

**DARK HEAD COVE SURFACE WATER LABORATORY
DATA COMPARISON STUDY
TECHNICAL MEMORANDUM
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MIDDLE RIVER COMPLEX
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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Table of Contents	i
List of Tables	ii
Appendices	ii
Acronyms and Abbreviations	iii
Executive Summary	1
Section 1 Introduction	1-1
Section 2 Laboratory Desktop Study and Data Review	2-1
2.1 TestAmerica Homolog Data Review	2-1
2.1.1 Data Quality Review	2-1
2.1.2 Chromatographic Review.....	2-2
2.1.3 Manual Results Recalculation.....	2-3
2.2 ALS Environmental Homolog Data Review	2-3
2.2.1 Data Quality Review	2-4
2.2.2 Chromatographic Review.....	2-5
2.2.3 Manual Results Recalculation.....	2-5
Section 3 Data Review Results	3-1
3.1 TestAmerica Homolog Data Review	3-1
3.2 ALS Environmental Homolog Data Review	3-2
Section 4 Conclusions	4-1
Section 5 References	5-1

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

Table 1	Polychlorinated Biphenyl Homolog Laboratory Detection Limit Comparison
Table 2	TestAmerica - Savannah Samples Reviewed
Table 3	ALS Environmental - Rochester Samples Reviewed

APPENDICES

Appendix A	—Results Recalculation
Appendix B	—TestAmerica – Savannah Chromatograms – 2016 & 2017
Appendix C	—Recalculation Equations

ACRONYMS AND ABBREVIATIONS

AECOM	AECOM Technical Services, Inc.
ALS-Rochester	ALS Environmental in Rochester, New York
CLP	Contract Laboratory Program
MDL(s)	method detection limit(s)
MRC	Middle River Complex
ug/L	micrograms per liter
PCB(s)	polychlorinated biphenyl(s)
QC	Quality Control
SDG(s)	sample delivery group(s)
TA-Savannah	TestAmerica Laboratories, Inc. in Savannah, Georgia
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

AECOM Technical Services, Inc., performed a review of the 2016-2018 polychlorinated biphenyl surface water analytical data to determine the causation of multiple polychlorinated biphenyl detections reported in the 2018 April surface water analytical data when previously collected data were mostly non-detect for Dark Head Cove. TestAmerica Laboratories, Inc., in Savannah, Georgia had performed the analysis of polychlorinated biphenyl homologs prior to 2018 and ALS Environmental in Rochester, New York, performed the analysis in 2018 both by United States Environmental Protection Agency Method 680. Prior to 2018, Tetra Tech, Inc., performed the analytical data validation and AECOM Technical Services, Inc., performed the analytical data validation in 2018.

To further evaluate the reported 2018 surface water polychlorinated biphenyl detections, Lockheed Martin Corporation proposed two action items in a proposal submitted to Maryland Department of the Environment in December 2018. These action items are to:

- (1) Perform a laboratory comparison study on existing data between the 2018 laboratory (ALS Environmental in Rochester, New York) and the previous laboratory (TestAmerica Laboratories, Inc., in Savannah, Georgia). A detailed review of the 2016, 2017, and 2018 existing laboratory data packages for Dark Head Cove surface water samples will be conducted, and
- (2) Perform an Interim Surface Water Sampling and Quality Assurance/Quality Control study to determine if laboratory or field conditions caused the polychlorinated biphenyl detections in the 2018 April surface water samples. Laboratory split samples will be collected as a set of co-located field samples at eight of the Dark Head Cove locations. Laboratory split samples will be collected at a rate of 100% for polychlorinated biphenyl homolog analysis.

This proposal was approved by the Maryland Department of the Environment on December 24, 2018. The purpose of this technical memorandum is to describe the laboratory data comparison between ALS Environmental and TestAmerica Laboratories, Inc., surface water analytical data and present the findings. The interim surface water sampling and Quality Assurance/Quality Control study are ongoing and the results of these studies will be discussed in a separate report.

The purpose of this technical memorandum is to verify the positive surface water sample results reported for total dichlorobiphenyls in April 2018 and investigate the possibility of additional PCB homolog responses present in the chromatograms which were less than the method detection limit, and therefore reported as non-detect by TestAmerica for data collected in 2016 and 2017. AECOM Technical Services, Inc., conducted a review of data quality, analytical sensitivity, chromatographic responses and interpretation, and result quantification for surface water polychlorinated biphenyl analytical data collected from 2016-2018 from Dark Head Cove. AECOM Technical Services, Inc., encountered only minor data quality anomalies in both the TestAmerica Laboratories, Inc. in Savannah, Georgia, and ALS Environmental in Rochester, New York, data. These anomalies are not anticipated to have a measurable effect on the usability of the data, and all result values are considered usable as reported. Conclusions from the laboratory data comparison study are as follows:

- During the review of analytical sensitivity, it was found that ALS Environmental was able to achieve method detection limits up to nine times lower than those of TestAmerica Laboratories, Inc., for all homolog groups (Table 1). Specifically, the ALS Environmental, Rochester, New York, method detection limit for dichlorobiphenyls of 0.0016 micrograms per liter ($\mu\text{g/L}$) was three times lower than that of TestAmerica Laboratories, Inc., in Savannah, Georgia (0.0054 $\mu\text{g/L}$). Of the 14 detections for total dichlorobiphenyls in the 2018 surface water samples, there is only one detection reported by ALS Environmental that would have hypothetically been reported as a detection greater than the method detection limit (0.0054 $\mu\text{g/L}$) by TestAmerica Laboratories, Inc. (MRC-SW7A) at 0.0066 $\mu\text{g/L}$.
- The review of ALS Environmental and TestAmerica Laboratories, Inc., chromatograms and manual recalculation of all reported on-column homolog results, consistent with a United States Environmental Protection Agency Region III Organic Level II data validation of Superfund Stage IV data, in sample delivery groups showed that the detected concentrations of polychlorinated biphenyl homologs were reported correctly by each laboratory and represent genuine detections.
- During the chromatographic review of TestAmerica Laboratories, Inc., data, AECOM Technical Services, Inc., identified several peaks that represented homolog groups present in the samples at concentrations less than the method detection limit. As part of this review, a TestAmerica Laboratories, Inc., analyst confirmed that some of the peaks observed by AECOM Technical Services, Inc., are associated with heptachlorobiphenyls, hexachlorobiphenyls, and tetrachlorobiphenyls. These responses were not distinguishable from baseline noise and were correctly reported as non-detect results by TestAmerica Laboratories, Inc., in Savannah, Georgia. However, these results may have been reported as true positives by ALS Environmental in Rochester, New York, due to their lower method detection and reporting limits.

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- During the chromatographic review of ALS Environmental in Rochester, New York, data, AECOM Technical Services, Inc., verified that the detections were reported correctly, and that polychlorinated biphenyl homolog concentrations may be greater than reported due to the presence of additional dichlorobiphenyl congener peaks identified by an ALS Environmental analyst in two samples that were initially presumed to be baseline noise.
 - TestAmerica Laboratories, Inc., as part of their standard operating procedures, compares each polychlorinated biphenyl congener peak to the homolog group method detection limit and does not include congener concentrations in the calculation of the homolog total that are less than the method detection limit. ALS Environmental on the other hand, includes all congener peaks that have integrated area counts greater than 100. Using total dichlorobiphenyls as an example, this means ALS Environmental would include all congeners greater than 0.0005 µg/L while TestAmerica Laboratories, Inc., would only include congeners greater than 0.0054 µg/L, approximately ten times higher than ALS Environmental.

The findings of the laboratory data comparison study verify the concentrations of total dichlorobiphenyls detected in 2018 surface water samples from Dark Head Cove and can be attributed to the lower method detection limits achieved by ALS Environmental in Rochester, New York, for total dichlorobiphenyls, which were three times lower than the preceding analyses for that homolog group performed by TestAmerica Laboratories, Inc., in Savannah, Georgia, from 2016 to 2017.

SECTION 1 INTRODUCTION

Total polychlorinated biphenyls, attributed to the dichlorobiphenyl homolog group, were detected in samples from all 14 of the Dark Head Cove surface water sampling locations, ranging from 0.0019 to 0.0066 micrograms per liter ($\mu\text{g/L}$) during the 2018 April surface water sampling event. In comparison, reported detections of total polychlorinated biphenyls were identified at just two locations from 2016 to 2017, in field samples MRC-SW6B-061316 (total pentachlorobiphenyls at 0.036 $\mu\text{g/L}$) and MRC-SW5A-091217 (total tetrachlorobiphenyls at 0.014 $\mu\text{g/L}$). To further evaluate the reported 2018 surface water polychlorinated biphenyl detections, Lockheed Martin Corporation proposed two action items in a proposal submitted to Maryland Department of the Environment in December 2018. These action items are to:

- (1) Perform a laboratory comparison study on existing data between the 2018 laboratory (ALS Environmental in Rochester, New York) and the previous laboratory (TestAmerica Laboratories, Inc. in Savannah, Georgia). A detailed review of the 2016, 2017, and 2018 existing laboratory data packages for Dark Head Cove surface water samples will be conducted, and
- (2) Perform an Interim Surface Water Sampling and Quality Assurance/Quality Control study to determine if laboratory or field conditions caused the polychlorinated biphenyl detections in the 2018 April surface water samples. Laboratory split samples will be collected as a set of co-located field samples at eight of the Dark Head Cove locations. Laboratory split samples will be collected at a rate of 100% for polychlorinated biphenyl homolog analysis.

This proposal was approved by the Maryland Department of the Environment on December 24, 2018. The purpose of this technical memorandum is to describe the laboratory data comparison between ALS Environmental and TestAmerica Laboratories, Inc., surface water analytical data packages and present the findings. The interim surface water sampling and Quality Assurance/Quality Control study are ongoing and the results of these studies will be discussed in a separate report.

The 2018 surface water sample collection and data validation were conducted by AECOM Technical Services, Inc., while sample analysis of polychlorinated biphenyl homologs was

performed by ALS Environmental in Rochester, New York. The 2016 and 2017 surface water sample collection and data validation were conducted by Tetra Tech Inc., while polychlorinated biphenyls homolog analysis was performed by TestAmerica Laboratories, Inc., in Savannah, Georgia. Both laboratories referenced United States Environmental Protection Agency Method 680 Determination of Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry (November 1985), provided valid method detection limit studies, and followed their standard operating procedure.

The purpose of this technical memorandum is to verify the positive surface water sample results reported for total dichlorobiphenyls in April 2018 and investigate the possibility of additional PCB homolog responses present in the chromatograms which were less than the method detection limit, and therefore reported as non-detect by TestAmerica for data collected in 2016 and 2017. The different levels of laboratory sensitivities and/or field/laboratory interferences were hypothesized by AECOM Technical Services, Inc., to be the reason for the April 2018 estimated detections of total dichlorobiphenyls which were not present in previous surface water data from Dark Head Cove. This technical memorandum is organized to evaluate this hypothesis. This technical memorandum is organized as follows:

- Section 1—Introduction: Presents objectives for the laboratory data comparison study.
- Section 2—Laboratory Desktop Study and Data Review: Briefly presents the technical approach to data comparison and the methodology employed to evaluate the data.
- Section 3—Data Review Results: Discusses the results of the laboratory data comparison study.
- Section 4—Conclusions: Summarizes findings and conclusions.
- Section 5—References: Cites references used to compile this technical memorandum.

SECTION 2

LABORATORY DESKTOP STUDY AND DATA REVIEW

The review performed by AECOM Technical Services, Inc., (AECOM) in this study includes elements of data quality, chromatographic interpretation, result quantitation and recalculation, and a comparison of method detection limits between the two laboratories (Table 1). During the data quality review, AECOM encountered minor quality control anomalies, but found that all data, from both laboratories, was usable as reported based on the laboratory procedures documented in the laboratory reports. TestAmerica and ALS Environmental homolog data review is presented in Sections 2.1 and 2.2, respectively.

2.1 TESTAMERICA HOMOLOG DATA REVIEW

The review of Test America (TA-Savannah) homolog data performed by AECOM included a review of data quality with result recalculation, and a thorough chromatographic review. The purpose of the review was to verify the positive surface water sample results reported for PCB homologs and investigate the possibility of additional PCB homolog responses present in the chromatograms which were less than the method detection limit, and therefore reported as non-detect by TA-Savannah.

2.1.1 Data Quality Review

The original data validation of the TA-Savannah data was performed by Tetra Tech Inc. (Tetra Tech) in 2016 and 2017. Tetra Tech validated the data to a USEPA Region III Organic Level II with reference to the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Superfund Methods Data Review (January 2017), and stated that the following parameters were included in their review:

- Holding times and sample preservation
- Blanks (Method, Trip, Field, and Equipment)
- Matrix spike and/or matrix spike duplicate results

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- Laboratory control sample/laboratory control sample duplicate results
 - Surrogate spike results
 - Field duplicates
 - Laboratory duplicates
 - Internal standard areas and recoveries
 - Initial/continuing calibrations

In addition to these standard data validation elements, the more thorough manual review of the TA-Savannah samples by AECOM in this study included factors related to analyte identification and quantitation.

2.1.2 Chromatographic Review

AECOM reviewed chromatograms from 2016 and 2017 for 100% of the TA-Savannah samples included in this study (Table 2). Internal standards phenanthrene-d10 and chrysene-d12, as well as surrogate $^{13}\text{C}_{12}$ -Decachlorobiphenyl, were added to all quality control and field samples analyzed by the laboratory. In addition, in the three sample delivery groups (SDGs) reported in 2017 (240-77949-1, 240-81286-1, and 240-84856-1), there is also a surrogate that is not being used for this analysis that elutes prior to phenanthrene-d10. This surrogate is Lindane- $^{13}\text{C}_6$, which according to TestAmerica-Savannah standard operating procedure (SOP) SA-SM-007, is being evaluated by the laboratory for future use in this method, but $^{13}\text{C}_{12}$ -Decachlorobiphenyl is the only surrogate being used by TA-Savannah at this time. Internal standards are used for quantitation of instrument responses based on relative responses within established retention time windows. The retention time windows for all compounds vary based on the initial calibration, so the comparison of chromatograms was limited to chromatograms from the same calibration.

AECOM reviewed the chromatograms visually using the associated calibrations, internal standards, and labelled surrogates. As part of the review, chromatograms with suspected PCB homolog peaks, as well as chromatograms with additional or unidentifiable peaks required further interpretation by a TA-Savannah analyst. AECOM chemists do not have direct access to all the resources of the TA-Savannah analysts, and rely heavily on visually identifying possible

homolog peaks in the chromatograms. TA-Savannah analysts are able to more definitively confirm the findings of the AECOM chemists, and provide insight into the analytical factors contributing to the nature of the chromatographic responses. The requested interpretation was focused on identifying PCB homolog responses in the chromatograms which were less than the MDLs and therefore reported as non-detect.

2.1.3 Manual Results Recalculation

AECOM manually recalculated all on-column results integrated by TA-Savannah for the two detections noted from 2016 and 2017 (Appendix A). On-column refers to concentrations derived directly from instrumental responses using the calibration curve and internal standard responses before being adjusted based on dilution factors and sample preparation considerations. The calculations were performed using Superfund Stage IV data in accordance with a USEPA Region III Organic Level II (formerly M-3) according to the USEPA CLP National Functional Guidelines for Organic/Inorganic (USEPA, 2017). Calculations were performed using equations in USEPA Method 680 and the laboratory's Standard Operating Procedure (USEPA, 1985).

