 35%
13C-2,3,7,8-TCDD	1.011	1.051	1.034	1.092	1.128	1.063	4.391	± 35%
13C-1,2,3,7,8-PeCDD	0.728	0.767	0.757	0.822	0.858	0.786	6.677	± 35%
13C-1,2,3,6,7,8-HxCDD	0.951	0.920	0.986	1.163	1.205	1.045	12.423	± 35%
13C-1,2,3,4,6,7,8-HpCDD	0.939	0.913	0.897	0.954	0.957	0.932	2.827	± 35%
13C-OCDD	0.774	0.782	0.785	0.847	0.861	0.810	5.049	± 35%
37C12-2,3,7,8-TCDD	2.658	2.025	2.094	2.125	2.103	2.201	11.737	± 35%
13C-2,3,4,7,8-PeCDF	1.161	0.936	0.983	0.981	1.010	1.014	8.509	± 35%
13C-1,2,3,4,7,8-HxCDF	0.988	0.928	0.816	0.766	0.736	0.847	12.694	± 35%
13C-1,2,3,4,7,8-HxCDD	0.907	0.741	0.802	0.761	0.761	0.794	8.404	± 35%
13C-1,2,3,4,7,8,9-HpCDF	0.847	0.789	0.846	0.852	0.871	0.841	3.671	± 35%
13C12-1,2,3,7,8,9-HxCDF	0.989	0.885	1.000	1.072	1.100	1.009	8.294	± 35%

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USEPA

6DFA - Form VI_HR CDD-2
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

TARGET ANALYTES	IONS	CS1_A829005	CS2_A829005	CS3_A829005	CS4_A829005	CS5_A829005	FLAG	QC LIMITS Low	High
2,3,7,8-TCDF	320/322	0.87	0.76	0.78	0.8	0.79		0.65	0.89
1,2,3,7,8-PeCDF	304/306	1.64	1.5	1.49	1.53	1.54		1.32	1.78
2,3,4,7,8-PeCDF	340/342	1.62	1.61	1.48	1.52	1.51		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	1.05	1.14	1.27	1.22	1.21		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.24	1.28	1.18	1.2	1.22		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	1.24	1.19	1.19	1.22	1.2		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	1.1	1.11	1.3	1.21	1.2		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.06	0.89	1.06	1.04	1.03		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	1.06	0.94	1.05	1.06	1.04		0.88	1.20
OCDF	390/392	0.89	0.87	0.93	0.94	0.92		0.76	1.02
2,3,7,8-TCDD	374/376	0.68	0.69	0.74	0.79	0.8		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.47	1.64	1.61	1.6	1.62		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	1.4	1.11	1.15	1.22	1.21		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.31	1.25	1.36	1.23	1.21		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.27	1.35	1.29	1.21	1.23		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	1.17	1.14	1.07	1.03	1.04		0.88	1.20
OCDD	442/444	0.9	0.84	0.87	0.86	0.87		0.76	1.02
LABELED COMPOUNDS									
13C-2,3,7,8-TCDF	316/318	0.81	0.79	0.8	0.81	0.81		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.6	1.55	1.56	1.55	1.6		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	0.51	0.51	0.52	0.52	0.51		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.43	0.44	0.43	0.44	0.44		0.37	0.51
13C-2,3,7,8-TCDD	332/334	0.79	0.8	0.8	0.8	0.8		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	1.61	1.62	1.59	1.6	1.61		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	1.27	1.31	1.34	1.3	1.29		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.12	1.09	1.08	1.11	1.09		0.88	1.20
13C-OCDD	470/472	0.88	0.86	0.9	0.88	0.89		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA					NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	1.49	1.64	1.58	1.58		*	1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.53	0.50	0.51	0.53		*	0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	1.21	1.15	1.32	1.32		*	1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.49	0.42	0.41	0.43		*	0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.54	0.54	0.53	0.52		*	0.43	0.59
13C-1,2,3,4-TCDD	332/334	0.82	0.80	0.82	0.83		*	0.65	0.89
13C-1,2,3,7,8,9-HxCDD	402/404	1.31	1.29	1.31	1.29		*	1.05	1.43

Quality Control (QC) limits represent ± 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration soution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

USEPA-8290A

7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 8290005ES:1 Date Analyzed: 4/15/2008 Time Analyzed: 14:34

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 to 3/19/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	%D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.870	1.030	-15.569		0.76		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.820	0.883	-7.134		1.6		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.800	0.932	-14.151		1.6		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	0.854	0.937	-8.823		1.13		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.223	1.125	8.704		1.29		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.830	0.898	-7.597		1.19		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.734	0.815	-9.902		1.22		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.294	1.417	-8.707		1.01		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	0.951	1.127	-15.661		1.02		0.88	1.20
OCDF	390/392	0.973	1.135	-14.288		0.85		0.76	1.02
2,3,7,8-TCDD	374/376	1.105	1.167	-5.354		0.8		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.001	1.055	-5.140		1.61		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	0.748	0.870	-14.013		1.32		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.120	1.020	9.788		1.28		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	0.995	1.028	-3.182		1.31		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.842	0.950	-11.366		0.92		0.88	1.20
OCDD	442/444	0.921	1.000	-7.914		0.83		0.76	1.02
LABELED COMPOUNDS					±30%				
13C-2,3,7,8-TCDF	316/318	1.458	1.652	-11.758		0.79		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.058	1.301	-18.664		1.65		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	1.123	1.369	-17.999		0.52		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.755	0.880	-14.168		0.43		0.37	0.51
13C-2,3,7,8-TCDD	332/334	1.054	1.063	-0.831		0.79		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.725	0.786	-7.819		1.53		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.968	1.045	-7.360		1.29		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	0.863	0.932	-7.380		1.14		0.88	1.20
13C-OCDD	470/472	0.815	0.810	0.598		0.86		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	2.144	2.201	-2.569		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.949	1.014	-6.452		1.6		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.777	0.847	-8.234		0.52		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.665	0.794	-16.248		1.31		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.683	0.841	-18.748		0.43		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.794	1.009	-21.356	Low.	0.52		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.8		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.29		1.05	1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

frm7diox8290Rev1

USEPA-8290A

7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 8290005ES:1 Date Analyzed: 4/15/2008 Time Analyzed: 14:34

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 3/19/2008

TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.001	27.57
1,2,3,7,8-PeCDF	1.001	31.92
2,3,4,7,8-PeCDF	1.027	32.75
1,2,3,4,7,8-HxCDF	0.996	36.75
1,2,3,6,7,8-HxCDF	1.000	36.92
2,3,4,6,7,8-HxCDF	1.023	37.75
1,2,3,7,8,9-HxCDF	1.051	38.77
1,2,3,4,6,7,8-HpCDF	1.000	40.72
1,2,3,4,7,8,9-HpCDF	1.034	42.10
OCDF	1.003	44.53
2,3,7,8-TCDD	1.000	28.35
1,2,3,7,8-PeCDD	1.001	33.18
1,2,3,4,7,8-HxCDD	0.997	37.93
1,2,3,6,7,8-HxCDD	1.000	38.07
1,2,3,7,8,9-HxCDD	1.011	38.48
1,2,3,4,6,7,8-HpCDD	1.000	41.70
OCDD	1.000	44.42
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.979	27.55
13C-1,2,3,7,8-PeCDF	1.134	31.90
13C-1,2,3,6,7,8-HxCDF	0.959	36.90
13C-1,2,3,4,6,7,8-HpCDF	1.058	40.70
13C-2,3,7,8-TCDD	1.007	28.33
13C-1,2,3,7,8-PeCDD	1.179	33.17
13C-1,2,3,6,7,8-HxCDD	0.989	38.05
13C-1,2,3,4,6,7,8-HpCDD	1.084	41.68
13C-OCDD	1.155	44.42
37C12-2,3,7,8-TCDD	1.001	28.35
13C-2,3,4,7,8-PeCDF	1.026	32.73
13C-1,2,3,4,7,8-HxCDF	0.995	36.73
13C-1,2,3,4,7,8-HxCDD	0.996	37.92
13C-1,2,3,4,7,8,9-HpCDF	1.010	42.08
13C12-1,2,3,7,8,9-HxCDF	1.008	38.77
Recovery Standard		
13C-1,2,3,4-TCDD	NA	28.13
13C-1,2,3,7,8,9-HxCDD	NA	38.47

frm7diox8290Rev1

USEPA-8290A

7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 8290005EES:1 Date Analyzed: 4/16/2008 Time Analyzed: 8:06

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 to 3/19/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	%D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.864	1.030	-16.154		0.69		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.781	0.883	-11.583		1.74		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.769	0.932	-17.524		1.64		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	0.791	0.937	-15.634		1.14		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.191	1.125	5.858		1.18		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.777	0.898	-13.517		1.07		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.769	0.815	-5.698		1.15		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.279	1.417	-9.773		1.06		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	0.890	1.127	-21.031	*	0.97		0.88	1.20
OCDF	390/392	0.946	1.135	-16.624		0.9		0.76	1.02
2,3,7,8-TCDD	374/376	1.054	1.167	-9.724		0.86		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.003	1.055	-4.936		1.71		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	0.669	0.870	-23.093	*	1.23		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.142	1.020	11.923		1.22		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.089	1.028	5.965		1.27		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.870	0.950	-8.463		0.98		0.88	1.20
OCDD	442/444	0.906	1.000	-9.420		0.88		0.76	1.02
LABELED COMPOUNDS					±30%				
13C-2,3,7,8-TCDF	316/318	1.463	1.652	-11.468		0.75		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.170	1.301	-10.066		1.56		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	0.982	1.369	-28.279		0.52		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	1.024	0.880	16.397		0.43		0.37	0.51
13C-2,3,7,8-TCDD	332/334	1.090	1.063	2.528		0.82		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.813	0.786	3.407		1.46		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.908	1.045	-13.080		1.29		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	0.968	0.932	3.852		1.04		0.88	1.20
13C-OCDD	470/472	0.977	0.810	20.593		0.87		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	2.045	2.201	-7.075		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.956	1.014	-5.718		1.56		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.754	0.847	-10.953		0.49		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.599	0.794	-24.573		1.27		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.690	0.841	-17.938		0.45		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.738	1.009	-26.824		0.54		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.83		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.28		1.05	1.43

J|NJ

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

frm7diox8290Rev1

USEPA-8290A

7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 8290005EES:1 Date Analyzed: 4/16/2008 Time Analyzed: 8:06

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 3/19/2008

TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.000	27.57
1,2,3,7,8-PeCDF	1.000	31.92
2,3,4,7,8-PeCDF	1.027	32.77
1,2,3,4,7,8-HxCDF	0.996	36.75
1,2,3,6,7,8-HxCDF	1.001	36.93
2,3,4,6,7,8-HxCDF	1.023	37.75
1,2,3,7,8,9-HxCDF	1.051	38.80
1,2,3,4,6,7,8-HpCDF	1.000	40.72
1,2,3,4,7,8,9-HpCDF	1.034	42.10
OCDF	1.003	44.57
2,3,7,8-TCDD	1.001	28.38
1,2,3,7,8-PeCDD	1.001	33.20
1,2,3,4,7,8-HxCDD	0.997	37.95
1,2,3,6,7,8-HxCDD	1.000	38.08
1,2,3,7,8,9-HxCDD	1.011	38.50
1,2,3,4,6,7,8-HpCDD	1.000	41.72
OCDD	1.000	44.43
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.979	27.57
13C-1,2,3,7,8-PeCDF	1.134	31.92
13C-1,2,3,6,7,8-HxCDF	0.959	36.90
13C-1,2,3,4,6,7,8-HpCDF	1.058	40.70
13C-2,3,7,8-TCDD	1.007	28.35
13C-1,2,3,7,8-PeCDD	1.178	33.17
13C-1,2,3,6,7,8-HxCDD	0.989	38.07
13C-1,2,3,4,6,7,8-HpCDD	1.084	41.70
13C-OCDD	1.154	44.42
37C12-2,3,7,8-TCDD	1.001	28.37
13C-2,3,4,7,8-PeCDF	1.026	32.75
13C-1,2,3,4,7,8-HxCDF	0.996	36.75
13C-1,2,3,4,7,8-HxCDD	0.996	37.93
13C-1,2,3,4,7,8,9-HpCDF	1.009	42.08
13C12-1,2,3,7,8,9-HxCDF	1.008	38.78
Recovery Standard		
13C-1,2,3,4-TCDD	NA	28.15
13C-1,2,3,7,8,9-HxCDD	NA	38.48

frm7diox8290Rev1

DAT Labs, Inc. Extraction Form

Project # 0208030

Sample: SOLIDS (LIQUID) AIR

Analysis: M-8260

Prepared By: CS

Date: 3/31/08

Spike Witness: DS / DE

Solvent Manufac: FMO

Solvent Lot #: 47064

Extraction	Solvent	Volume mls	Reps
Soxhlet	Hexane		
✓ Sep Funnel	Methanol		
Sonication	✓ Methylene Chloride	60mL	3
Cont. Ext	ACN		
Vial	Ethyl Acetate		
SPE Dcon	IPA		
Other	Toluene		
No Extract	Water		
Other (Describe)			

SURROGATE ID	VOL (mls) / ul	CONC
~~St.~~ DLM-2-77	1.0	4ng/mL
ACT ~~St.~~ SL-36-19	40µL	100ng/mL 4ng/total
SL.		

LSMS ID	VOL (mls) / ul	CONC
~~SL.~~ DLM-2-78	1.0mL	4-20ng/mL
SL.		
SL.		

INT STD ID	VOL (mls) / ul	CONC
~~SL.~~ DLM-2-71	1.0	4ng/mL
~~ACT SL.~~		
RS, SL. EDF-1055	10µL	500ng/mL

COMMENTS: Sample + MS, MSD, LS were 2x spiked w/ ACT SL-36-19 8ng/total DS

SAMPLE ID	TOTAL SAMPLE AMNT	SAMPLE AMNT EXTRACTED	TOTAL EXTRACT VOL (ADD ALL REPS) 180	FINAL EXTRACT VOL mls / ul	SURR INIT	SPK INIT	IS INIT
-MB	1000mL	1000mL	~~126mL~~ 180	20µL	DE	DE	[illegible]
-1			180mL				
-8							
-10							
-12							
-14							
-17							
-21							
-1ms							
-1msD							
-LS							

If extract was split for additional analyses, please note the aliquot volume for this analysis and at what point the extract was spiked.

ALIQUOT VOLUME: _____ mls ul (Circle one)

Extract was spiked: Before After the split. (Circle one)

Additional samples may be listed on the back of this page.

006005

DATFRM

DLM-2-78 3/31/08

8290 Matrix Spike + LS Soln.

120µL of EDF-5008 @ 100-500 mg/mL were placed into a V_F of 3.0 mL Acetone

C_F = 4-20 mg/mL

Acetone Lot #: 47093 EMD exp 3/11/08

exp 3/31/08

350978

DLM-2-77 3/31/08

Surrogate STD

440 µL of SL-36-42 @ 100ng/mL were placed into a V_F of 11 mL Acetone.

C_F 4ng/mL

Acetone Lot# EM 47093

exp. 3/31/08

350977

SL-36-42 3/31/08

~~M23 Internal~~

M23 Surrogate Standard

100µL of EDF-4053 M23 Surrogate Standard Stock Soln. @ 1000ng/mL was placed into VF 1.0mL Acetone.

Cf 100ng/µL

~~Absolute~~ Acetone Lot#: 140160HD Sigma

Expiration Date 9/09

353742

12
31

DLM-~~2~~ 3 - 71

3/31/08

8290 Internal Standard

440 µl of SL-36-41 @ 100ng/ml was placed into a total of 11ml Acetone.

G - 4ng/ml

Acetone Lot# EMD 47093

CS

gp - 3/31/08

350976

SL-36-41 3/28/08

M23 Internal Standard.

100µl of EDF-4053 M23 Internal Standard Stock @ 100ng/mL solution were placed into 900µl Nonane (Lot #: 10313TD Sigma).

@ 100ng/mL

Nonane Lot#: 14016HD
Sigma

Expiration Date 9/09

35 37.41

B. UNFILTERED SAMPLES

EVALAUTION OF ORGANIC DUPLICATE ANALYSIS PRECISION

Units pg/kg	PRECISION OBJECTIVES*		
	Analyte > or = 5 X RL	RPD < or =	20
	Analyte < 5 X RL	Difference < or = RL Times	1

* Enter the project-specific or default acceptance criteria

ANALYTE	1316057_UF Analyte Concentration	Qual	RL	1316061_UF Analyte Concentration	Qual	RL	Difference	RPD	Notes
2,3,7,8-TCDD	2742.72		10	6154.18		10	NA	76.69%	1
OCDD	0.37	U	50	9.51		50	15.49	NA	IN
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!
							NA	#DIV/0!	#DIV/0!

NOTES:

Qual) Column to enter J, U, U*, or B

RPD) Relative Percent Difference

RL) Reporting Limit

J) The analyte concentration should be considered estimated.

U) The analyte was not-detected in the sample. The half of the numerical value will be used for comparison purposes.

U* or B) The result was blank qualified. The numerical value will be used for comparison purposes.

NA) The RPD or Difference is not applicable.

1) Both results are > or = 5 X RL and RPD over acceptance limit, flag positive results "J".

2) At least one of the results is < 5 X RL and difference is over acceptance limit, flag positive results "J" and "not-detected" results "UJ".

Comments:

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1316057_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: A829004BS:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 1:33

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL	
2,3,7,8-TCDF					U	0.34	
1,2,3,7,8-PeCDF					U	2.74	
2,3,4,7,8-PeCDF					U	2.69	
1,2,3,4,7,8-HxCDF					U	21.92	
1,2,3,6,7,8-HxCDF					U	19.76	
2,3,4,6,7,8-HxCDF					U	23.26	
1,2,3,7,8,9-HxCDF					U	26.44	
1,2,3,4,6,7,8-HpCDF		39:20	0.46 *		B	11.15	U
1,2,3,4,7,8,9-HpCDF					U	0.47	
OCDF		43:16	0.81	20.84	B	0.60	U
2,3,7,8-TCDD		26:37	0.87	68.04		0.37	
1,2,3,7,8-PeCDD					U	3.64	
1,2,3,4,7,8-HxCDD					U	18.11	
1,2,3,6,7,8-HxCDD					U	17.29	
1,2,3,7,8,9-HxCDD					U	17.21	
1,2,3,4,6,7,8-HpCDD		40:26	1.78 *		B	9.02	U
OCDD		43:11	0.67 *		B	21.82	U

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). * = EMPC

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:45	0.78	0.65	0.89	80	40	135
13C-1,2,3,7,8-PeCDF	IS	30:20	1.53	1.32	1.78	80	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:57	0.52	0.43	0.59	83	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:20	0.43	0.37	0.51	95	40	135
13C-2,3,7,8-TCDD	IS	26:35	0.78	0.65	0.89	85	40	135
13C-1,2,3,7,8-PeCDD	IS	31:35	1.61	1.32	1.78	80	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:06	1.31	1.05	1.43	87	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:25	1.08	0.88	1.2	101	40	135
13C-OCDD	IS	43:09	0.85	0.76	1.02	76	40	135
37C12-2,3,7,8-TCDD	Surr	26:37	1.00	1	1	95	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:11	1.55	1.32	1.78	97	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:48	0.53	0.43	0.59	98	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:58	1.33	1.05	1.43	99	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:50	0.44	0.37	0.51	97	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:58	0.52	0.43	0.59	97	40	135
13C-1,2,3,4-TCDD	RS	26:21	0.78	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:37	1.28	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316057_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF	20.84	x 0.001 =	0.02 U
2,3,7,8-TCDD	68.04	x 1.00 =	68.04
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	68.06

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:10

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	4	142.46		0.37
Total PeCDD	3	9786.43		3.64
Total HxCDD	0		U	11.68
Total HpCDD	0		U	9.02
FURANS				
Total TCDF	4	199.03		0.34
Total PeCDF	4	1026.52		2.70
Total HxCDF	1	60.02		22.59
Total HpCDF	0		U	11.15

(EMPC)

(EMPC)

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1316062_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-9

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: A829004BS:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 2:23

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	1.60
1,2,3,7,8-PeCDF					U	1.94
2,3,4,7,8-PeCDF					U	1.90
1,2,3,4,7,8-HxCDF					U	4.79
1,2,3,6,7,8-HxCDF					U	4.32
2,3,4,6,7,8-HxCDF					U	5.09
1,2,3,7,8,9-HxCDF					U	5.78
1,2,3,4,6,7,8-HpCDF					U	0.27
1,2,3,4,7,8,9-HpCDF					U	0.32
OCDF		43:16	1.29 *		B	8.78
2,3,7,8-TCDD		26:36	0.80	5101.11		1.31
1,2,3,7,8-PeCDD					U	2.13
1,2,3,4,7,8-HxCDD					U	1.78
1,2,3,6,7,8-HxCDD					U	1.70
1,2,3,7,8,9-HxCDD					U	1.69
1,2,3,4,6,7,8-HpCDD					U	0.75
OCDD		43:10	0.85	16.10	B	0.53

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:44	0.79	0.65	0.89	86	40	135
13C-1,2,3,7,8-PeCDF	IS	30:20	1.54	1.32	1.78	86	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:56	0.54	0.43	0.59	78	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:19	0.44	0.37	0.51	93	40	135
13C-2,3,7,8-TCDD	IS	26:36	0.78	0.65	0.89	88	40	135
13C-1,2,3,7,8-PeCDD	IS	31:35	1.59	1.32	1.78	85	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:07	1.30	1.05	1.43	82	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:26	1.05	0.88	1.2	88	40	135
13C-OCDD	IS	43:10	0.88	0.76	1.02	77	40	135
37C12-2,3,7,8-TCDD	Surr	26:36	1.00	1	1	99	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:11	1.55	1.32	1.78	95	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:48	0.61 *	0.43	0.59	57	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:58	1.40	1.05	1.43	102	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:50	0.43	0.37	0.51	98	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:58	0.52	0.43	0.59	105	40	135
13C-1,2,3,4-TCDD	RS	26:22	0.76	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:37	1.32	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

PE True value for 2,3,7,8-TCDD is 3010 pg/L
& acceptable range is 2290-3460 pg/L

frm18290Arev2

high %R → J

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316062_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-9

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	5101.11	x 1.00 =	5101.11
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD	16.10	x 0.001 =	0.02
		Total =	5101.13

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316062_uf

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-9

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:11

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	4	5271.02		1.31
Total PeCDD	2	440.58		2.13
Total HxCDD	0		U	1.15
Total HpCDD	0		U	0.75
FURANS				
Total TCDF	0		U	1.60
Total PeCDF	0		U	1.91
Total HxCDF	2	53.74		4.94
Total HpCDF	0		U	0.29

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1316058_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-11

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: A829004BS:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 3:13

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	0.75
1,2,3,7,8-PeCDF					U	0.95
2,3,4,7,8-PeCDF					U	0.93
1,2,3,4,7,8-HxCDF					U	1.59
1,2,3,6,7,8-HxCDF					U	1.43
2,3,4,6,7,8-HxCDF					U	1.68
1,2,3,7,8,9-HxCDF					U	1.91
1,2,3,4,6,7,8-HpCDF					U	0.18
1,2,3,4,7,8,9-HpCDF					U	0.21
OCDF					U	0.31
2,3,7,8-TCDD		26:37	0.79	2742.72		0.98
1,2,3,7,8-PeCDD					U	0.97
1,2,3,4,7,8-HxCDD					U	0.48
1,2,3,6,7,8-HxCDD					U	0.46
1,2,3,7,8,9-HxCDD					U	0.46
1,2,3,4,6,7,8-HpCDD		40:25	1.35 *		B	2.24
OCDD					U	0.37

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:45	0.78	0.65	0.89	83	40	135
13C-1,2,3,7,8-PeCDF	IS	30:20	1.55	1.32	1.78	86	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:57	0.53	0.43	0.59	76	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:18	0.42	0.37	0.51	86	40	135
13C-2,3,7,8-TCDD	IS	26:35	0.75	0.65	0.89	85	40	135
13C-1,2,3,7,8-PeCDD	IS	31:35	1.57	1.32	1.78	87	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:07	1.34	1.05	1.43	81	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:25	1.03	0.88	1.2	101	40	135
13C-OCDD	IS	43:09	0.87	0.76	1.02	73	40	135
37C12-2,3,7,8-TCDD	Surr	26:37	1.00	1	1	99	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:11	1.55	1.32	1.78	97	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:48	0.52	0.43	0.59	99	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:58	1.35	1.05	1.43	99	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:50	0.43	0.37	0.51	86	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:58	0.52	0.43	0.59	84	40	135
13C-1,2,3,4-TCDD	RS	26:22	0.79	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:36	1.32	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316058_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-11

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	2742.72	x 1.00 =	2742.72
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	2742.72

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316058_uf

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-11

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:12

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	2742.72		0.98
Total PeCDD	0		U	0.97
Total HxCDD	0		U	0.31
Total HpCDD	1	7.21		2.24
FURANS				
Total TCDF	0		U	0.75
Total PeCDF	0		U	0.94
Total HxCDF	0		U	1.63
Total HpCDF	0		U	0.20

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316061_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-13

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: A829004BS:13

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 4:03

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	1.06
1,2,3,7,8-PeCDF					U	0.66
2,3,4,7,8-PeCDF					U	0.65
1,2,3,4,7,8-HxCDF					U	0.77
1,2,3,6,7,8-HxCDF					U	0.69
2,3,4,6,7,8-HxCDF					U	0.82
1,2,3,7,8,9-HxCDF					U	0.93
1,2,3,4,6,7,8-HpCDF		39:15	1.33 *		B	3.21
1,2,3,4,7,8,9-HpCDF					U	0.46
OCDF					U	0.64
2,3,7,8-TCDD		26:35	0.77	6154.18		1.20
1,2,3,7,8-PeCDD					U	1.07
1,2,3,4,7,8-HxCDD					U	0.45
1,2,3,6,7,8-HxCDD					U	0.43
1,2,3,7,8,9-HxCDD					U	0.42
1,2,3,4,6,7,8-HpCDD					U	0.44
OCDD		43:09	0.92	9.51	B	0.52

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:43	0.83	0.65	0.89	66	40	135
13C-1,2,3,7,8-PeCDF	IS	30:20	1.56	1.32	1.78	71	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:56	0.52	0.43	0.59	73	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:17	0.43	0.37	0.51	73	40	135
13C-2,3,7,8-TCDD	IS	26:35	0.79	0.65	0.89	74	40	135
13C-1,2,3,7,8-PeCDD	IS	31:35	1.59	1.32	1.78	71	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:06	1.34	1.05	1.43	73	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:25	1.03	0.88	1.2	70	40	135
13C-OCDD	IS	43:09	0.86	0.76	1.02	61	40	135
37C12-2,3,7,8-TCDD	Surr	26:35	1.00	1	1	101	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:10	1.58	1.32	1.78	94	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:48	0.52	0.43	0.59	93	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:57	1.38	1.05	1.43	100	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:50	0.44	0.37	0.51	94	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:57	0.53	0.43	0.59	83	40	135
13C-1,2,3,4-TCDD	RS	26:21	0.79	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:36	1.33	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316061_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-13

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:13

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x	0.10	=	
1,2,3,7,8-PeCDF		x	0.05	=	
2,3,4,7,8-PeCDF		x	0.50	=	
1,2,3,4,7,8-HxCDF		x	0.10	=	
1,2,3,6,7,8-HxCDF		x	0.10	=	
2,3,4,6,7,8-HxCDF		x	0.10	=	
1,2,3,7,8,9-HxCDF		x	0.10	=	
1,2,3,4,6,7,8-HpCDF		x	0.01	=	
1,2,3,4,7,8,9-HpCDF		x	0.01	=	
OCDF		x	0.001	=	
2,3,7,8-TCDD	6154.18	x	1.00	=	6154.18
1,2,3,7,8-PeCDD		x	0.50	=	
1,2,3,4,7,8-HxCDD		x	0.10	=	
1,2,3,6,7,8-HxCDD		x	0.10	=	
1,2,3,7,8,9-HxCDD		x	0.10	=	
1,2,3,4,6,7,8-HpCDD		x	0.01	=	
OCDD	9.51	x	0.001	=	0.01
		Total		=	6154.19

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316074_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-15

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: A829004BS:14

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 4:53

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL	
2,3,7,8-TCDF					U	0.74	
1,2,3,7,8-PeCDF					U	0.66	
2,3,4,7,8-PeCDF					U	0.65	
1,2,3,4,7,8-HxCDF					U	0.68	
1,2,3,6,7,8-HxCDF					U	0.61	
2,3,4,6,7,8-HxCDF					U	0.72	
1,2,3,7,8,9-HxCDF					U	0.81	
1,2,3,4,6,7,8-HpCDF					U	0.50	
1,2,3,4,7,8,9-HpCDF		40:51	0.73 *		B	1.40	U
OCDF					U	0.72	
2,3,7,8-TCDD		26:36	0.78	9.99		1.32	J
1,2,3,7,8-PeCDD					U	0.56	
1,2,3,4,7,8-HxCDD					U	0.75	
1,2,3,6,7,8-HxCDD					U	0.72	
1,2,3,7,8,9-HxCDD					U	0.72	
1,2,3,4,6,7,8-HpCDD					U	0.60	
OCDD					U	0.77	

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:44	0.80	0.65	0.89	78	40	135
13C-1,2,3,7,8-PeCDF	IS	30:20	1.55	1.32	1.78	83	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:56	0.51	0.43	0.59	80	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:16	0.43	0.37	0.51	80	40	135
13C-2,3,7,8-TCDD	IS	26:34	0.75	0.65	0.89	79	40	135
13C-1,2,3,7,8-PeCDD	IS	31:35	1.59	1.32	1.78	81	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:06	1.31	1.05	1.43	83	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:25	1.04	0.88	1.2	75	40	135
13C-OCDD	IS	43:09	0.86	0.76	1.02	63	40	135
37C12-2,3,7,8-TCDD	Surr	26:35	1.00	1	1	96	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:10	1.55	1.32	1.78	96	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:47	0.54	0.43	0.59	95	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:57	1.37	1.05	1.43	100	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:50	0.41	0.37	0.51	98	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:57	0.53	0.43	0.59	83	40	135
13C-1,2,3,4-TCDD	RS	26:21	0.78	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:36	1.32	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316074_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-15

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:14

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	9.99	x 1.00 =	9.99
1,2,3,7,8-PeCDD		x 0.50 =	
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	9.99

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316074_uf

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-15

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:14

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	9.99		1.32
Total PeCDD	0		U	0.56
Total HxCDD	0		U	0.49
Total HpCDD	0		U	0.60
FURANS				
Total TCDF	0		U	0.74
Total PeCDF	0		U	0.65
Total HxCDF	0		U	0.70
Total HpCDF	0		U	1.40

(EMPC)

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: 1316060_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-19

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 0208030fS:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 10:56

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	0.44
1,2,3,7,8-PeCDF					U	2.05
2,3,4,7,8-PeCDF					U	2.01
1,2,3,4,7,8-HxCDF					U	11.24
1,2,3,6,7,8-HxCDF					U	10.13
2,3,4,6,7,8-HxCDF					U	11.92
1,2,3,7,8,9-HxCDF					U	13.56
1,2,3,4,6,7,8-HpCDF					U	0.61
1,2,3,4,7,8,9-HpCDF					U	0.71
OCDF					U	1.00
2,3,7,8-TCDD		26:35	0.82	338.87		0.87
1,2,3,7,8-PeCDD		31:35	1.60	424.42		2.68
1,2,3,4,7,8-HxCDD					U	5.47
1,2,3,6,7,8-HxCDD					U	5.22
1,2,3,7,8,9-HxCDD					U	5.20
1,2,3,4,6,7,8-HpCDD					U	0.80
OCDD					U	0.90

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:43	0.79	0.65	0.89	53	40	135
13C-1,2,3,7,8-PeCDF	IS	30:19	1.57	1.32	1.78	50	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:55	0.51	0.43	0.59	59	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:16	0.44	0.37	0.51	56	40	135
13C-2,3,7,8-TCDD	IS	26:34	0.82	0.65	0.89	57	40	135
13C-1,2,3,7,8-PeCDD	IS	31:34	1.66	1.32	1.78	50	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:05	1.26	1.05	1.43	59	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:24	1.04	0.88	1.2	54	40	135
13C-OCDD	IS	43:08	0.88	0.76	1.02	43	40	135
37C12-2,3,7,8-TCDD	Surr	26:35	1.00	1	1	97	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:10	1.55	1.32	1.78	92	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:46	0.51	0.43	0.59	93	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:56	1.37	1.05	1.43	95	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:49	0.43	0.37	0.51	93	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:56	0.51	0.43	0.59	63	40	135
13C-1,2,3,4-TCDD	RS	26:20	0.78	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:35	1.29	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.
1316060_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-19

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x 0.10 =	
1,2,3,7,8-PeCDF		x 0.05 =	
2,3,4,7,8-PeCDF		x 0.50 =	
1,2,3,4,7,8-HxCDF		x 0.10 =	
1,2,3,6,7,8-HxCDF		x 0.10 =	
2,3,4,6,7,8-HxCDF		x 0.10 =	
1,2,3,7,8,9-HxCDF		x 0.10 =	
1,2,3,4,6,7,8-HpCDF		x 0.01 =	
1,2,3,4,7,8,9-HpCDF		x 0.01 =	
OCDF		x 0.001 =	
2,3,7,8-TCDD	338.87	x 1.00 =	338.87
1,2,3,7,8-PeCDD	424.42	x 0.50 =	212.21
1,2,3,4,7,8-HxCDD		x 0.10 =	
1,2,3,6,7,8-HxCDD		x 0.10 =	
1,2,3,7,8,9-HxCDD		x 0.10 =	
1,2,3,4,6,7,8-HpCDD		x 0.01 =	
OCDD		x 0.001 =	
		Total =	551.08

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316060_uf

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-19

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:4

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	338.87		0.87
Total PeCDD	2	1979.69		2.68
Total HxCDD	0		U	3.53
Total HpCDD	0		U	0.80
FURANS				
Total TCDF	4	541.78		0.44
Total PeCDF	3	556.59		2.03
Total HxCDF	1	188.87		11.58
Total HpCDF	0		U	0.65

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316059_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-22

QC Code: N

Sample wt/vol: 1.0 g / L L Lab File ID: 0208030fS:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 11:47

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	0.37
1,2,3,7,8-PeCDF					U	1.52
2,3,4,7,8-PeCDF					U	1.49
1,2,3,4,7,8-HxCDF					U	5.45
1,2,3,6,7,8-HxCDF					U	4.92
2,3,4,6,7,8-HxCDF					U	5.79
1,2,3,7,8,9-HxCDF					U	6.58
1,2,3,4,6,7,8-HpCDF		39:18	0.80 *		B	4.02
1,2,3,4,7,8,9-HpCDF					U	0.70
OCDF					U	0.95
2,3,7,8-TCDD		26:36	0.75	233.87		2.13
1,2,3,7,8-PeCDD		31:36	1.65	102.31		3.94
1,2,3,4,7,8-HxCDD					U	0.74
1,2,3,6,7,8-HxCDD					U	0.71
1,2,3,7,8,9-HxCDD					U	0.71
1,2,3,4,6,7,8-HpCDD					U	0.64
OCDD					U	0.66

U

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:44	0.79	0.65	0.89	64	40	135
13C-1,2,3,7,8-PeCDF	IS	30:19	1.58	1.32	1.78	58	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:55	0.49	0.43	0.59	69	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:16	0.41	0.37	0.51	68	40	135
13C-2,3,7,8-TCDD	IS	26:34	0.76	0.65	0.89	67	40	135
13C-1,2,3,7,8-PeCDD	IS	31:34	1.61	1.32	1.78	59	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:04	1.31	1.05	1.43	70	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:24	1.08	0.88	1.2	63	40	135
13C-OCDD	IS	43:08	0.87	0.76	1.02	54	40	135
37C12-2,3,7,8-TCDD	Surr	26:35	1.00	1	1	97	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:09	1.55	1.32	1.78	95	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:46	0.50	0.43	0.59	94	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:57	1.31	1.05	1.43	94	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:49	0.39	0.37	0.51	95	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:55	0.50	0.43	0.59	79	40	135
13C-1,2,3,4-TCDD	RS	26:20	0.80	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:34	1.31	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

US EPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316059_uf

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-22

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x	0.10	=	
1,2,3,7,8-PeCDF		x	0.05	=	
2,3,4,7,8-PeCDF		x	0.50	=	
1,2,3,4,7,8-HxCDF		x	0.10	=	
1,2,3,6,7,8-HxCDF		x	0.10	=	
2,3,4,6,7,8-HxCDF		x	0.10	=	
1,2,3,7,8,9-HxCDF		x	0.10	=	
1,2,3,4,6,7,8-HpCDF		x	0.01	=	
1,2,3,4,7,8,9-HpCDF		x	0.01	=	
OCDF		x	0.001	=	
2,3,7,8-TCDD	233.87	x	1.00	=	233.87
1,2,3,7,8-PeCDD	102.31	x	0.50	=	51.15
1,2,3,4,7,8-HxCDD		x	0.10	=	
1,2,3,6,7,8-HxCDD		x	0.10	=	
1,2,3,7,8,9-HxCDD		x	0.10	=	
1,2,3,4,6,7,8-HpCDD		x	0.01	=	
OCDD		x	0.001	=	
		Total		=	285.03

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316059_uf

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-22

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:5

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	233.87		2.13
Total PeCDD	2	436.27		3.94
Total HxCDD	0		U	0.48
Total HpCDD	0		U	0.64
FURANS				
Total TCDF	1	38.68		0.37
Total PeCDF	1	473.76		1.50
Total HxCDF	2	81.81		5.62
Total HpCDF	0		U	4.02

(EMPC)

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
Lab_Spike

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

Sample wt/vol: 1 g / L L Lab File ID: 0208030fS:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received:

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 2 (uL) % Solids/Lipids Date Analyzed: 03/20/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	HIGH
2,3,7,8-TCDF	4000	4270		107		75	158
1,2,3,7,8-PeCDF	10000	10395		104		80	134
2,3,4,7,8-PeCDF	10000	10294		103		68	160
1,2,3,4,7,8-HxCDF	10000	11167		112		72	134
1,2,3,6,7,8-HxCDF	10000	10559		106		84	130
2,3,4,6,7,8-HxCDF	10000	10587		106		70	156
1,2,3,7,8,9-HxCDF	10000	10329		103		78	130
1,2,3,4,6,7,8-HpCDF	10000	10372		104		82	132
1,2,3,4,7,8,9-HpCDF	10000	9231		92		78	138
OCDF	20000	22731		114		63	170
2,3,7,8-TCDD	4000	3929		98		67	158
1,2,3,7,8-PeCDD	10000	10325		103		70	142
1,2,3,4,7,8-HxCDD	10000	9767		98		70	164
1,2,3,6,7,8-HxCDD	10000	10349		103		76	134
1,2,3,7,8,9-HxCDD	10000	9938		99		64	162
1,2,3,4,6,7,8-HpCDD	10000	9783		98		70	140
OCDD	20000	21496		107		78	144

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 0 Outside limits out of 17 total.

frm3diox040505

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: Lab_Spike

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

QC Code: LS

Sample wt/vol: 1.0 g / L L Lab File ID: 0208030fS:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 14:30

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		25:44	0.77	4270.17		1.87
1,2,3,7,8-PeCDF		30:19	1.54	10395.48	B	2.70
2,3,4,7,8-PeCDF		31:10	1.51	10293.64		2.65
1,2,3,4,7,8-HxCDF		34:47	1.21	11167.02	B	6.11
1,2,3,6,7,8-HxCDF		34:56	1.19	10559.22		5.50
2,3,4,6,7,8-HxCDF		35:44	1.21	10587.24		6.48
1,2,3,7,8,9-HxCDF		36:56	1.19	10329.19		7.36
1,2,3,4,6,7,8-HpCDF		39:17	1.06	10371.68	B	3.09
1,2,3,4,7,8,9-HpCDF		40:49	1.05	9230.70	B	3.61
OCDF		43:14	0.93	22731.13	B	0.66
2,3,7,8-TCDD		26:35	0.79	3929.21		2.31
1,2,3,7,8-PeCDD		31:34	1.56	10324.98		4.98
1,2,3,4,7,8-HxCDD		35:57	1.28	9766.66		3.14
1,2,3,6,7,8-HxCDD		36:05	1.27	10348.52		3.00
1,2,3,7,8,9-HxCDD		36:35	1.27	9938.42		2.98
1,2,3,4,6,7,8-HpCDD		40:24	1.04	9783.26	B	0.61
OCDD		43:08	0.86	21495.69	B	0.67

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	ION RATIO LIMITS HIGH	% REC #	RECOVERY LIMITS LOW	RECOVERY LIMITS HIGH
13C-2,3,7,8-TCDF	IS	25:42	0.80	0.65	0.89	64	40	135
13C-1,2,3,7,8-PeCDF	IS	30:18	1.54	1.32	1.78	59	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:55	0.53	0.43	0.59	68	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:16	0.42	0.37	0.51	73	40	135
13C-2,3,7,8-TCDD	IS	26:34	0.76	0.65	0.89	68	40	135
13C-1,2,3,7,8-PeCDD	IS	31:33	1.55	1.32	1.78	60	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:04	1.31	1.05	1.43	68	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:24	1.09	0.88	1.2	67	40	135
13C-OCDD	IS	43:07	0.89	0.76	1.02	55	40	135
37C12-2,3,7,8-TCDD	Surr	26:36	1.00	1	1	101	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:09	1.59	1.32	1.78	94	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:46	0.51	0.43	0.59	99	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:56	1.28	1.05	1.43	97	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:48	0.43	0.37	0.51	96	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:55	0.51	0.43	0.59	80	40	135
13C-1,2,3,4-TCDD	RS	26:20	0.78	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:34	1.30	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: Lab_Spike

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF	4270.17	x	0.10	=	427
1,2,3,7,8-PeCDF	10395.48	x	0.05	=	519.77
2,3,4,7,8-PeCDF	10293.64	x	0.50	=	5146.82
1,2,3,4,7,8-HxCDF	11167.02	x	0.10	=	1116.70
1,2,3,6,7,8-HxCDF	10559.22	x	0.10	=	1055.92
2,3,4,6,7,8-HxCDF	10587.24	x	0.10	=	1058.72
1,2,3,7,8,9-HxCDF	10329.19	x	0.10	=	1032.92
1,2,3,4,6,7,8-HpCDF	10371.68	x	0.01	=	103.72
1,2,3,4,7,8,9-HpCDF	9230.70	x	0.01	=	92.31
OCDF	22731.13	x	0.001	=	22.73
2,3,7,8-TCDD	3929.21	x	1.00	=	3929.21
1,2,3,7,8-PeCDD	10324.98	x	0.50	=	5162.49
1,2,3,4,7,8-HxCDD	9766.66	x	0.10	=	976.67
1,2,3,6,7,8-HxCDD	10348.52	x	0.10	=	1034.85
1,2,3,7,8,9-HxCDD	9938.42	x	0.10	=	993.84
1,2,3,4,6,7,8-HpCDD	9783.26	x	0.01	=	97.83
OCDD	21495.69	x	0.001	=	21.50
		Total		=	22793.01

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
Lab_Spike

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-LS

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:8

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	3929.21		2.31
Total PeCDD	1	10324.98		4.98
Total HxCDD	3	30053.60		2.03
Total HpCDD	2	9807.71		0.61
FURANS				
Total TCDF	2	4341.71		1.87
Total PeCDF	3	20737.42		2.66
Total HxCDF	4	42642.66		6.29
Total HpCDF	2	19602.37		3.33

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

frm18290Arev2

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MS

Sample wt/vol: 1 g / L L Lab File ID: 0208030fS:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received:

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 2 (uL) % Solids/Lipids Date Analyzed: 03/20/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	HIGH
2,3,7,8-TCDF	4000	4219		105		75	158
1,2,3,7,8-PeCDF	10000	9937		99		80	134
2,3,4,7,8-PeCDF	10000	10119		101		68	160
1,2,3,4,7,8-HxCDF	10000	10992		110		72	134
1,2,3,6,7,8-HxCDF	10000	10312		103		84	130
2,3,4,6,7,8-HxCDF	10000	10679		107		70	156
1,2,3,7,8,9-HxCDF	10000	10751		108		78	130
1,2,3,4,6,7,8-HpCDF	10000	9932		99		82	132
1,2,3,4,7,8,9-HpCDF	10000	9349		93		78	138
OCDF	20000	20606		103		63	170
2,3,7,8-TCDD	4000	4062		102		67	158
1,2,3,7,8-PeCDD	10000	10075		101		70	142
1,2,3,4,7,8-HxCDD	10000	9871		99		70	164
1,2,3,6,7,8-HxCDD	10000	10176		102		76	134
1,2,3,7,8,9-HxCDD	10000	9787		98		64	162
1,2,3,4,6,7,8-HpCDD	10000	9473		95		70	140
OCDD	20000	20141		101		78	144

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 0 Outside limits out of 17 total.

frm3diox040505

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MS

QC Code: MS

Sample wt/vol: 1.0 g / L L Lab File ID: 0208030fS:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 12:37

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		25:43	0.76	4218.95		0.18
1,2,3,7,8-PeCDF		30:19	1.52	9937.28	B	4.22
2,3,4,7,8-PeCDF		31:10	1.51	10118.98		4.14
1,2,3,4,7,8-HxCDF		34:47	1.18	10991.53	B	12.70
1,2,3,6,7,8-HxCDF		34:56	1.20	10311.89		11.45
2,3,4,6,7,8-HxCDF		35:44	1.19	10679.05		13.47
1,2,3,7,8,9-HxCDF		36:56	1.21	10751.36		15.32
1,2,3,4,6,7,8-HpCDF		39:18	1.05	9931.98	B	2.14
1,2,3,4,7,8,9-HpCDF		40:49	1.04	9348.69	B	2.50
OCDF		43:14	0.93	20605.87	B	0.26
2,3,7,8-TCDD		26:35	0.78	4062.13		0.70
1,2,3,7,8-PeCDD		31:34	1.57	10074.80		2.57
1,2,3,4,7,8-HxCDD		35:57	1.27	9870.83		7.36
1,2,3,6,7,8-HxCDD		36:06	1.28	10175.65		7.02
1,2,3,7,8,9-HxCDD		36:35	1.27	9786.70		6.99
1,2,3,4,6,7,8-HpCDD		40:25	1.02	9473.12	B	2.55
OCDD		43:08	0.87	20141.11	B	1.11

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:42	0.80	0.65	0.89	73	40	135
13C-1,2,3,7,8-PeCDF	IS	30:18	1.56	1.32	1.78	70	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:55	0.50	0.43	0.59	72	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:17	0.41	0.37	0.51	78	40	135
13C-2,3,7,8-TCDD	IS	26:34	0.78	0.65	0.89	74	40	135
13C-1,2,3,7,8-PeCDD	IS	31:33	1.60	1.32	1.78	69	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:04	1.31	1.05	1.43	75	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:24	1.09	0.88	1.2	75	40	135
13C-OCDD	IS	43:07	0.87	0.76	1.02	62	40	135
37C12-2,3,7,8-TCDD	Surr	26:35	1.00	1	1	103	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:09	1.51	1.32	1.78	93	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:46	0.49	0.43	0.59	100	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:56	1.27	1.05	1.43	100	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:48	0.42	0.37	0.51	95	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:55	0.51	0.43	0.59	90	40	135
13C-1,2,3,4-TCDD	RS	26:20	0.79	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:34	1.26	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316057_uf_MS

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MS

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF	4218.95	x	0.10	=	422
1,2,3,7,8-PeCDF	9937.28	x	0.05	=	496.86
2,3,4,7,8-PeCDF	10118.98	x	0.50	=	5059.49
1,2,3,4,7,8-HxCDF	10991.53	x	0.10	=	1099.15
1,2,3,6,7,8-HxCDF	10311.89	x	0.10	=	1031.19
2,3,4,6,7,8-HxCDF	10679.05	x	0.10	=	1067.90
1,2,3,7,8,9-HxCDF	10751.36	x	0.10	=	1075.14
1,2,3,4,6,7,8-HpCDF	9931.98	x	0.01	=	99.32
1,2,3,4,7,8,9-HpCDF	9348.69	x	0.01	=	93.49
OCDF	20605.87	x	0.001	=	20.61
2,3,7,8-TCDD	4062.13	x	1.00	=	4062.13
1,2,3,7,8-PeCDD	10074.80	x	0.50	=	5037.40
1,2,3,4,7,8-HxCDD	9870.83	x	0.10	=	987.08
1,2,3,6,7,8-HxCDD	10175.65	x	0.10	=	1017.57
1,2,3,7,8,9-HxCDD	9786.70	x	0.10	=	978.67
1,2,3,4,6,7,8-HpCDD	9473.12	x	0.01	=	94.73
OCDD	20141.11	x	0.001	=	20.14
		Total		=	22662.77

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf_MS

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MS

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:6

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	4062.13		0.70
Total PeCDD	4	13740.62		2.57
Total HxCDD	3	29833.19		4.75
Total HpCDD	1	9473.12		2.55
FURANS				
Total TCDF	7	4578.11		0.18
Total PeCDF	5	20723.21		4.16
Total HxCDF	4	42733.83		13.09
Total HpCDF	2	19280.67		2.31

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

USEPA

3dfa-Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MSD

Sample wt/vol: 1 g / L L Lab File ID: 0208030fS:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received:

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 2 (uL) % Solids/Lipids Date Analyzed: 03/20/2008

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED		PERCENT RECOVERY	#	QC LIMITS LOW	HIGH
2,3,7,8-TCDF	4000	4042		101		75	158
1,2,3,7,8-PeCDF	10000	9788		98		80	134
2,3,4,7,8-PeCDF	10000	9614		96		68	160
1,2,3,4,7,8-HxCDF	10000	10435		104		72	134
1,2,3,6,7,8-HxCDF	10000	10030		100		84	130
2,3,4,6,7,8-HxCDF	10000	10134		101		70	156
1,2,3,7,8,9-HxCDF	10000	10445		104		78	130
1,2,3,4,6,7,8-HpCDF	10000	9686		97		82	132
1,2,3,4,7,8,9-HpCDF	10000	9383		94		78	138
OCDF	20000	20841		104		63	170
2,3,7,8-TCDD	4000	3959		99		67	158
1,2,3,7,8-PeCDD	10000	9428		94		70	142
1,2,3,4,7,8-HxCDD	10000	10021		100		70	164
1,2,3,6,7,8-HxCDD	10000	10227		102		76	134
1,2,3,7,8,9-HxCDD	10000	10059		101		64	162
1,2,3,4,6,7,8-HpCDD	10000	9608		96		70	140
OCDD	20000	19959		100		78	144

Column to be used to flag values outside Quality Control (QC) Limits.

Laboratory Control Sample Recovery: 0 Outside limits out of 17 total.

frm3dlox040505

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MSD

QC Code: MSD

Sample wt/vol: 1.0 g / L L Lab File ID: 0208030fS:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 13:27

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF		25:43	0.77	4041.81		2.54
1,2,3,7,8-PeCDF		30:19	1.52	9788.35	B	3.38
2,3,4,7,8-PeCDF		31:10	1.52	9613.98		3.32
1,2,3,4,7,8-HxCDF		34:47	1.20	10434.54	B	9.53
1,2,3,6,7,8-HxCDF		34:56	1.21	10030.29		8.58
2,3,4,6,7,8-HxCDF		35:45	1.19	10134.23		10.10
1,2,3,7,8,9-HxCDF		36:57	1.18	10444.89		11.48
1,2,3,4,6,7,8-HpCDF		39:17	1.06	9686.33	B	3.02
1,2,3,4,7,8,9-HpCDF		40:49	1.04	9382.67	B	3.53
OCDF		43:15	0.91	20840.61	B	0.62
2,3,7,8-TCDD		26:35	0.77	3959.45		2.58
1,2,3,7,8-PeCDD		31:35	1.56	9427.63		5.94
1,2,3,4,7,8-HxCDD		35:57	1.23	10021.36		8.75
1,2,3,6,7,8-HxCDD		36:06	1.30	10227.23		8.35
1,2,3,7,8,9-HxCDD		36:35	1.28	10059.05		8.31
1,2,3,4,6,7,8-HpCDD		40:25	1.03	9608.49	B	3.24
OCDD		43:09	0.86	19958.70	B	0.41

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:42	0.78	0.65	0.89	76	40	135
13C-1,2,3,7,8-PeCDF	IS	30:19	1.54	1.32	1.78	70	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:54	0.49	0.43	0.59	76	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:17	0.43	0.37	0.51	84	40	135
13C-2,3,7,8-TCDD	IS	26:33	0.79	0.65	0.89	76	40	135
13C-1,2,3,7,8-PeCDD	IS	31:34	1.56	1.32	1.78	71	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:04	1.29	1.05	1.43	73	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:24	1.09	0.88	1.2	79	40	135
13C-OCDD	IS	43:08	0.88	0.76	1.02	69	40	135
37C12-2,3,7,8-TCDD	Surr	26:34	1.00	1	1	102	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:09	1.56	1.32	1.78	93	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:46	0.51	0.43	0.59	97	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:56	1.34	1.05	1.43	104	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:49	0.43	0.37	0.51	99	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:56	0.51	0.43	0.59	89	40	135
13C-1,2,3,4-TCDD	RS	26:20	0.81	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:34	1.32	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: 1316057_uf_MSD

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MSD

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF	4041.81	x	0.10	=	404
1,2,3,7,8-PeCDF	9788.35	x	0.05	=	489.42
2,3,4,7,8-PeCDF	9613.98	x	0.50	=	4806.99
1,2,3,4,7,8-HxCDF	10434.54	x	0.10	=	1043.45
1,2,3,6,7,8-HxCDF	10030.29	x	0.10	=	1003.03
2,3,4,6,7,8-HxCDF	10134.23	x	0.10	=	1013.42
1,2,3,7,8,9-HxCDF	10444.89	x	0.10	=	1044.49
1,2,3,4,6,7,8-HpCDF	9686.33	x	0.01	=	96.86
1,2,3,4,7,8,9-HpCDF	9382.67	x	0.01	=	93.83
OCDF	20840.61	x	0.001	=	20.84
2,3,7,8-TCDD	3959.45	x	1.00	=	3959.45
1,2,3,7,8-PeCDD	9427.63	x	0.50	=	4713.81
1,2,3,4,7,8-HxCDD	10021.36	x	0.10	=	1002.14
1,2,3,6,7,8-HxCDD	10227.23	x	0.10	=	1022.72
1,2,3,7,8,9-HxCDD	10059.05	x	0.10	=	1005.91
1,2,3,4,6,7,8-HpCDD	9608.49	x	0.01	=	96.08
OCDD	19958.70	x	0.001	=	19.96
		Total		=	21836.58

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

US EPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
1316057_uf_MSD

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-3MSD

Sample wt/vol: 1.00 g / L L Lab File ID: 0208030fS:7

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	1	3959.45		2.58
Total PeCDD	4	10981.07		5.94
Total HxCDD	4	30338.95		5.64
Total HpCDD	1	9608.49		3.24
FURANS				
Total TCDF	4	4213.08		2.54
Total PeCDF	5	20073.18		3.34
Total HxCDF	5	42040.13		9.82
Total HpCDF	3	19119.06		3.26

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

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USEPA

4DF - Form IV - HR CDD
CDD/CDF METHOD BLANK SUMMARY
HIGH RESOLUTION

Sample No.

METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

Water Sample Prep: SEPF (SEPF/SPE) Lab File ID: A829004BS:9

Date Extracted: 27_02_08

Date Analyzed: 3/20/2008

GC Column: JWS-DB-5 ID: 0.25 (mm)

Instrument ID: :Autospec

THIS METHOD BLANK APPLIES TO LABORATORY CONTROL SAMPLES (LCSs)

EPA Sample ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1316057_uf	0208030-3	A829004B S:10	3/20/2008
1316062_uf	0208030-9	A829004B S:11	3/20/2008
1316058_uf	0208030-11	A829004B S:12	3/20/2008
1316061_uf	0208030-13	A829004B S:13	3/20/2008
1316074_uf	0208030-15	A829004B S:14	3/20/2008
1316060_uf	0208030-19	0208030f S:4	3/20/2008
1316059_uf	0208030-22	0208030f S:5	3/20/2008
1316057_uf_MS	0208030-3MS	0208030f S:6	3/20/2008
1316057_uf_MSD	0208030-3MSD	0208030f S:7	3/20/2008
Lab_Spike	0208030-LS	0208030f S:8	3/20/2008

frm4diox040505

US EPA - Method 8290A

1DFA - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

Sample No.: METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

QC Code: MB

Sample wt/vol: 1.0 g / L L Lab File ID: A829004BS:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20.00 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (uL) % Solids/Lipids 0.0% Date Analyzed: 20-03-08 0:43

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L, ng/Kg, pg) pg/L

TARGET ANALYTE		PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2,3,7,8-TCDF					U	0.29 *
1,2,3,7,8-PeCDF		30:20	1.16 *			4.37
2,3,4,7,8-PeCDF					U	0.25
1,2,3,4,7,8-HxCDF		34:47	1.70 *			4.48
1,2,3,6,7,8-HxCDF					U	0.32
2,3,4,6,7,8-HxCDF					U	0.37
1,2,3,7,8,9-HxCDF					U	0.43
1,2,3,4,6,7,8-HpCDF		39:18	0.98	6.39		0.32
1,2,3,4,7,8,9-HpCDF		40:52	1.27 *			2.94
OCDF		43:16	0.78	13.09		0.41
2,3,7,8-TCDD					U	0.32
1,2,3,7,8-PeCDD					U	0.25
1,2,3,4,7,8-HxCDD					U	0.45
1,2,3,6,7,8-HxCDD					U	0.43
1,2,3,7,8,9-HxCDD					U	0.42
1,2,3,4,6,7,8-HpCDD		40:26	1.28 *			5.44
OCDD		43:10	1.14 *			17.36

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	Type	PEAK RT	ION RATIO #	ION RATIO LIMITS LOW	HIGH	% REC #	RECOVERY LIMITS LOW	HIGH
13C-2,3,7,8-TCDF	IS	25:45	0.79	0.65	0.89	80	40	135
13C-1,2,3,7,8-PeCDF	IS	30:20	1.54	1.32	1.78	80	40	135
13C-1,2,3,6,7,8-HxCDF	IS	34:57	0.53	0.43	0.59	79	40	135
13C-1,2,3,4,6,7,8-HpCDF	IS	39:17	0.44	0.37	0.51	75	40	135
13C-2,3,7,8-TCDD	IS	26:36	0.78	0.65	0.89	80	40	135
13C-1,2,3,7,8-PeCDD	IS	31:35	1.58	1.32	1.78	79	40	135
13C-1,2,3,6,7,8-HxCDD	IS	36:06	1.31	1.05	1.43	83	40	135
13C-1,2,3,4,6,7,8-HpCDD	IS	40:25	1.05	0.88	1.2	75	40	135
13C-OCDD	IS	43:09	0.86	0.76	1.02	65	40	135
37C12-2,3,7,8-TCDD	Surr	26:36	1.00	1	1	98	40	135
13C-2,3,4,7,8-PeCDF	Surr	31:11	1.56	1.32	1.78	99	40	135
13C-1,2,3,4,7,8-HxCDF	Surr	34:48	0.52	0.43	0.59	93	40	135
13C-1,2,3,4,7,8-HxCDD	Surr	35:58	1.34	1.05	1.43	95	40	135
13C-1,2,3,4,7,8,9-HpCDF	Surr	40:50	0.43	0.37	0.51	99	40	135
13C12-1,2,3,7,8,9-HxCDF	Alt	36:58	0.53	0.43	0.59	90	40	135
13C-1,2,3,4-TCDD	RS	26:21	0.76	0.65	0.89	NA	NA	NA
13C-1,2,3,7,8,9-HxCDD	RS	36:36	1.30	1.05	1.43	NA	NA	NA

Column to be used to flag values outside QC limits.

frm18290Arev2

USEPA - Method 8290A

2DF - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

Sample No.
METHOD_BLANK

Lab Name: Data/Analysis Technologies Contract:

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD	0		U	0.32
Total PeCDD	0		U	0.25
Total HxCDD	0		U	0.29
Total HpCDD	0		U	5.44
FURANS				
Total TCDF	0		U	0.29
Total PeCDF	0		U	4.37
Total HxCDF	0		U	4.48
Total HpCDF	1	6.39		2.94

* EMPC

Note: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

Solely 1234678-HpCDF

frm18290Arev2

USEPA - Method 8290A

1DFB - Form I-HR CDD-2

CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

Sample No.: METHOD_BLANK

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) Water Lab Sample ID: 0208030-MB

Sample wt/vol: 1.00 g / L L Lab File ID: A829004BS:9

Water Sample Prep: SEPF (SEPF/SPE) Date Received: 26-02-08

Concentrated Extract Volume: 20 (ul) Date Extracted: 27_02_08

Injection Volume: 1 (ul) % Solids: 0.0% Date Analyzed: 20-03-08

% Lipids

GC Column: JWS-DB-5 ID: 0.25 (mm) Dilution Factor: 1

CONCENTRATION UNITS: (pg/L or ng/Kg) pg/L

TARGET ANALYTE	CONCENTRATION	TEF*			TEF-ADJUSTED CONCENTRATIONS
2,3,7,8-TCDF		x	0.10	=	
1,2,3,7,8-PeCDF		x	0.05	=	
2,3,4,7,8-PeCDF		x	0.50	=	
1,2,3,4,7,8-HxCDF		x	0.10	=	
1,2,3,6,7,8-HxCDF		x	0.10	=	
2,3,4,6,7,8-HxCDF		x	0.10	=	
1,2,3,7,8,9-HxCDF		x	0.10	=	
1,2,3,4,6,7,8-HpCDF	6.39	x	0.01	=	0.06
1,2,3,4,7,8,9-HpCDF		x	0.01	=	
OCDF	13.09	x	0.001	=	0.01
2,3,7,8-TCDD		x	1.00	=	
1,2,3,7,8-PeCDD		x	0.50	=	
1,2,3,4,7,8-HxCDD		x	0.10	=	
1,2,3,6,7,8-HxCDD		x	0.10	=	
1,2,3,7,8,9-HxCDD		x	0.10	=	
1,2,3,4,6,7,8-HpCDD		x	0.01	=	
OCDD		x	0.001	=	
		Total		=	0.08

TEF* - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

frm18290Arev2

USEPA

5DFA-Form V-HR-CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_03190801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Lab File ID: A829004B S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 03/19/2008

Instrument ID: :AutoSpec Time Analyzed: 18:02

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD	23.75	27.80
TCDF	22.10	27.80
PeCDD	29.58	32.20
PeCDF	28.12	32.35
HxCDD	34.20	36.62
HxCDF	33.50	37.17
HpCDD	39.70	40.50
HpCDF	39.35	40.90

frm5diox040505

USEPA

5DFB-Form V-HR-CDD-2

CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY

HIGH RESOLUTION

Sample No.