Calculations were performed for any analyte that was identified and integrated in the raw data of each sample, even if that analyte displayed a response which would have a calculated concentration less than the MDL. However, the only results reported in the raw data by TA-Savannah were all greater than the MDL. The specific values calculated for each integrated analyte include response factors for each calibration standard, average response factors for the calibration, relative standard deviation for the calibration, on-column concentration, and reportable concentration. AECOM's recalculation matches TA-Savannah's reported results.

2.2 ALS ENVIRONMENTAL HOMOLOG DATA REVIEW

The review of ALS Environmental (ALS-Rochester) homolog data performed by AECOM included a review of data quality with result recalculation, and a thorough chromatographic review. The purpose of the review was to verify the positive surface water sample results reported for total dichlorobiphenyls and investigate the possibility of additional PCB homolog responses present in the chromatograms which were less than the method detection limit, and therefore reported as non-detect by ALS-Rochester.

2.2.1 Data Quality Review

Data validation was performed by AECOM on 100% of the surface water samples and the groundwater field blank included in this study, which were collected in April 2018 at the Middle River Complex (Table 3). In accordance with the Quality Assurance Project Plan in the 2018-2020 Groundwater and Surface Water Monitoring Work Plan and its associated addenda (AECOM, 2017, 2018a, 2018b), the validation was performed to a USEPA Region III Organic Level I based on the specifics of the analytical methods referenced and qualified according to the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic/Inorganic (January 2017) Superfund Data Review, with the exception of blank detections which were qualified according to the USEPA Region III modifications to the National Functional Guidelines defining the use of the “B” flag.

The review was assisted using an electronic data management tool that compiles batch-level quality control (QC) data submitted with the laboratory deliverables and identifies anomalies for verification and qualification by the data reviewer. This information is provided in the form of a structured workbook that includes field sample analytical results, QC sample results, batch associations, and QC criteria. Prior to validation, the quality assurance procedures applied to this process include reviewing the output for data completeness based on laboratory deliverables and chain of custody reports, verification of QC criteria based on the aforementioned data validation guidelines and project-specific Quality Assurance Project Plan, as well as strict control of data management permissions. The resulting data validation workbooks were evaluated and validated using the AECOM automated validation assistant tool. The specific data elements that were reviewed include:

- Holding times and sample preservation
- Blanks (Method, Trip, Field, and Equipment)
- Matrix spike and/or matrix spike duplicate results
- Laboratory control sample/laboratory control sample duplicate results
- Surrogate spike results
- Field duplicates

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- Laboratory duplicates
 - Sensitivity

In addition to these standard data validation elements, the more thorough manual review of the ALS-Rochester samples in this study included initial and continuing calibrations, internal standard area counts, and factors related to analyte identification and quantitation.

2.2.2 Chromatographic Review

Chromatograms were reviewed for 100% of the ALS-Rochester samples included in this study. Internal standards phenanthrene-d10 and chrysene-d12, as well as surrogate ¹³C₁₂-Decachlorobiphenyl, are added to all quality control and field samples analyzed by the laboratory. Internal standards are used for quantitation of instrument responses based on relative responses within established retention time windows. The retention time windows for all compounds vary based on the initial calibration, so comparison of chromatograms was limited to chromatograms from the same calibration.

AECOM reviewed the chromatograms visually using the associated calibrations, internal standards, and labelled surrogates in order to visually identify peaks that required further analysis, and possibly manual integration, by an ALS-Rochester analyst. Two samples were identified by AECOM for further analysis by an ALS-Rochester analyst. The review procedure followed by the ALS-Rochester analyst included confirmation of the existing results, verification that no additional homolog groups were represented, and that all congener responses were identified and included in the total for the homolog groups reported. The findings of the ALS-Rochester analyst resulted in a change to the original quantification of both samples, and the results were manually recalculated by AECOM using the adjusted on-column area count provided by the ALS-Rochester analyst (Appendix A).

2.2.3 Manual Results Recalculation

AECOM manually recalculated all on-column results integrated by the laboratory in 100% of the ALS-Rochester samples in this study (Appendix A). The calculations were performed using Superfund Stage IV data in accordance with a USEPA Region III Organic Level II (formerly M-3) according to the USEPA CLP National Functional Guidelines for Organic/Inorganic

Superfund Methods Data Review (USEPA, 2017). Calculations were performed using equations in USEPA Method 680 and the laboratory's SOP (USEPA, 1985) (Appendix C).

Calculations were performed for any analyte that was identified and integrated in the raw data of each sample, even if that analyte displayed a response which would have a calculated concentration less than the MDL. In those instances, calculations would determine if the laboratory correctly reported those results as non-detect. Additionally, the two samples with adjusted on-column concentrations issued by an ALS analyst as a result of this study were recalculated, and the on-column concentrations were translated into reportable concentrations. The specific values calculated for each integrated analyte include response factors for each calibration standard, average response factors for the calibration, relative standard deviation for the calibration, on-column concentration, and reportable concentration.

SECTION 3

DATA REVIEW RESULTS

AECOM Technical Services, Inc., (AECOM) encountered only minor data quality anomalies in both the TestAmerica Laboratories, Inc., in Savannah, Georgia, (TA-Savannah) and ALS Environmental in Rochester, New York, (ALS-Rochester) data. These anomalies are not anticipated to have a measurable effect on the usability of the data, and all result values are considered usable as reported.

3.1 TESTAMERICA HOMOLOG DATA REVIEW

Typical minor anomalies were encountered during the data quality review of the 2016 and 2017 surface water data packages. Several field samples displayed internal standard area counts greater than upper quality control (QC) limits or internal standards outside of retention time windows. Both anomalies can have minor effects on the precision of result quantification. Field samples with internal standard area counts greater than the upper QC limit could indicate low biased field sample results because of the relationship between the internal standard response and the calculated concentration of target compounds. In other words, with all other factors remaining the same, a greater internal standard area count will result in a lower calculated target compound concentration. Additionally, matrix spikes and matrix spike duplicates displayed percent recoveries less than the lower quality control limits, which could also be a result of the high internal standard area counts.

A review of TA-Savannah chromatograms in sample delivery groups (SDGs) 240-65994-1, 240-77949-1, 240-84859-1, and 240-81286-1 showed that several samples displayed peaks at retention times that were not associated with laboratory spiked standards for polychlorinated biphenyl (PCB) homologs and may represent the presence of other organic co-contaminants encountered during the analytical procedure. No reporting limits were elevated based on these matrix interferences.

As part of this review, AECOM requested further investigation of unidentified peaks in the chromatograms by a TA-Savannah analyst. When the raw data was reviewed by a TA-Savannah

analyst, it was confirmed that some of the peaks seen in the chromatograms are associated with heptachlorobiphenyl, tetrachlorobiphenyl, and hexachlorobiphenyl homolog groups at concentrations less than the method detection limit (MDL). It is likely that these responses would have been reported as true positives by ALS-Rochester due to their lower detection limits, but TA-Savannah did not find these distinguishable from baseline noise, and therefore were not included in the quantification of the 2016-2017 result values.

For example, in SDG 240-84856-1, TA-Savannah reported a detection greater than the MDL in field sample MRC-SW5A2-091217 for total tetrachlorobiphenyls at 0.014 micrograms per liter ($\mu\text{g/L}$); however, there were two additional peaks associated with tetrachlorobiphenyl congeners that displayed concentrations less than the MDL in that sample. Each individual PCB congener peak is evaluated against the homolog group MDL. Therefore, those congener concentrations were not included in the total tetrachlorobiphenyls concentrations. Field samples MRC-SW5A1-091217 and MRC-SWDUP2-091217 displayed peaks associated with heptachlorobiphenyls and hexachlorobiphenyls, respectively. These responses were at concentrations less than the MDL and therefore were also reported as non-detect.

3.2 ALS ENVIRONMENTAL HOMOLOG DATA REVIEW

During the Organic Level I data validation performed by AECOM in June 2018, typical minor anomalies were encountered, and all data was found to be usable. The laboratory control spike pair which was performed in the same QC batch as the field samples displayed percent recoveries less than the lower QC limits for total heptachlorobiphenyls and total octachlorobiphenyls. All associated field sample results were non-detect and were qualified “UJ” by the data reviewer. These anomalies are minor and should be considered usable as estimated values with a possible negative bias. This negative bias means that there is a possibility that results reported for these analytes may be less than the true sample concentration. Since the affected results were reported as non-detect, the results were qualified as estimated.

All surface water samples reported detections that were greater than the MDL of $0.0016 \mu\text{g/L}$ for total dichlorobiphenyls at concentrations ranging from 0.0019 to $0.0066 \mu\text{g/L}$, while a field blank collected during the groundwater sampling one-week prior, reported detections greater than the MDL for total monochlorobiphenyls at $0.0045 \mu\text{g/L}$ (MDL of $0.00059 \mu\text{g/L}$), total

dichlorobiphenyls at 0.009 µg/L (MDL of 0.0016 µg/L), and total trichlorobiphenyls at 0.0055 µg/L (MDL of 0.0022 µg/L). The positive surface water sample results associated with the groundwater field blank detections were not qualified during surface water data validation because the field blank was assumed to only be representative of the temporal and spatial conditions of groundwater sampling.

The groundwater field blank was reviewed as part of this study in the same manner as the surface water field samples. The sample was collected in the field, by an AECOM chemist, by pouring de-ionized water directly from the full bottle provided by the laboratory, which remained sealed from the time it was shipped from the laboratory, directly into the sample bottle. AECOM performed data validation of this field blank to the same level as the surface water field samples. AECOM found no quality control anomalies impacting the quality of the field blank data. Additionally, the method blank prepared by ALS-Rochester in the same batch as the field blank displayed non-detect results for all PCB-Homologs. The findings of this study do not provide sufficient evidence to determine the source of the PCB homolog detections in the groundwater field blank.

The review of ALS-Rochester chromatograms and manual recalculation of all reported on-column homolog results, consistent with a United States Environmental Protection Agency (USEPA) Region III Organic Level II data validation of Superfund Stage IV data, in SDGs R1803359 and R1803542 showed that the detected concentrations of PCB homologs in surface water samples and the field blank were reported correctly by the laboratory and represent genuine detections. Several samples displayed responses for total hexachlorobiphenyls that were less than the MDL and were correctly reported as non-detects by the laboratory. Responses for hexachlorobiphenyls were identified and integrated for field samples MRC-SW9A, MRC-SW5B, MRC-SW9B, MRC-SW6B, and FB-041018-ZN. Using these responses, the reportable concentrations were calculated by AECOM and confirmed to all be less than the MDL of 0.0047 µg/L (Appendix A). The field blank collected during the 2018 groundwater sampling event, FB-041018-ZN, displayed a calculated total hexachlorobiphenyls concentration of 0.0025 µg/L while the remaining four samples each displayed a calculated concentration of 0.0014 µg/L. The calculated total hexachlorobiphenyls concentrations of the surface water

samples are all less than the calculated total hexachlorobiphenyls concentration in the field blank and, therefore, may have been affected by a similar mechanism of contamination.

During the review of the raw data, chromatograms for field samples MRC-SW5A1 (R1803542-006) and field duplicate MRC-SW8A-D (R1803542-013) displayed unidentified peaks near the retention time windows of several homolog groups in addition to the identified peaks for the reported concentrations of total dichlorobiphenyls. These chromatograms were submitted for further review to the ALS-Rochester analyst, who then determined that the peaks in question were not associated with PCB homologs. However, in both samples, the analyst identified additional peaks from dichlorobiphenyl congeners, which were not included in the original calculation of total dichlorobiphenyls. According to the analyst, peaks with area counts less than 100 are not considered to be significantly different from background noise and are not typically included in the homolog quantitation. However, the analyst identified a small number of peaks in both samples with area counts greater than 100 which were not integrated in the original quantification, most likely due to baseline noise in the chromatogram. Therefore, a negative bias was observed in the quantitation of these two samples due to the minor interferences in the baseline. Since this affected both samples that were submitted to ALS for further review, it is possible that other PCB homolog results were reported with a negative bias as well. The negative bias would cause sample results to be reported at concentrations less than the true sample concentration. The ALS-Rochester analyst provided adjusted on-column responses and raw data (Appendix B) for the reintegrated chromatograms in samples MRC-SW5A1 (R1803542-006) and MRC-SW8A-D (R1803542-013).

Using the adjusted raw data provided by ALS-Rochester for these two samples, AECOM calculated the reportable concentrations of total dichlorobiphenyls with all peaks included and calculated reportable concentrations of total dichlorobiphenyls with only peak areas greater than 100, as is consistent with the laboratory's standard operating procedure. The adjusted sample concentrations of total dichlorobiphenyls were all greater than the original reported results for those samples. AECOM recommends using the adjusted concentrations, which include only the additional congener peak areas greater than 100, as an estimated value of the true sample concentrations. The original total dichlorobiphenyls concentration reported for MRC-SW5A1 was 0.0028 µg/L, while the adjusted total dichlorobiphenyls concentrations for the sample are

0.0033 $\mu\text{g/L}$ (including only the additional congener peak area counts greater than 100) and 0.0042 $\mu\text{g/L}$ (with all congener peak area counts included). The original total dichlorobiphenyls concentration reported for MRC-SW8A-D was 0.0047 $\mu\text{g/L}$ while the adjusted total dichlorobiphenyls concentration for the sample is 0.0056 $\mu\text{g/L}$ (including only the additional congener peak area counts greater than 100); the ALS analyst did not identify any dichlorobiphenyl congener peaks with area counts less than 100 in this sample. The raw data and chromatograms of these samples are shown in Appendix B, while the recalculated concentrations are shown in Appendix A with the associated equations listed in Appendix C.

SECTION 4 CONCLUSIONS

Polychlorinated biphenyls detections, as the dichlorobiphenyl homolog group, were verified by AECOM Technical Services, Inc., in samples from all 14 of the Dark Head Cove surface water sampling locations, ranging from 0.0019 to 0.0066 micrograms per liter ($\mu\text{g/L}$) during the 2018 April event. Likewise, the two previous reported detections of total polychlorinated biphenyls were verified by AECOM Technical Services, Inc., at both locations from 2016 to 2017, in field sample MRC-SW6B-061316 in 2016 (total pentachlorobiphenyls at $0.036 \mu\text{g/L}$) and MRC-SW5A-091217 in 2017 (total tetrachlorobiphenyls at $0.014 \mu\text{g/L}$). Therefore, all polychlorinated biphenyls detections reported from 2016 to 2018 surface water data have been verified as true detections.

AECOM Technical Services, Inc., encountered only minor data quality anomalies in both the TestAmerica Laboratories, Inc., Savannah, Georgia, and ALS Environmental, Rochester, New York, data. These anomalies are not anticipated to have a measurable effect on the usability of the data. Conclusions from the laboratory data comparison study are as follows:

- During the review of analytical sensitivity, it was found that ALS Environmental was able to achieve method detection limits up to nine times lower than those of TestAmerica Laboratories, Inc., for all homolog groups (Table 1). Specifically, method detection limits of ALS Environmental in Rochester, New York, for dichlorobiphenyls was three times lower than that of TestAmerica Laboratories, Inc., Savannah, Georgia. Of the 14 detections for total dichlorobiphenyls in the 2018 surface water samples, there is only one detection reported by ALS Environmental that would have hypothetically been reported as a detection greater than the method detection limit by TestAmerica Laboratories, Inc., (MRC-SW7A) at $0.0066 \mu\text{g/L}$. Therefore, the remaining 13 detections in 2018 surface water samples would have been identified as non-detect by TestAmerica Laboratories, Inc.
- The review of ALS Environmental and TestAmerica Laboratories, Inc., chromatograms and manual recalculation of all reported on-column homolog results, consistent with a United States Environmental Protection Agency Region III Organic Level II data validation of Superfund Stage IV data, in sample delivery groups showed that the detected concentrations of polychlorinated biphenyl homologs were reported correctly by each laboratory and represent genuine detections.