WDM_03190801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: SDG No.: 1316057

Lab File ID: A829004B S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 03/19/2008

Instrument ID: :AutoSpec Time Analyzed: 18:02

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD / 2378-TCDD: 18

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

2347-TCDF / 2378-TCDF: NA

QC LIMITS:

Percent Valley between the TCDD / TCDF isomers must be less than or equal to 25%.

frm5diox040505

USEPA

5DFA-Form V-HR-CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_03200801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

Lab File ID: 0208030F S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 03/20/2008

Instrument ID: :AutoSpec

Time Analyzed: 8:26

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD	23.67	27.73
TCDF	22.05	27.72
PeCDD	29.52	32.15
PeCDF	28.03	32.28
HxCDD	34.13	36.55
HxCDF	33.43	37.10
HpCDD	39.65	40.43
HpCDF	39.30	40.83

frm5diox040505

USEPA

5DFB-Form V-HR-CDD-2
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

Sample No.
WDM_03200801

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: SDG No.: 1316057

Lab File ID: 0208030F S:1

GC Column: JWS-DB-5 ID: 0.25 (mm)

Date Analyzed: 03/20/2008

Instrument ID: :AutoSpec Time Analyzed: 8:26

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD / 2378-TCDD: 18

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

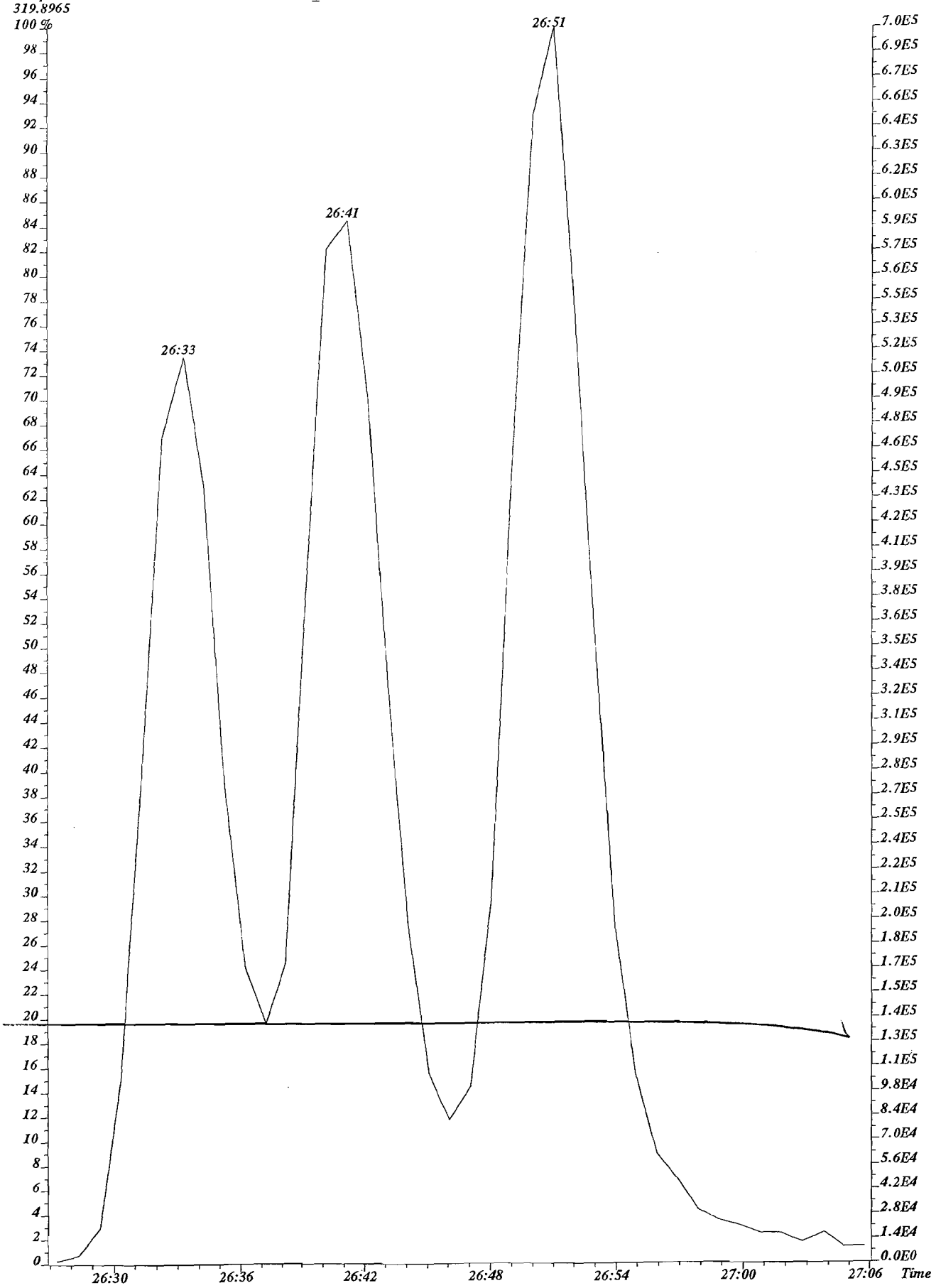
2347-TCDF / 2378-TCDF: NA

QC LIMITS:

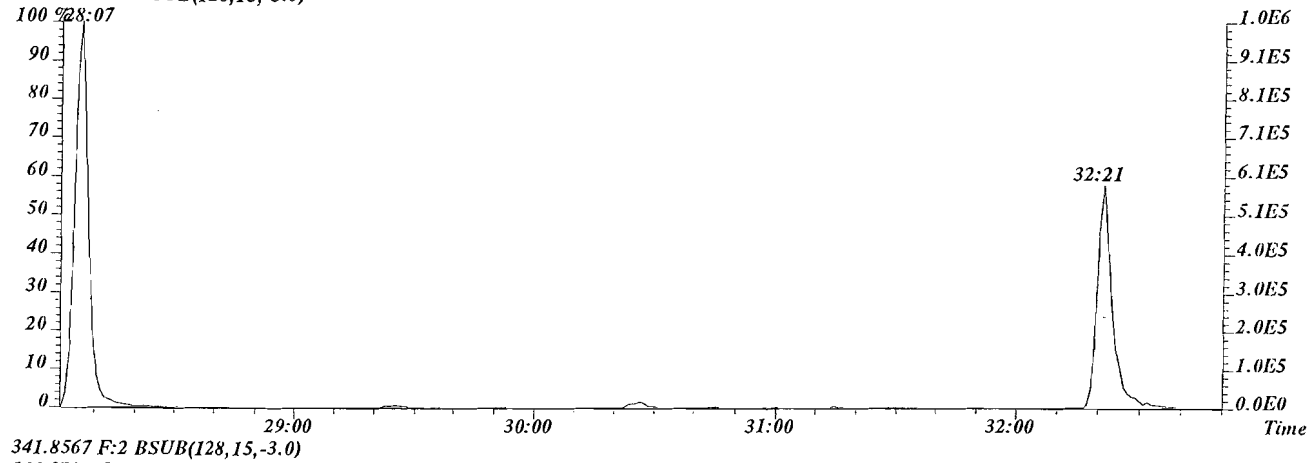
Percent Valley between the TCDD / TCDF isomers must be less than or equal to 25%.

frm5diox040505

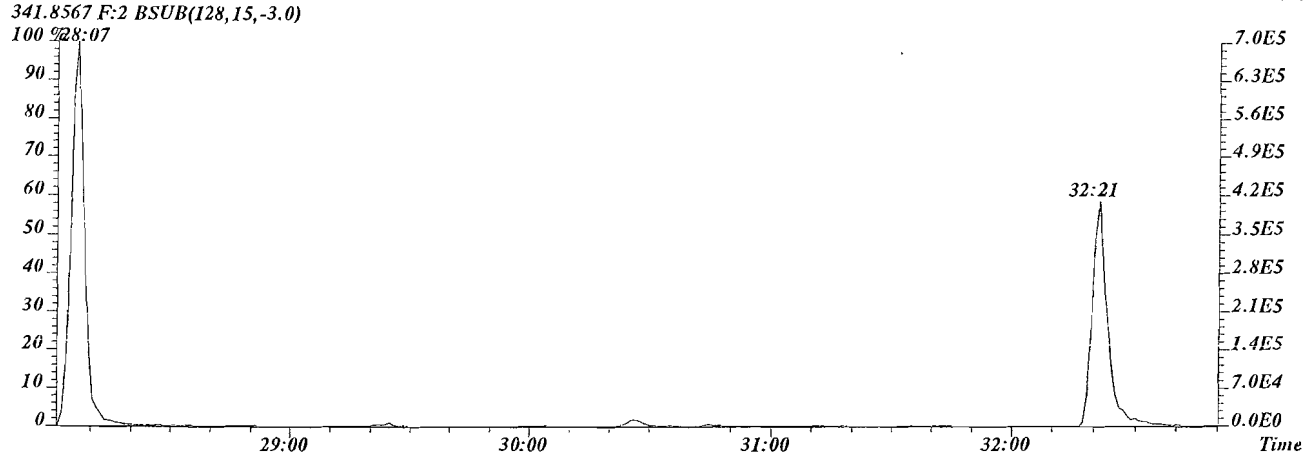
File:A829004B #1-485 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290
319.8965



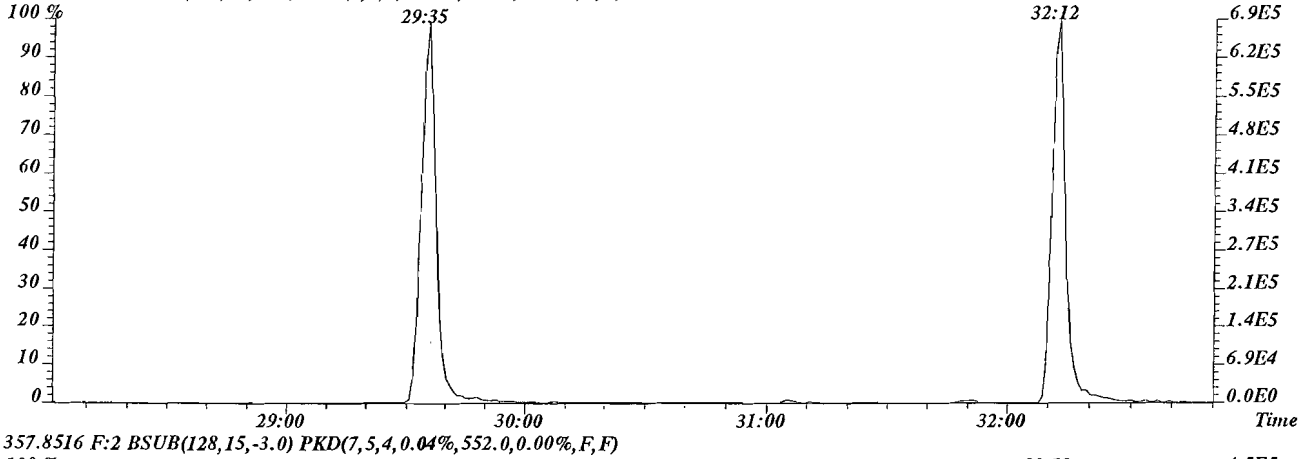
File:A829004B #1-300 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290
339.8597 F:2 BSUB(128,15,-3.0)



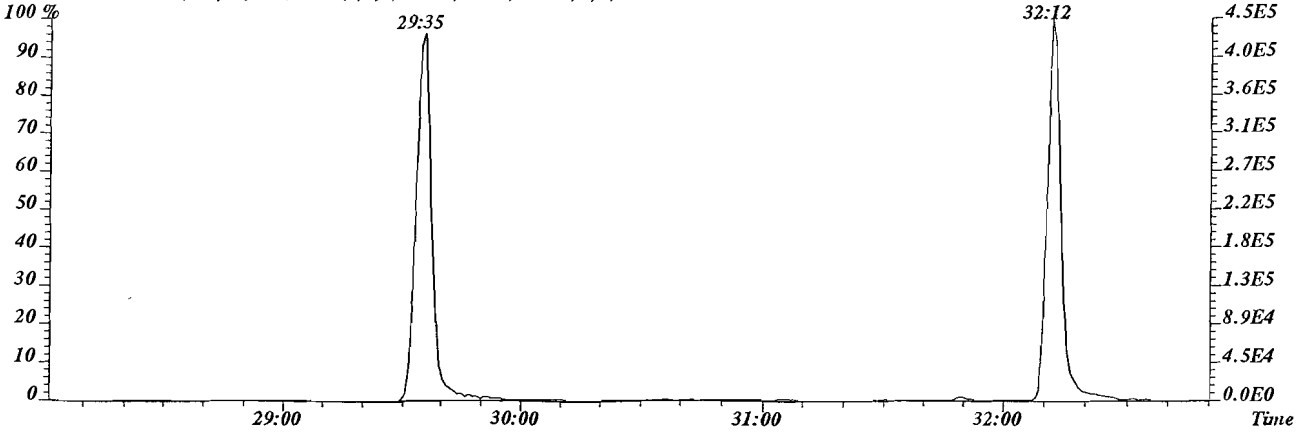
341.8567 F:2 BSUB(128,15,-3.0)



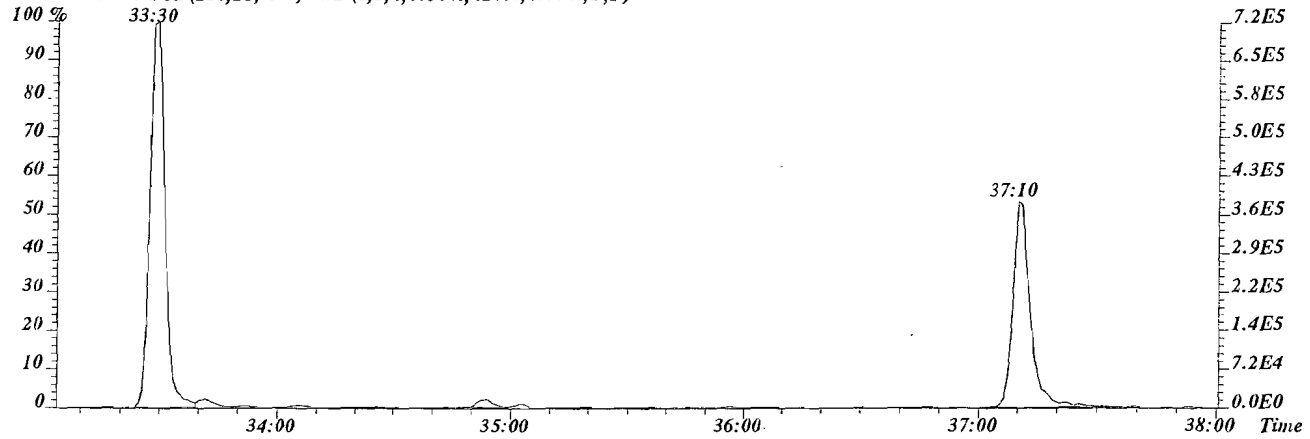
355.8546 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



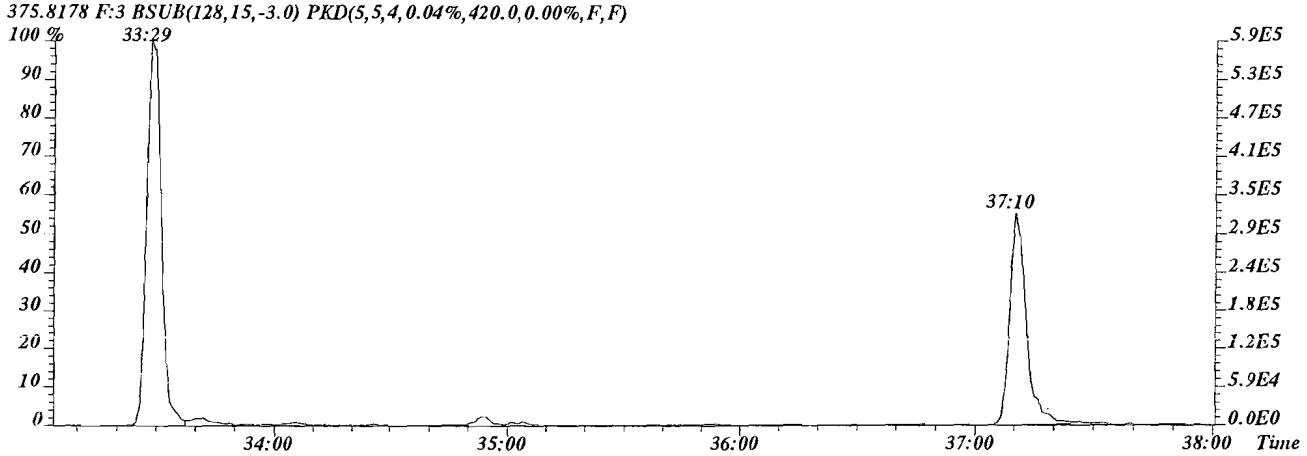
357.8516 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



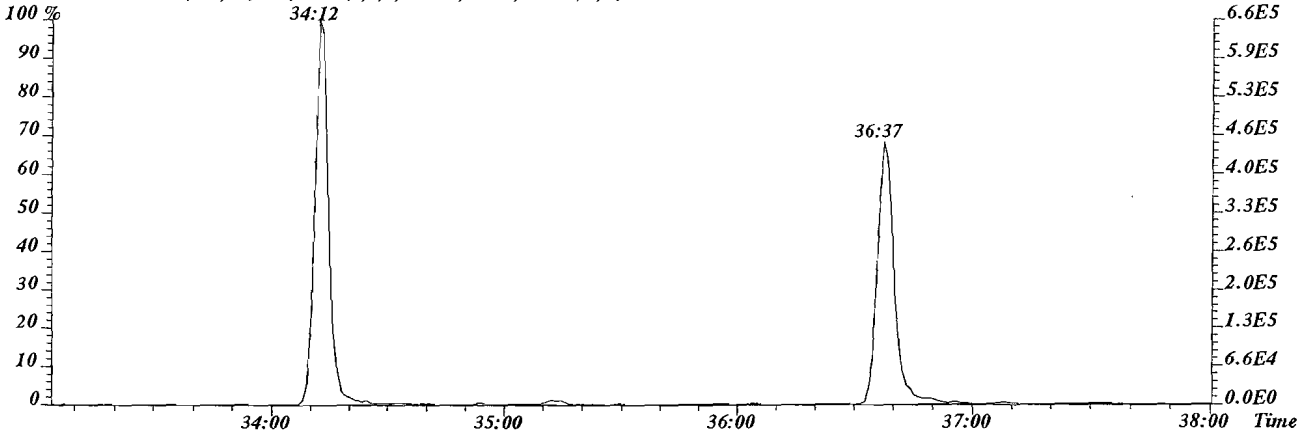
File:A829004B #1-308 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290
373.8208 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



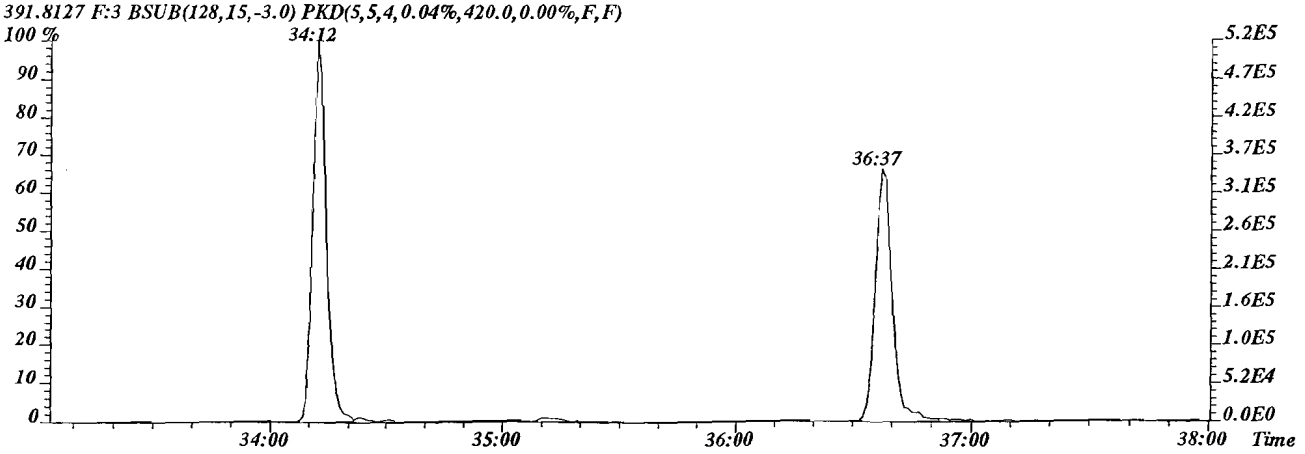
375.8178 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



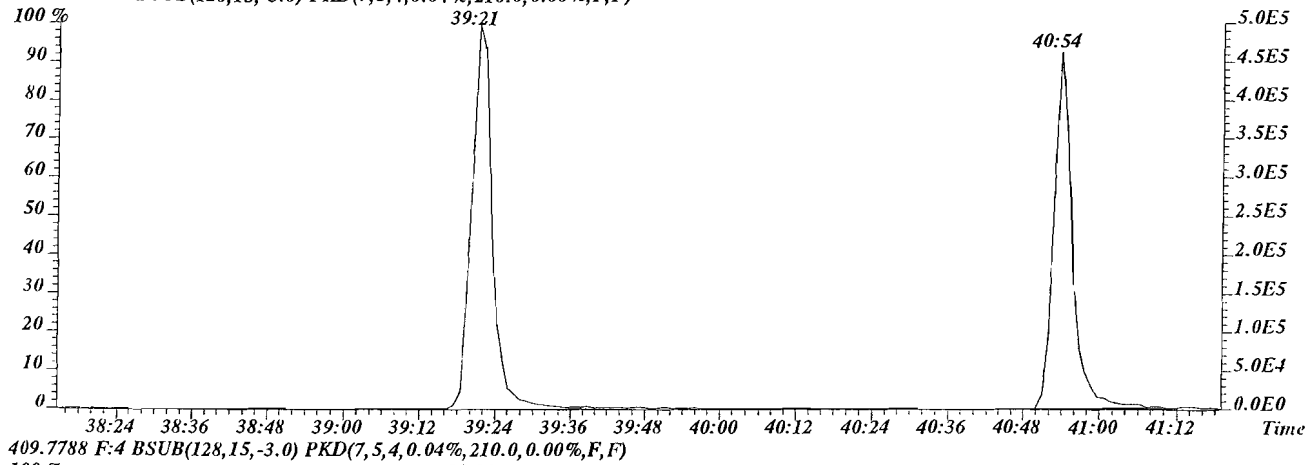
389.8156 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



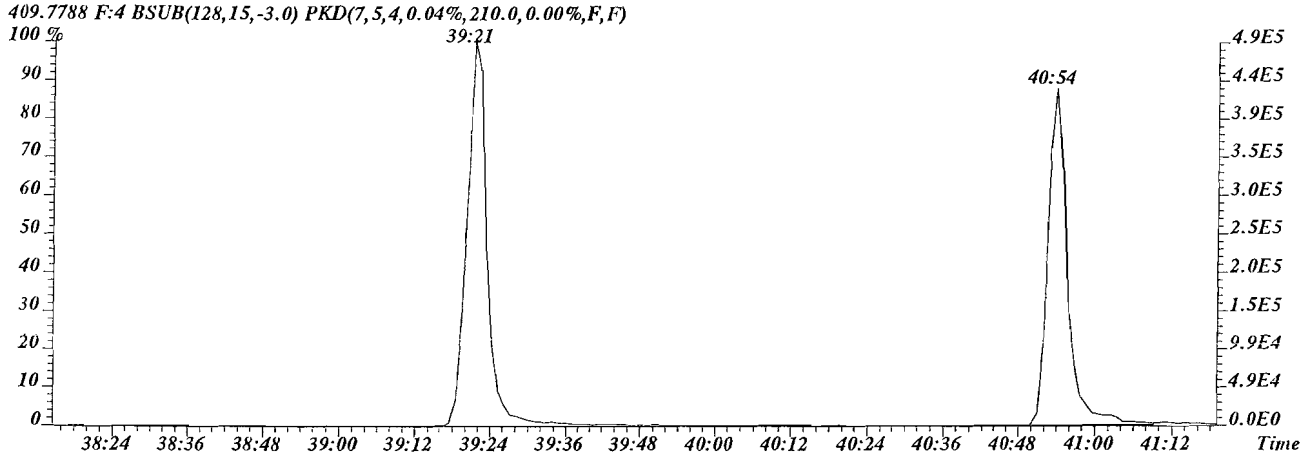
391.8127 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



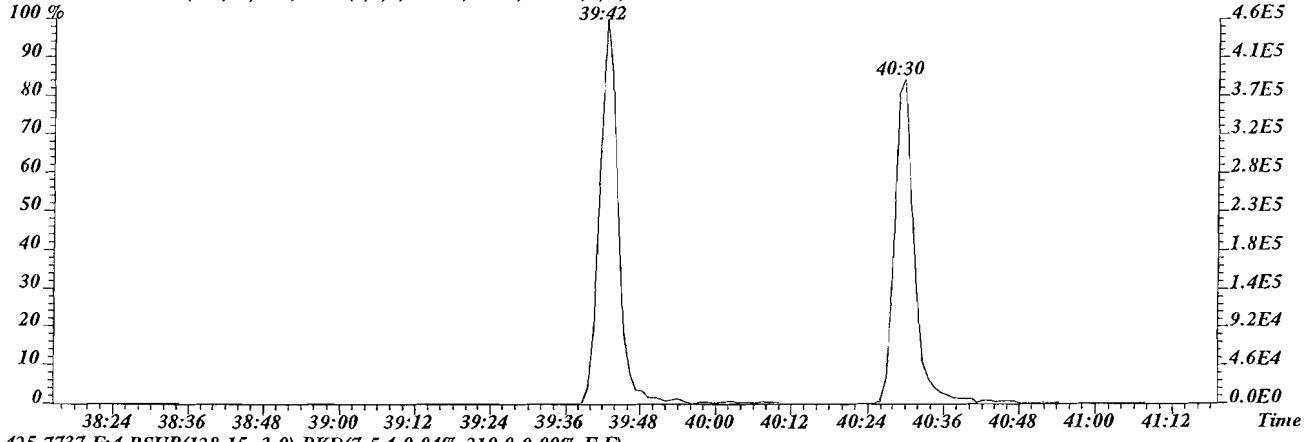
File:A829004B #1-192 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290
407.7818 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



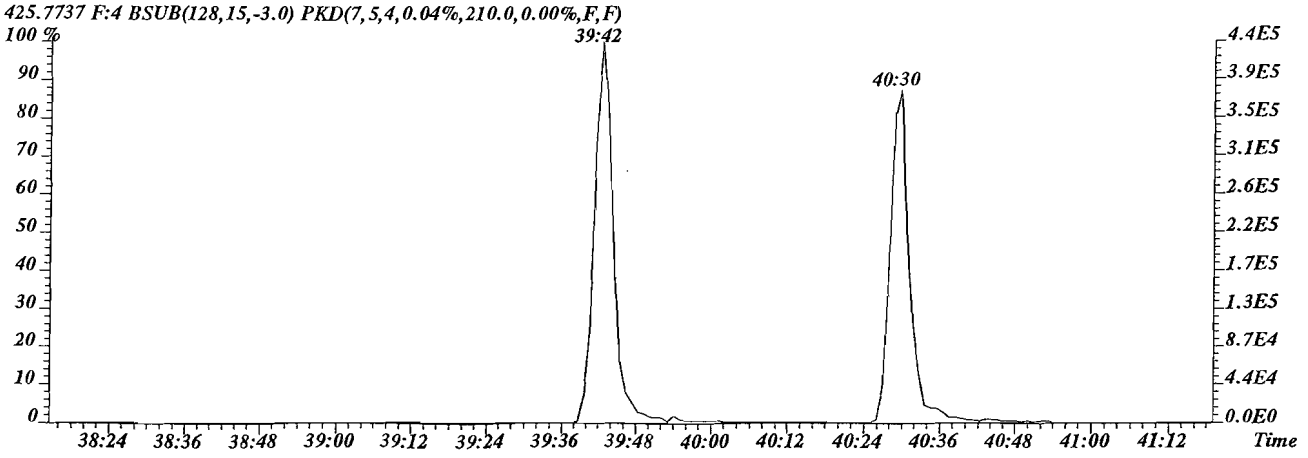
409.7788 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



423.7767 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



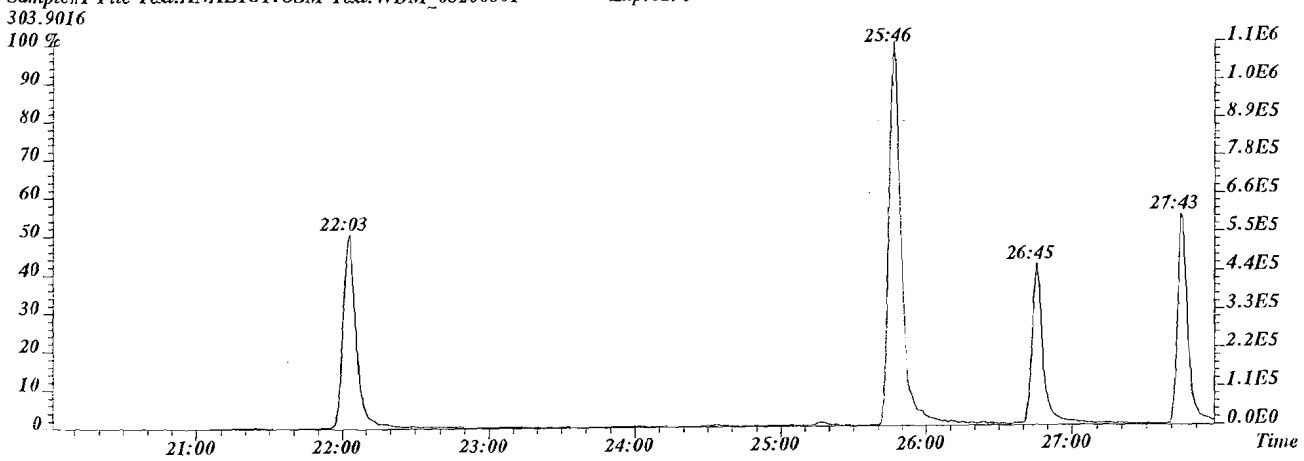
425.7737 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)

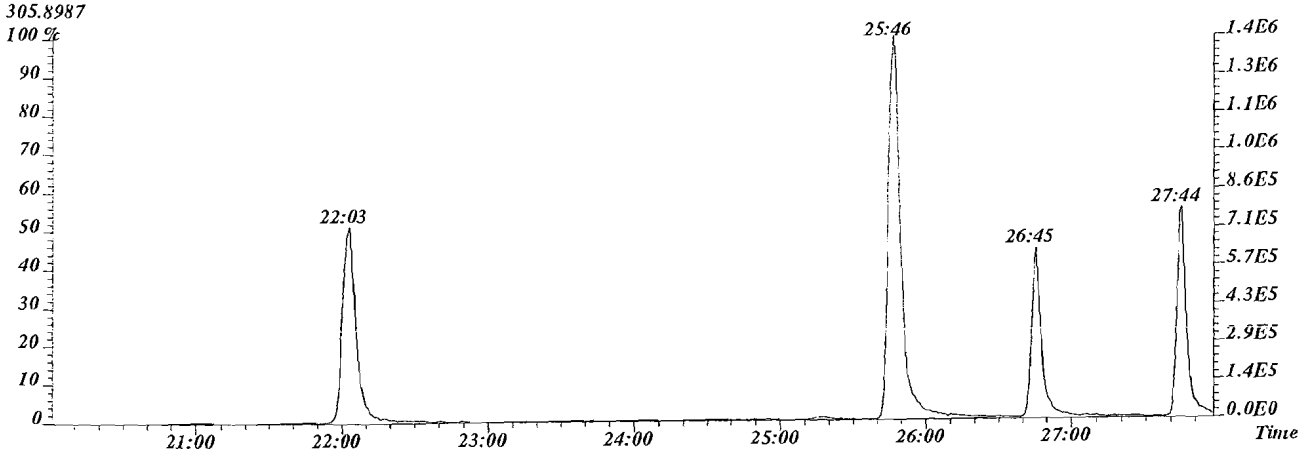


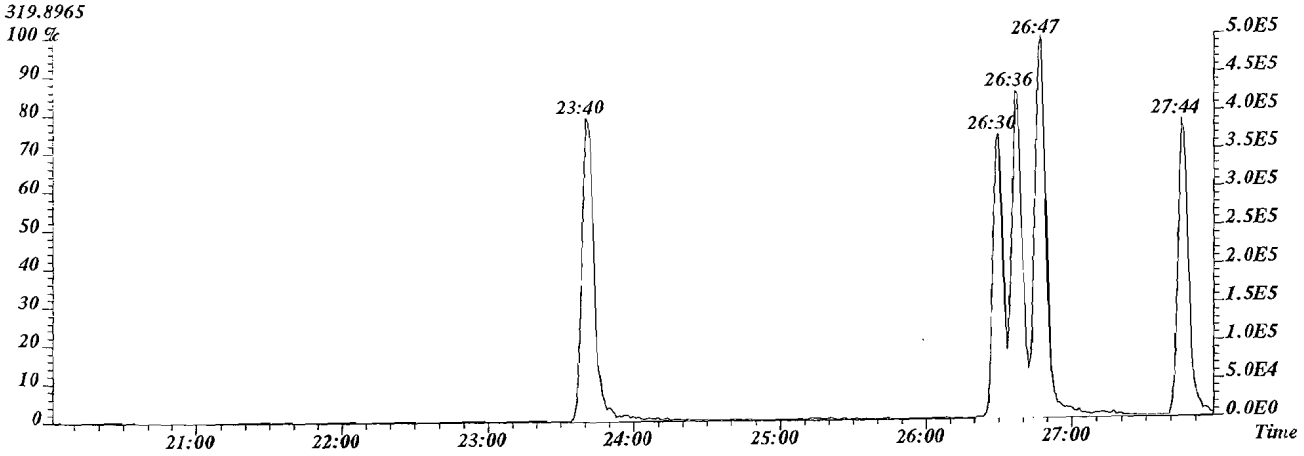
Run #2 Filename 0208030F S: 1 I: 1 Acquired: 20-MAR-08 08:26:38 Processed: 21-MAR-08 11:46:20
Run: Analyte: WDM Cal: Results: 0208030FW Version: V3.6 19-OCT-2005 15:45:13
Sample text: WDM_03200801 Analyst: ANALYST:CSM Instrument : AutoSpec
Comments: 18 0.000

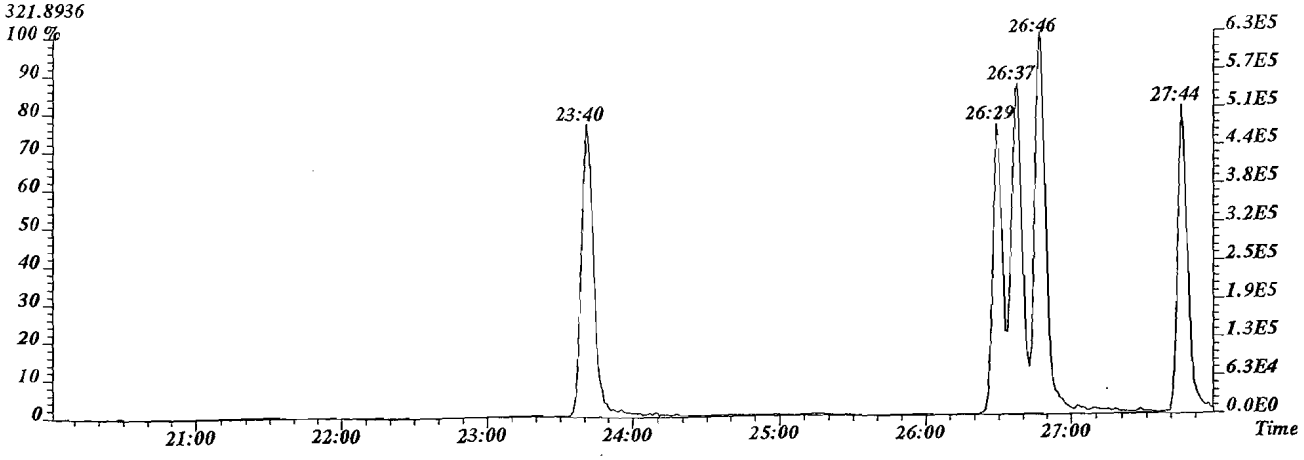
	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	1,3,6,8-TCDF	1	8.328e+06	0.77	y	22:03	*	*	*	-	n
2	Unk	1,2,8,9-TCDF	1	6.025e+06	0.77	y	27:43	*	*	*	-	n
3	Unk	1,3,6,8-TCDD	1	5.129e+06	0.81	y	23:40	*	*	*	-	n
4	Unk	1,2,8,9-TCDD	1	4.139e+06	0.79	y	27:44	*	*	*	-	n
5	Unk	1,3,4,6,8-PeCDF	1	3.550e+06	1.54	y	28:02	*	*	*	-	y
6	Unk	1,2,3,8,9-PeCDF	1	2.879e+06	1.49	y	32:17	*	*	*	-	n
7	Unk	1,2,4,7,9-PeCDD	1	3.509e+06	1.50	y	29:31	*	*	*	-	n
8	Unk	1,2,3,8,9-PeCDD	1	3.106e+06	1.51	y	32:09	*	*	*	-	n
9	Unk	1,2,3,4,6,8-HxCDF	1	3.668e+06	1.16	y	33:26	*	*	*	-	n
10	Unk	1,2,3,7,8,9-HxCDF	1	2.372e+06	1.15	y	37:06	*	*	*	-	n
11	Unk	1,2,4,6,7,9-HxCDD	1	3.469e+06	1.28	y	34:08	*	*	*	-	n
12	Unk	1,2,3,7,8,9-HxCDD	1	2.746e+06	1.24	y	36:33	*	*	*	-	n
13	Unk	1,2,3,4,6,7,9-HpCDF	1	2.442e+06	1.08	y	39:18	*	*	*	-	n
14	Unk	1,2,3,4,7,8,9-HpCDF	1	2.119e+06	1.05	y	40:50	*	*	*	-	n
15	Unk	1,2,3,4,6,7,9-HpCDD	1	2.087e+06	0.98	y	39:39	*	*	*	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	1.846e+06	1.00	y	40:26	*	*	*	-	n
17	IS	13C-2,3,7,8-TCDF	1	7.572e+06	0.78	y	25:44	*	-	*	*	n
18	IS	13C-2,3,7,8-TCDD	1	4.532e+06	0.76	y	26:35	*	-	*	*	n

File:0208030F #1-484 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290

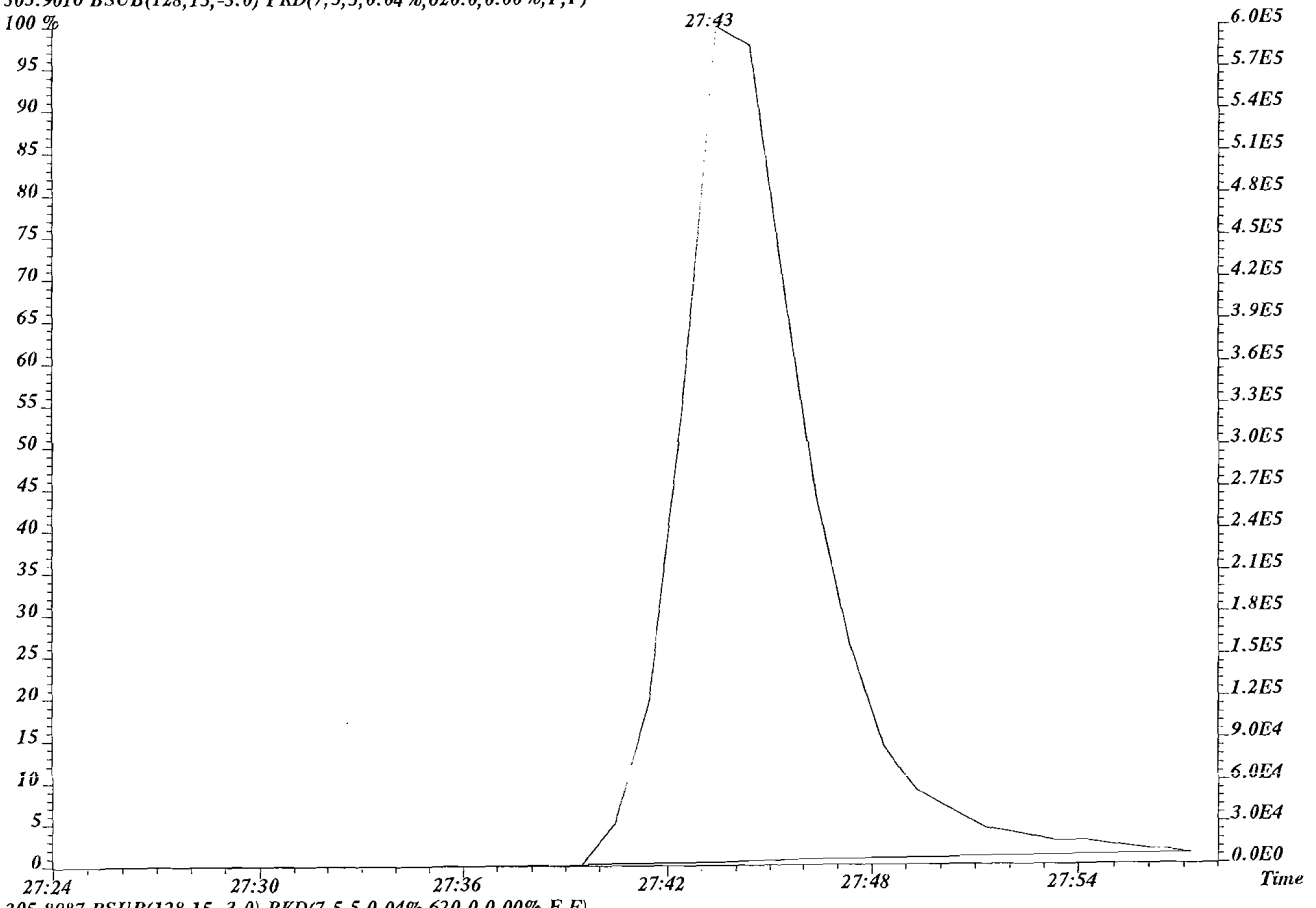




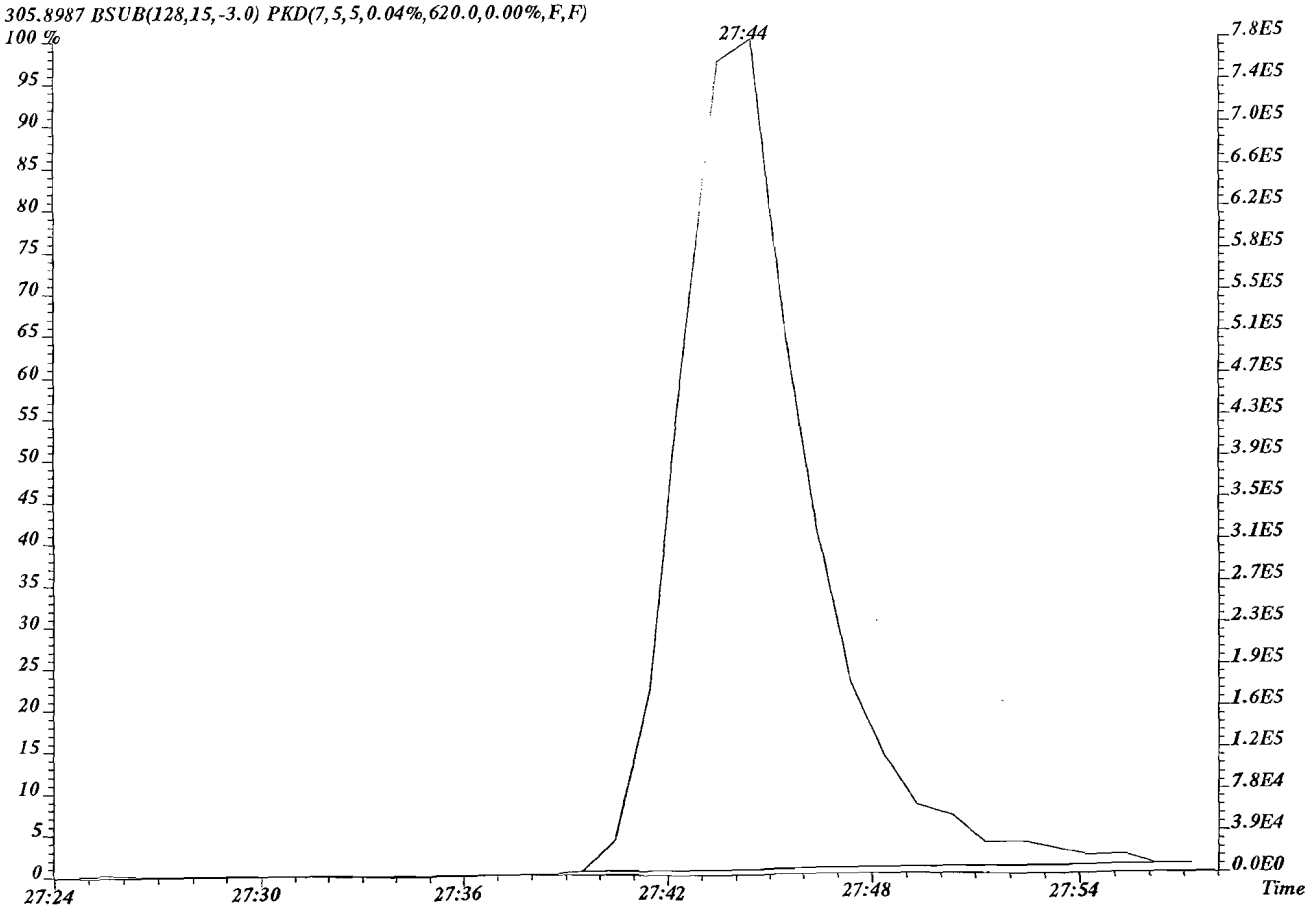




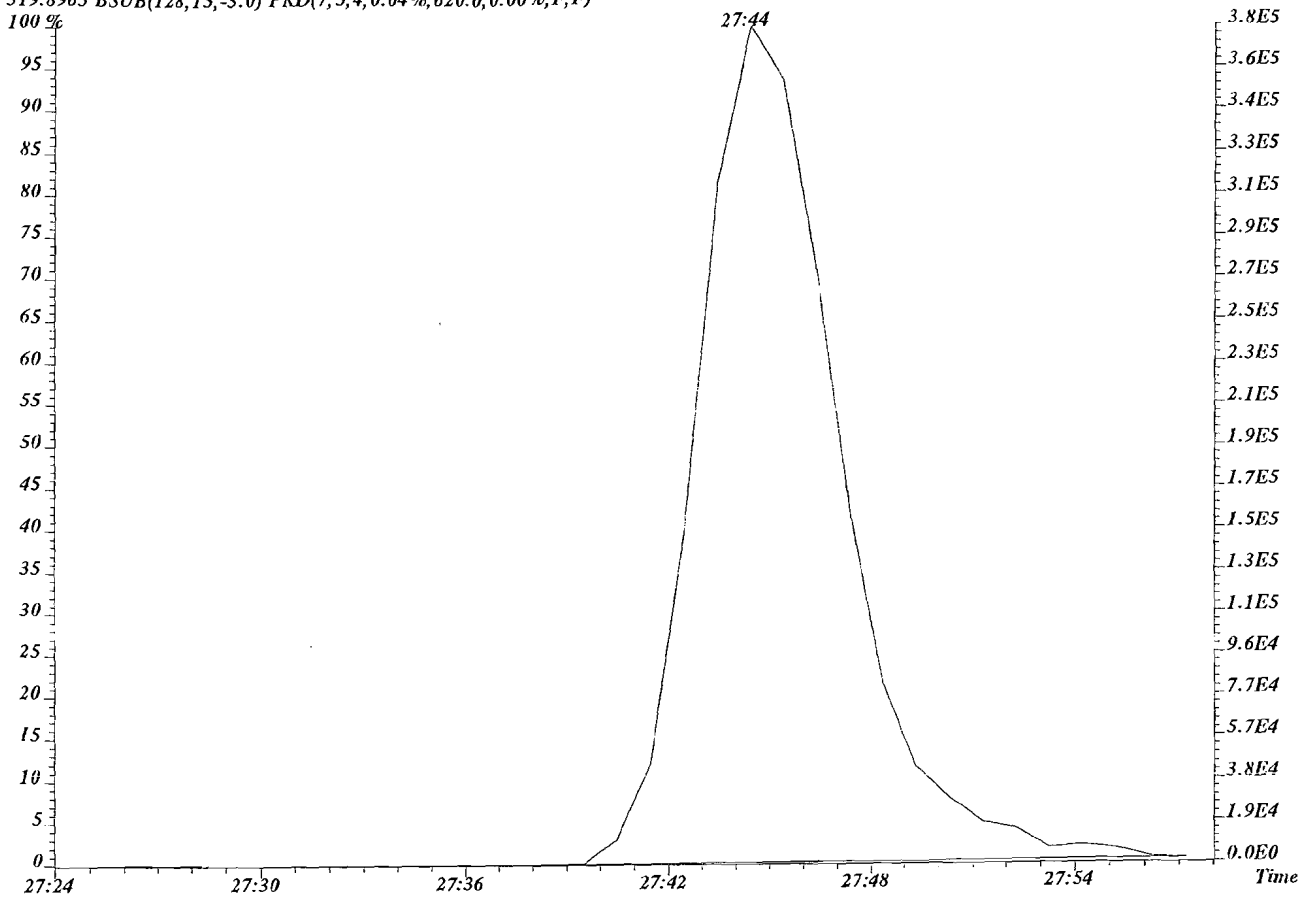
File:0208030F #1-484 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290
303.9016 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



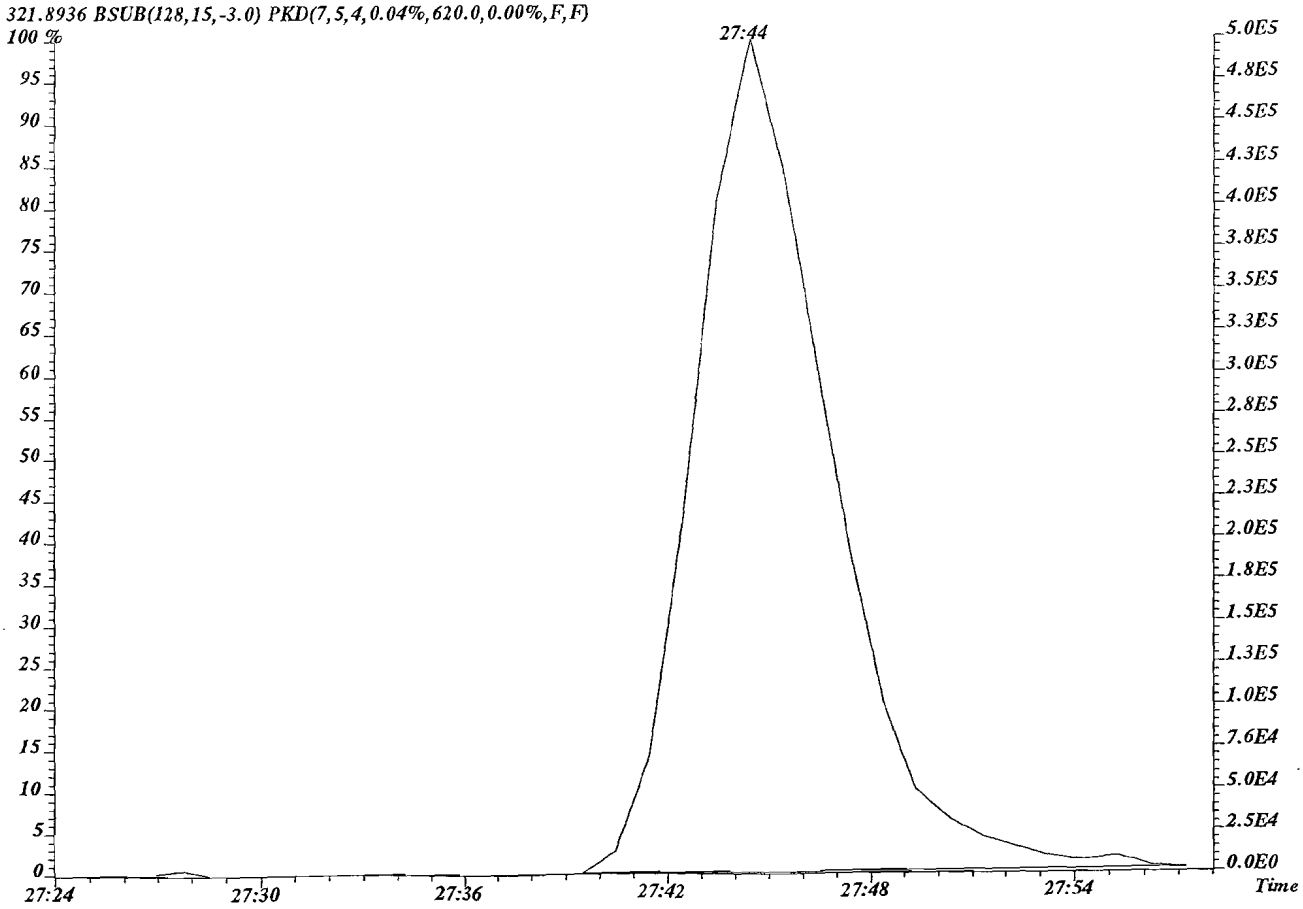
305.8987 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



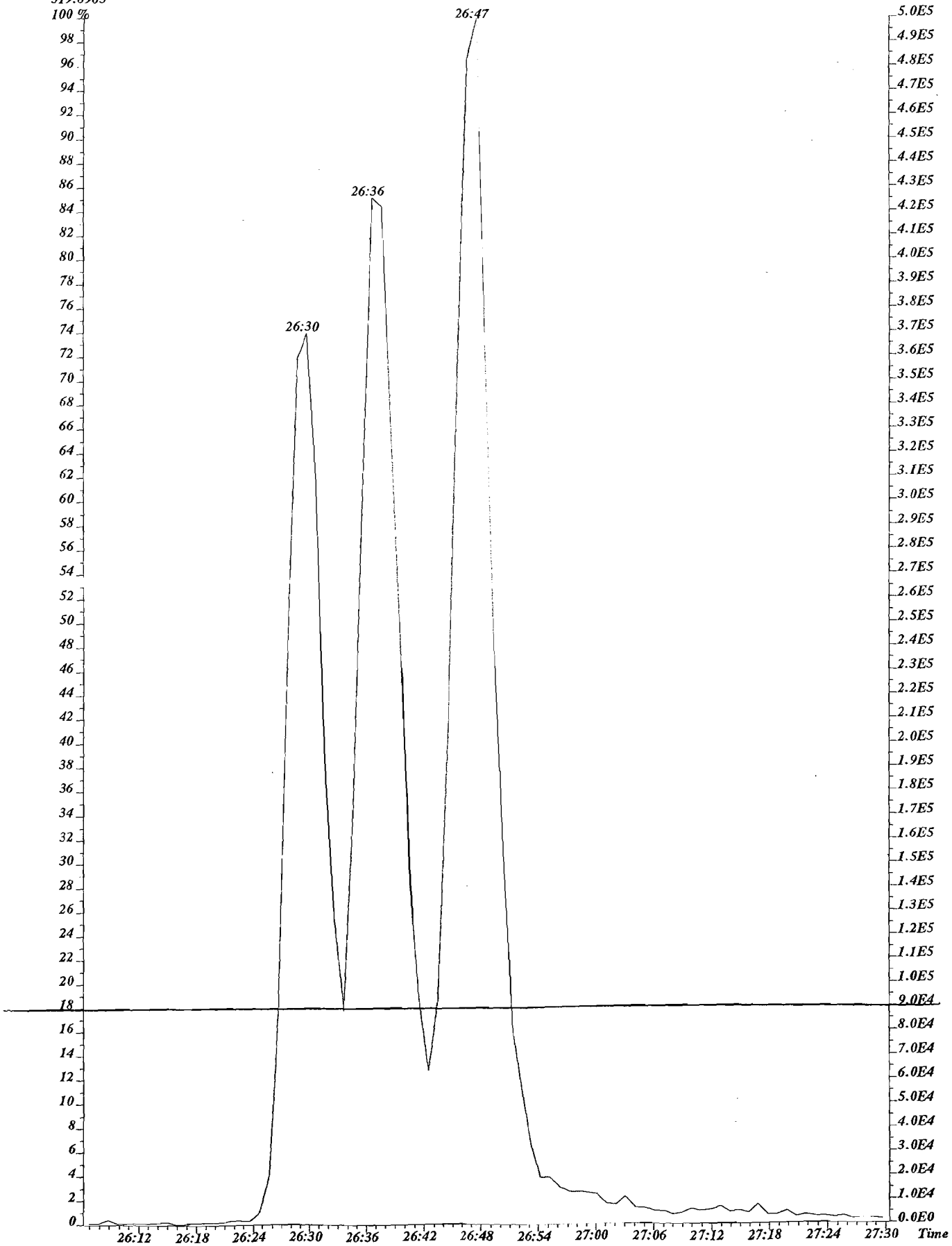
File:0208030F #1-484 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290
319.8965 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



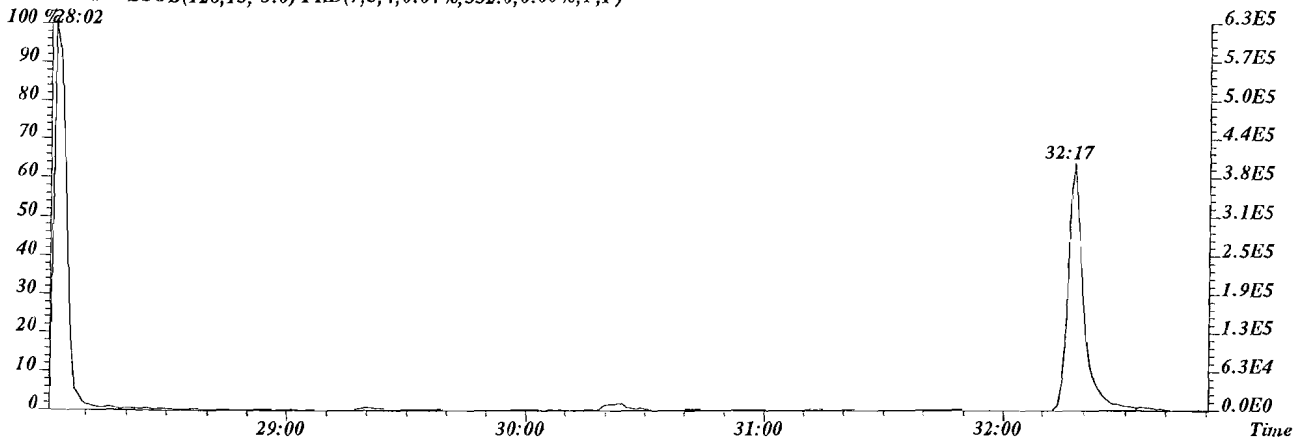
321.8936 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



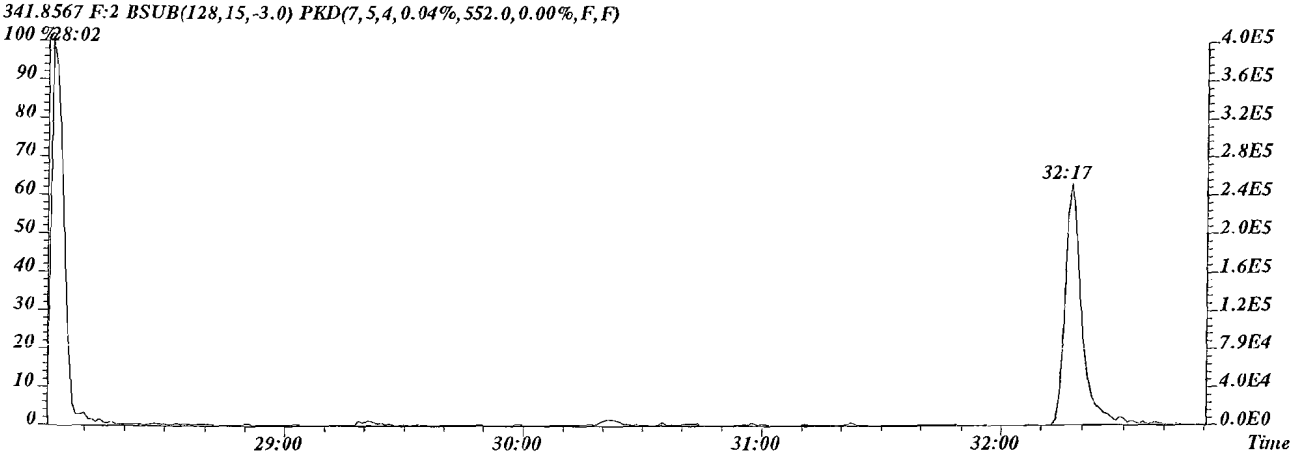
File:0208030F #1-484 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290
319.8965