-
- During the chromatographic review of TestAmerica Laboratories, Inc., data, AECOM Technical Services, Inc., identified several peaks that represented homolog groups present in the samples at concentrations less than the method detection limit. As part of this review, a TestAmerica Laboratories, Inc., analyst confirmed that some of the peaks observed by AECOM Technical Services, Inc., are associated with heptachlorobiphenyls, hexachlorobiphenyls, and tetrachlorobiphenyls. These responses were not distinguishable from baseline noise and were correctly reported as non-detect results by TestAmerica Laboratories, Inc. However, these results may have been reported as true positives by ALS Environmental due to their lower method detection and reporting limits.
 - During the chromatographic review of ALS Environmental, Rochester, New York data, AECOM Technical Services, Inc., verified that the detections were reported correctly, and that polychlorinated biphenyl homolog concentrations may be greater than reported due to the presence of additional dichlorobiphenyl congener peaks identified by an ALS Environmental analyst in two samples that were initially presumed to be baseline noise. AECOM recommends using the adjusted concentrations, which include only the additional congener peak areas greater than 100, as an estimated value of the true sample concentrations.
 - TestAmerica Laboratories, Inc., as part of its standard operating procedures, compares each polychlorinated biphenyl congener peak to the homolog group method detection limit and does not include congener concentrations in the calculation of the homolog total that are less than the method detection limit. ALS Environmental on the other hand, includes all congener peaks that have integrated area counts greater than 100. Using total dichlorobiphenyls as an example, which means ALS Environmental would include all congeners greater than 0.0005 µg/L while TestAmerica Laboratories, Inc., would only include congeners greater than 0.0054 µg/L, approximately ten times higher than ALS Environmental.

Additionally, field blank detections for total monochlorobiphenyls at 0.0045 µg/L, total dichlorobiphenyls at 0.0090 µg/L, and total trichlorobiphenyls at 0.0055 µg/L were reported from the groundwater sampling conducted by AECOM Technical Services, Inc., one week prior to the April surface water sampling. This detection was greater than all reported detections from the 2018 surface water sampling event. A field blank was not collected during the surface water sampling event, and the detection found in the groundwater field blank was not used to qualify the surface water results during data validation because it was not considered to be representative of the conditions during surface water sampling.

During the data quality review, AECOM Technical Services, Inc., encountered minor quality control anomalies, but found that all data from both laboratories, was usable as reported. Additionally, through recalculation of the chromatographic responses (chromatograms are provided in Appendix B), it was demonstrated that the positive results reported by ALS

Environmental and TestAmerica Laboratories, Inc., were reported correctly (Appendices B and C). Several samples displayed integrated responses for total hexachlorobiphenyls less than the method detection limit and were correctly reported as non-detect by ALS Environmental. The chromatographic review conducted by AECOM Technical Services, Inc., in this study revealed that polychlorinated biphenyl homolog responses were present at levels less than the method detection limit in some TestAmerica Laboratories, Inc., chromatograms, which was confirmed by a TestAmerica Laboratories, Inc., analyst. The review of ALS Environmental chromatograms verified the positive results obtained from the April 2018 surface water sampling event and revealed additional dichlorobiphenyl congener peaks in two samples which were not included in the original total dichlorobiphenyls results reported in those samples.

After review of the chromatographic data by AECOM Technical Services, Inc., chemists, and confirmation provided by TestAmerica Laboratories, Inc., and ALS Environmental analysts, it was determined that sufficient evidence exists to support the hypothesis of differing detection limits between laboratories as one potential explanation for the disparity in reported results.

The findings of the laboratory data comparison study verify the concentrations of total dichlorobiphenyls detected in 2018 surface water samples from Dark Head Cove and can be attributed to the lower method detection limits achieved by ALS Environmental in Rochester, New York, for total dichlorobiphenyls, which were three times lower than the preceding analyses for that homolog group performed by TestAmerica Laboratories, Inc., in Savannah, Georgia, from 2016 to 2017.

AECOM on behalf of Lockheed Martin will collect additional quality control samples during the interim sampling event, which will be conducted prior to the next surface water sampling event scheduled in April 2019 as part of the Laboratory Comparison Study, to help identify if laboratory or field conditions caused the polychlorinated biphenyl detections in the 2018 April surface water samples.

SECTION 5 REFERENCES

AECOM Technical Services, Inc. (AECOM), 2017. *2018-2020 Groundwater and Surface Water Monitoring Work Plan, Lockheed Martin Corporation, Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by AECOM Technical Services, Inc., Germantown, Maryland, for Lockheed Martin Corporation, Bethesda, Maryland. December.

_____, 2018a. *2018-2020 Groundwater and Surface Water Monitoring Work Plan Addendum #1, Lockheed Martin Corporation, Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by AECOM Technical Services, Inc., Germantown, Maryland, for Lockheed Martin Corporation, Bethesda, Maryland. March.

_____, 2018b. *2018-2020 Groundwater and Surface Water Monitoring Work Plan Addendum #2, Lockheed Martin Corporation, Middle River Complex, 2323 Eastern Boulevard, Middle River, Maryland*. Prepared by AECOM Technical Services, Inc., Germantown, Maryland, for Lockheed Martin Corporation, Bethesda, Maryland. July.

Maryland Department of the Environment. 2019. Surface Water Quality Criteria, Code of Maryland Regulations 26.08.02.03, updated January 2019

United States Environmental Protection Agency (USEPA). 2017. *National Functional Guidelines for Organic Superfund Methods Data Review*. EPA-540-R-2017-002. January. <https://www.epa.gov/clp/national-functional-guidelines-organic-superfund-methods-data-review-som024>

_____, 1985. *Method 680 Determination of Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry*. November 1985.

TABLES

Table 1—Polychlorinated Biphenyl Homolog Laboratory Detection Limit Comparison

Table 2—TestAmerica - Savannah Reviewed Samples

Table 3—ALS Environmental - Rochester Reviewed Samples

TABLE 1
Polychlorinated Biphenyl Homolog Laboratory Detection
Limit Comparison

**Table 1: Polychlorinated Biphenyl Homolog MDL and RL Comparison
 ALS Environmental - Rochester (2018) and TestAmerica - Savannah (2016-2017)
 Lockheed Martin Corporation, Middle River Complex, Middle River, Maryland
 Page 1 of 1**

Homolog Group	Units	ALS - Rochester MDL	TestAmerica - Savannah MDL	ALS - Rochester RL	TestAmerica - Savannah RL
Monochlorobiphenyls, Total	µg/L	0.00059	0.0056	0.0047	0.1
Dichlorobiphenyls, Total	µg/L	0.0016	0.0054	0.0047	0.1
Trichlorobiphenyls, Total	µg/L	0.0022	0.0065	0.0047	0.1
Tetrachlorobiphenyls, Total	µg/L	0.0023	0.013	0.0094	0.2
Pentachlorobiphenyls, Total	µg/L	0.0043	0.014	0.0094	0.2
Hexachlorobiphenyls, Total	µg/L	0.0047	0.015	0.0094	0.2
Heptachlorobiphenyls, Total	µg/L	0.009	0.03	0.014	0.3
Octachlorobiphenyls, Total	µg/L	0.0099	0.038	0.014	0.3
Nonachlorobiphenyls, Total	µg/L	0.0088	0.049	0.019	0.5
Decachlorobiphenyl	µg/L	0.0012	0.07	0.024	0.5

Notes:

MDL – Method Detection Limit

RL – Reporting Limit

µg/L – micrograms per liter

TABLE 2
TestAmerica - Savannah Reviewed Samples

Table 2: Reviewed Samples - TestAmerica - Savannah
Lockheed Martin Corporation, Middle River Complex, Middle River, Maryland
Page 1 of 1

Lab Sample ID	Field Sample ID	Sample Type	Sample Date	Detection (Y/N)
240-65994-1	MRC-SW5A1-061316	SW Sample	6/13/2016	N
240-65994-2	MRC-SW5A2-061316	SW Sample	6/13/2016	N
240-65994-3	MRC-SW5B-061316	SW Sample	6/13/2016	N
240-65994-4	MRC-SW6A-061316	SW Sample	6/13/2016	N
240-65994-5	MRC-SW6B-061316	SW Sample	6/13/2016	Y (Penta – 0.036 µg/L)
240-65994-6	MRC-SW7A-061316	SW Sample	6/13/2016	N
240-65994-7	MRC-SW7B-061316	SW Sample	6/13/2016	N
240-65994-8	MRC-SW8A-061316	SW Sample	6/13/2016	N
240-65994-9	MRC-SW8B-061316	SW Sample	6/13/2016	N
240-65994-10	MRC-SW9A-061316	SW Sample	6/13/2016	N
240-65994-11	MRC-SW9B-061316	SW Sample	6/13/2016	N
240-77949-3	MRC-SW5A1-041017	SW Sample	4/10/2017	N
240-77949-4	MRC-SW5A2-041017	SW Sample	4/10/2017	N
240-77949-5	MRC-SW5B-041017	SW Sample	4/10/2017	N
240-77949-6	MRC-SW6A-041017	SW Sample	4/10/2017	N
240-77949-7	MRC-SW6B-041017	SW Sample	4/10/2017	N
240-77949-8	MRC-SW7A-041017	SW Sample	4/10/2017	N
240-77949-9	MRC-SW7B-041017	SW Sample	4/10/2017	N
240-77949-10	MRC-SW8A-041017	SW Sample	4/10/2017	N
240-77949-12	MRC-SW8B-041017	SW Sample	4/10/2017	N
240-77949-13	MRC-SW9A-041017	SW Sample	4/10/2017	N
240-77949-14	MRC-SW9B-041017	SW Sample	4/10/2017	N
240-77949-33	MRC-SWDUP2-041017	SW Sample	4/10/2017	N
240-81286-5	MRC-SW5A1-061917	SW Sample	6/19/2017	N
240-81286-6	MRC-SW5A2-061917	SW Sample	6/19/2017	N
240-81286-7	MRC-SW5B-061917	SW Sample	6/19/2017	N
240-81286-8	MRC-SW6A-061917	SW Sample	6/19/2017	N
240-81286-9	MRC-SW6B-061917	SW Sample	6/19/2017	N
240-81286-10	MRC-SW7A-061917	SW Sample	6/19/2017	N
240-81286-11	MRC-SW7B-061917	SW Sample	6/19/2017	N
240-81286-12	MRC-SWDUP2-061917	SW Sample	6/19/2017	N
240-81286-13	MRC-SW8A-061917	SW Sample	6/19/2017	N
240-81286-14	MRC-SW8B-061917	SW Sample	6/19/2017	N
240-81286-15	MRC-SW9A-061917	SW Sample	6/19/2017	N
240-81286-16	MRC-SW9B-061917	SW Sample	6/19/2017	N
240-84856-4	MRC-SW5A1-091217	SW Sample	9/12/2017	N
240-84856-5	MRC-SW5A2-091217	SW Sample	9/12/2017	Y (Tetra – 0.014 µg/L)
240-84856-6	MRC-SW5B-091217	SW Sample	9/12/2017	N
240-84856-7	MRC-SW6A-091217	SW Sample	9/12/2017	N
240-84856-8	MRC-SW6B-091217	SW Sample	9/12/2017	N
240-84856-9	MRC-SW7A-091217	SW Sample	9/12/2017	N
240-84856-10	MRC-SW7B-091217	SW Sample	9/12/2017	N
240-84856-12	MRC-SWDUP2-091217	SW Sample	9/12/2017	N
240-84856-15	MRC-SW8A-091217	SW Sample	9/12/2017	N
240-84856-16	MRC-SW8B-091217	SW Sample	9/12/2017	N
240-84856-17	MRC-SW9A-091217	SW Sample	9/12/2017	N
240-84856-18	MRC-SW9B-091217	SW Sample	9/12/2017	N

Notes:

Penta – Pentachlorobiphenyl

SW – Surface Water

Tetra –Tetrachlorobiphenyl

µg/L – micrograms per liter

TABLE 3
ALS Environmental - Rochester Reviewed Samples

Table 3: Reviewed Samples - ALS Environmental - Rochester
Lockheed Martin Corporation, Middle River Complex, Middle River, Maryland
Page 1 of 1

ALS-Rochester Lab Sample ID	ALS-Middletown Lab Sample ID	Field Sample ID	Sample Type	Sample Date	Detection (Y/N)
R1803359-002	2308280 002	FB-041018-ZN	Field Blank*	4/10/2018	Y (Mono – 0.0045 µg/L Di – 0.0090 µg/L, Tri – 0.0055 µg/L)
R1803542-001	2309395 004	MRC-SW9A	SW Sample	4/17/2018	Y (Di – 0.0042 µg/L)
R1803542-002	2309395 006	MRC-SW5A2	SW Sample	4/17/2018	Y (Di – 0.0033 µg/L)
R1803542-003	2309395 007	MRC-SW5B	SW Sample	4/17/2018	Y (Di – 0.0042 µg/L)
R1803542-004	2309395 008	MRC-SW7A	SW Sample	4/17/2018	Y (Di – 0.0066 µg/L)
R1803542-005	2309395 009	MRC-SW7B	SW Sample	4/17/2018	Y (Di – 0.0038 µg/L)
R1803542-006	2309395 011	MRC-SW5A1	SW Sample	4/17/2018	Y (Di – 0.0028 µg/L)
R1803542-007	2309395 012	MRC-SW9B	SW Sample	4/17/2018	Y (Di – 0.0028 µg/L)
R1803542-008	2309395 013	MRC-SW15A	SW Sample	4/17/2018	Y (Di – 0.0047 µg/L)
R1803542-009	2309395 014	MRC-SW16A	SW Sample	4/17/2018	Y (Di – 0.0042 µg/L)
R1803542-010	2309395 016	MRC-SW13A	SW Sample	4/17/2018	Y (Di – 0.0019 µg/L)
R1803542-011	2309395 017	MRC-SW6B	SW Sample	4/17/2018	Y (Di – 0.0042 µg/L)
R1803542-012	2309395 018	MRC-SW8B	SW Sample	4/17/2018	Y (Di – 0.0038 µg/L)
R1803542-013	2309395 020	MRC-SW8A-D	SW Sample	4/17/2018	Y (Di – 0.0047 µg/L)
R1803542-014	2309395 021	MRC-SW6A	SW Sample	4/17/2018	Y (Di – 0.0038 µg/L)
R1803542-015	2309395 023	MRC-SW8A	SW Sample	4/17/2018	Y (Di – 0.0033 µg/L)

Notes:

Di – Dichlorobiphenyl
 Mono – Monochlorobiphenyl
 SW – Surface Water
 Tri – Trichlorobiphenyl
 µg/L – micrograms per liter

* – Field Blank is only associated with the groundwater sampling program and was collected one week before the SW sampling