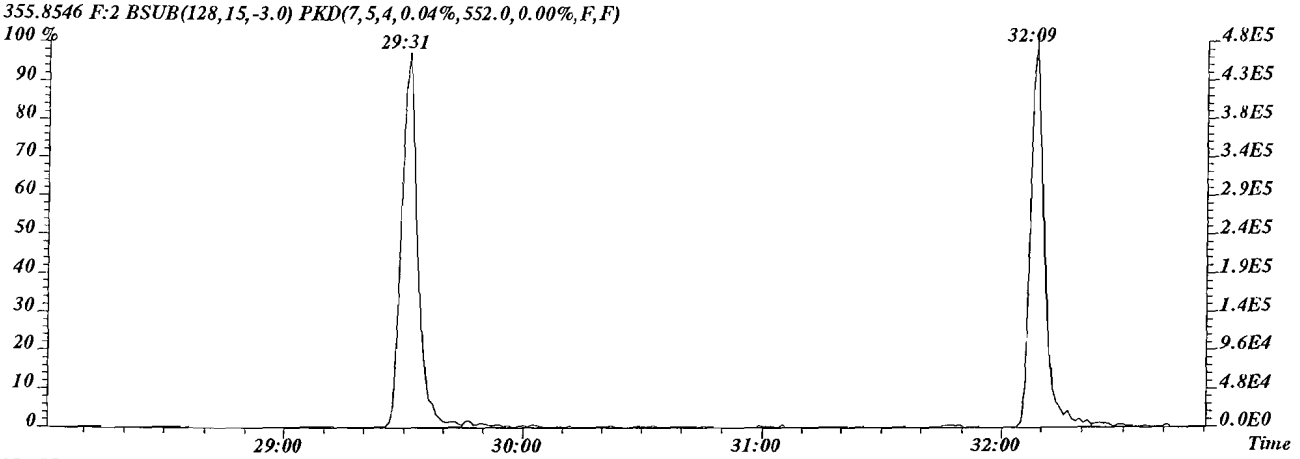
File:0208030F #1-300 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290
339.8597 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



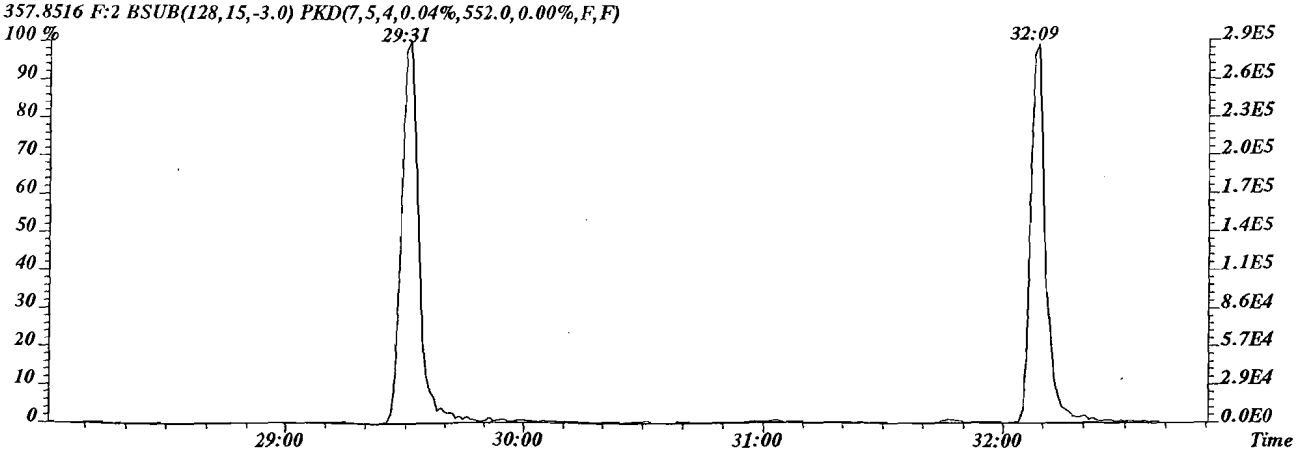
341.8567 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



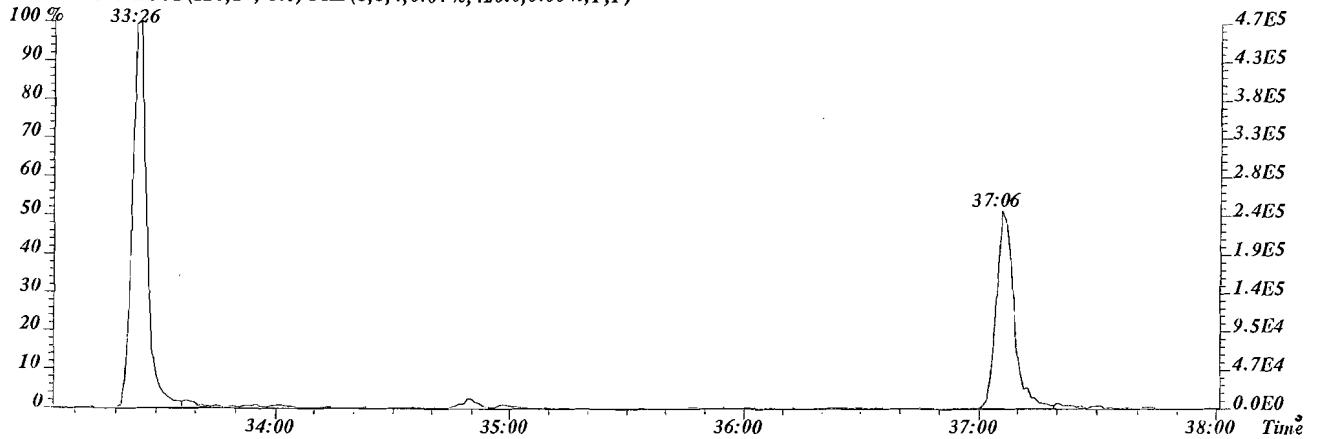
355.8546 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



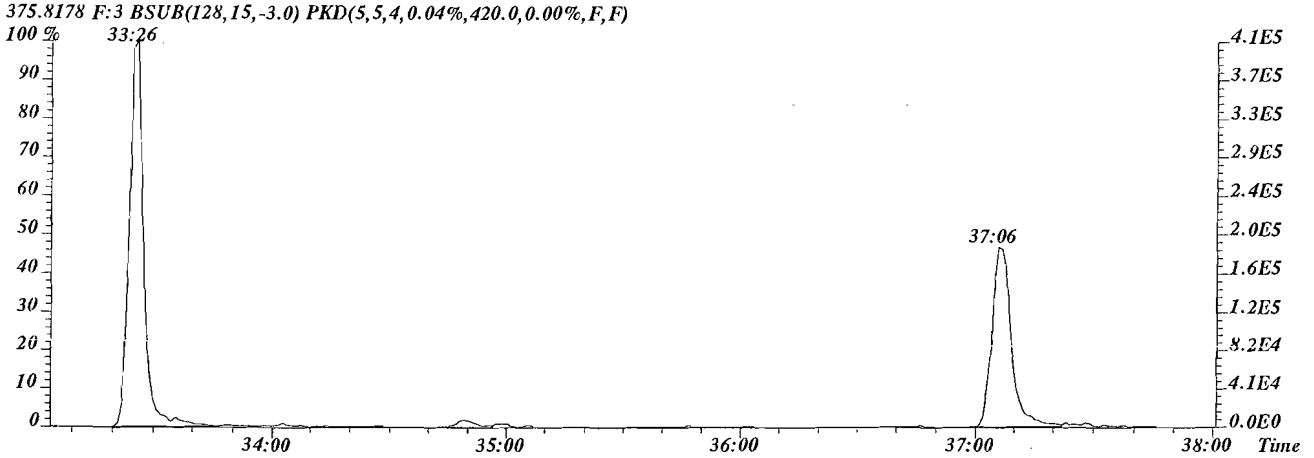
357.8516 F:2 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,552.0,0.00%,F,F)



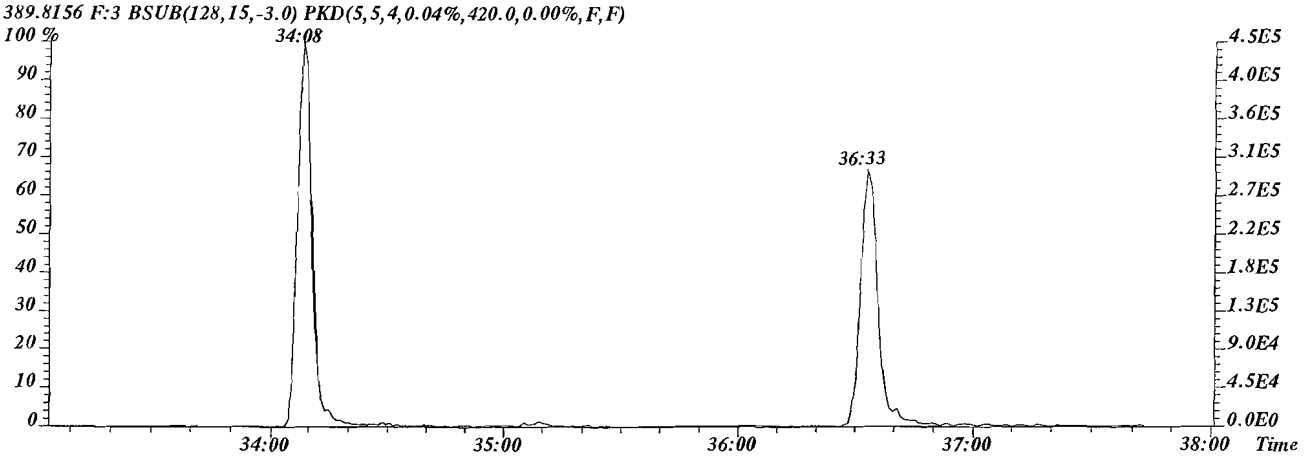
File:0208030F #1-308 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290
373.8208 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



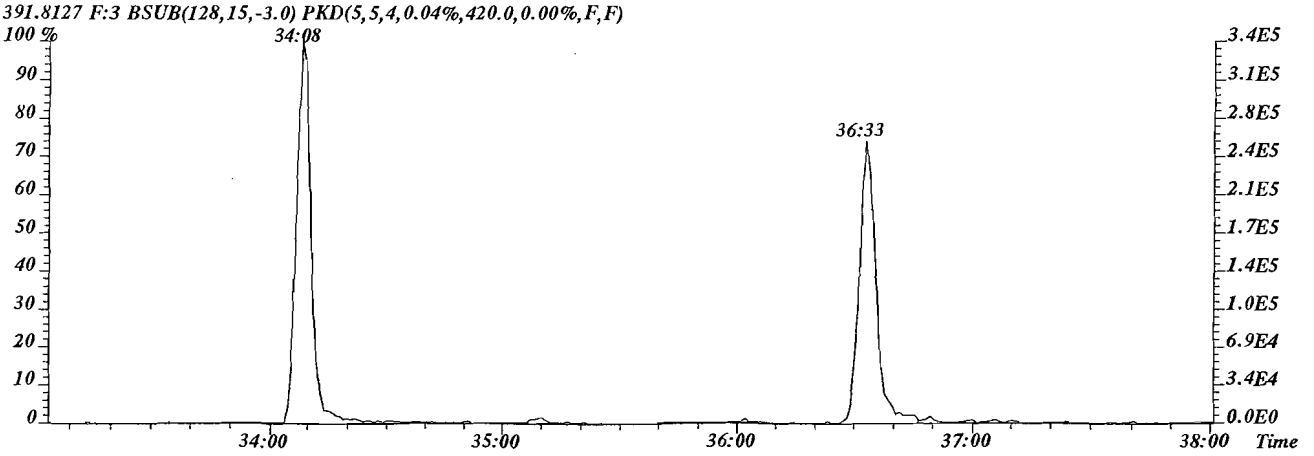
375.8178 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



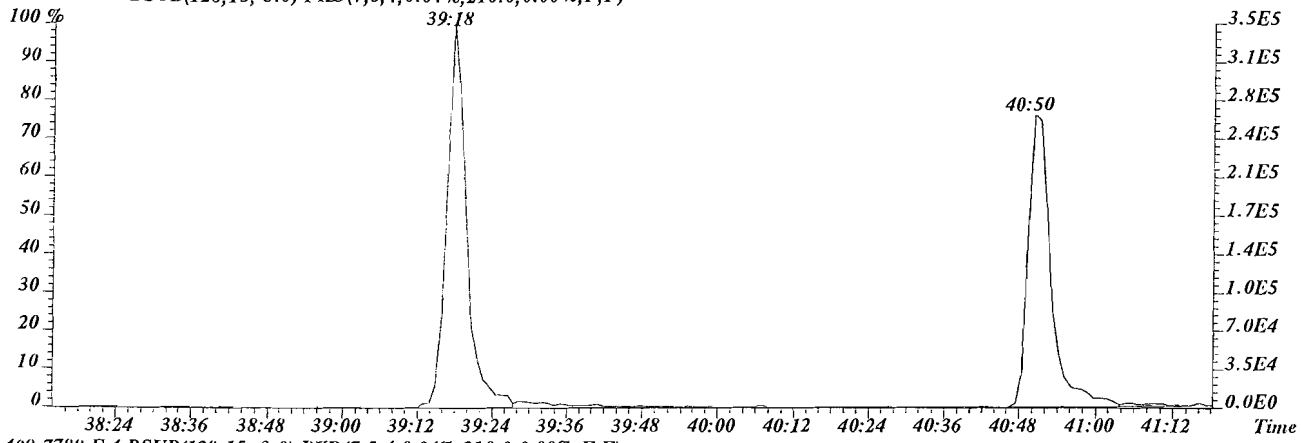
389.8156 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



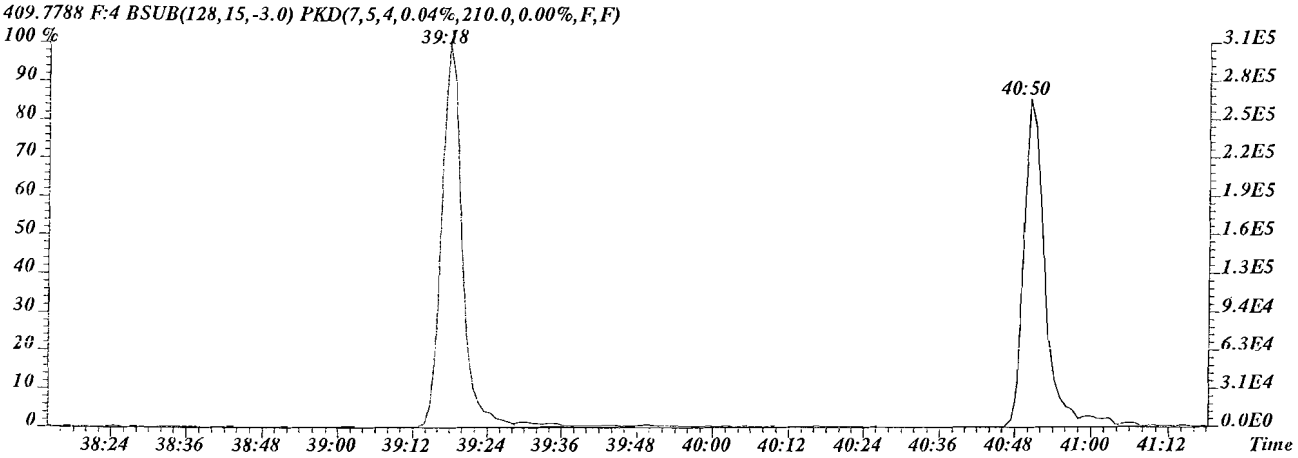
391.8127 F:3 BSUB(128,15,-3.0) PKD(5,5,4,0.04%,420.0,0.00%,F,F)



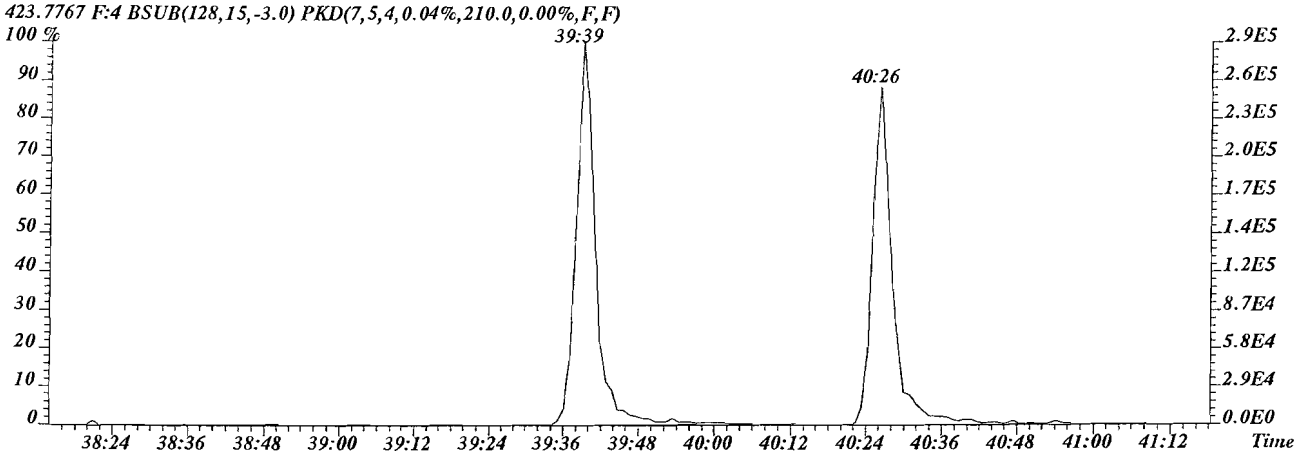
File:0208030F #1-192 Acq:20-MAR-2008 08:26:38 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03200801 Exp:8290
407.7818 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



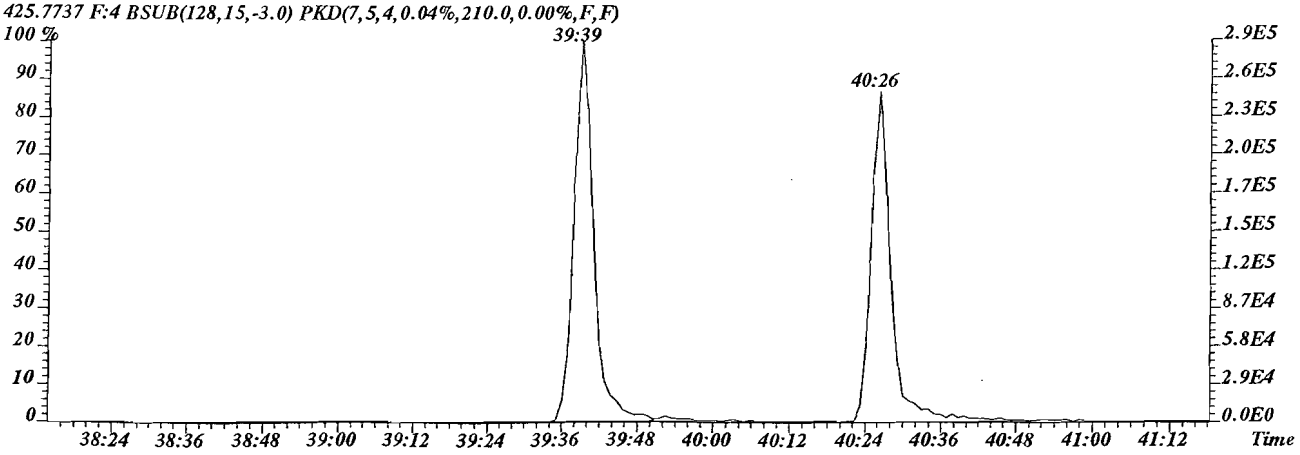
409.7788 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



423.7767 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



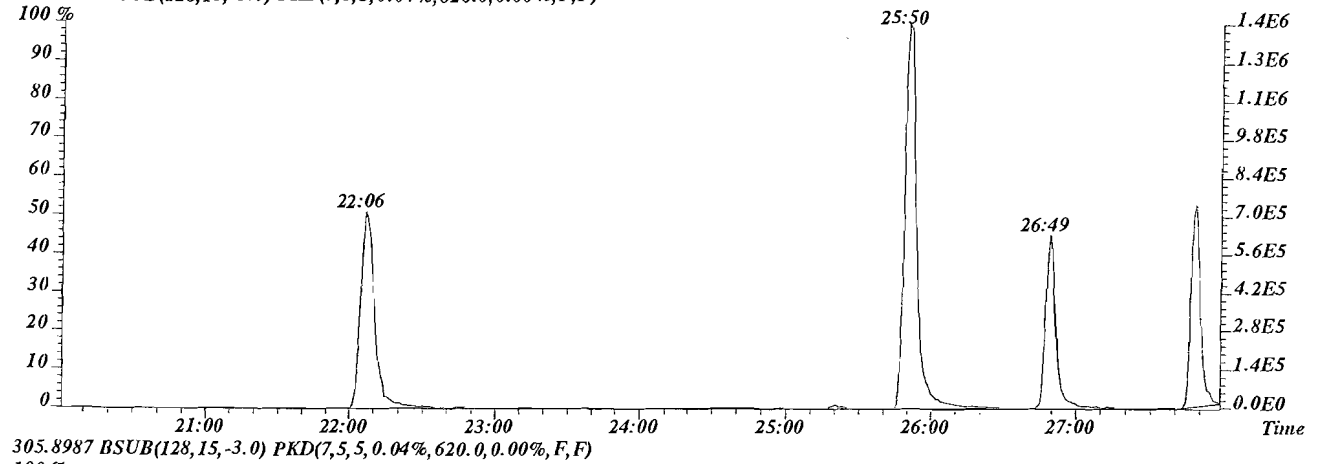
425.7737 F:4 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,210.0,0.00%,F,F)



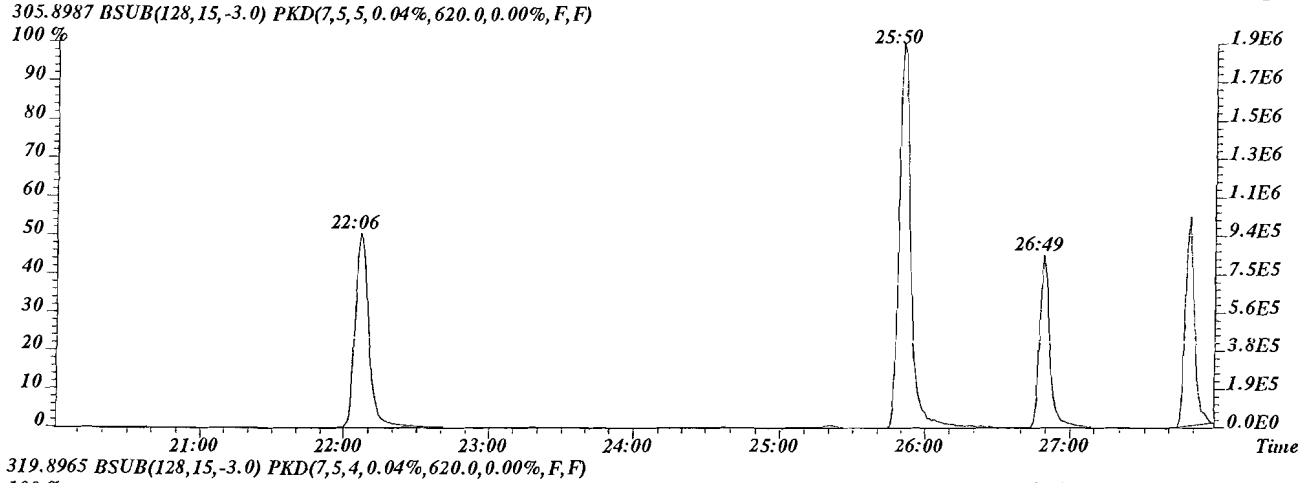
Run #1 Filename A829004B S: 1 I: 1 Acquired: 19-MAR-08 18:02:56 Processed: 21-MAR-08 11:38:29
Run: Analyte: WDM Cal: Results: 0208030FW Version: V3.6 19-OCT-2005 15:45:13
Sample text: WDM_03190801 Analyst: ANALYST:CSM Instrument : AutoSpec
Comments: ~~10~~ 20 ng 3/21/08 0.000

	Typ	Name	#Hom	Resp	RA		RT	Conc (pg)	Tox #1	DL	Rec	Mod?
0	Unk	1,3,6,8-TCDF	1	1.060e+07	0.76	y	22:06	*	*	*	-	n
2	Unk	1,2,8,9-TCDF	1	7.570e+06	0.73	y	27:48	*	*	*	-	n
3	Unk	1,3,6,8-TCDD	1	6.619e+06	0.78	y	23:45	*	*	*	-	n
4	Unk	1,2,8,9-TCDD	1	5.512e+06	0.74	y	27:48	*	*	*	-	n
5	Unk	1,3,4,6,8-PeCDF	1	6.672e+06	1.47	y	28:07	*	*	*	-	y
6	Unk	1,2,3,8,9-PeCDF	1	4.123e+06	1.44	y	32:21	*	*	*	-	n
7	Unk	1,2,4,7,9-PeCDD	1	4.993e+06	1.52	y	29:35	*	*	*	-	n
8	Unk	1,2,3,8,9-PeCDD	1	4.333e+06	1.53	y	32:12	*	*	*	-	n
9	Unk	1,2,3,4,6,8-HxCDF	1	5.444e+06	1.24	y	33:30	*	*	*	-	n
10	Unk	1,2,3,7,8,9-HxCDF	1	3.538e+06	1.21	y	37:10	*	*	*	-	n
11	Unk	1,2,4,6,7,9-HxCDD	1	4.723e+06	1.28	y	34:12	*	*	*	-	n
12	Unk	1,2,3,7,8,9-HxCDD	1	3.962e+06	1.29	y	36:37	*	*	*	-	n
13	Unk	1,2,3,4,6,7,9-HpCDF	1	3.747e+06	1.04	y	39:21	*	*	*	-	n
14	Unk	1,2,3,4,7,8,9-HpCDF	1	3.075e+06	1.03	y	40:54	*	*	*	-	n
15	Unk	1,2,3,4,6,7,9-HpCDD	1	3.120e+06	1.03	y	39:42	*	*	*	-	n
16	Unk	1,2,3,4,6,7,8-HpCDD	1	2.752e+06	1.03	y	40:30	*	*	*	-	n
17	IS	13C-2,3,7,8-TCDF	1	9.635e+06	0.80	y	25:49	*	-	*	*	n
18	IS	13C-2,3,7,8-TCDD	1	5.749e+06	0.80	y	26:39	*	-	*	*	n

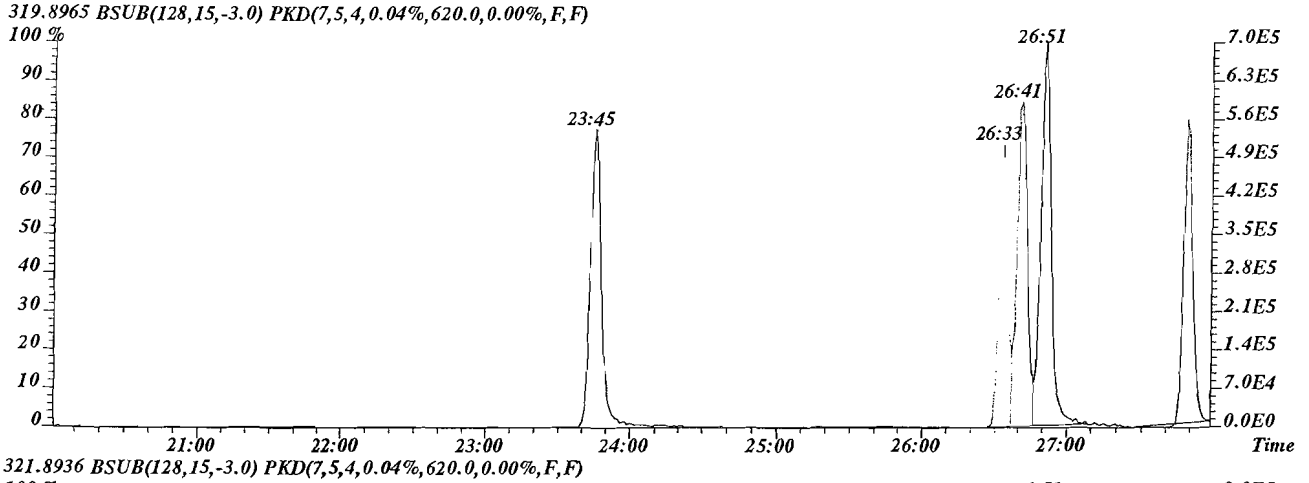
File:A829004B #1-485 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290
303.9016 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



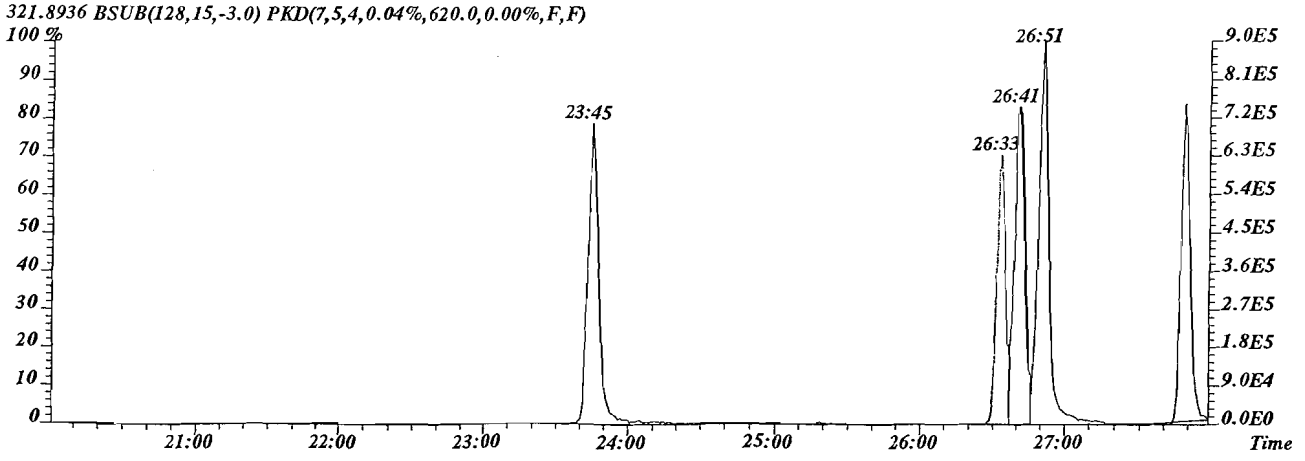
305.8987 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