APPENDICES

Appendix A—Results Recalculation

Appendix B—TestAmerica – Savannah Chromatograms – 2016 & 2017

Appendix C—Recalculation Equations

APPENDIX A
Results Recalculation

Appendix A
TestAmerica Laboratories, Inc. - Savannah Results Recalculation
Lockheed Martin Corporation, Middle River Complex, Middle River, Maryland
Page 1 of 2

Sample ID:	240-65994-5
Analysis Date & Time:	6/22/2016 2:27
Dilution:	1
Initial Volume (mL):	1042.4
Final Volume (mL):	1

Target Compound	Reported Concentration (ug/L):	MDL	RL	Calculated Concentration (ug/L)
Pentachlorobiphenyls	0.036	0.013	0.19	0.036

Target Analytes	Response	Reported On-Column (mg/L)	Calculated On-Column (mg/L)
Pentachlorobiphenyls	591	0.0376	0.0376

Internal Standards	Response	On-Column (mg/L)
d10-phenanthrene	70730	0.75
d12-chrysene	55487	0.75

Internal Standards	Std 1		Std 2		Std 3		Std 4		Std 5	
	Response	Injected Conc	Response	Injected Conc	Response	Injected Conc	Response	Injected Conc	Response	Injected Conc
d10-phenanthrene	49957	0.75	47494	0.75	55556	0.75	51278	0.75	46155	0.75
d12-chrysene	44039	0.75	38678	0.75	48021	0.75	42526	0.75	38435	0.75

Target Analytes	Injected Conc: 0.2		Injected Conc: 1		Injected Conc: 2		Injected Conc: 4		Injected Conc: 10		RRF Average	RSD (%)
	Response	mg/L	Response	mg/L	Response	mg/L	Response	mg/L	Response	mg/L		
Pentachlorobiphenyls	1952	0.1756	10019	0.9483	24891	2.01	48213	4.23	113946	11.1		
Reported RF	0.1465		0.1582		0.168		0.1763		0.1852			
Calculated RF	0.1465		0.1582		0.1680		0.1763		0.1852		0.1668	9.05688%

Notes:

MDL - method detection limit
mg/L - milligrams per liter
mL - milliliters
RF - response factor

RL - reporting limit
RRF - relative response factor
RSD - relative standard deviation
ug/L - micrograms per liter

Appendix A
TestAmerica Laboratories, Inc. - Savannah Results Recalculation
Lockheed Martin Corporation, Middle River Complex, Middle River, Maryland
Page 2 of 2

Sample ID:	240-84856-5
Analysis Date & Time:	9/23/2017 4:52
Dilution:	1
Initial Volume (mL):	1011.1
Final Volume (mL):	1

Target Compound	Reported Concentration (ug/L):	MDL	RL	Calculated Concentration (ug/L)
Tetrachlorobiphenyls	0.014	0.013	0.2	0.014

Target Analytes	Response	Reported On-Column (mg/L)	Calculated On Column (mg/L)
Tetrachlorobiphenyls	556	0.0142	0.0142

Internal Standards	Response	On-Column (mg/L)
d10-phenanthrene	92477	0.75
d12-chrysene	119753	0.75

Internal Standards	Std 1		Std 2		Std 3		Std 4		Std 5	
	Response	Injected Conc	Response	Injected Conc	Response	Injected Conc	Response	Injected Conc	Response	Injected Conc
d10-phenanthrene	58507	0.75	66939	0.75	50966	0.75	60233	0.75	71806	0.75
d12-chrysene	69944	0.75	84247	0.75	66694	0.75	64555	0.75	93840	0.75

Target Analytes	Injected Conc:	0.2	Injected Conc:	1	Injected Conc:	2	Injected Conc:	4	Injected Conc:	10	RRF Average	RSD (%)
	Response	mg/L	Response	mg/L	Response	mg/L	Response	mg/L	Response	mg/L		
Tetrachlorobiphenyls	4628	0.202	25875	0.9375	43516	2.01	96195	4.55	282720	9.2		
Reported RF	0.2481		0.2303		0.2447		0.2794		0.2260			
Calculated RF	0.2481		0.2303		0.2447		0.2794		0.2260		0.2457	8.55628%

Notes:

MDL - method detection limit
 mg/L - milligrams per liter
 mL - milliliters
 RF - response factor

RL - reporting limit
 RRF - relative response factor
 RSD - relative standard deviation
 ug/L - micrograms per liter

APPENDIX B
TestAmerica - Savannah Chromatograms - 2016 & 2017

TestAmerica Savannah

Data File: \\chromna\Savannah\ChromData\CMSX\20190118-53301.b\xa1812.D

Injection Date: 18-Jan-2019 20:41:30

Instrument ID: CMSX

Lims ID: 680-163273-A-1-A

Lab Sample ID: 680-163273-1

Client ID: Lot Bottle Blank

Operator ID:

ALS Bottle#: 8

Worklist Smp#: 8

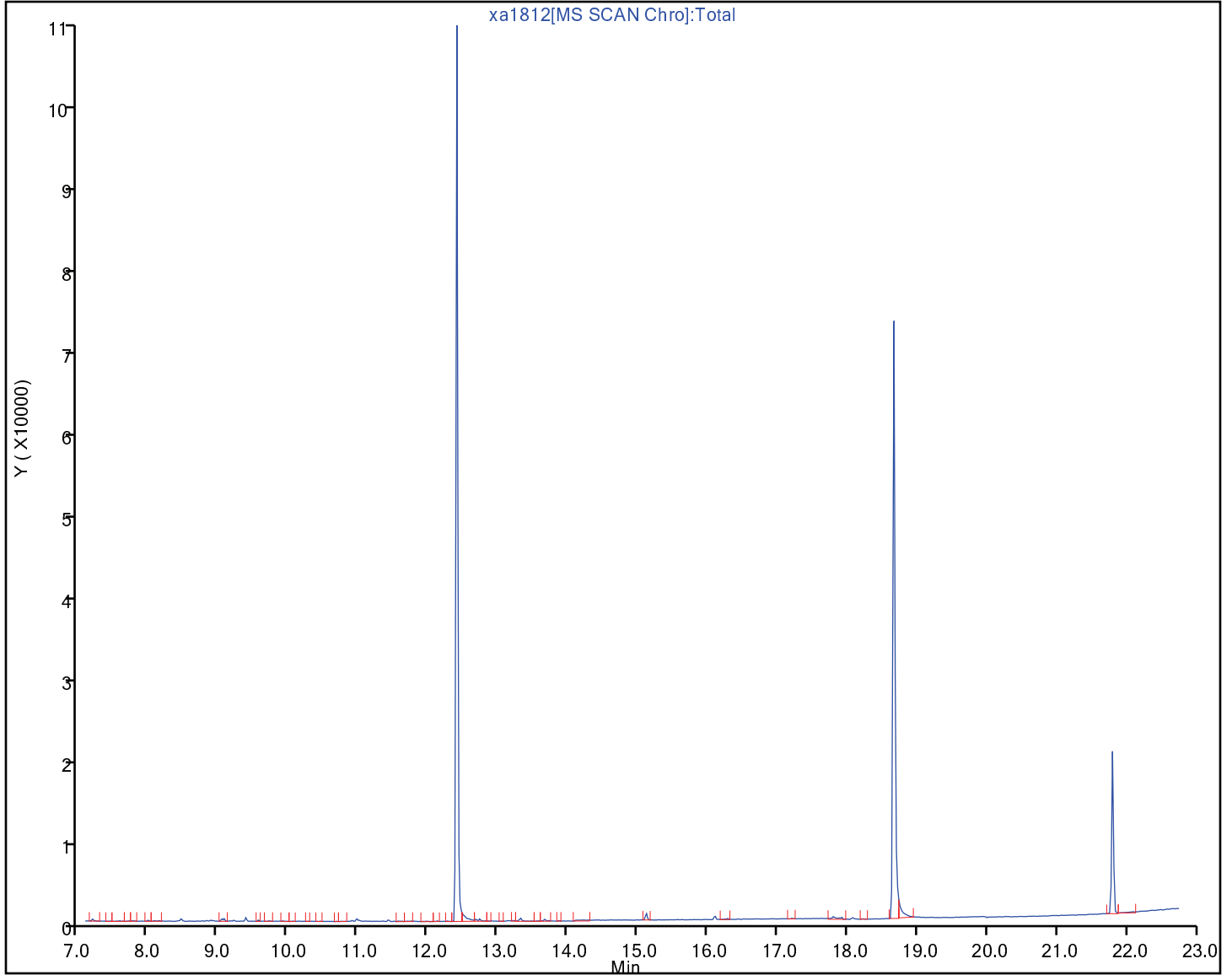
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah
Target Compound Quantitation Report

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160620-30686.b\Xf2004.D
 Lims ID: ccvis
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Jun-2016 09:49:30 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVIS
 Misc. Info.: 680-0030686-004
 Operator ID: Instrument ID: CMSX
 Sublist: chrom-680\CMSX*sub13
 Method: \\ChromNA\Savannah\ChromData\CMSX\20160620-30686.b\680\CMSX.m
 Limit Group: 680
 Last Update: 22-Jun-2016 09:27:41 Calib Date: 24-Apr-2016 17:35:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Savannah\ChromData\CMSX\20160424-29094.b\Xd2408.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK016

First Level Reviewer: davisn Date: 22-Jun-2016 09:27:41

Compound	Sig	RT	EXP RT	DLT RT	Q	Response	On-Col Amt ug/ml	Flags
A 23 Total Monochlorobiphenyls	188	8.484	8.008 - 8.960		0	87030	0.9400	
A 24 Total Dichlorobiphenyls	222	10.227	9.282 - 11.172		0	62283	0.9670	
* 5 Phenanthrene-d10	188	10.995	10.995 0.0		100	70060	0.7500	
A 25 Total Trichlorobiphenyls	256	11.871	10.547 -13.195		0	40338	1.01	
9 PCB-104	326	12.983	12.983 0.0		96	49536	2.17	
A 26 Total Tetrachlorobiphenyls	292	13.368	11.653 -15.083		0	49595	2.02	
A 27 Total Pentachlorobiphenyls	326	14.771	12.923 -16.619		0	33698	2.16	
12 PCB-77	292	15.023	15.023 0.0		93	69195	2.03	
A 28 Total Hexachlorobiphenyls	360	16.069	14.108 -18.031		0	29249	2.11	
* 15 Chrysene-d12	240	17.177	17.177 0.0		100	48548	0.7500	
A 29 Total Heptachlorobiphenyls	394	17.202	15.730 -18.674		0	34630	3.17	
A 30 Total Octachlorobiphenyls	430	18.287	17.216 -19.358		0	32708	3.13	
19 PCB-208	464	18.848	18.848 0.0		98	17860	3.83	
A 31 Total Nonachlorobiphenyls	464	19.342	18.788 -19.896		0	18270	5.14	
32 DCB Decachlorobiphenyl	498	20.337	20.337 0.0		69	15052	4.24	
\$ 22 Decachlorobiphenyl-13C12	510	20.337	20.337 0.0		69	13629	4.68	M

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

680isomerCal3_00025

Amount Added: 1.00

Units: mL

Report Date: 22-Jun-2016 09:27:42

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160620-30686.b\Xf2004.D

Injection Date: 20-Jun-2016 09:49:30

Instrument ID: CMSX

Lims ID: ccvis

Client ID:

Operator ID:

ALS Bottle#: 3

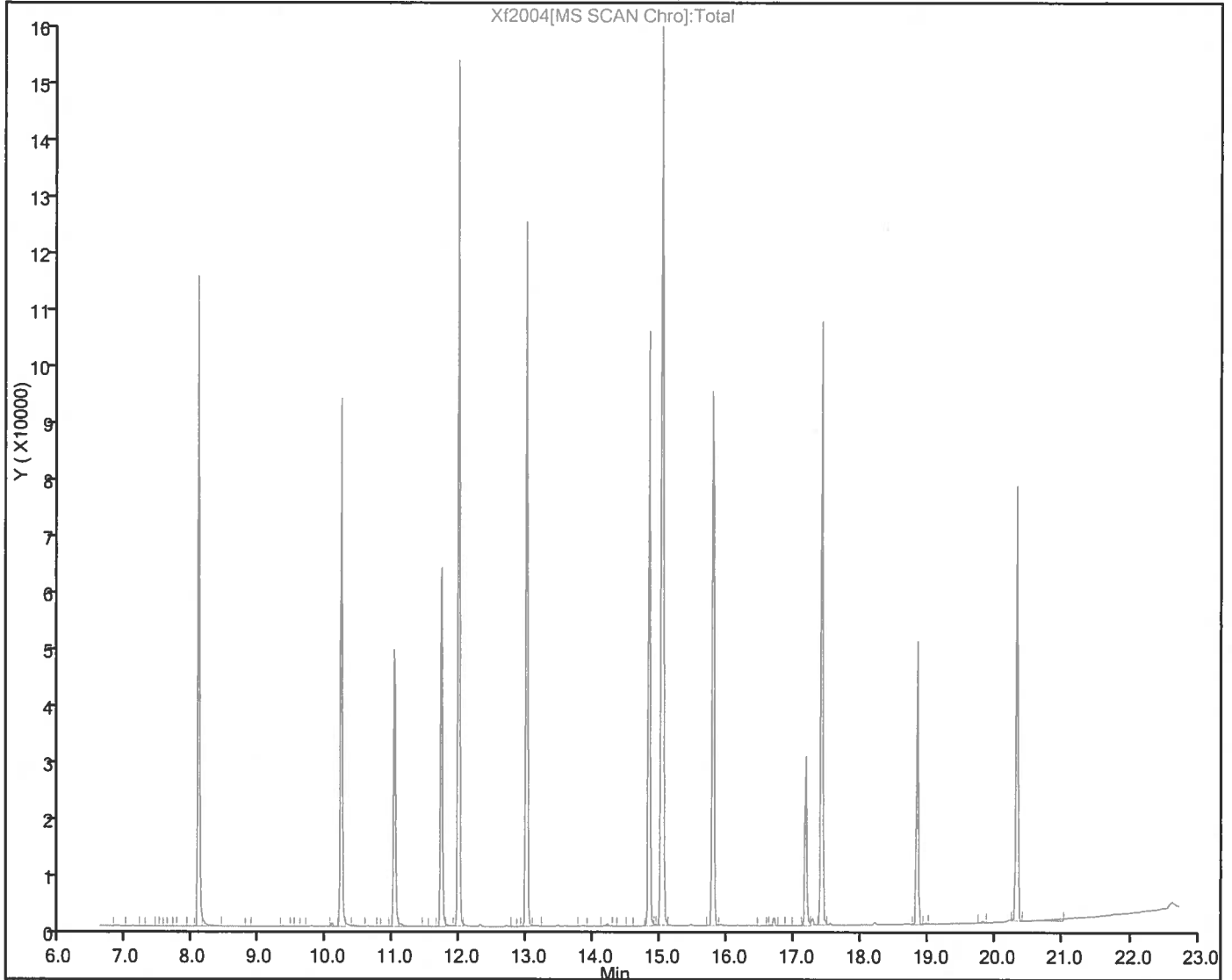
Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 22-Jun-2016 09:37:08

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160620-30686.b\Xf2018.D

Injection Date: 20-Jun-2016 16:30:30

Instrument ID: CMSX

Lims ID: 240-65994-E-1-A

Lab Sample ID: 680-65994-1

Client ID: MRC-SW5A1-061316

Operator ID:

ALS Bottle#: 17

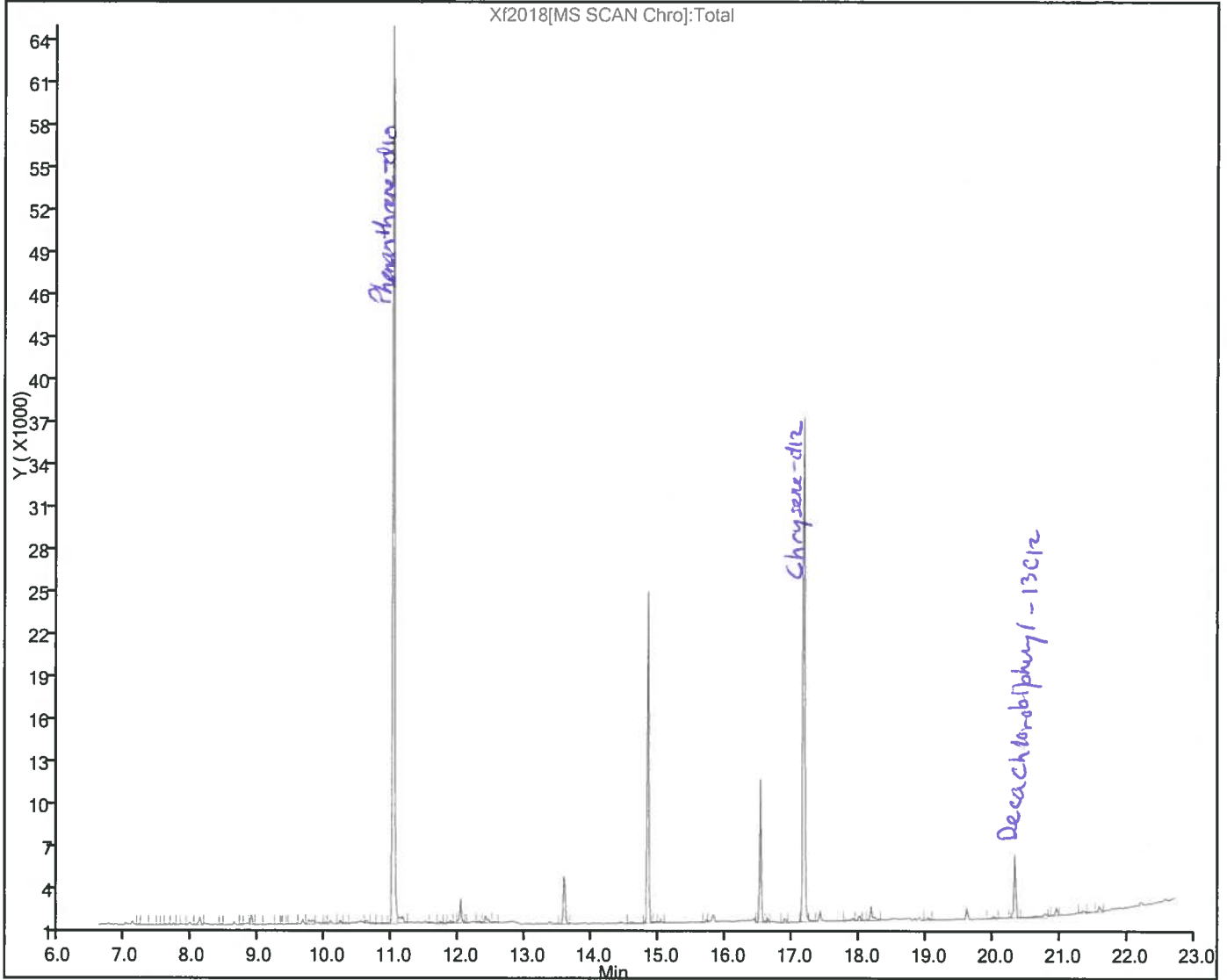
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Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:20

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2112.D

Injection Date: 22-Jun-2016 01:01:30

Instrument ID: CMSX

Lims ID: 240-65994-D-2-A

Lab Sample ID: 680-65994-2

Client ID: MRC-SW5A2-061316

Operator ID:

ALS Bottle#: 11

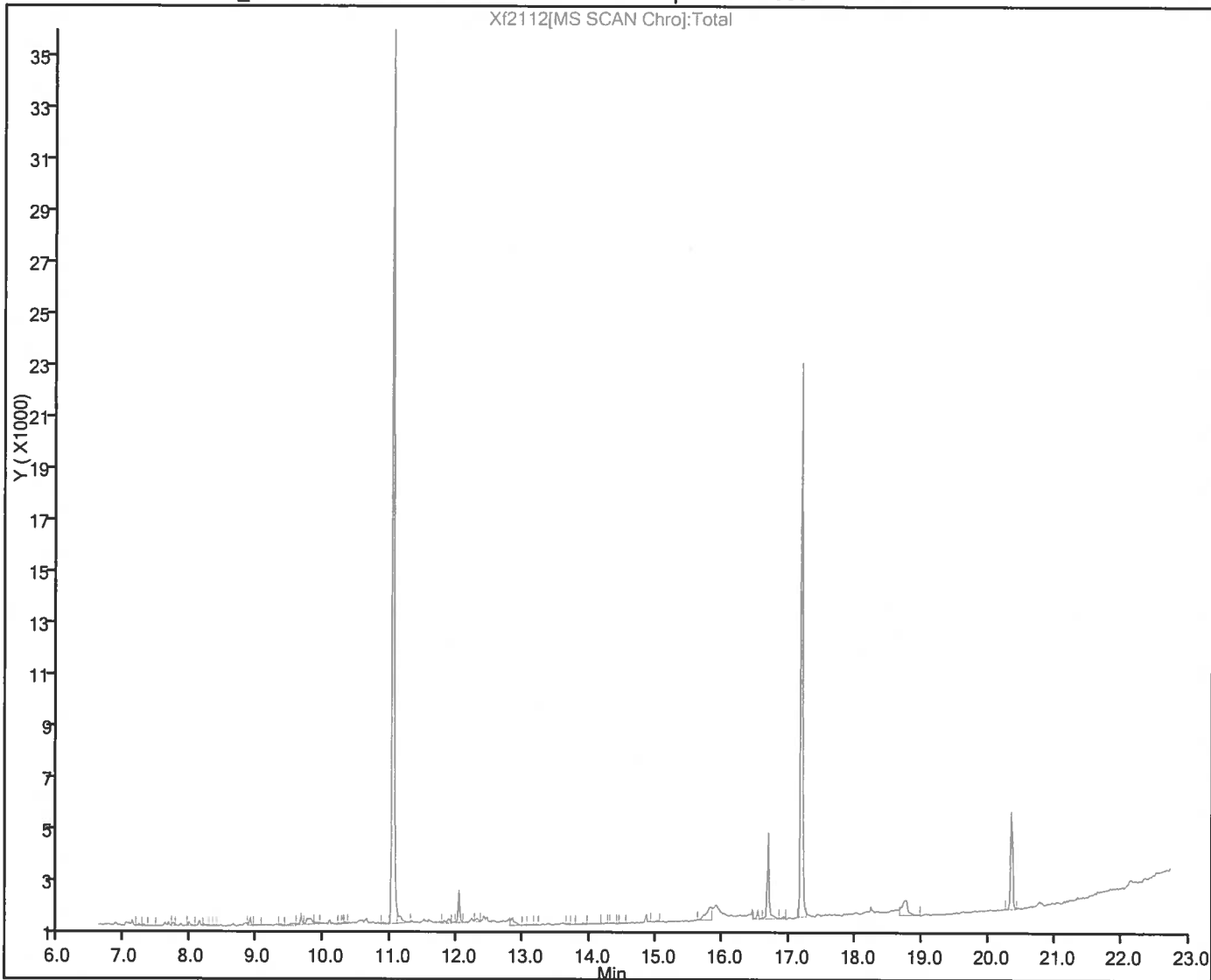
Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:21

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2113.D

Injection Date: 22-Jun-2016 01:30:30

Instrument ID: CMSX

Lims ID: 240-65994-E-3-A

Lab Sample ID: 680-65994-3

Client ID: MRC-SW5B-061316

Operator ID:

ALS Bottle#: 12

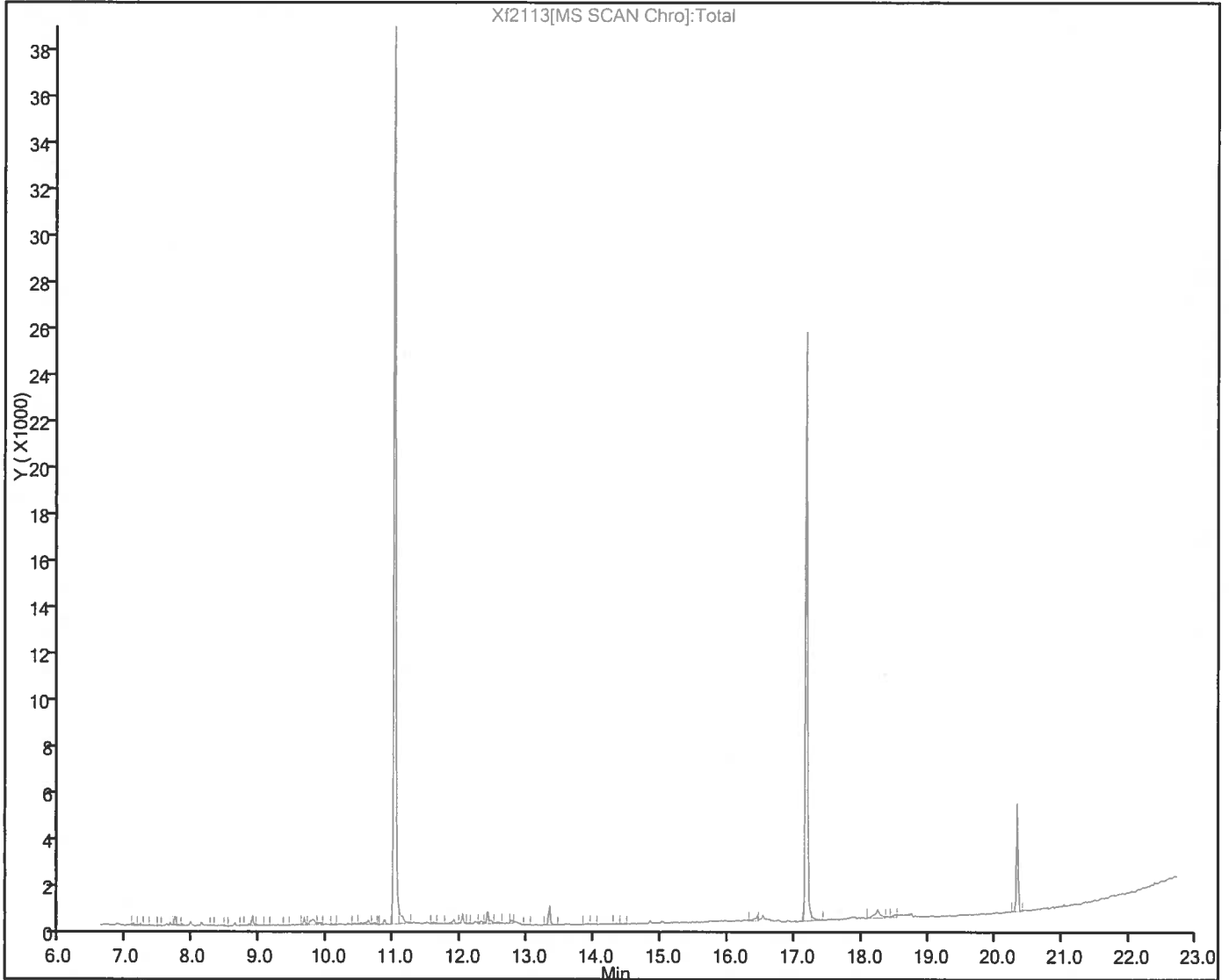
Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:23

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2114.D

Injection Date: 22-Jun-2016 01:59:30

Instrument ID: CMSX

Lims ID: 240-65994-E-4-A

Lab Sample ID: 680-65994-4

Client ID: MRC-SW6A-061316

Operator ID:

ALS Bottle#: 13

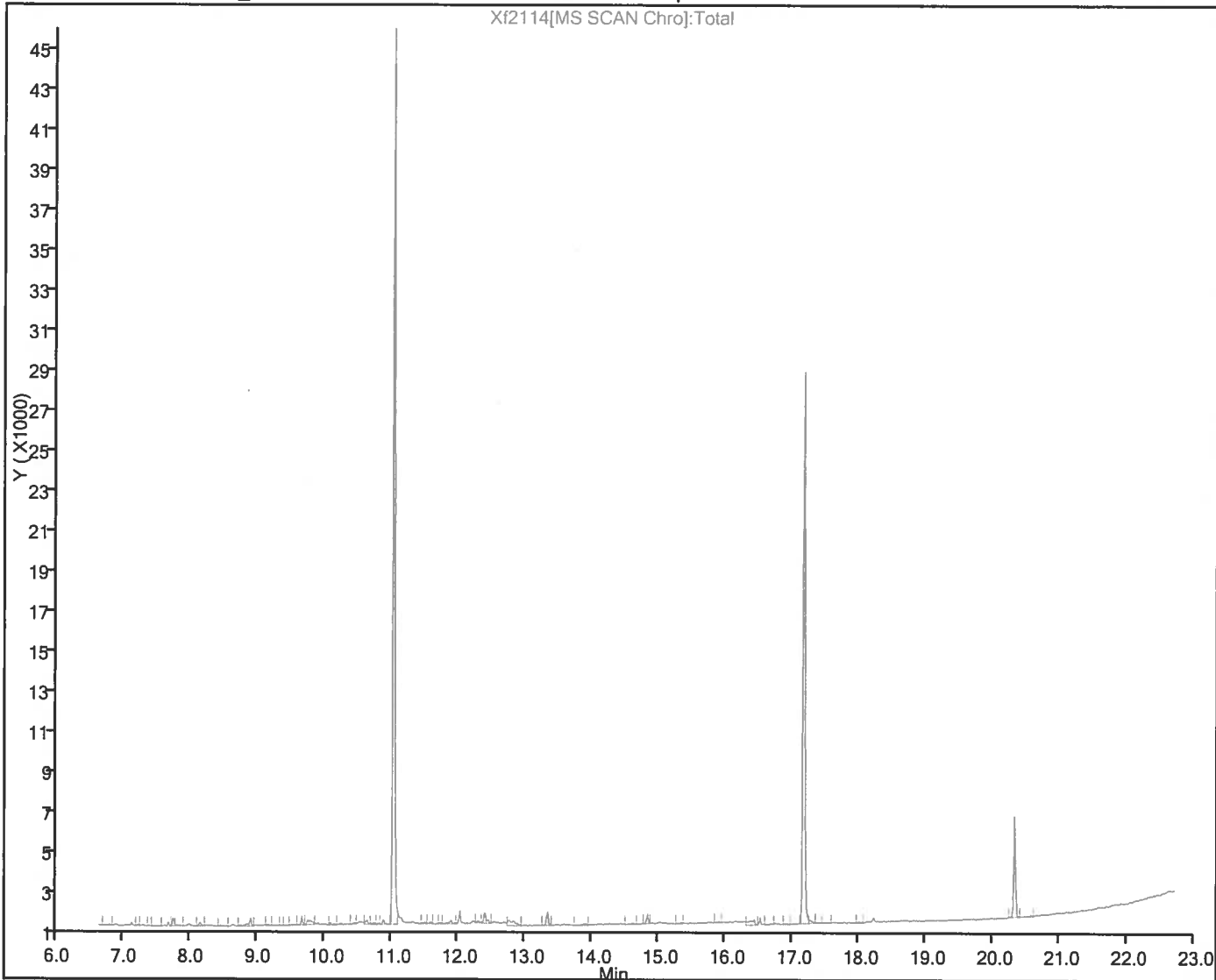
Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Savannah Job No.: 240-65994-1
 SDG No.: _____
 Client Sample ID: MRC-SW6B-061316 Lab Sample ID: 240-65994-5
 Matrix: Water Lab File ID: Xf2115.D
 Analysis Method: 680 Date Collected: 06/13/2016 12:52
 Extract. Method: 680 Date Extracted: 06/16/2016 13:29
 Sample wt/vol: 1042.4(mL) Date Analyzed: 06/22/2016 02:27
 Con. Extract Vol.: 1(mL) Dilution Factor: 1
 Injection Volume: 2(uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 438264 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
28655-71-2	Heptachlorobiphenyl	0.29	U *	0.29	0.029
26601-64-9	Hexachlorobiphenyl	0.19	U *	0.19	0.014
53742-07-7	Nonachlorobiphenyl	0.48	U *	0.48	0.047
55722-26-4	Octachlorobiphenyl	0.29	U *	0.29	0.036
27323-18-8	Monochlorobiphenyl	0.096	U *	0.096	0.0054
2051-24-3	DCB Decachlorobiphenyl	0.48	U *	0.48	0.067
25512-42-9	Dichlorobiphenyl	0.096	U *	0.096	0.0052
25429-29-2	Pentachlorobiphenyl	0.036	J *	0.19	0.013
26914-33-0	Tetrachlorobiphenyl	0.19	U *	0.19	0.012
25323-68-6	Trichlorobiphenyl	0.096	U *	0.096	0.0062

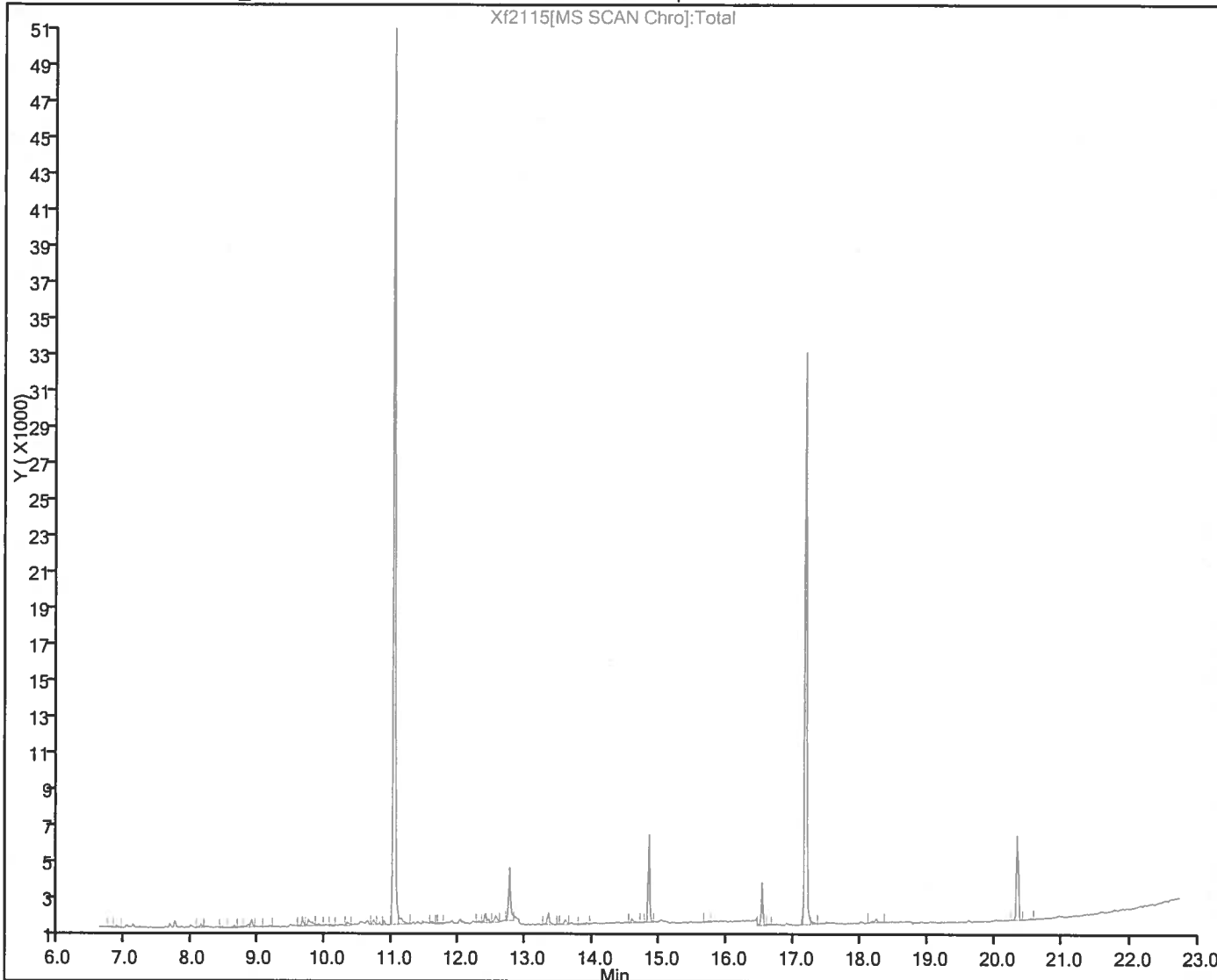
CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00281	Decachlorobiphenyl-13C12	71	*	25-113

Report Date: 24-Jun-2016 10:24:25

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2115.D
Injection Date: 22-Jun-2016 02:27:30 Instrument ID: CMSX
Lims ID: 240-65994-E-5-A Lab Sample ID: 680-65994-5
Client ID: MRC-SW6B-061316
Operator ID: ALS Bottle#: 14 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 680\CMSX Limit Group: 680



Report Date: 24-Jun-2016 10:24:25

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2115.D

Injection Date: 22-Jun-2016 02:27:30

Instrument ID: CMSX

Lims ID: 240-65994-E-5-A

Lab Sample ID: 680-65994-5

Client ID: MRC-SW6B-061316

Operator ID:

ALS Bottle#: 14

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

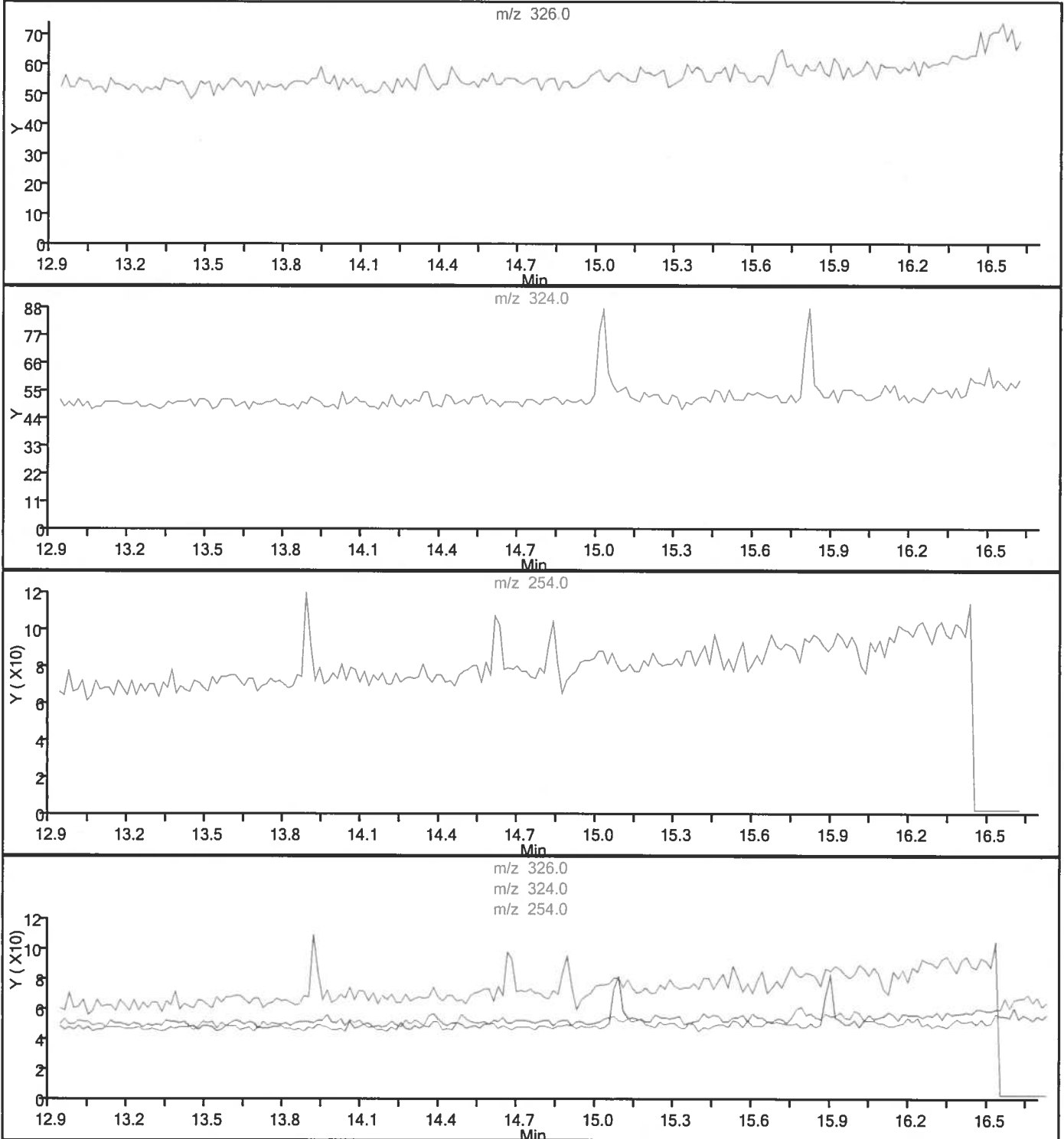
Method: 680\CMSX

Limit Group: 680

Column:

Detector MS SCAN

A 27 Total Pentachlorobiphenyls, CAS: 25429-29-2



Report Date: 24-Jun-2016 10:24:26

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2116.D

Injection Date: 22-Jun-2016 02:56:30

Instrument ID: CMSX

Lims ID: 240-65994-D-6-A

Lab Sample ID: 680-65994-6

Client ID: MRC-SW7A-061316

Operator ID:

ALS Bottle#: 15

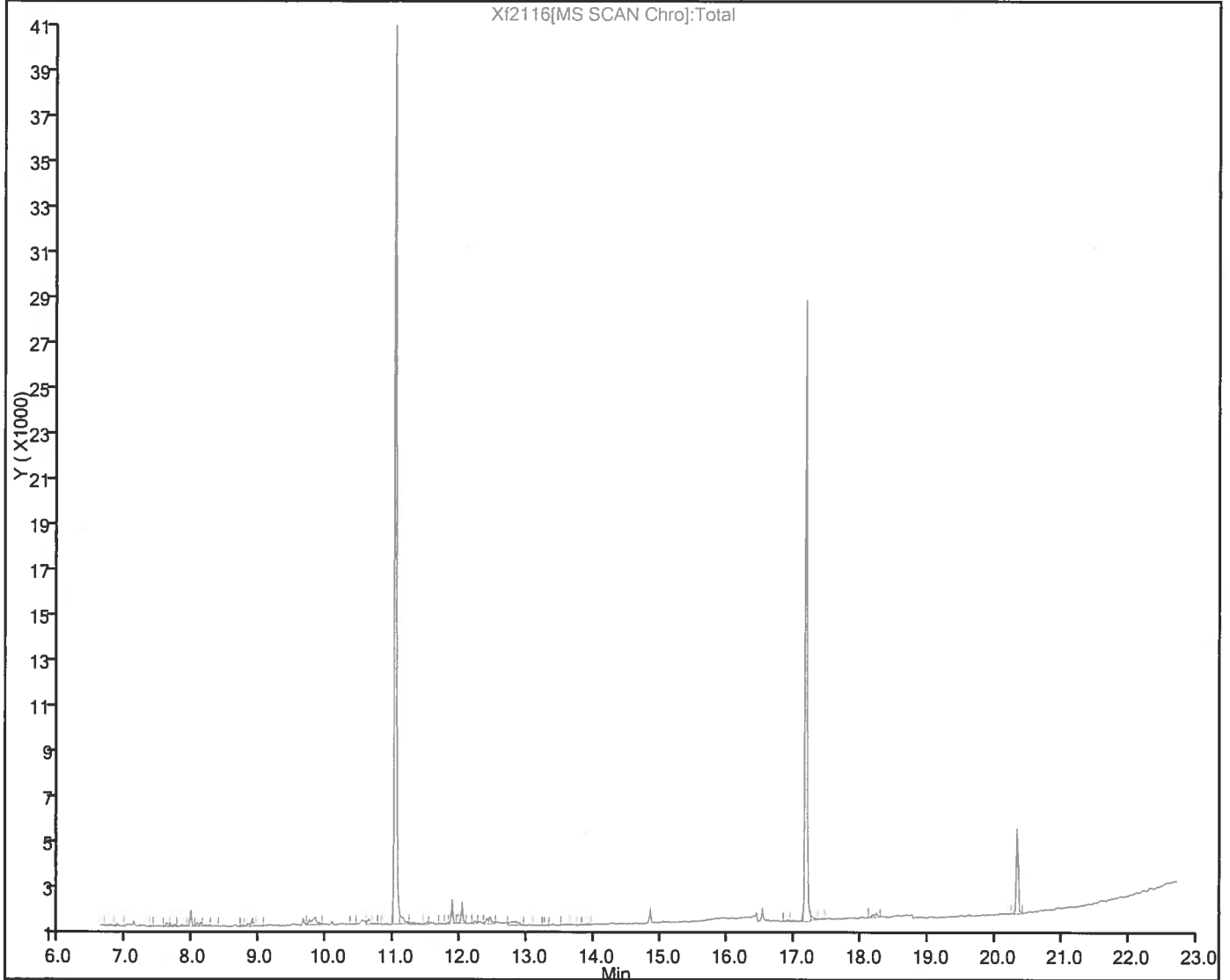
Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:27

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2117.D

Injection Date: 22-Jun-2016 03:25:30

Instrument ID: CMSX

Lims ID: 240-65994-E-7-A

Lab Sample ID: 680-65994-7

Client ID: MRC-SW7B-061316

Operator ID:

ALS Bottle#: 16

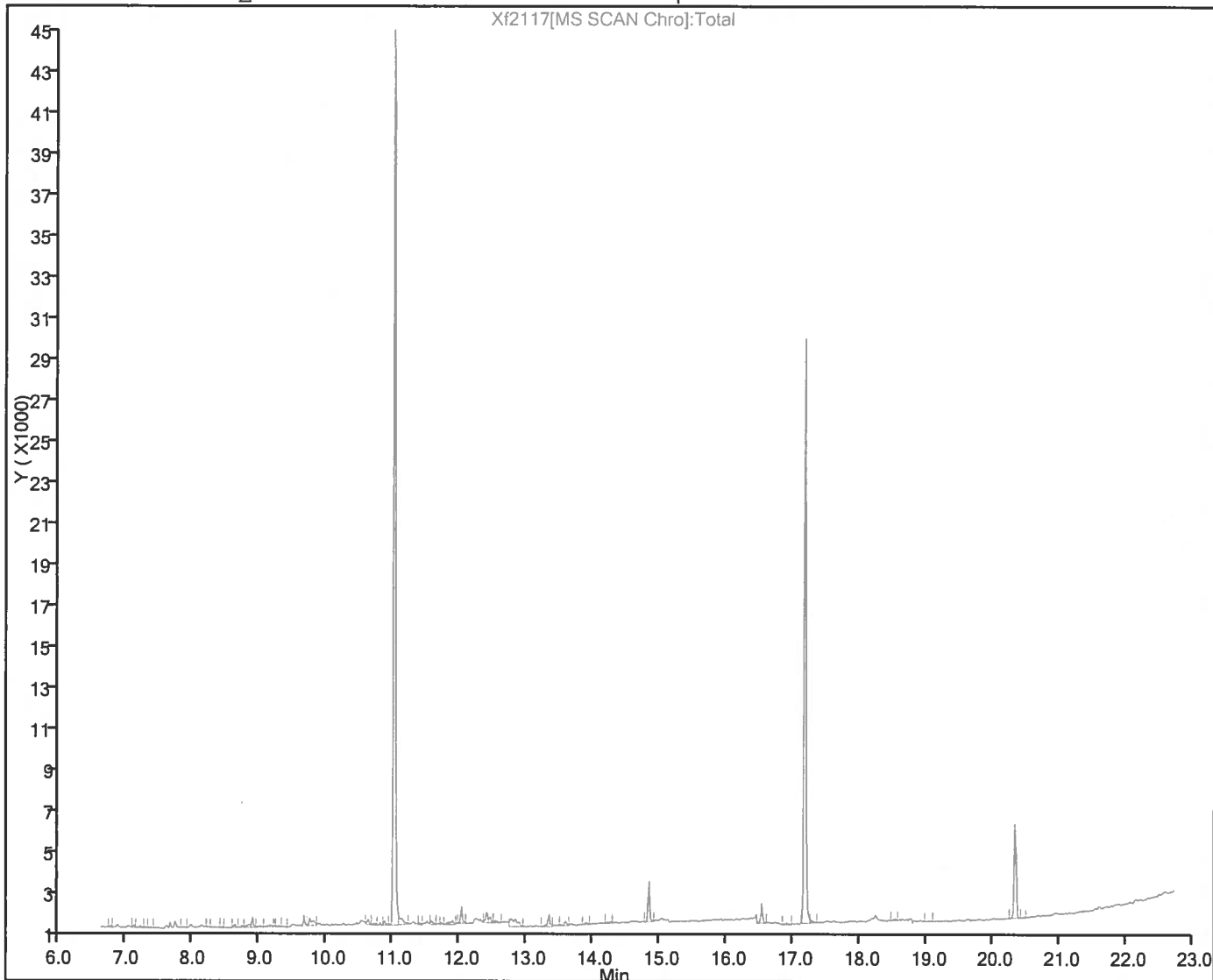
Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:28

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2118.D

Injection Date: 22-Jun-2016 03:54:30

Instrument ID: CMSX

Lims ID: 240-65994-D-8-A

Lab Sample ID: 680-65994-8

Client ID: MRC-SW8A-061316

Operator ID:

ALS Bottle#: 17

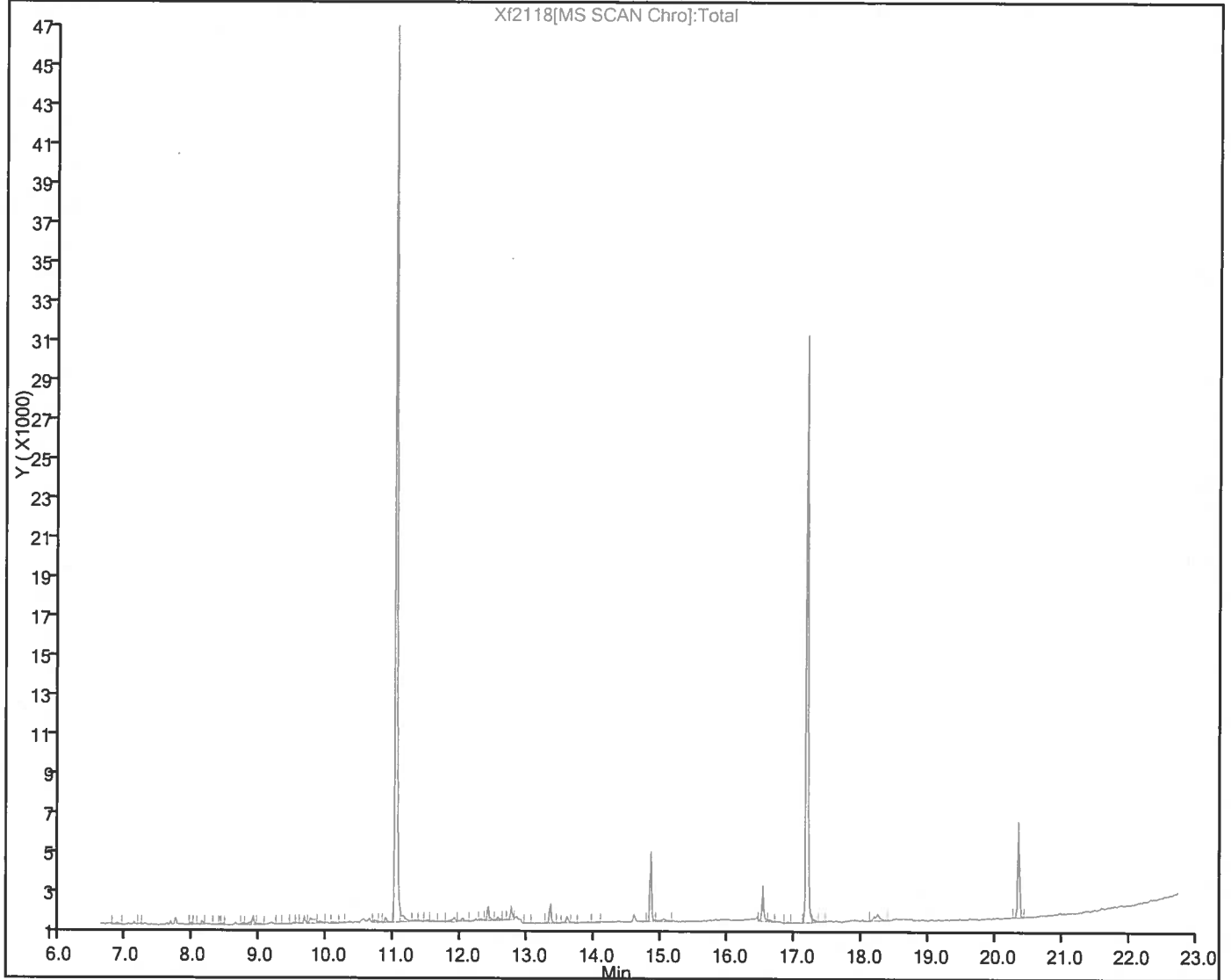
Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:29

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2119.D

Injection Date: 22-Jun-2016 04:22:30

Instrument ID: CMSX

Lims ID: 240-65994-D-9-A

Lab Sample ID: 680-65994-9

Client ID: MRC-SW8B-061316

Operator ID:

ALS Bottle#: 18

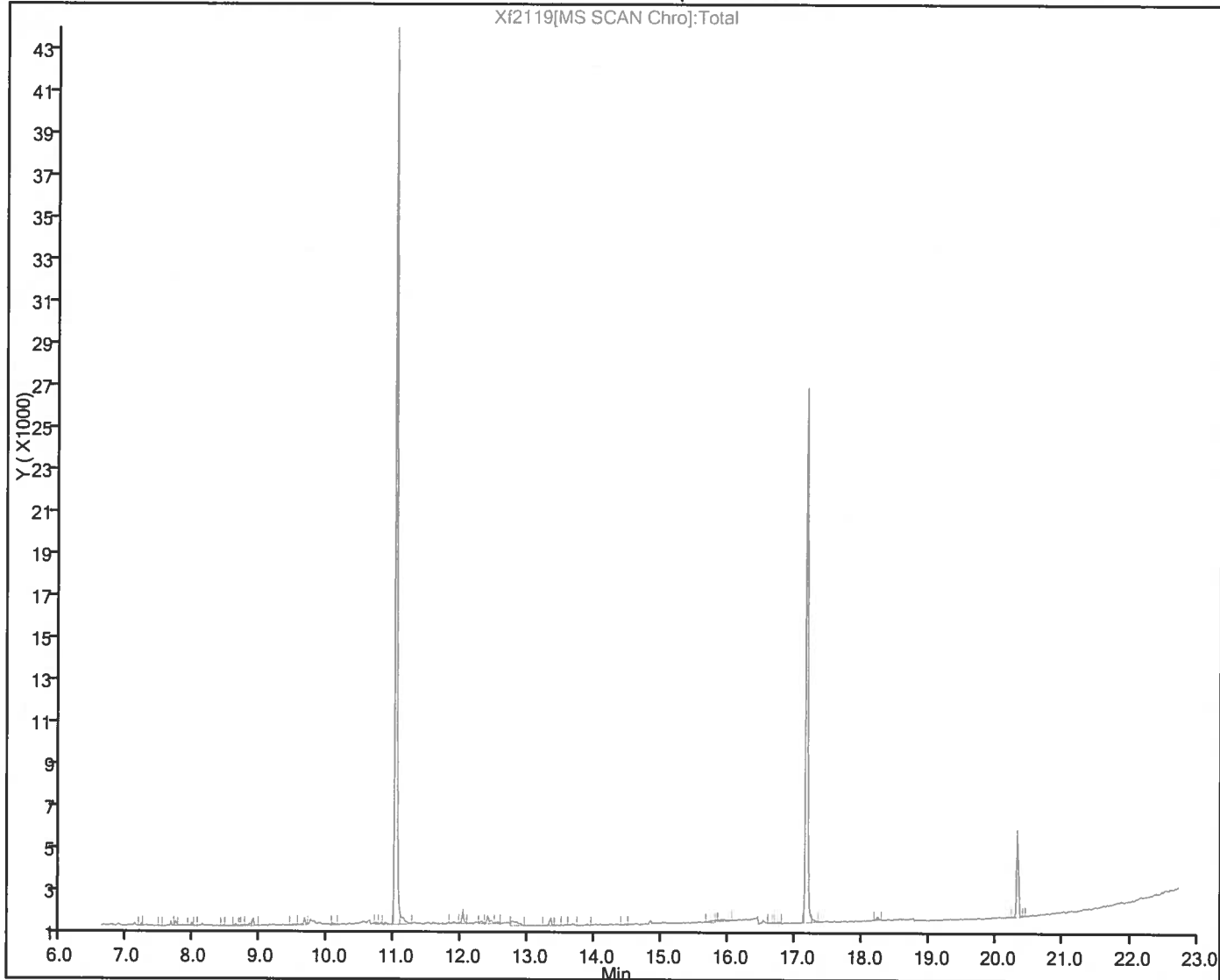
Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:30

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2120.D

Injection Date: 22-Jun-2016 04:51:30

Instrument ID: CMSX

Lims ID: 240-65994-D-10-A

Lab Sample ID: 680-65994-10

Client ID: MRC-SW9A-061316

Operator ID:

ALS Bottle#: 19

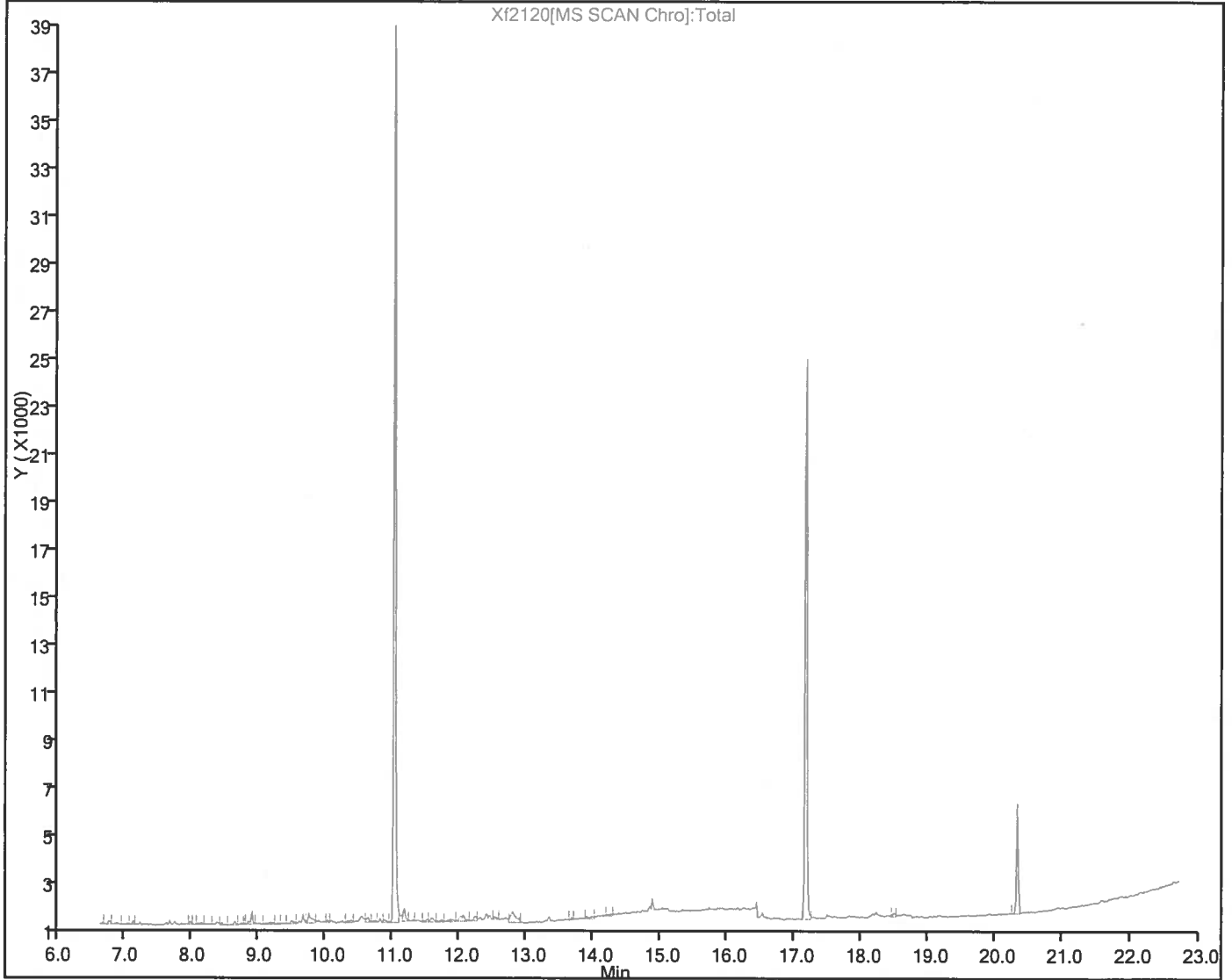
Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:30