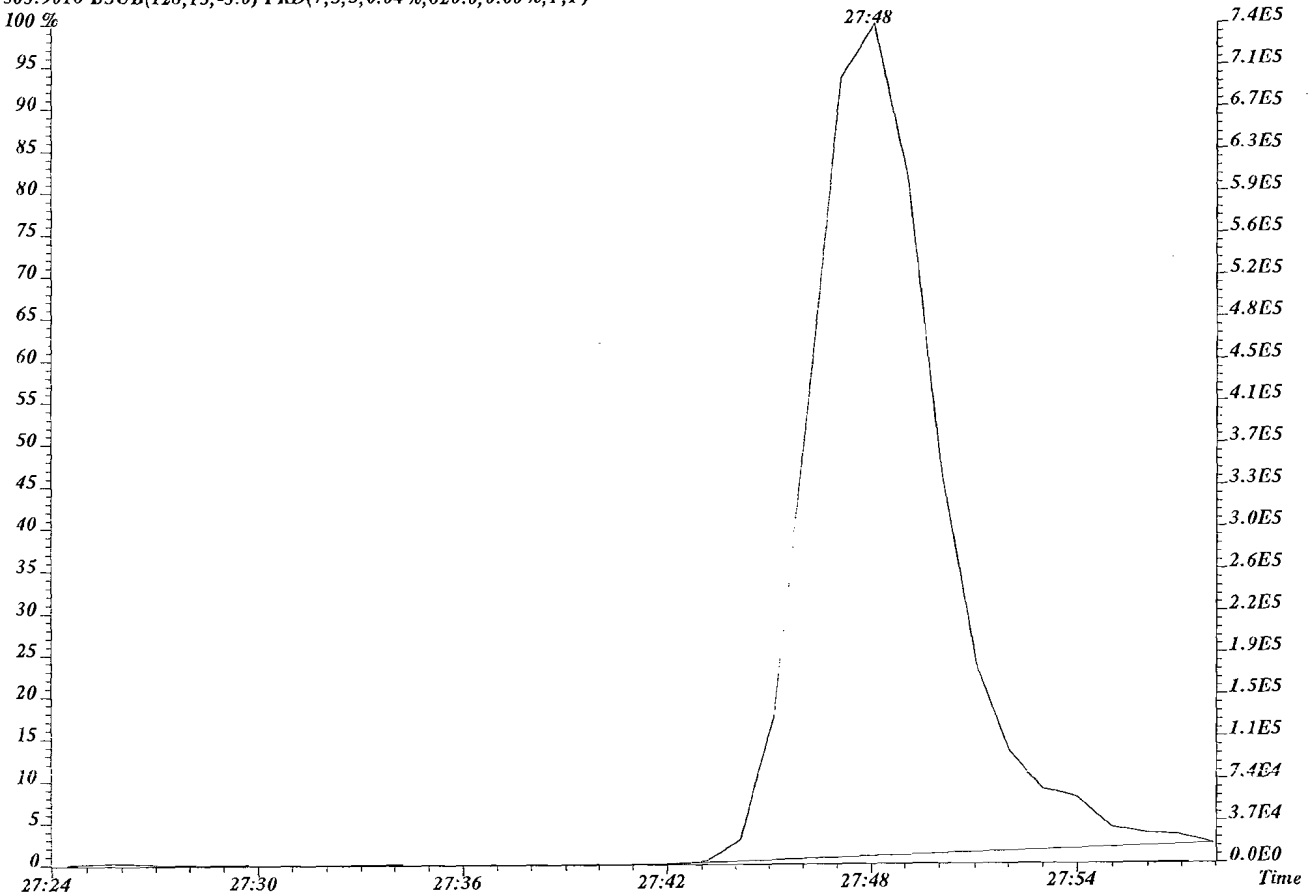
319.8965 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



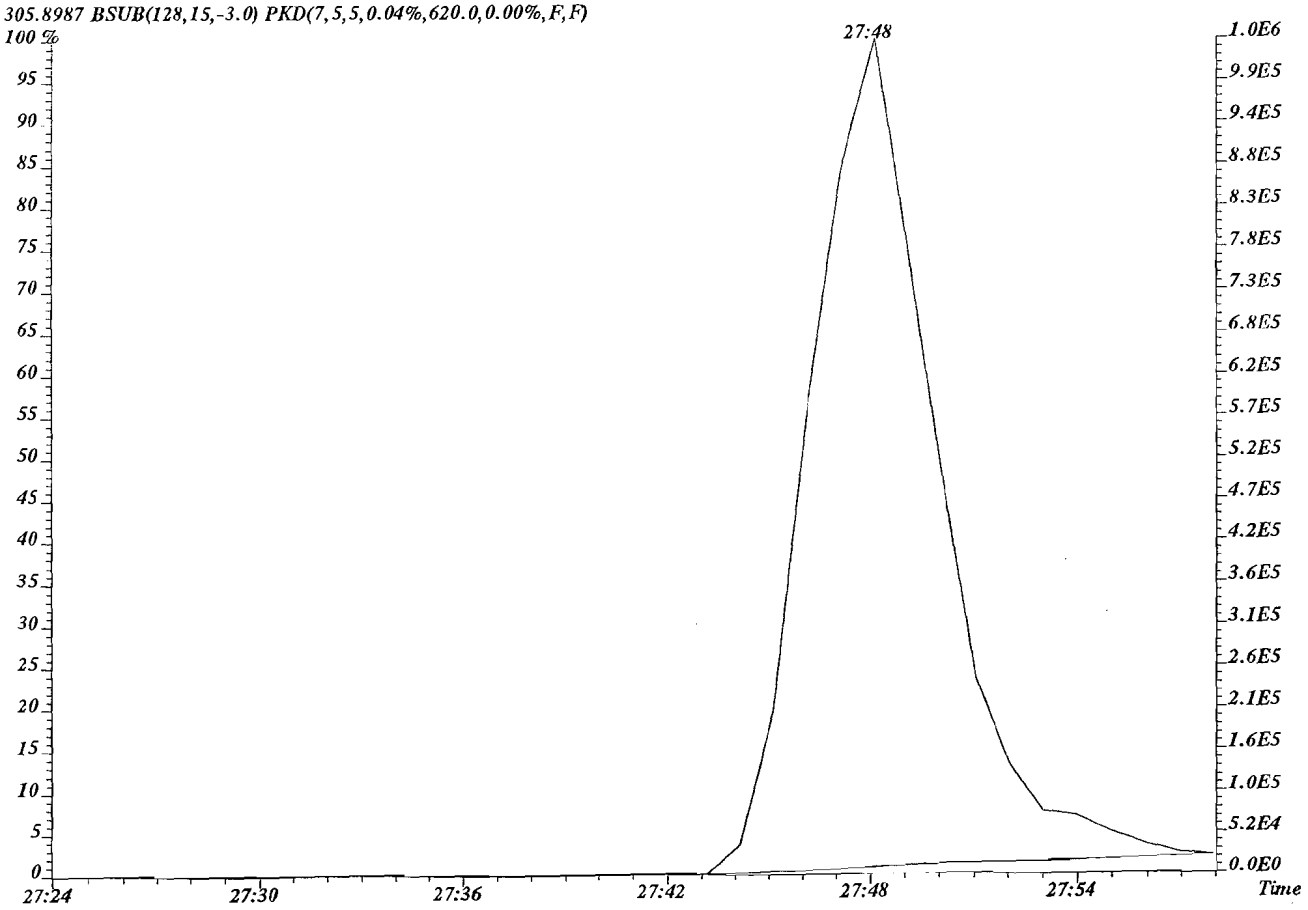
321.8936 BSUB(128,15,-3.0) PKD(7,5,4,0.04%,620.0,0.00%,F,F)



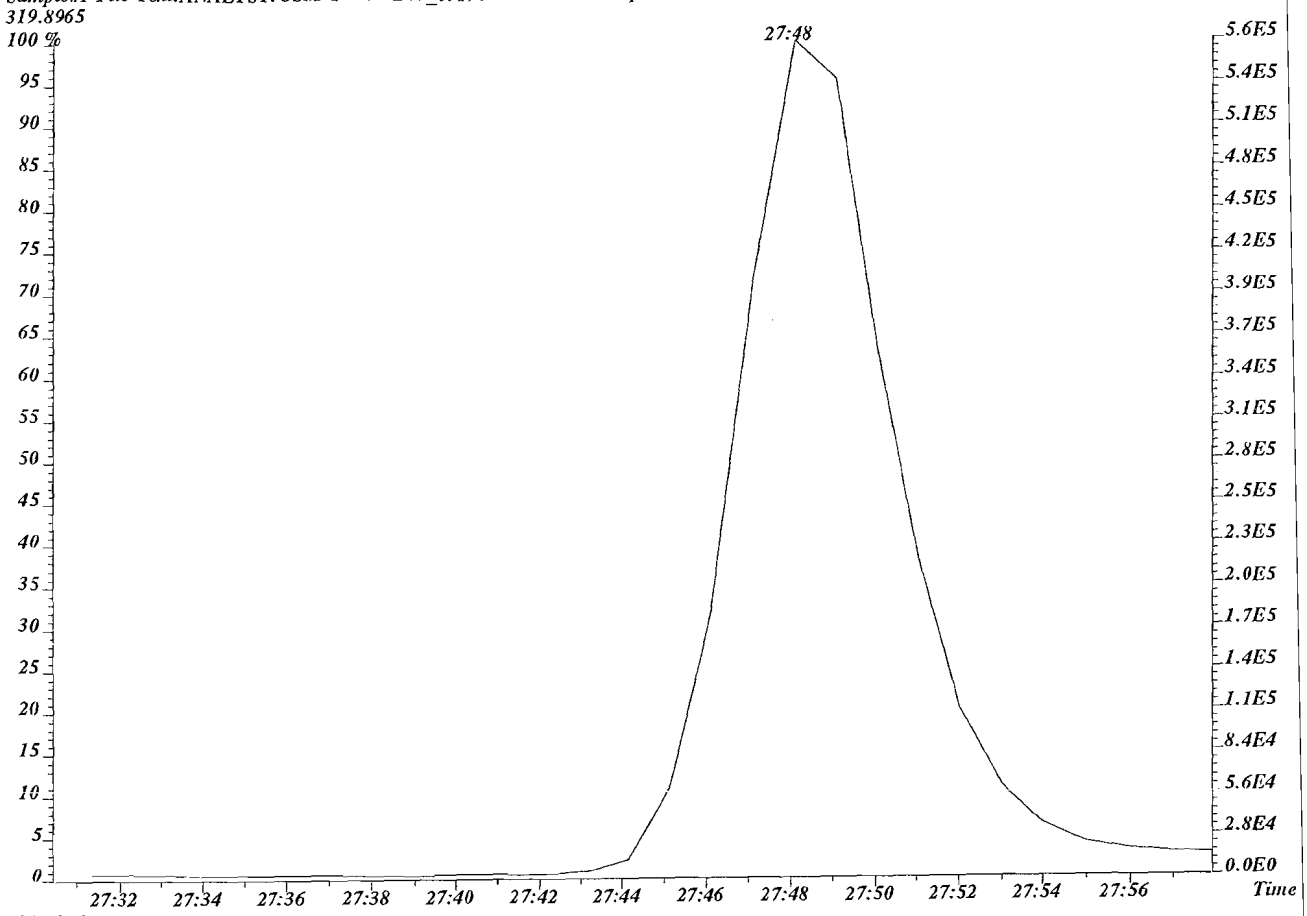
File:A829004B #1-485 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290
303.9016 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)

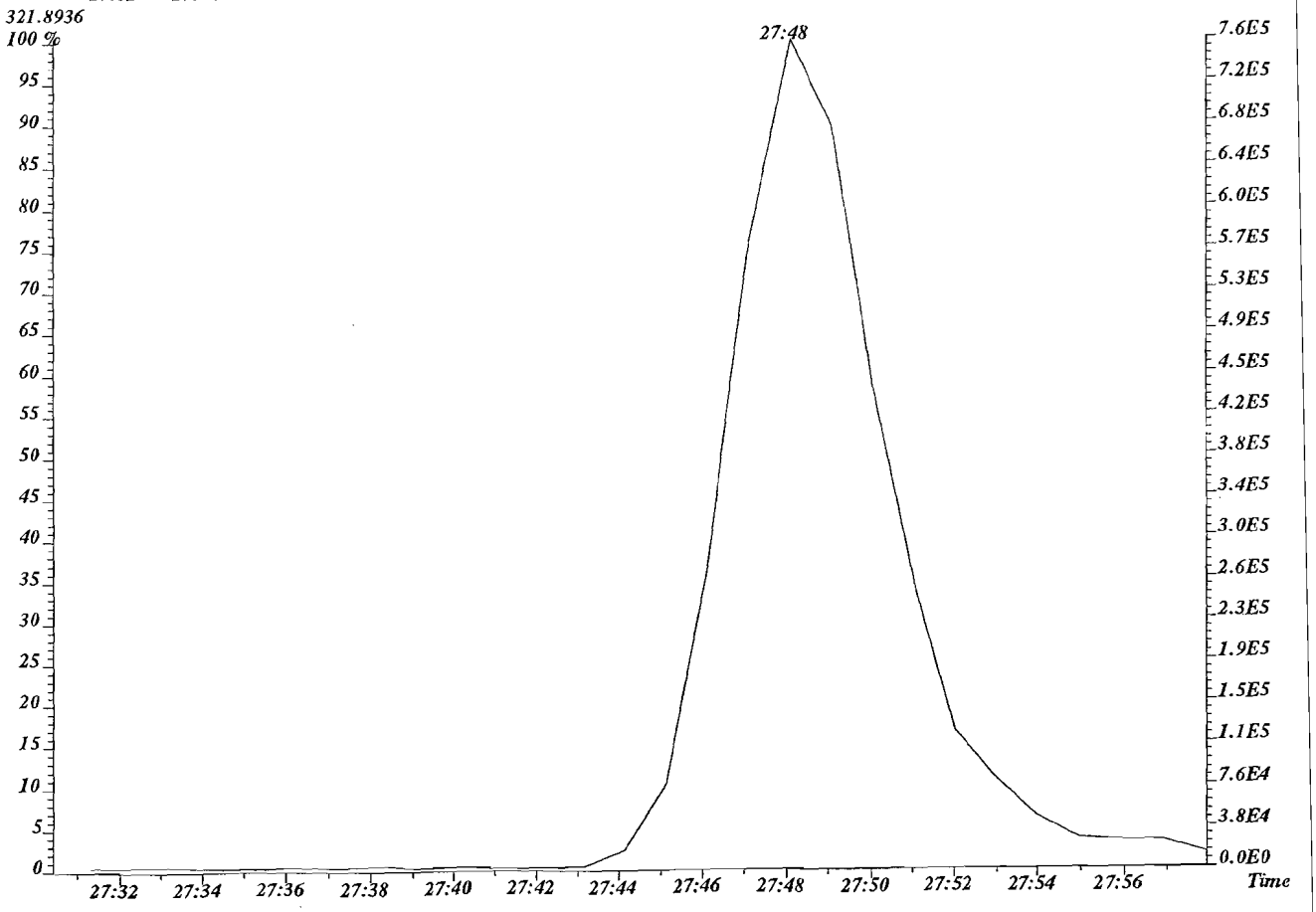


305.8987 BSUB(128,15,-3.0) PKD(7,5,5,0.04%,620.0,0.00%,F,F)



File:A829004B #1-485 Acq:19-MAR-2008 18:02:56 GC EI+ Voltage SIR AutoSpec
Sample#1 File Text:ANALYST:CSM Text:WDM_03190801 Exp:8290





USEPA

5DFC-Form V-HR CDD-3
CDD/CDF ANALYTICAL SEQUENCE SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: AutoSpec

Initial Calib. Date(s): 3/19/2008 3/19/2008

Initial Calib. Times: 18:52 22:13

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

LAB SAMPLE ID	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
CS1_A929004	A829004	A829004B S:2	3/19/2008	18:52
CS2_A829004	A829004	A829004B S:3	3/19/2008	19:43
CS3_A829004	A829004	A829004B S:4	3/19/2008	20:33
CS4_A829004	A829004	A829004B S:5	3/19/2008	21:23
CS5_A829004	A829004	A829004B S:6	3/19/2008	22:13
CCAL._829004C01	CCAL._A829004C01	A829004B S:15	3/20/2008	5:43
INS._BLANK	INS._BLANK	A829004B S:7	3/19/2008	23:03
INS._BLANK	INS._BLANK	A829004B S:8	3/19/2008	23:53
0208030-MB	METHOD_BLANK	A829004B S:9	3/20/2008	0:43
0208030-3	1316057_uf	A829004B S:10	3/20/2008	1:33
0208030-9	1316062_uf	A829004B S:11	3/20/2008	2:23
0208030-11	1316058_uf	A829004B S:12	3/20/2008	3:13
0208030-13	1316061_uf	A829004B S:13	3/20/2008	4:03
0208030-15	1316074_uf	A829004B S:14	3/20/2008	4:53
CCAL._A829004C02	CCAL._A829004C02	0208030f S:2	3/20/2008	9:16
CCAL._A829004C03	CCAL._A829004C03	0208030f S:9	3/20/2008	15:20
INS._BLANK	INS._BLANK	0208030f S:3	3/20/2008	10:06
0208030-19	1316060_uf	0208030f S:4	3/20/2008	10:56
0208030-22	1316059_uf	0208030f S:5	3/20/2008	11:47
0208030-3MS	1316057_uf_MS	0208030f S:6	3/20/2008	12:37
0208030-3MSD	1316057_uf_MSD	0208030f S:7	3/20/2008	13:27
0208030-LS	Lab_Spike	0208030f S:8	3/20/2008	14:30

frm5cdiox040505

Sequence Acquisition Parameters
Run: 0208030f

	c/q	Data file	S	I	File text	Sample Text	Expt file	Bot	O/w	Inlet meth	Inlet file	Done?
1	q	A829004	1	1	ANALYST:CSM	WDM_0319801	8290	1	n	GC	8290GC	n
2	c	A829004	2	1	ANALYST:CSM	CS1_A829004	8290	1	n	GC	8290GC	n
3	c	A829004	3	1	ANALYST:CSM	CS2_A829004	8290	1	n	GC	8290GC	n
4	c	A829004	4	1	ANALYST:CSM	CS3_A829004	8290	1	n	GC	8290GC	n
5	c	A829004	5	1	ANALYST:CSM	CS4_A829004	8290	1	n	GC	8290GC	n
6	c	A829004	6	1	ANALYST:CSM	CS5_A829004	8290	1	n	GC	8290GC	n
7	q	A829004	7	1	ANALYST:CSM	INS._BLANK	8290	1	n	GC	8290GC	n
8	q	A829004	8	1	ANALYST:CSM	INS._BLANK	8290	1	n	GC	8290GC	n
9	q	A829004	9	1	ANALYST:CSM	0208030-MB	8290	1	n	GC	8290GC	n
10	q	A829004	10	1	ANALYST:CSM	0208030-3	8290	1	n	GC	8290GC	n
11	q	A829004	11	1	ANALYST:CSM	0208030-9	8290	1	n	GC	8290GC	n
12	q	A829004	12	1	ANALYST:CSM	0208030-11	8290	1	n	GC	8290GC	n
13	q	A829004	13	1	ANALYST:CSM	0208030-13	8290	1	n	GC	8290GC	n
14	q	A829004	14	1	ANALYST:CSM	0208030-15	8290	1	n	GC	8290GC	n
15	q	A829004	15	1	ANALYST:CSM	CCAL._A829004C01	8290	1	n	GC	8290GC	n
16	q	0208030F	1	1	ANALYST:CSM	WDM_03200801	8290	1	n	GC	8290GC	n
17	q	0208030F	2	1	ANALYST:CSM	CCAL._A829004C02	8290	1	n	GC	8290GC	n
18	q	0208030F	3	1	ANALYST:CSM	INS._BLANK	8290	1	n	GC	8290GC	n
19	q	0208030F	4	1	ANALYST:CSM	0208030-19	8290	1	n	GC	8290GC	n
20	q	0208030F	5	1	ANALYST:CSM	0208030-22	8290	1	n	GC	8290GC	n
21	q	0208030F	6	1	ANALYST:CSM	0208030-3MS	8290	1	n	GC	8290GC	n
22	q	0208030F	7	1	ANALYST:CSM	0208030-3MSD	8290	1	n	GC	8290GC	n
23	q	0208030F	8	1	ANALYST:CSM	0208030-LS	8290	1	n	GC	8290GC	n
24	q	0208030F	9	1	ANALYST:CSM	CCAL._A829004C03	8290	1	n	GC	8290GC	n

Sequence Acquisition Parameters
Run: A829004

	c/q	Data file	S	I	File text	Sample Text	Expt file	Bot	O/w	Inlet meth	Inlet file	Done?
1	c	A829004B	2	1	ANALYST:CSM	CS1_A929004	default	1	n	GC	default	y
2	c	A829004B	3	1	ANALYST:CSM	CS2_A829004	default	1	n	GC	default	y
3	c	A829004B	4	1	ANALYST:CSM	CS3_A829004	default	1	n	GC	default	y
4	c	A829004B	5	1	ANALYST:CSM	CS4_A829004	default	1	n	GC	default	y
5	c	A829004B	6	1	ANALYST:CSM	CS5_A829004	default	1	n	GC	default	y
6	q	A829004B	15	1	ANALYST:CSM	CCAL._829004C01	default	1	n	GC	default	y
7	q	A829004B	7	1	ANALYST:CSM	INS._BLANK	default	1	n	GC	default	y
8	q	A829004B	8	1	ANALYST:CSM	INS._BLANK	default	1	n	GC	default	y
9	q	A829004B	9	1	ANALYST:CSM	0208030-MB	default	1	n	GC	default	y
10	q	A829004B	10	1	ANALYST:CSM	0208030-3	default	1	n	GC	default	y
11	q	A829004B	11	1	ANALYST:CSM	0208030-9	default	1	n	GC	default	y
12	q	A829004B	12	1	ANALYST:CSM	0208030-11	default	1	n	GC	default	y
13	q	A829004B	13	1	ANALYST:CSM	0208030-13	default	1	n	GC	default	y
14	q	A829004B	14	1	ANALYST:CSM	0208030-15	default	1	n	GC	default	y
15	q	0208030f	2	1	ANALYST:CSM	CCAL._A829004C02	default	1	n	GC	default	y
16	q	0208030f	9	1	ANALYST:CSM	CCAL._A829004C03	default	1	n	GC	default	y
17	q	0208030f	3	1	ANALYST:CSM	INS._BLANK	default	1	n	GC	default	y
18	q	0208030f	4	1	ANALYST:CSM	0208030-19	default	1	n	GC	default	y
19	q	0208030f	5	1	ANALYST:CSM	0208030-22	default	1	n	GC	default	y
20	q	0208030f	6	1	ANALYST:CSM	0208030-3MS	default	1	n	GC	default	y
21	q	0208030f	7	1	ANALYST:CSM	0208030-3MSD	default	1	n	GC	default	y
22	q	0208030f	8	1	ANALYST:CSM	0208030-LS	default	1	n	GC	default	y

Sequence Summary Table
Run: A829004

	c/q	Data Area	Data File	S	I	AnalyteTable	Factr #1	Factr #2	Size	MP	DLFac	HC	Sample Text	Done
1	c	0208030	A829004B	2	1	A829004	1.000	1.000	1.00	n	1.00	y	CS1_A929004	y
2	c	0208030	A829004B	3	1	A829004	2.000	1.000	1.00	n	1.00	y	CS2_A829004	y
3	c	0208030	A829004B	4	1	A829004	10.000	1.000	1.00	n	1.00	y	CS3_A829004	y
4	c	0208030	A829004B	5	1	A829004	100.000	1.000	1.00	n	1.00	y	CS4_A829004	y
5	c	0208030	A829004B	6	1	A829004	200.000	1.000	1.00	n	1.00	y	CS5_A829004	y
6	q	0208030	A829004B	15	1	A829004	10.000	1.000	1.00	n	1.00	y	CCAL._829004C01	y
7	q	0208030	A829004B	7	1	0208030f	1.000	1.000	1.00	n	1.00	y	INS._BLANK	y
8	q	0208030	A829004B	8	1	0208030F	1.000	1.000	1.00	n	1.00	y	INS._BLANK	y
9	q	0208030	A829004B	9	1	0208030F	1.000	1.000	1.00	n	1.00	y	0208030-MB	y
10	q	0208030	A829004B	10	1	0208030F	1.000	1.000	1.00	n	1.00	y	0208030-3	y
11	q	0208030	A829004B	11	1	0208030F	1.000	1.000	1.00	n	1.00	y	0208030-9	y
12	q	0208030	A829004B	12	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-11	y
13	q	0208030	A829004B	13	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-13	y
14	q	0208030	A829004B	14	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-15	y
15	q	0208030	0208030f	2	1	A829004	10.000	1.000	1.00	n	1.00	y	CCAL._A829004C02	y
16	q	0208030	0208030f	9	1	A829004	10.000	1.000	1.00	n	1.00	y	CCAL._A829004C03	y
17	q	0208030	0208030f	3	1	0208030f	1.000	1.000	1.00	n	1.00	y	INS._BLANK	y
18	q	0208030	0208030f	4	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-19	y
19	q	0208030	0208030f	5	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-22	y
20	q	0208030	0208030f	6	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-3MS	y
21	q	0208030	0208030f	7	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-3MSD	y
22	q	0208030	0208030f	8	1	0208030f	1.000	1.000	1.00	n	1.00	y	0208030-LS	y

PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY HIGH RESOLUTION

LAB Sample ID	CLIENT SAMPLE ID	LAB FILE ID		DATE ANALYZED	TIME
CS1_A829004	A829004	A829004B	S:2	19-MAR-08	18:52
CS2_A829004	A829004	A829004B	S:3	19-MAR-08	19:43
CS3_A829004	A829004	A829004B	S:4	19-MAR-08	20:33
CS4_A829004	A829004	A829004B	S:5	19-MAR-08	21:23
CS5_A829004	A829004	A829004B	S:6	19-MAR-08	22:13
CCAL._829004C01	CCAL._A829004C01	A829004B	S:15	20-MAR-08	05:43
INS._BLANK	INS._BLANK	A829004B	S:7	19-MAR-08	23:03
INS._BLANK	INS._BLANK	A829004B	S:8	19-MAR-08	23:53
0208030-MB	METHOD_BLANK	A829004B	S:9	20-MAR-08	00:43
0208030-3	1316057_uf	A829004B	S:10	20-MAR-08	01:33
0208030-9	1316062_uf	A829004B	S:11	20-MAR-08	02:23
0208030-11	1316058_uf	A829004B	S:12	20-MAR-08	03:13
0208030-13	1316061_uf	A829004B	S:13	20-MAR-08	04:03
0208030-15	1316074_uf	A829004B	S:14	20-MAR-08	04:53
CCAL._A829004C02	CCAL._A829004C02	0208030f	S:2	20-MAR-08	09:16
CCAL._A829004C03	CCAL._A829004C03	0208030f	S:9	20-MAR-08	15:20
INS._BLANK	INS._BLANK	0208030f	S:3	20-MAR-08	10:06
0208030-19	1316060_uf	0208030f	S:4	20-MAR-08	10:56
0208030-22	1316059_uf	0208030f	S:5	20-MAR-08	11:47
0208030-3MS	1316057_uf_MS	0208030f	S:6	20-MAR-08	12:37
0208030-3MSD	1316057_uf_MSD	0208030f	S:7	20-MAR-08	13:27
0208030-LS	Lab_Spike	0208030f	S:8	20-MAR-08	14:30

USEPA - 8290

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6DFA - Form VI_HR CDD-1
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: Autospec

Initial Calib. Date(s): 03/19/2008 03/19/2008 File_RRF A829004

Initial Calib. Times: 18:52 22:13 File_RSD 0208030f

TARGET ANALYTES	RR/RRF CS1_A829004	CS2_A829004	CS3_A829004	CS4_A829004	CS5_A829004	MEAN RR/RRF	%RSD		QC LIMITS
2,3,7,8-TCDF	0.902	0.824	0.850	0.854	0.871	0.860	3.32		± 20%
1,2,3,7,8-PeCDF	0.813	0.798	0.844	0.848	0.832	0.827	2.57		± 20%
2,3,4,7,8-PeCDF	0.794	0.796	0.859	0.882	0.887	0.844	5.399		± 20%
1,2,3,4,7,8-HxCDF	0.935	0.924	1.000	1.004	0.957	0.964	3.794		± 20%
1,2,3,6,7,8-HxCDF	1.086	1.099	1.139	1.053	0.973	1.070	5.823		± 20%
2,3,4,6,7,8-HxCDF	0.91	0.919	0.960	0.899	0.857	0.909	4.071		± 20%
1,2,3,7,8,9-HxCDF	0.749	0.772	0.821	0.845	0.811	0.800	4.819		± 20%
1,2,3,4,6,7,8-HpCDF	1.279	1.299	1.295	1.347	1.379	1.320	3.162		± 20%
1,2,3,4,7,8,9-HpCDF	0.97	1.014	1.075	1.270	1.318	1.129	13.794		± 20%
OCDF	0.816	0.870	0.940	1.013	1.040	0.936	10.07		± 20%
2,3,7,8-TCDD	1.125	1.030	1.077	1.054	1.077	1.073	3.264		± 20%
1,2,3,7,8-PeCDD	1.003	0.959	0.985	1.010	1.009	0.993	2.186		± 20%
1,2,3,4,7,8-HxCDD	0.893	0.939	0.959	0.984	1.016	0.958	4.825		± 20%
1,2,3,6,7,8-HxCDD	1.054	1.010	1.030	0.958	0.968	1.004	4.051		± 20%
1,2,3,7,8,9-HxCDD	1.021	1.013	1.047	0.967	0.995	1.008	2.948		± 20%
1,2,3,4,6,7,8-HpCDD	0.871	0.887	0.930	0.923	0.908	0.904	2.713		± 20%
OCDD	0.926	0.866	0.935	0.940	0.941	0.922	3.462		± 20%
LABELED COMPOUNDS									
13C-2,3,7,8-TCDF	1.371	1.358	1.411	1.444	1.507	1.418	4.231		± 35%
13C-1,2,3,7,8-PeCDF	1.114	1.104	1.158	1.287	1.348	1.202	9.084		± 35%
13C-1,2,3,6,7,8-HxCDF	1.146	1.211	1.177	1.322	1.407	1.253	8.693		± 35%
13C-1,2,3,4,6,7,8-HpCDF	0.761	0.763	0.797	0.782	0.786	0.778	1.961		± 35%
13C-2,3,7,8-TCDD	1.011	1.020	1.028	1.100	1.109	1.054	4.451		± 35%
13C-1,2,3,7,8-PeCDD	0.774	0.781	0.826	0.897	0.918	0.840	7.85		± 35%
13C-1,2,3,6,7,8-HxCDD	0.942	0.986	0.973	1.061	1.041	1.001	4.906		± 35%
13C-1,2,3,4,6,7,8-HpCDD	0.878	0.858	0.905	0.928	0.944	0.903	3.916		± 35%
13C-OCDD	0.835	0.806	0.891	0.940	0.947	0.884	7.086		± 35%
37C12-2,3,7,8-TCDD	2.075	2.113	2.043	2.038	2.060	2.066	1.457		± 35%
13C-2,3,4,7,8-PeCDF	1.093	0.910	0.957	0.965	0.967	0.978	6.977		± 35%
13C-1,2,3,4,7,8-HxCDF	0.993	0.930	0.932	0.880	0.845	0.916	6.17		± 35%
13C-1,2,3,4,7,8-HxCDD	0.883	0.836	0.863	0.905	0.958	0.889	5.208		± 35%
13C-1,2,3,4,7,8,9-HpCDF	0.655	0.723	0.745	0.818	0.843	0.757	9.997		± 35%
13C12-1,2,3,7,8,9-HxCDF	0.779	0.837	0.912	1.012	1.052	0.918	12.492		± 35%

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6DFA - Form VI_HR CDD-2
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale Manor TO No.: NA SDG No.: 1316057

TARGET ANALYTES	IONS	CS1_A929004	CS2_A829004	CS3_A829004	CS4_A829004	CS5_A829004	FLAG	QC LIMITS Low	High
2,3,7,8-TCDF	320/322	0.79	0.75	0.78	0.76	0.76		0.65	0.89
1,2,3,7,8-PeCDF	304/306	1.43	1.52	1.53	1.52	1.51		1.32	1.78
2,3,4,7,8-PeCDF	340/342	1.47	1.45	1.52	1.51	1.49		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	1.2	1.23	1.2	1.22	1.22		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.18	1.25	1.2	1.22	1.22		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	1.12	1.19	1.19	1.23	1.2		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	1.23	1.21	1.22	1.21	1.21		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.1	1.05	1.01	1.04	1.05		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	0.96	0.99	1.04	1.05	1.04		0.88	1.20
OCDF	390/392	0.93	0.93	0.92	0.93	0.93		0.76	1.02
2,3,7,8-TCDD	374/376	0.83	0.76	0.77	0.78	0.78		0.65	0.89
1,2,3,7,8-PeCDD	374/376	1.56	1.51	1.58	1.57	1.55		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	1.26	1.2	1.25	1.29	1.27		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.28	1.2	1.27	1.28	1.28		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.24	1.21	1.27	1.3	1.27		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	1	0.98	0.99	1.02	1.01		0.88	1.20
OCDD	442/444	0.88	0.85	0.86	0.87	0.86		0.76	1.02
LABELED COMPOUNDS									
13C-2,3,7,8-TCDF	316/318	0.78	0.81	0.79	0.79	0.79		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.57	1.55	1.54	1.56	1.57		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	0.51	0.51	0.52	0.5	0.53		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.44	0.43	0.43	0.43	0.43		0.37	0.51
13C-2,3,7,8-TCDD	332/334	0.76	0.76	0.77	0.77	0.77		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	1.6	1.61	1.59	1.57	1.56		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	1.27	1.31	1.31	1.31	1.34		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.06	1.04	1.05	1.05	1.03		0.88	1.20
13C-OCDD	470/472	0.87	0.86	0.86	0.86	0.87		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA					NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	1.56	1.49	1.55	1.54	1.54		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.50	0.50	0.51	0.52	0.52		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	1.19	1.14	1.31	1.33	1.32		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.50	0.43	0.43	0.43	0.43		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.55	0.54	0.51	0.52	0.52		0.43	0.59
13C-1,2,3,4-TCDD	332/334	0.77	0.78	0.78	0.78	0.78		0.65	0.89
13C-1,2,3,7,8,9-HxCDD	402/404	1.29	1.34	1.35	1.33	1.35		1.05	1.43

Quality Control (QC) limits represent ± 15% window around the theoretical ion abundance ratio.

The laboratory must flag any analyte in any calibration soution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

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7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: A829004BS:15 Date Analyzed: 3/20/2008 Time Analyzed: 5:43

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 to 3/19/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	%D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.760	0.860	-11.595		0.73		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.847	0.827	2.476		1.54		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.841	0.844	-0.328		1.49		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	1.016	0.964	5.351		1.19		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.147	1.070	7.193		1.23		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.952	0.909	4.742		1.2		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.824	0.800	2.958		1.21		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.336	1.320	1.175		1.03		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	1.073	1.129	-4.922		1.05		0.88	1.20
OCDF	390/392	0.961	0.936	2.693		0.91		0.76	1.02
2,3,7,8-TCDD	374/376	0.974	1.073	-9.227		0.78		0.65	0.89
1,2,3,7,8-PeCDD	374/376	0.988	0.993	-0.503		1.56		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	0.974	0.958	1.695		1.28		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	0.992	1.004	-1.240		1.29		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.029	1.008	2.098		1.27		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.910	0.904	0.709		1.02		0.88	1.20
OCDD	442/444	0.922	0.922	0.025		0.83		0.76	1.02
LABELED COMPOUNDS					±30%				
13C-2,3,7,8-TCDF	316/318	1.271	1.418	-10.387		0.79		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.122	1.202	-6.678		1.56		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	1.216	1.253	-2.971		0.53		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.821	0.778	5.582		0.43		0.37	0.51
13C-2,3,7,8-TCDD	332/334	1.015	1.054	-3.673		0.75		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.779	0.840	-7.290		1.58		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.939	1.001	-6.145		1.37		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	0.915	0.903	1.294		1.07		0.88	1.20
13C-OCDD	470/472	0.840	0.884	-4.974		0.86		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	1.915	2.066	-7.302		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.920	0.978	-5.949		1.49		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.935	0.916	2.053		0.53		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.935	0.889	5.121		1.32		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.767	0.757	1.353		0.44		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.925	0.918	0.806		0.54		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.78		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.36		1.05	1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

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7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name:	DATA/ANALYSIS TECHNOLOGIES			Contract:	Loureio Engineering
Lab Code:	OH01241	Case No.: Centredale	TO No.: NA	SDG No.:	1316057
GC Column:	JWS-DB-5	ID: 0.25 (mm)		Instrument ID:	:Autospec
Lab File ID:	A829004BS:15	Date Analyzed: 3/20/2008		Time Analyzed:	5:43
Initial Calib. Times:	18:52 22:13		Initial Calib. Dates:	3/19/2008	3/19/2008

TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.001	25.75
1,2,3,7,8-PeCDF	1.001	30.35
2,3,4,7,8-PeCDF	1.029	31.20
1,2,3,4,7,8-HxCDF	0.996	34.82
1,2,3,6,7,8-HxCDF	1.000	34.97
2,3,4,6,7,8-HxCDF	1.023	35.77
1,2,3,7,8,9-HxCDF	1.058	36.97
1,2,3,4,6,7,8-HpCDF	1.000	39.30
1,2,3,4,7,8,9-HpCDF	1.039	40.83
OCDF	1.003	43.27
2,3,7,8-TCDD	1.001	26.62
1,2,3,7,8-PeCDD	1.001	31.60
1,2,3,4,7,8-HxCDD	0.997	35.98
1,2,3,6,7,8-HxCDD	1.000	36.12
1,2,3,7,8,9-HxCDD	1.014	36.62
1,2,3,4,6,7,8-HpCDD	1.000	40.43
OCDD	1.000	43.17
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.977	25.73
13C-1,2,3,7,8-PeCDF	1.151	30.33
13C-1,2,3,6,7,8-HxCDF	0.955	34.95
13C-1,2,3,4,6,7,8-HpCDF	1.073	39.28
13C-2,3,7,8-TCDD	1.009	26.58
13C-1,2,3,7,8-PeCDD	1.199	31.58
13C-1,2,3,6,7,8-HxCDD	0.986	36.10
13C-1,2,3,4,6,7,8-HpCDD	1.104	40.42
13C-OCDD	1.179	43.15
37C12-2,3,7,8-TCDD	1.001	26.60
13C-2,3,4,7,8-PeCDF	1.028	31.18
13C-1,2,3,4,7,8-HxCDF	0.996	34.80
13C-1,2,3,4,7,8-HxCDD	0.996	35.97
13C-1,2,3,4,7,8,9-HpCDF	1.010	40.83
13C12-1,2,3,7,8,9-HxCDF	1.010	36.95
Recovery Standard		
13C-1,2,3,4-TCDD	NA	26.35
13C-1,2,3,7,8,9-HxCDD	NA	36.60

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7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 0208030fS:2 Date Analyzed: 3/20/2008 Time Analyzed: 9:16

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 to 3/19/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	%D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.891	0.860	3.651		0.74		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.793	0.827	-4.157		1.56		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.808	0.844	-4.265		1.49		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	0.963	0.964	-0.055		1.18		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.106	1.070	3.410		1.2		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.889	0.909	-2.206		1.2		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.801	0.800	0.160		1.21		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.327	1.320	0.506		1.05		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	1.121	1.129	-0.734		1.09		0.88	1.20
OCDF	390/392	0.944	0.936	0.905		0.93		0.76	1.02
2,3,7,8-TCDD	374/376	1.047	1.073	-2.434		0.74		0.65	0.89
1,2,3,7,8-PeCDD	374/376	0.976	0.993	-1.755		1.55		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	0.934	0.958	-2.491		1.29		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.024	1.004	1.948		1.3		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.027	1.008	1.913		1.26		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.913	0.904	1.006		1.04		0.88	1.20
OCDD	442/444	0.927	0.922	0.495		0.87		0.76	1.02
LABELED COMPOUNDS					±30%				
13C-2,3,7,8-TCDF	316/318	1.421	1.418	0.189		0.78		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.071	1.202	-10.930		1.56		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	1.151	1.253	-8.155		0.49		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.705	0.778	-9.357		0.41		0.37	0.51
13C-2,3,7,8-TCDD	332/334	1.035	1.054	-1.789		0.77		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.770	0.840	-8.324		1.59		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.959	1.001	-4.195		1.27		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	0.807	0.903	-10.673		1.04		0.88	1.20
13C-OCDD	470/472	0.746	0.884	-15.649		0.87		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	2.047	2.066	-0.910		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.942	0.978	-3.702		1.57		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.892	0.916	-2.574		0.5		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.861	0.889	-3.133		1.27		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.763	0.757	0.792		0.4		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.899	0.918	-2.047		0.5		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.78		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.28		1.05	1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

frm7diox8290Rev1

USEPA-8290A

7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 0208030fS:2 Date Analyzed: 3/20/2008 Time Analyzed: 9:16

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 3/19/2008

TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.001	25.75
1,2,3,7,8-PeCDF	1.001	30.33
2,3,4,7,8-PeCDF	1.029	31.18
1,2,3,4,7,8-HxCDF	0.996	34.80
1,2,3,6,7,8-HxCDF	1.000	34.95
2,3,4,6,7,8-HxCDF	1.024	35.77
1,2,3,7,8,9-HxCDF	1.058	36.95
1,2,3,4,6,7,8-HpCDF	1.000	39.28
1,2,3,4,7,8,9-HpCDF	1.040	40.85
OCDF	1.003	43.25
2,3,7,8-TCDD	1.000	26.60
1,2,3,7,8-PeCDD	1.001	31.58
1,2,3,4,7,8-HxCDD	0.997	35.98
1,2,3,6,7,8-HxCDD	1.000	36.10
1,2,3,7,8,9-HxCDD	1.014	36.60
1,2,3,4,6,7,8-HpCDD	1.000	40.42
OCDD	1.000	43.15
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.977	25.73
13C-1,2,3,7,8-PeCDF	1.151	30.32
13C-1,2,3,6,7,8-HxCDF	0.955	34.93
13C-1,2,3,4,6,7,8-HpCDF	1.073	39.27
13C-2,3,7,8-TCDD	1.009	26.58
13C-1,2,3,7,8-PeCDD	1.198	31.57
13C-1,2,3,6,7,8-HxCDD	0.986	36.08
13C-1,2,3,4,6,7,8-HpCDD	1.105	40.42
13C-OCDD	1.179	43.13
37C12-2,3,7,8-TCDD	1.001	26.60
13C-2,3,4,7,8-PeCDF	1.028	31.17
13C-1,2,3,4,7,8-HxCDF	0.996	34.78
13C-1,2,3,4,7,8-HxCDD	0.997	35.97
13C-1,2,3,4,7,8,9-HpCDF	1.010	40.83
13C12-1,2,3,7,8,9-HxCDF	1.010	36.93
Recovery Standard		
13C-1,2,3,4-TCDD	NA	26.35
13C-1,2,3,7,8,9-HxCDD	NA	36.58

frm7diox8290Rev1

USEPA-8290A

7DFA - Form VII_HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 0208030fS:9 Date Analyzed: 3/20/2008 Time Analyzed: 15:20

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 to 3/19/2008

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	%D	±20% %D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS LOW	HIGH
2,3,7,8-TCDF	320/322	0.854	0.860	-0.732		0.77		0.65	0.89
1,2,3,7,8-PeCDF	304/306	0.818	0.827	-1.124		1.54		1.32	1.78
2,3,4,7,8-PeCDF	340/342	0.820	0.844	-2.786		1.53		1.32	1.78
1,2,3,4,7,8-HxCDF	356/358	0.988	0.964	2.503		1.18		1.05	1.43
1,2,3,6,7,8-HxCDF	340/342	1.145	1.070	6.999		1.21		1.05	1.43
2,3,4,6,7,8-HxCDF	374/376	0.939	0.909	3.262		1.23		1.05	1.43
1,2,3,7,8,9-HxCDF	374/376	0.822	0.800	2.799		1.22		1.05	1.43
1,2,3,4,6,7,8-HpCDF	390/392	1.338	1.320	1.332		1.06		0.88	1.20
1,2,3,4,7,8,9-HpCDF	390/392	1.071	1.129	-5.151		1.06		0.88	1.20
OCDF	390/392	0.986	0.936	5.370		0.93		0.76	1.02
2,3,7,8-TCDD	374/376	1.021	1.073	-4.807		0.78		0.65	0.89
1,2,3,7,8-PeCDD	374/376	0.995	0.993	0.204		1.56		1.32	1.78
1,2,3,4,7,8-HxCDD	408/410	0.939	0.958	-1.984		1.3		1.05	1.43
1,2,3,6,7,8-HxCDD	424/426	1.002	1.004	-0.244		1.28		1.05	1.43
1,2,3,7,8,9-HxCDD	408/410	1.029	1.008	2.082		1.26		1.05	1.43
1,2,3,4,6,7,8-HpCDD	458/460	0.907	0.904	0.381		1.00		0.88	1.20
OCDD	442/444	0.955	0.922	3.540		0.88		0.76	1.02
LABELED COMPOUNDS					±30%				
13C-2,3,7,8-TCDF	316/318	1.385	1.418	-2.349		0.8		0.65	0.89
13C-1,2,3,7,8-PeCDF	352/354	1.058	1.202	-11.959		1.56		1.32	1.78
13C-1,2,3,6,7,8-HxCDF	384/386	1.144	1.253	-8.681		0.5		0.43	0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.746	0.778	-4.104		0.44		0.37	0.51
13C-2,3,7,8-TCDD	332/334	1.032	1.054	-2.078		0.78		0.65	0.89
13C-1,2,3,7,8-PeCDD	368/370	0.745	0.840	-11.295		1.59		1.32	1.78
13C-1,2,3,6,7,8-HxCDD	402/404	0.939	1.001	-6.154		1.31		1.05	1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	0.830	0.903	-8.119		1.07		0.88	1.20
13C-OCDD	470/472	0.718	0.884	-18.792		0.87		0.76	1.02
37C12-2,3,7,8-TCDD	328/NA	2.019	2.066	-2.280		NA	NA	NA	NA
13C-2,3,4,7,8-PeCDF	352/354	0.960	0.978	-1.863		1.62		1.32	1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.934	0.916	1.946		0.52		0.43	0.59
13C-1,2,3,4,7,8-HxCDD	402/404	0.864	0.889	-2.772		1.3		1.05	1.43
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.737	0.757	-2.626		0.43		0.37	0.51
13C12-1,2,3,7,8,9-HxCDF	384/386	0.894	0.918	-2.659		0.51		0.43	0.59
Recovery Standards									
13C12-1234-TCDD	332/334	NA	NA	NA	NA	0.78		0.65	0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.3		1.05	1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

frm7diox8290Rev1

USEPA-8290A

7DFA - Form VII_HR CDD-2
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: DATA/ANALYSIS TECHNOLOGIES Contract: Loureio Engineering

Lab Code: OH01241 Case No.: Centredale TO No.: NA SDG No.: 1316057

GC Column: JWS-DB-5 ID: 0.25 (mm) Instrument ID: :Autospec

Lab File ID: 0208030fS:9 Date Analyzed: 3/20/2008 Time Analyzed: 15:20

Initial Calib. Times: 18:52 22:13 Initial Calib. Dates: 3/19/2008 3/19/2008

TARGET ANALYTES	RRT	RT
2,3,7,8-TCDF	1.001	25.72
1,2,3,7,8-PeCDF	1.001	30.32
2,3,4,7,8-PeCDF	1.029	31.17
1,2,3,4,7,8-HxCDF	0.996	34.77
1,2,3,6,7,8-HxCDF	1.000	34.93
2,3,4,6,7,8-HxCDF	1.023	35.73
1,2,3,7,8,9-HxCDF	1.058	36.93
1,2,3,4,6,7,8-HpCDF	1.000	39.27
1,2,3,4,7,8,9-HpCDF	1.040	40.83
OCDF	1.003	43.23
2,3,7,8-TCDD	1.001	26.58
1,2,3,7,8-PeCDD	1.001	31.57
1,2,3,4,7,8-HxCDD	0.997	35.97
1,2,3,6,7,8-HxCDD	1.000	36.08
1,2,3,7,8,9-HxCDD	1.014	36.58
1,2,3,4,6,7,8-HpCDD	1.000	40.40
OCDD	1.000	43.13
LABELED COMPOUNDS		
13C-2,3,7,8-TCDF	0.977	25.70
13C-1,2,3,7,8-PeCDF	1.151	30.30
13C-1,2,3,6,7,8-HxCDF	0.955	34.92
13C-1,2,3,4,6,7,8-HpCDF	1.074	39.25
13C-2,3,7,8-TCDD	1.009	26.55
13C-1,2,3,7,8-PeCDD	1.199	31.55
13C-1,2,3,6,7,8-HxCDD	0.987	36.07
13C-1,2,3,4,6,7,8-HpCDD	1.105	40.38
13C-OCDD	1.180	43.12
37C12-2,3,7,8-TCDD	1.001	26.57
13C-2,3,4,7,8-PeCDF	1.028	31.13
13C-1,2,3,4,7,8-HxCDF	0.995	34.75
13C-1,2,3,4,7,8-HxCDD	0.996	35.93
13C-1,2,3,4,7,8,9-HpCDF	1.011	40.82
13C12-1,2,3,7,8,9-HxCDF	1.010	36.92
Recovery Standard		
13C-1,2,3,4-TCDD	NA	26.32
13C-1,2,3,7,8,9-HxCDD	NA	36.55

frm7diox8290Rev1

DAT Labs, Inc. Extraction Form

Project # 0208030

Sample: SOLIDS (LIQUID) AIR

Analysis: 8290

Prepared By: CS

Date: 2/27/08

Spike Witness: DE

Solvent Manufac: EMD

Solvent Lot # 47164

Extraction	Solvent	Volume mls	Reps
Soxhlet	Hexane		
✓ Sep Funnel	Methanol		
Sonication	✓ Methylene Chloride	60	3
Cont. Ext	ACN		
Vial	Ethyl Acetate		
SPE Distill	IPA		
Other	Toluene		
No Extract	Water		
Other (Describe)			

SURROGATE ID	VOL (mls) / ul	CONC
Sur ~~SL~~ DLM-2-72	1.0 mL	4ng/mL
Alt ~~SL~~ SL-36-19	40µL	100ng/mL (4ng/total)
SL -		

LS/MS ID	VOL (mls) / ul	CONC
~~SL~~ DLM-2-73	1.0	4ng/mL
SL -		
SL -		

INT STD ID	VOL (mls) / ul	CONC
Ins ~~SL~~ DLM-2-71	1.0 mL	4ng/mL
R.S. ~~SL~~ EDF-4055 w/ CS	10µL	500ng/mL (5ng/total)
SL -		

COMMENTS Sample 0208030-19
R.S. was added 2x, CS

SAMPLE ID	TOTAL SAMPLE AMNT	SAMPLE AMNT EXTRACTED	TOTAL EXTRACT VOL (ADD ALL REPS)	FINAL EXTRACT VOL mls / (ul)	SURR INIT	SPK INIT	IS INIT
MB	1.0L	1.0L		20µL			
3							
3MS							
3MSD							
9							
11							
15							
19							
13							
22							
LS							

If extract was split for additional analyses, please note the aliquot volume for this analysis and at what point the extract was spiked.

ALIQUOT VOLUME: _____ mls ul (Circle one)

Extract was spiked: Before After the split. (Circle one)

Additional samples may be listed on the back of this page.

006141

FRMGENEXT

Page #:_____

AUTO SPEC APPLICATION SHEET

Client: Laureiro Eng.

Project: 0208030

Analysis: 8290

Archived:_____ Deletion Date:_____

Experiment: 8290 GC Method: 8290GC

Analyte Table: A829004, 0208030F Calibration: A829004

Quant Results: 0208030F

Run Conditions

Carrier gas He Injection Temp °C: 160C Inj. Vol. 1.0µL

Flow cm/sec 30 Injection Speed: Fast / Slow

Column Type HP-5 Serial #: US68325474

Temp Ramp: 160C/13min - 1.5C/min - 215C/min - 10C/min - 330C/5

TXT Files:

Run Log:_____ Continuing Calibration:

Calibration: % Dev sheets: 0208030FD.TXT;1

% RSD: A829004RSD.TXT;1 Sample Raw Data:

RRF 5 points: A829004RRF.TXT;1 Raw Data: 0208030F.TXT;1

Cal Stats: A829004ST.TXT;1 Analyte Responses: 0208030FN.TXT;1

Analytical Seq: 0208030FSEQ.TXT;1 Analyst: LG

Date: 3/21/08

DLM-2-73 2/28/08

8290 Matrix Spike & LS Soln.

120µL of EDF-5008 @ 100-500mg/mL was spiked into 3.0 V_F acetone.

C_F 4-20mg/mL

Acetone Lot # 47093 EMD exp. 2/23/11

LS

350973

DLM-2-72 2/27/08

8290 Surrogate STD

440µL of SL-36-18 @ 100ng/mL
were placed into a V_F of 11mL Acetone

C_F - 4ng/mL

Acetone Lot#: EMD 47093

exp: 02/27/08

350972

DLM-2-71 2/27/0

8290 Internal Standard

440 µL of SL-36 22 @ 100 ng/mL
were placed into a V_f of 11 mL Acetone.

C - 4 ng/mL

Acetone Lot #: EMD 47093

exp: 02/27/08

350971

DATA/ANALYSIS TECHNOLOGIES
ANALYSIS CORRECTIVE ACTION FORM

Project Number: 0208030 Analysis Date: 3/20/08

Client: Lureiro Eng. Method: 8290

Samples Affected: -19

Please check the faild QC parameter.

Initial Calibration		Method Blank Contamination	
Continuing Calibration		Surrogate Recoveries	
End Calibration		Laboratory Spike Recoveries	
Tune Failure		Matrix Spike Recoveries	
Verifications		Duplicate Analysis RPDs	
Instrument Contamination		Holding Time	
Run Time Failure		Other	
Internal Standard Recovery	✓		
Retention Time Discrepance			

Please describe the corrective measures taken.

The Recovery Standards for sample 0208030-19 were added twice @ 10ng Total. The Recovery Standard values were changed from 5ng to 10ng for this sample only.

Analyst Initials

Release Data? Yes No

Basis:

Signature

SECTION 4

PROJECT CASE NARRATIVES AND CHAIN-OF-CUSTODY RECORDS

EPA - 8290A

NARRATIVE

PCDD/PCDF Analysis for
Sampies
Sample #1316057uf, 1316062uf, 1316058uf, 1316061uf,.1316074uf, 1316060uf, 1316059uf

March 31, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

This report shall not be reproduced except in full, with written approval of the laboratory.

SDG Narrative

Laboratory name: Data/Analysis Technologies, Inc.

Case Number: Centredale Manor

Sample Numbers: #1316057uf, 1316062uf, 1316058uf, 1316061uf,.1316074uf, 1316060uf, 1316059uf

SDG # 1316057

Contract Number Loureio Engineering

Task Order Number NA

Cooler Temperature: 6.9°C

The following GC columns were used for this analysis:

Name:	Agilent	Column:	DB-5
ID (mm):	0.25	Length (m):	60
Coating material:	95% Methyl/5% Phenyl	Film thickness:	0.25 μm

Quality Control:

CRQL: The EDL was reported

Laboratory Control spikes: The control limits were not exceeded. See Form 3dfa.
Matrix spikes: A matrix spike and matrix spike duplicate were performed on 1316057 and the results are reported on Form 3dfa.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8290A.

Internal Standard Ion Ratios: The internal standard ion ratios met the QC guidelines in EPA 8290A.

Confirmations: 2,3,7,8-TCDF was not detected in the primary column analysis.

Report reviewed and prepared by

R.K. Mitchum, PhD.
President

TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**DEB JOHNSON**	FAX NUMBER:	**614.873.0810**
COMPANY:	**DAT, Inc.**	DATE:	**02/26/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**4**
RE:	**CLARIFICATION OF REQUESTED ANALSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (COC) documentation (COC Nos. 27723, 27724, and 27725). Copies of the COC forms are attached for clarification of the analyses that we are requesting for the samples received.

As "highlighted" on the attached copy of COC forms 27723, 27724, and 27725, please "HOLD" the following 7 samples for potential, future analysis for dioxins/furans by USEPA Method 8290:

1316057 1316062 1316058 1316061 1316074 1316060 1316059

With regard to Sample ID 1316057, please analyze the samples (field/MS/MSD) for VOCs by 8260B (see VOC list provided on 02/25/08); these samples have not been filtered.

Also, as discussed this morning and as noted on the attached copy of COC 27724, no amber liter containers were submitted for sample IDs 1316060 and 1316060uf in the cooler associated with this COC form. The amber liter containers for sample IDs 1316060 and 1316060uf were submitted in the cooler associated with COC 27725, as noted.

Subsequent to analysis, please hold all parts of samples for potential, future re-analysis. Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

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100 Northwest Drive, Plainville, CT 06062 860-747-6181 Fax 860-747-8822

An Employee Owned Company

DAT®

Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL № 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centredale Manor	15RP601	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wimbaney, Jason Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Loureiro Engineering Assoc.	David Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

PAGE 1 OF

☑ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

REQUIRED ANALYSIS: VOCs (8260B), Dioxins/Furans (8290)

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/08	1305		1316057	✓				(3) 1 L Ambers, (9) VOAs	Matrix Spike/MSDpl.
2/25/08	1305		1316057 uf	✓				(3) 1 L Ambers	
2/25/08	1120		1316063	✓				(1) VOA	
2/25/08	1340		1316058	✓				(3) VOA	
2/25/08	1340		1316061	✓				(3) VOA	
2/25/08	1255		1316074	✓				(3) VOA	
2/25/08	1125		1316062	✓				(1) 1 L	
2/25/08	1125		1316062 uf	✓				(1) 1 L	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Wimbaney (under custody seal)	2/25/08	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
[illegible]	2/26/08	0900	☐ YES ☐ NO		02080530	6.9°C 1316057 VOA - 1 cracked on bottom

3

DAT®

Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL № 27724

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centerbrook Manor	15RFG01	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Winbourne / Jason Purdy	860.747.6181	860.747.8872

CLIENT NAME	CLIENT PROJECT MANAGER
Loureiro Engineering Assoc.	David Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 Northwest Dr., Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Pesticides/Herbicides (8270) VOCs (8260B)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/08	1340		1316058	✓				(1) 1L Amber	
	1340		1316058uf	✓				(1) 1L Amber	
	1340		1316061	✓				(1) 1L Amber	
	1340		1316061uf	✓				(1) 1L Amber	
	1255		1316074	✓				(1) 1L Amber	
	1255		1316074uf	✓				(1) 1L Amber	
	1500		1316075	✓				(1) VOA	
	1540		1316060	✓				(3) VOAs, (1) 1L Amber	
	1540		1316060uf	✓				(1) 1L Amber	
2/25/08	1615		1316059	✓				(3) VOAs	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
(under custody seal)	2/26/08	1600						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
	2/26/08	0900	☐ YES ☐ NO		02080030	6.9°C 1316057 VOA cracked on bottom

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Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL № 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Centedale Manor	15RFG01	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	Mark Wilbur / Jason Purdy	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
Loureiro Engineering	Dave Scotti

CLIENT ADDRESS (CITY, STATE, ZIP): 100 NW Drive, Plainville, CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: Dioxins (8290)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED	REMARKS
12/05/08	1540		1316060	✓				(1) 1L Amber	
↓	1540		1316060 uf	✓				(1) 1L Amber	
	1615		1316059	✓				(1) 1L Amber	
12/25/08	1615		1316059 uf	✓				(1) 1L Amber	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
Mark Wilbur (via custody seal)	12/25/08	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
[illegible]	12/26/08	0900	☐ YES ☐ NO		02080030	6.9°C 1316057 VOA 1 cracked on bottom

Page 11 of 103

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"Analytical Laboratories and Consultants"

SERIAL 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE / FAX

CLIENT NAME	CLIENT PROJECT MANAGER

CLIENT ADDRESS (CITY, STATE, ZIP)

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS

PAGE 1 OF

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED					REMARKS
								HOLD					
													TIER III LABORATORY DATA PACKAGE
													Hard Copy + EDD PER SUB AGREEMENT
								HOLD					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

DAT®

Data/Analysis Technologies, Inc.

"Analytical Laboratories and Consultants"

SERIAL NO. 27724

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE / FAX
[illegible]	[illegible]	[illegible] / [illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible]

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible]

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (oil, solvent, etc.)	NUMBER OF CONTAINERS SUBMITTED	REMARKS
[illegible]	[illegible]		1316-58	✓				[illegible] Held	TIER III LABORATORY DATA PACKAGE
	[illegible]		1316-58 [illegible]	✓				[illegible]	
[illegible]	[illegible]		1316-61	✓				[illegible] Hold	
[illegible]	[illegible]		1316-61 [illegible]	✓				[illegible]	
[illegible]	[illegible]		1316-74	✓				[illegible] Hold	HARD COPY + EDD PER SUB AGREEMENT
	[illegible]		[illegible]	✓				[illegible]	
	[illegible]		1316-75	✓				[illegible]	
	1540		1316-60	✓				3 VOAs ~~[illegible]~~	
↓	~~[illegible]~~		~~1316-62 [illegible]~~	✓				~~[illegible]~~	
[illegible]	[illegible]		1316-59	✓				(3) VOAs	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	1600						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

DAT®
Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE / FAX

CLIENT NAME	CLIENT PROJECT MANAGER

CLIENT ADDRESS (CITY, STATE, ZIP)

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, etc.)

REQUIRED ANALYSIS

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, etc.)	NUMBER OF CONTAINERS SUBMITTED				REMARKS
								Hold				TIER III LABORATORY DATA PACKAGE HARD COPY + EDD PER SUB AGREEMENT
								Hold				

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS:
			☐ YES ☐ NO			

FedEx Express *US Airbill*

8580 3269 9851

0200 Form ID No

FedEx Retrieval Copy

1 From

Date ~~1/31/2008~~ 2/25/08 Sender's FedEx Account Number 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro ENGINEERING ASSOCIATES? INC.

Address 100 Northwest Drive Dept./Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name DAT Inc. Phone

Company DAT Inc.

Recipient's Address 7715 Corporate Blvd Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes

Address

To request a package be held at a specific FedEx location, print FedEx address here

City Plain City State OH ZIP 43064

4a Express Package Service *Packages up to 150 lbs.*

1 X FedEx Priority Overnight 5 — Next business afternoon.* FedEx shipments will be delivered on Monday, unless SATURDAY Delivery is selected.

FedEx Standard Overnight 6 — Next business afternoon.* Saturday Delivery NOT available

FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available

3 FedEx 2Day 20 — Second business day.* FedEx shipments will be delivered on Monday, unless SATURDAY Delivery is selected.

FedEx Express Saver — Third business day.* Saturday Delivery NOT available

FedEx Envelope rate not available. Minimum charge: One-pound rate

* To most locations.

4b Express Freight Service *Packages over 150 lbs.*

FedEx 1Day Freight* — Next business day.** FedEx shipments will be delivered on Monday, unless SATURDAY Delivery is selected. 8

FedEx 2Day Freight — Second business day.** FedEx shipments will be delivered on Monday, unless SATURDAY Delivery is selected. 83

FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available

* Call for Confirmation

** To most locations

5 Packaging

6 FedEx Envelope* 2 FedEx Pak* 3 FedEx Box 4 FedEx Tube 1 X Other

* Declared value limit $500.

6 Special Handling Include FedEx address in Section 3

3 SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 2Day. 1

HOLD Weekday at FedEx Location — Not available for FedEx First Overnight. 31

HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

X No 4 Yes — As per attached Shipper's Declaration. Yes — Shipper's Declaration not required. 6 Dry Ice

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging. Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip Acct. No.

1 X Sender — Acct. No. in Section 1 will be billed. 2 Recipient 3 Third Party 4 Credit Card 5 Cash/Check

Total Packages 1 Total Weight Total Charges

Credit Card Auth.

Liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 NEW Residential Delivery Signature Options If you require a signature, check Direct or Indirect.

No Signature Required 10 — Parcel may be left without obtaining signature for delivery.

Direct Signature 34 — Someone at recipient's address may sign for delivery. *Fee applies.*

Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. *Fee applies.*

520

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fedex.com 1.800.GoFedEx 1.800.463.3339

8580 3269 9851

FedEx TRK# 0200 8580 3269 9851

TUE 26 FEB A2

PRIORITY OVERNIGHT

NS-CMHA

LCK OH-US 43064

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL

Collecting Sample Mark Winbourne (signature) Sample No.

Collected 2/25/08 Time Collected

FedEx Express **US Airbill** 8580 3269 9748 0200 Form ID No. **FedEx Retrieval Copy**

1 From

Date 2/25/08 Sender's FedEx Account Number 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro Engineeering Associates, Inc.

Address 100 Northwest Drive

Dept/Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name Phone

Company DAT, Inc.

Recipient's Address 7715 Corporate Blvd

We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept/Floor/Suite/Room

Address

To request a package be held at a specific FedEx location, print FedEx address here

City Plain City State OH ZIP 43064

8580 3269 9748

4a Express Package Service *Packages up to 150 lbs.*

1 X FedEx Priority Overnight — Next business morning.* Today's shipments will be delivered on Monday unless SATURDAY Delivery is selected.

5 FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

6 FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 FedEx 2Day — Second business day.** Today's shipments will be delivered on Monday unless SATURDAY Delivery is selected.

20 FedEx Express Saver — Third business day.** Saturday Delivery NOT available.

FedEx Envelope rates not available. Minimum charge: One pound rate. * To most locations.

4b Express Freight Service *Packages over 150 lbs.*

7 FedEx 1Day Freight* — Next business day.** Today's shipments will be delivered on Monday unless SATURDAY Delivery is selected.

8 FedEx 2Day Freight — Second business day.** Today's shipments will be delivered on Monday unless SATURDAY Delivery is selected.

83 FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation. ** To most locations.

5 Packaging

6 FedEx Envelope* 2 FedEx Pak* (includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak) 3 FedEx Box 4 FedEx Tube 1 X Other

* Declared value limit $500.

6 Special Handling Include FedEx address in Section 3.

3 SATURDAY Delivery — Select eligible FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 2Day Freight.

1 HOLD Weekday at FedEx Location — Select eligible FedEx First Overnight.

31 HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

X No 4 Yes — Shipper's Declaration not required. Yes — Shipper's Declaration required.

6 Dry Ice — Dry Ice, 9, UN 1845 x kg

Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No.

1 X Sender — Acct. No. in Section 1 will be billed. 2 Recipient 3 Third Party 4 Credit Card 5 Cash/Check

Total Packages 1 Total Weight Total Charges

Credit Card Auth.

[1] Liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 NEW Residential Delivery Signature Options If you require a signature, check Direct or Indirect.

No Signature Required 10 — Package may be left without obtaining a signature for delivery.

Direct Signature 34 — Someone at recipient's address may sign for delivery. *Fee applies.*

Indirect Signature — If someone is available at recipient's address, anyone at a neighboring address may sign for delivery. *Fee applies.*

520

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FedEx TRK# 0200 8580 3269 9748

TUE - 26 FEB A2
PRIORITY OVERNIGHT

NS-CMHA

LCK
OH-US
43064

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL

Person Collecting Sample [signature] (signature) Sample No.

Date Collected 2/25/08 Time Collected

FedEx Express **US Airbill** 8580 3269 9634 0200 Form ID No. **FedEx Retrieval Copy**

1 From

Date 2/25/08 Sender's FedEx Account Number 16 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro Engineering Associates, Inc.

Address 100 Northwest Drive Dept./Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name Phone

Company DAT? Inc.

Recipient's Address 7715 Corporate Blvd Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City PlainCity State OH ZIP 43064

8580 3269 9634

4a Express Package Service *Packages up to 150 lbs.*

- X FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday, unless SATURDAY Delivery is selected. — 5
- FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available. — 6
- FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
- FedEx 2Day — Second business day.* Friday shipments will be delivered on Monday, unless SATURDAY Delivery is selected. — 20
- FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate. * To most locations

4b Express Freight Service *Packages over 150 lbs.*

- FedEx 1Day Freight — Next business day.** Friday shipments will be delivered on Monday, unless SATURDAY Delivery is selected. — 8
- FedEx 2Day Freight — Second business day.** Friday shipments will be delivered on Monday, unless SATURDAY Delivery is selected. — 83
- FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation. ** To most locations

5 Packaging

- FedEx Envelope* — 2
- FedEx Pak* — 3 (Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak)
- FedEx Box — 4
- FedEx Tube — 1
- X Other

* Declared value limit $500

6 Special Handling Include FedEx address in Section 3

- SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight. — 1
- HOLD Weekday at FedEx Location — Not available for FedEx First Overnight. — 31
- HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day. Is select for all.

Does this shipment contain dangerous goods? One box must be checked.

- X No — 4
- Yes — Accessible aircraft. Shipment requires two signatures.
- Yes — Shipper's Declaration not required. — 6
- Dry Ice — Dry ice 9 UN 1845 kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging. Cargo Aircraft Only

7 Payment *Bill to.* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No.

- X Sender FedEx Acct. No. Recipient (cell) to be billed — 1
- Recipient — 2
- Third Party — 3
- Credit Card — 4
- Cash/Check — 5

Total Packages 1 Total Weight 39 Total Charges

Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 NEW Residential Delivery Signature Options If you require a signature, check Direct or Indirect.

- No Signature Required — Package may be left without obtaining a signature for delivery. — 10
- Direct Signature — Someone at recipient's address may sign for delivery. Fee applies. — 34
- Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. Fee applies.

520

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FedEx. TRK# 0200 8580 3269 9634

TUE - 26 FEB A2
PRIORITY OVERNIGHT

LCK
OH-US
43064

NS-CMHA

CUSTODY SEAL

Person Collecting Sample Mark Winbourne (signature) Sample No.

Date Collected 2/25/08 Time Collected

DAT Labs Inc.
Sample Receipt Report

Client: ~~Camp Dresser McKee~~ Zoweiro Eng.

Custodian Initial: JP Date: 2/26/08 PCC 2-26-08

Secondary Review: Initials: Date:

The client has been contacted. ____ Yes ____ No

Upon receipt of samples, check if any of the following discrepancies have been noted.

	Discrepancy Type	Specify applicable client ID or "all"
	COC and samples do not match	
	No unique sample identifications	
	Samples received outside of the required temp criteria. **Receipt Temp:** 5.2 C	
	No preservation type was noted **Correction Factor:** 1.7 C	
	No date of collection stated **Corrected Temp:** 6.9 C	
	No time of collection stated	
	The sample collector was not named	
	Sample containers were not appropriate	
	Sample labels were destroyed or unreadable	
	Samples were received outside of holding time	
	There was not enough sample to perform the requested analysis.	
	Samples showed sign of damage or contamination.	
	Aqueous samples for volatile analysis: Headspace? Y N	If Yes, list sample ID(s) in details:
	Sample pH acidic basic (neutral)	Check pH of aqueous samples if no preservation is noted on COC.

Details: _____

Sample pH for nonvolatile aqueous samples and presence or absence of headspace (Y or N) for VOA aqueous samples shall be recorded at time of sample log-in.
Under no circumstances shall VOA vials be opened at time of sample receipt.

Other Discrepancies:

Sample ID	Discrepancy
1316057 VOA	VOA Bottle cracked on bottom

☐ ***Upon receipt, the samples met all of DAT's acceptance criteria.*** ***DAT Project #*** 0208030

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Date Received:	2/26/2008	**Carrier:**	Fed Ex
Client Name:	Loureiro Eng. Assoc.	**Analysis:**	voc,dioxins,furans
Tracking number:	8580 3269 9634	**Package Temp:**	6.9 C.
Custody Seals ?:	Yes	**COC:** ✔	check if COC from client

Sample Information

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316057	0208030-1A/B/C	2/25/2008	aq	amber bottle	samples archived
1316057	0208030-2A/B/C/D/E/F/G/H/I	2/25/2008	aq	voa vial	one voa vial cracked
1316057 uf	0208030-3A/B/C	2/25/2008	aq	amber bottle	
1316063	0208030-4	2/25/2008	aq	voa vial	
1316058	0208030-5A/B/C	2/25/2008	aq	voa vial	
1316061	0208030-6A/B/C	2/25/2008	aq	voa vial	
1316074	0208030-7A/B/C	2/25/2008	aq	voa vial	
1316062	0208030-8	2/25/2008	aq	amber bottle	sample archieved

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316062 uf	0208030-9	2/25/2008	aq	amber bottle	
1316058	0208030-10	2/25/2008	aq	amber bottle	sample archieved
1316058 uf	0208030-11	2/25/2008	aq	amber bottle	
1316061	0208030-12	2/25/2008	aq	amber bottle	sample archieved
1316061 uf	0208030-13	2/25/2008	aq	amber bottle	
1316074	0208030-14	2/25/2008	aq	amber bottle	sample archived
1316074 uf	0208030-15	2/25/2008	aq	amber bottle	
1316075	0208030-16	2/25/2008	aq	voa vial	
1316060	0208030-17	2/25/2008	aq	amber bottle	sample archived
1316060	0208030-18A/B/C	2/25/2008	aq	voa vial	
1316060 uf	0208030-19	2/25/2008	aq	amber bottle	
1316059	0208030-20A/B/C	2/25/2008	aq	voa vial	

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316059	0208030-21	2/25/2008	aq	amber bottle	sample archived
1316059 uf	0208030-22	2/25/2008	aq	amber bottle	

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

EPA - 8290A

NARRATIVE

PCDD/PCDF Analysis for
Samples
Sample #
1316057 1316062 1316058 1316061 1316074 1316060 1316059 1316057_MS 1316057_MSD

April 17, 2008

Report Prepared
by
DAT, Inc
7715 Corporate Boulevard
Plain City, OH 43064
1-800-733-8644

DAT Project # 0208030

This report shall not be reproduced except in full, with written approval of the laboratory.

SDG Narrative

Laboratory name: Data/Analysis Technologies, Inc.

Case Number: Centredale Manor

Sample Numbers:
1316057 1316062 1316058 1316061 1316074 1316060 1316059 1316057_MS 1316057_MSD
All samples were designated as filtered.

SDG # 1316057

Contract Number Loureio Engineering

Task Order Number NA
Cooler Temperature: 6.9°C

The following GC columns were used for this analysis:

Name:	Agilent	Column:	DB-5
ID (mm):	0.25	Length (m):	60
Coating material:	95% Methyl/5% Phenyl	Film thickness:	0.25 μm

Quality Control:

CRQL: The EDL was reported

Laboratory Control spikes: The control limits were exceeded for one analyte. See Form 3dfa.
Matrix spikes: A matrix spike and matrix spike duplicate were performed on 1316057 and the results are reported on Form 3dfa.

Internal Standard Recoveries: The internal standard met the QC guidelines in EPA 8290A.

Internal Standard Ion Ratios: The internal standard ion ratios met the QC guidelines in EPA 8290A.

Confirmations: 2,3,7,8-TCDF was not detected in the primary column analysis.

Report reviewed and prepared by

R.K. Mitchum, PhD.

Deb Johnson

From: "Mark A. Winbourne" <mawinbourne@loureiro.com>
To: <deborahjohnson@core.com>; "'Ronald Mitchum'" <ronaldmitchum@core.com>
Cc: "David Scotti" <dnscotti@loureiro.com>
Sent: Thursday, March 20, 2008 2:12 PM
Attach: filtered_sample_dioxin_analysis_request.pdf
Subject: 15RP601: Request for Additional Dioxin Analyses

Dear Ron and Deborah,

Relative to groundwater samples you have for LEA's Centredale Manor project in North Providence, Rhode Island, please refer to the attached request to remove samples from "Hold" and analyze them for dioxins / furans by EPA Method 8290.

Please call me or Dave Scotti at 860.747.6181 if you have any questions.

Thank you,

Mark Winbourne, P.G.
Senior Geologist
Loureiro Engineering Associates, Inc.
860.747.6181
860.747.8822 Fax
mawinbourne@loureiro.com
Visit us on the web: www.loureiroengineering.com

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Data/Analysis Technologies, Inc.
"Analytical Laboratories and Consultants"

SERIAL Nº 27723

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cortdale Manor	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] NE Dr. [illegible] 02862

PAGE 1 OF

☑ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

REQUIRED ANALYSIS

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (Oil, solvent, etc.)	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED	REMARKS
2/25/-8	1305		131[illegible]	✓				(3) 1 L Amber's (9) VOAs * Release for Hold and ANALYZE for Dioxins/Furans	Matrix: Water/Misty
2/25/-8	1305		131[illegible]57 uf	✓				(3) 1 L Ambers	TIER III
2/25/-8	1120		131[illegible]	✓				(1) VOA	LABORATORY
2/25/-8	1340		131[illegible]	✓				(3) VOA	DATA PACKAGE
2/25/-8	1340		131[illegible]	✓				(1) VOA	
2/25/-8	1155		131[illegible]	✓				(3) VOA	Hard Copy
2/25/-8	1125		131[illegible]62	✓				(1) 1 L ~~Hold~~ * Release from Hold and Analyze for Dioxins/Furans	+ EDD Per
2/25/-8	1125		131[illegible]62 uf	✓				(1) 1 L	SUB ASSIGNMENT

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	2/27/-8	1415						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

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"Analytical Laboratories and Consultants"

SERIAL Nº 27724

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
Cinderella Mine	15R261	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
RI	[illegible] / [illegible]	860.747.6181	860.747.8822

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible] Assoc.	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] Dr., [illegible], CT 06062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc.)

REQUIRED ANALYSIS: [illegible] (8270) / [illegible] (8260B)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED	REMARKS
9/24-8	1340		1316-58	(1) 1L Amber ~~Hold~~ * Return from Hold and ANALYZE for Dioxins/Furans	TIER III
	1340		1316-58-F	(1) 1L Amber	LABORATORY
	1340		1316-61	(1) 1L Amber ~~Hold~~ * Return from Hold and ANALYZE for Dioxins/Furans	DATA PACKAGE
	1340		1316-61-F	(1) 1L Amber	
	1255		1316-74	(1) 1L Amber ~~Hold~~ * Return from Hold and ANALYZE for Dioxins/Furans	HARD COPY
	1255		1316-74-F	(1) 1L Amber	+ EDD PER
	1340		1316-75	(1) VOA	SUB AGREEMENT
	1540		1316-60	(3) VOAs, ~~(1) 1L Amber~~ ~~Hold~~	
	~~1540~~		~~1316-60-F~~	~~(1) 1L Amber~~	
9/25-8	1615		1316-59	(3) VOAs	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible] (Cinderella Site)	9/25/-8	1600						
RECEIVED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	DAT LOC. NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

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"Analytical Laboratories and Consultants"

SERIAL Nº 27725

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

7715 CORPORATE BLVD.
PLAIN CITY, OHIO 43064
614-873-0710 800-733-8644
FAX 614-873-0810

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
[illegible]	[illegible]	

PROJECT LOC. (State)	SAMPLER(S) NAME	PHONE	FAX
[illegible]	[illegible]	[illegible]	[illegible]

CLIENT NAME	CLIENT PROJECT MANAGER
[illegible]	[illegible]

CLIENT ADDRESS (CITY, STATE, ZIP): [illegible] 26062

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (Oil, solvent, etc.)

REQUIRED ANALYSIS: Dioxins (1613)

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

SAMPLE DATE	SAMPLE TIME	DAT NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	PRESERVATIVE / NUMBER OF CONTAINERS SUBMITTED	REMARKS
[illegible]	1540	[redacted]	1316060	✓				(1) 1 L Amber ~~HOLD~~ * Release for Hold and ANALYZE for Dioxins/Furans	TIER III LABORATORY DATA PACKAGE HARD COPY + RDD PER SUB AGREEMENT
	1540	[redacted]	1316060-f	✓				(1) 1 L Amber	
	1615	[redacted]	1316059	✓				(1) 1 L Amber ~~HOLD~~ * Release for Hold and ANALYZE for Dioxins/Furans	
[illegible]	1615	[redacted]	1316059-f	✓				(1) 1 L Amber	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
[illegible]	[illegible]	1630						

RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	LOCATION	CUSTODY SEAL	DAT LOG NO.	LABORATORY REMARKS
			☐ YES ☐ NO			

TRANSMITTAL SHEET

Loureiro Engineering Associates, Inc.
An Employee Owned Company

TO:	**Ron Mitchum**	FAX NUMBER:	**614.873.0810**
COMPANY:	**DAT, Inc.**	DATE:	**3/20/2008**
FROM:	**David N. Scotti**	NO. OF PAGES (including cover):	**4**
RE:	**REQUEST for ADDITIONAL ANALYSES**	LEA REFERENCE NUMBER:	**15RP6.01**

[X] URGENT [ ] FOR REVIEW [X] FOR YOUR USE [ ] PLEASE COMMENT [ ] PLEASE REPLY

On Monday, February 25, 2008 LEA collected samples from the Centredale Manor Restoration Project Superfund Site located in North Providence, Rhode Island. The samples were received by you on Tuesday, February 26, 2008, under Chain-of-Custody (COC) documentation (COC Nos. 27723, 27724, and 27725). Copies of the COC forms are attached for clarification of the analyses that we are requesting for the samples.

Please release from "HOLD" and analyze the following 7 samples for dioxins/furans by USEPA Method 8290:

1316057 1316062 1316058 1316061 1316074 1316060 1316059

Subsequent to analysis, please hold all parts of samples for potential, future re-analysis. Please let me know if you have any questions. I can be reached at 860.410.2976. Thank you.

The information contained in this facsimile message may be information protected by attorney-client and/or the attorney/work product privilege. It is intended only for the use of the individual named above and the privileges are not waived by virtue of this having been sent by facsimile. If the person actually receiving this facsimile or any other reader of the facsimile is not the named recipient or the employee or agent responsible to deliver it to the named recipient, any use, dissemination, distribution, or copying of the communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone and return the original message to us at the below address via U.S. Postal Service.

100 Northwest Drive, Plainville, CT 06062 860-747-6181 Fax 860-747-8822

An Employee Owned Company

FedEx Express US Airbill

8580 3269 9851

0200 Form ID No.

FedEx Retrieval Copy

1 From

Date ~~1/31/2008~~ 2/25/08 Sender's FedEx Account Number 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro ENGINEERING ASSOCIATES? INC.

Address 100 Northwest Drive

Dept./Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name DAT Inc. Phone

Company DAT Inc,

Recipient's Address 7715 Corporate Blvd

We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City Plain City State OH ZIP 43064

4a Express Package Service *Packages up to 150 lbs.*

1 [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected

5 [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

6 [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected

20 [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service *Packages over 150 lbs.*

7 [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected

8 [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected

83 [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation:

** To most locations.

5 Packaging

6 [ ] FedEx Envelope* 2 [ ] FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. 3 [ ] FedEx Box 4 [ ] FedEx Tube 1 [X] Other

* Declared value limit $500.

6 Special Handling Include FedEx address in Section 3.

3 [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.

1 [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight.

31 [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

[X] No 4 [ ] Yes — As per attached Shipper's Declaration. [ ] Yes — Shipper's Declaration not required. 6 [ ] Dry Ice — Dry ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

[ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No. [ ]

1 [X] Sender — Acct. No. in Section 1 will be billed. 2 [ ] Recipient 3 [ ] Third Party 4 [ ] Credit Card 5 [ ] Cash/Check

Total Packages 1 Total Weight Total Charges

Credit Card Auth.

† Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 *NEW* Residential Delivery Signature Options If you require a signature, check Direct or Indirect

[ ] No Signature Required — Package may be left without obtaining a signature for delivery.

10 [ ] Direct Signature — Anyone at recipient's address may sign for delivery. *Fee applies.*

34 [ ] Indirect Signature — If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. *Fee applies.*

520

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fedex.com 1.800.GoFedEx 1.800.463.3339

8580 3269 9851

FedEx TRK# 0200 8580 3269 9851

TUE 26 FEB A2

PRIORITY OVERNIGHT

NS-CMHA

LCK OH-US 43064

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL

Collecting Sample Mark Winbourne (signature) Sample No.

Collected 2/25/08 Time Collected

FedEx Express US Airbill 8580 3269 9748 0200 Form ID No. FedEx Retrieval Copy

fedex.com 1.800.GoFedEx 1.800.463.3339

1 From

Date 2/25/08 Sender's FedEx Account Number 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro Engineeering Associates, Inc.

Address 100 Northwest Drive Dept./Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name Phone

Company DAT, Inc.

Recipient's Address 7715 Corporate Blvd Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City Plain City State OH ZIP 43064

8580 3269 9748

4a Express Package Service *Packages up to 150 lbs.*

1 [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected

5 [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

6 [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

20 [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate

* To most locations.

4b Express Freight Service *Packages over 150 lbs.*

7 [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected

8 [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected

83 [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation.

** To most locations.

5 Packaging

6 [ ] FedEx Envelope* 2 [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak 3 [ ] FedEx Box 4 [ ] FedEx Tube 1 [X] Other

* Declared value limit $500

6 Special Handling Include FedEx address in Section 3.

3 [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.

1 [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight

31 [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

[X] No 4 [ ] Yes — As per attached Shipper's Declaration [ ] Yes — Shipper's Declaration not required. 6 [ ] Dry Ice — Dry ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

[ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No. [ ]

1 [X] Sender — Acct. No. in Section 1 will be billed 2 [ ] Recipient 3 [ ] Third Party 4 [ ] Credit Card 5 [ ] Cash/Check

Total Packages 1 Total Weight 5 LBS Total Charges

Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 *NEW* Residential Delivery Signature Options If you require a signature, check Direct or Indirect

[ ] No Signature Required — Package may be left without obtaining a signature for delivery

10 [ ] Direct Signature — Anyone at recipient's address may sign for delivery. *Fee applies.*

34 [ ] Indirect Signature — If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. *Fee applies.*

520

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FedEx TRK# 0200 8580 3269 9748

TUE - 26 FEB A2
PRIORITY OVERNIGHT

NS-CMHA

LCK
OH-US
43064

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL

Person Collecting Sample Mark Winbourne (signature) Sample No.

Date Collected 2/25/08 Time Collected

FedEx Express **US Airbill** 8580 3269 9634 0200 Form ID No. **FedEx Retrieval Copy**

1 From

Date 2/25/08 Sender's FedEx Account Number 16 102160223

Sender's Name Mark Winbourne Phone 860 410-2936

Company Loureiro Engineering Associates, Inc.

Address 100 Northwest Drive Dept./Floor/Suite/Room

City Plainville State CT ZIP 06062

2 Your Internal Billing Reference

3 To

Recipient's Name Phone

Company DAT? Inc.

Recipient's Address 7715 Corporate Blvd Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City PlainCity State OH ZIP 43064

8580 3269 9634

4a Express Package Service *Packages up to 150 lbs.*

1 [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected

5 [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available

6 [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

3 [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

20 [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service *Packages over 150 lbs.*

7 [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected

8 [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

83 [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available

* Call for Confirmation:

** To most locations.

5 Packaging

6 [ ] FedEx Envelope* 2 [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. 3 [ ] FedEx Box 4 [ ] FedEx Tube 1 [X] Other

* Declared value limit $500.

6 Special Handling — Include FedEx address in Section 3.

3 [ ] SATURDAY Delivery — Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.

1 [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight.

31 [ ] HOLD Saturday at FedEx Location — Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

[X] No 4 [ ] Yes — As per attached Shipper's Declaration. [ ] Yes — Shipper's Declaration not required. 6 [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging. [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No. [ ]

1 [X] Sender — Acct. No. in Section 1 will be billed. 2 [ ] Recipient 3 [ ] Third Party 4 [ ] Credit Card 5 [ ] Cash/Check

Total Packages 1 Total Weight 39 Total Charges

Credit Card Auth

[1] Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

8 *NEW* Residential Delivery Signature Options If you require a signature, check Direct or Indirect

[ ] No Signature Required — Package may be left without obtaining a signature for delivery.

10 [ ] Direct Signature — Anyone at recipient's address may sign for delivery. *Fee applies.*

34 [ ] Indirect Signature — If no one is available at recipient's address, anyone at a neighboring address may sign for delivery. *Fee applies.*

520

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FedEx TRK# 0200 8580 3269 9634

TUE - 26 FEB A2
PRIORITY OVERNIGHT

LCK
OH-US
43064

NS-CMHA

Emp# 621898 25FEB08 PVDA

CUSTODY SEAL

Person Collecting Sample Mark Winbourne (signature) Sample No.

Date Collected 2/25/08 Time Collected

DAT Labs Inc.
Sample Receipt Report

Client: ~~Camp Dresser McKee~~ Louveiro Eng.

Custodian Initial: JO Date: 2/26/08 PCC 2-26-08

Secondary Review: Initials: Date:

The client has been contacted.

_____ Yes _____ No

Upon receipt of samples, check if any of the following discrepancies have been noted.

	Discrepancy Type	*Specify applicable client ID or "all"*
	COC and samples do not match	
	No unique sample identifications	
	Samples received outside of the required temp criteria. **Receipt Temp:** 5.2 C	
	No preservation type was noted **Correction Factor:** 1.7 C	
	No date of collection stated **Corrected Temp:** 6.9 C	
	No time of collection stated	
	The sample collector was not named	
	Sample containers were not appropriate	
	Sample labels were destroyed or unreadable	
	Samples were received outside of holding time	
	There was not enough sample to perform the requested analysis.	
	Samples showed sign of damage or contamination.	
	Aqueous samples for volatile analysis: Headspace? Y N	If Yes, list sample ID(s) in details:
	Sample pH acidic basic (neutral)	Check pH of aqueous samples if no preservation is noted on COC.

Details: _____

Sample pH for nonvolatile aqueous samples and presence or absence of headspace (Y or N) for VOA aqueous samples shall be recorded at time of sample log-in.
Under no circumstances shall VOA vials be opened at time of sample receipt.

Other Discrepancies:

Sample ID	**Discrepancy**
1316057 VOA	VOA Bottle cracked on bottom

☐ ***Upon receipt, the samples met all of DAT's acceptance criteria.*** ***DAT Project #*** 0208030

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Date Received:	2/26/2008	**Carrier:**	Fed Ex
Client Name:	Loureiro Eng. Assoc.	**Analysis:**	voc,dioxins,furans
Tracking number:	8580 3269 9634	**Package Temp:**	6.9 C.
Custody Seals ?:	Yes	**COC:**	✓ check if COC from client

Sample Information

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316057	0208030-1A/B/C	2/25/2008	aq	amber bottle	samples archived
1316057	0208030-2A/B/C/D/E/F/G/H/I	2/25/2008	aq	voa vial	one voa vial cracked
1316057 uf	0208030-3A/B/C	2/25/2008	aq	amber bottle	
1316063	0208030-4	2/25/2008	aq	voa vial	
1316058	0208030-5A/B/C	2/25/2008	aq	voa vial	
1316061	0208030-6A/B/C	2/25/2008	aq	voa vial	
1316074	0208030-7A/B/C	2/25/2008	aq	voa vial	
1316062	0208030-8	2/25/2008	aq	amber bottle	sample archieved

Laboratory Receiving Initials

0208030

2/26/2008 1:10:48 PM

DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316062 uf	0208030-9	2/25/2008	aq	amber bottle	
1316058	0208030-10	2/25/2008	aq	amber bottle	sample archieved
1316058 uf	0208030-11	2/25/2008	aq	amber bottle	
1316061	0208030-12	2/25/2008	aq	amber bottle	sample archieved
1316061 uf	0208030-13	2/25/2008	aq	amber bottle	
1316074	0208030-14	2/25/2008	aq	amber bottle	sample archived
1316074 uf	0208030-15	2/25/2008	aq	amber bottle	
1316075	0208030-16	2/25/2008	aq	voa vial	
1316060	0208030-17	2/25/2008	aq	amber bottle	sample archived
1316060	0208030-18A/B/C	2/25/2008	aq	voa vial	
1316060 uf	0208030-19	2/25/2008	aq	amber bottle	
1316059	0208030-20A/B/C	2/25/2008	aq	voa vial	

Laboratory Receiving Initials

0208030

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DAT SAMPLE RECEIVING

7715 Corporate Blvd. Plain City,OH 43064.

Project Number: 0208030

Client ID:	Laboratory ID	Date	Matrix:	Container:	Comment:
1316059	0208030-21	2/25/2008	aq	amber bottle	sample archived
1316059 uf	0208030-22	2/25/2008	aq	amber bottle	

Laboratory Receiving Initials

0208030

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APPENDIX H

APPENDIX H

Environmental Resource Associates®
Performance Evaluation Sample Certification Documentation

ENVIRONMENTAL
RESOURCE ASSOCIATES
The Industry Standard™

February 21, 2008

Mark Winbourne
Loureiro Engineering Associates
100 Northwest Drive
Plainville, CT 06062

Dear Mark:

Enclosed please find the certification documentation for the whole volume performance evaluation sample you recently ordered. The sample was shipped on February 21, 2008 to your attention via UPS Red over-night service. The ERA project number corresponding to this sample is 0211-08-01.

Thank you for choosing ERA for this project. If you have any questions or if we can be of any further assistance, please do not hesitate to call me.

Sincerely,

Heidi M. Senft

Heidi M. Senft
Chemist

enclosures
hms

6000 West 54th Ave., Arvada, CO 80002 800-372-0122 fax (303) 421-0159 www.eraqc.com

ENVIRONMENTAL RESOURCE ASSOCIATES®
The Industry Standard™

Loureiro Engineering Associates

Catalog No. 093 Custom Standard **Sample ID # 0211-08-01.1**

Parameter	Certified Value (pg/L)	Performance Acceptance Limits™ (pg/L)[1]
2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	3,010	2,290 - 3,460

Standard Preparation Instructions: None required. This sample is ready for preparation and analysis as received.

Preservative: None

Storage: 4±2°C

The Certified Values are equal to 100% of the "made to" values as determined by volumetric and/or gravimetric measurements used during the manufacture of this product.

The Performance Acceptance Limits (PALs™) are listed as guidelines for acceptable analytical results given the limitations of the USEPA methodologies commonly used to determine these parameters and closely approximate the 95% confidence interval. The PALs™ are based on the regulated acceptance limits as published by the EPA in the Federal Register, data generated by your peer laboratories in ERA's InterLaB™ program using the same samples you are analyzing, data from USEPA methods and WS interlaboratory studies. The PALs™ listed for this project may not be applicable since the analyte concentrations are outside of ERA's normal manufacturing ranges and a linear relationship to the concentration listed has not been established. If your result falls outside of the PALs™, ERA recommends that you investigate potential sources of error in your preparation and/or analytical procedures. For further technical assistance, call ERA at 1-800-372-0122.

Prepared by: HMS
Date: 2/21/08

Reviewed by: AJC
Date: 2/21/08

6000 West 54th Ave., Arvada, CO 80002 800-372-0122 fax (303) 421-0159 www.eraqc.com