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2121.D

Injection Date: 22-Jun-2016 05:20:30

Instrument ID: CMSX

Lims ID: 240-65994-E-11-A

Lab Sample ID: 680-65994-11

Client ID: MRC-SW9B-061316

Operator ID:

ALS Bottle#: 20

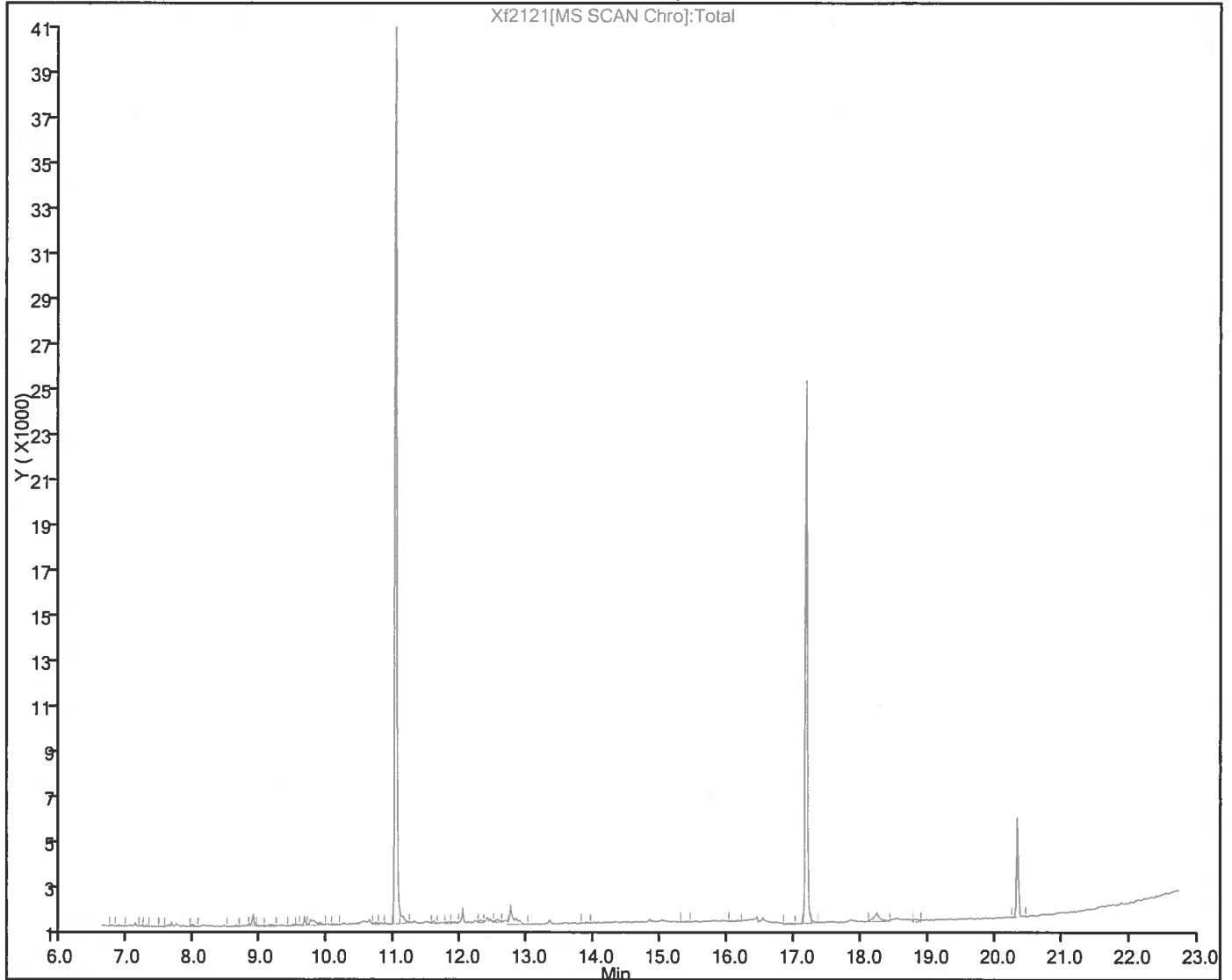
Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:31

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2122.D

Injection Date: 22-Jun-2016 05:48:30

Instrument ID: CMSX

Lims ID: 240-65996-G-1-A

Lab Sample ID: 680-65996-1

Client ID: MRC-SWFB-061316

Operator ID:

ALS Bottle#: 21

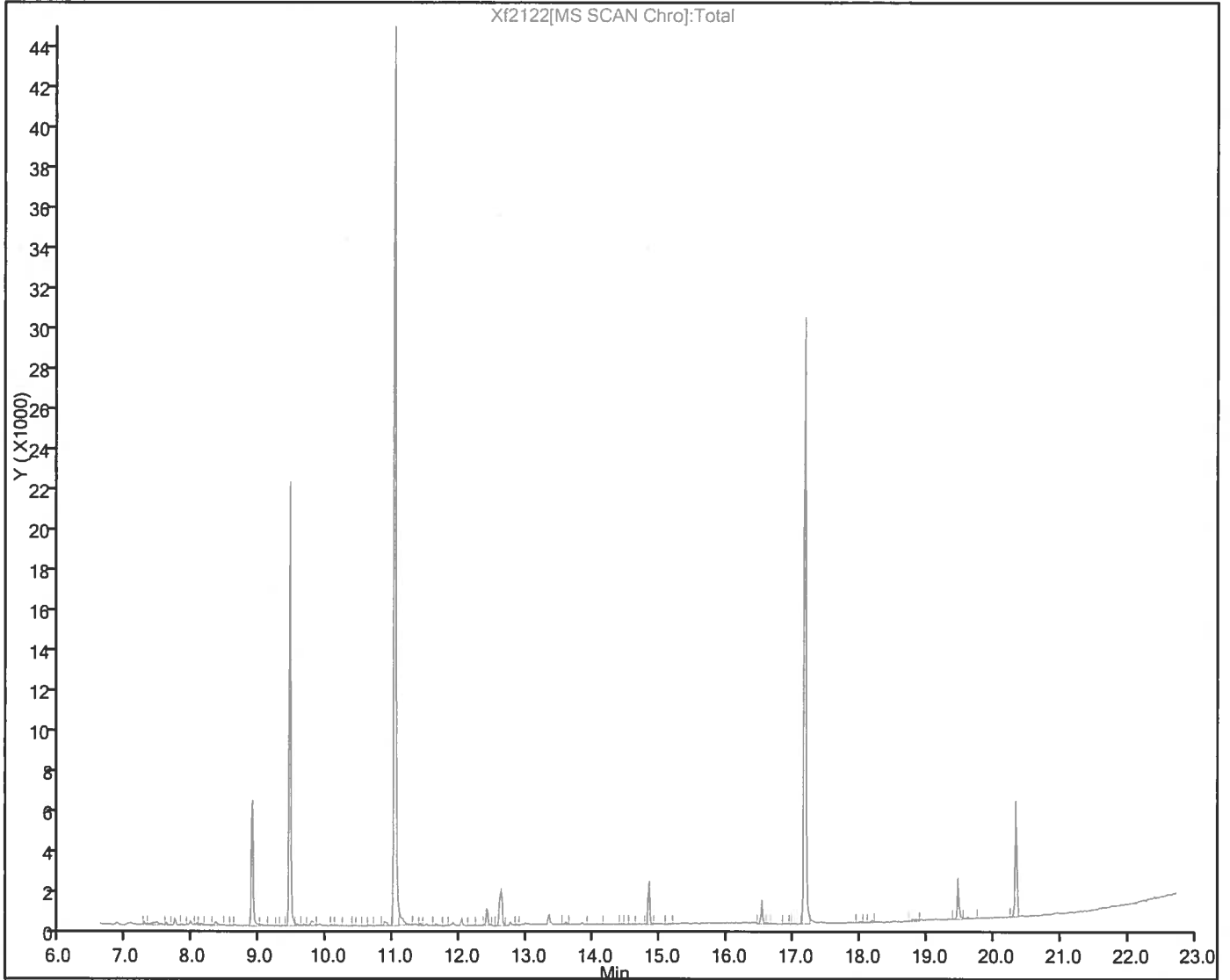
Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680



Report Date: 24-Jun-2016 10:24:31

Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20160621-30741.b\Xf2123.D

Injection Date: 22-Jun-2016 06:17:30

Instrument ID: CMSX

Lims ID: 240-65996-E-5-A

Lab Sample ID: 680-65996-5

Client ID: MRC-SWDUP2-061316

Operator ID:

ALS Bottle#: 22

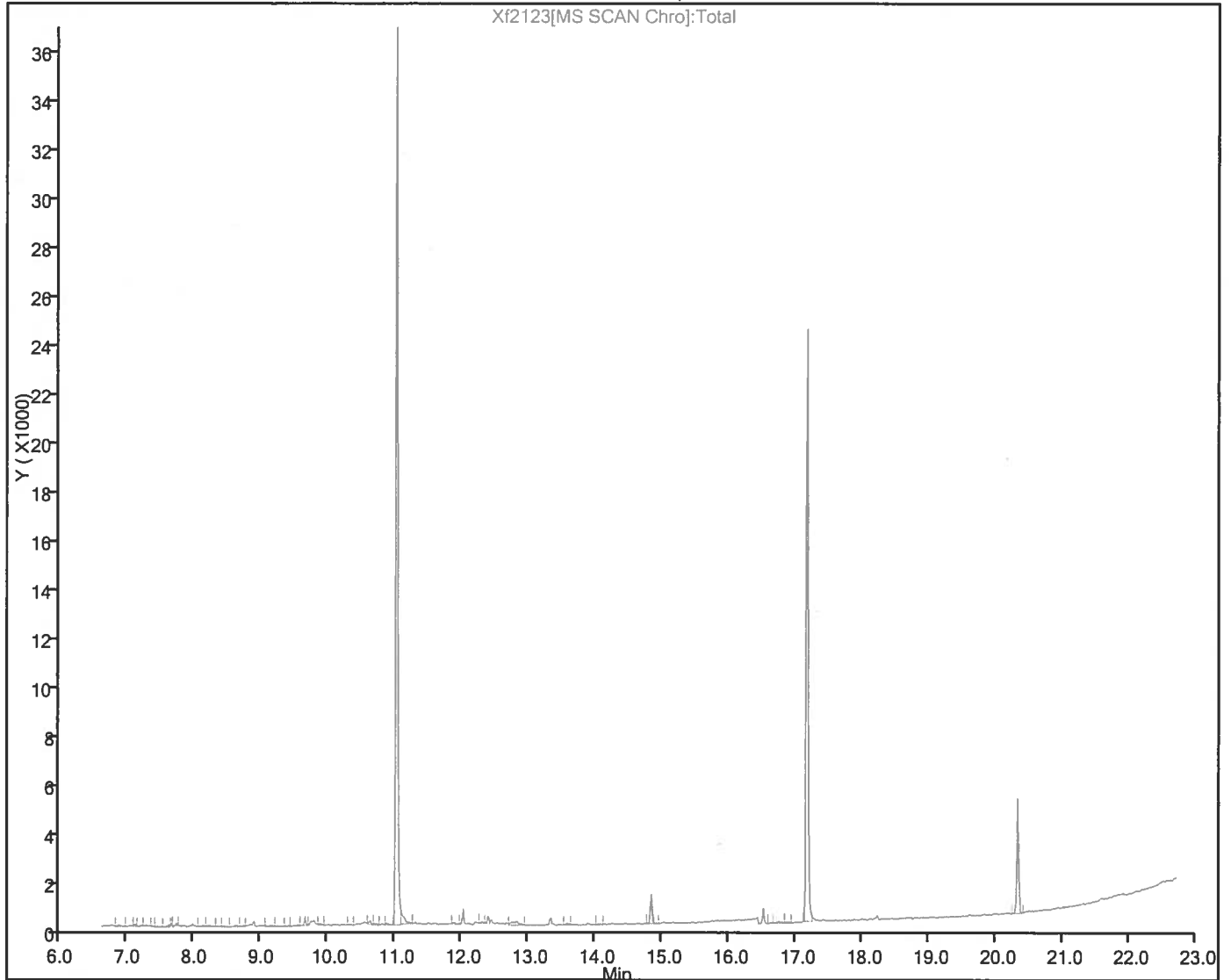
Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680



TestAmerica Savannah
Target Compound Quantitation Report

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\vd1704.D
 Lims ID: ccvis
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 17-Apr-2017 16:44:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVIS
 Misc. Info.: 680-0037858-003
 Operator ID: Instrument ID: CMSX
 Sublist: chrom-680\CMSX*sub13
 Method: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\680\CMSX.m
 Limit Group: 680 - AQ
 Last Update: 20-Apr-2017 14:04:41 Calib Date: 14-Apr-2017 12:05:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Savannah\ChromData\CMSX\20170414-37809.b\vd1409.D
 Column 1 : HP-5MS (0.25 mm) Det: MS SCAN
 Process Host: XAWRK024

First Level Reviewer: davisn Date: 20-Apr-2017 14:04:41

Compound	Sig	RT	EXP RT	DLT RT	Q	Response	On-Col Amt ug/ml	Flags
A 23 Total Monochlorobiphenyls	188	7.614	7.154 - 8.075		0	38762	0.9577	
A 24 Total Dichlorobiphenyls	222	9.290	8.366 - 10.213		0	28820	0.9559	
* 5 Phenanthrene-d10	188	10.023	10.023 0.0		100	40270	0.7500	
A 25 Total Trichlorobiphenyls	256	10.901	9.588 - 12.215		0	21657	1.01	
9 PCB-104	326	11.992	11.992 0.0		98	39194	2.08	
A 26 Total Tetrachlorobiphenyls	292	12.374	10.673 -14.075		0	31504	2.01	
A 27 Total Pentachlorobiphenyls	326	13.765	11.932 -15.597		0	26776	1.98	
12 PCB-77	292	14.015	14.015 0.0		98	48217	2.04	
A 28 Total Hexachlorobiphenyls	360	15.047	13.107 -16.988		0	27502	1.99	
* 15 Chrysene-d12	240	16.106	16.106 0.0		100	43259	0.7500	
A 29 Total Heptachlorobiphenyls	394	16.164	14.708 -17.620		0	37168	3.05	
A 30 Total Octachlorobiphenyls	430	17.239	16.172 -18.305		0	34128	3.03	
19 PCB-208	464	17.786	17.786 0.0		97	18541	4.08	
A 31 Total Nonachlorobiphenyls	464	18.279	17.726 -18.831		0	18541	7.66	
32 DCB Decachlorobiphenyl	498	19.276	19.276 0.0		97	12680	5.24	
\$ 22 Decachlorobiphenyl-13C12	510	19.276	19.276 0.0		97	15316	4.93	

Reagents:

680isomerCal3_00034 Amount Added: 1.00 Units: mL

Report Date: 20-Apr-2017 14:04:41

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1704.D

Injection Date: 17-Apr-2017 16:44:30

Instrument ID: CMSX

Lims ID: ccvis

Client ID:

Operator ID:

ALS Bottle#: 3

Worklist Smp#: 3

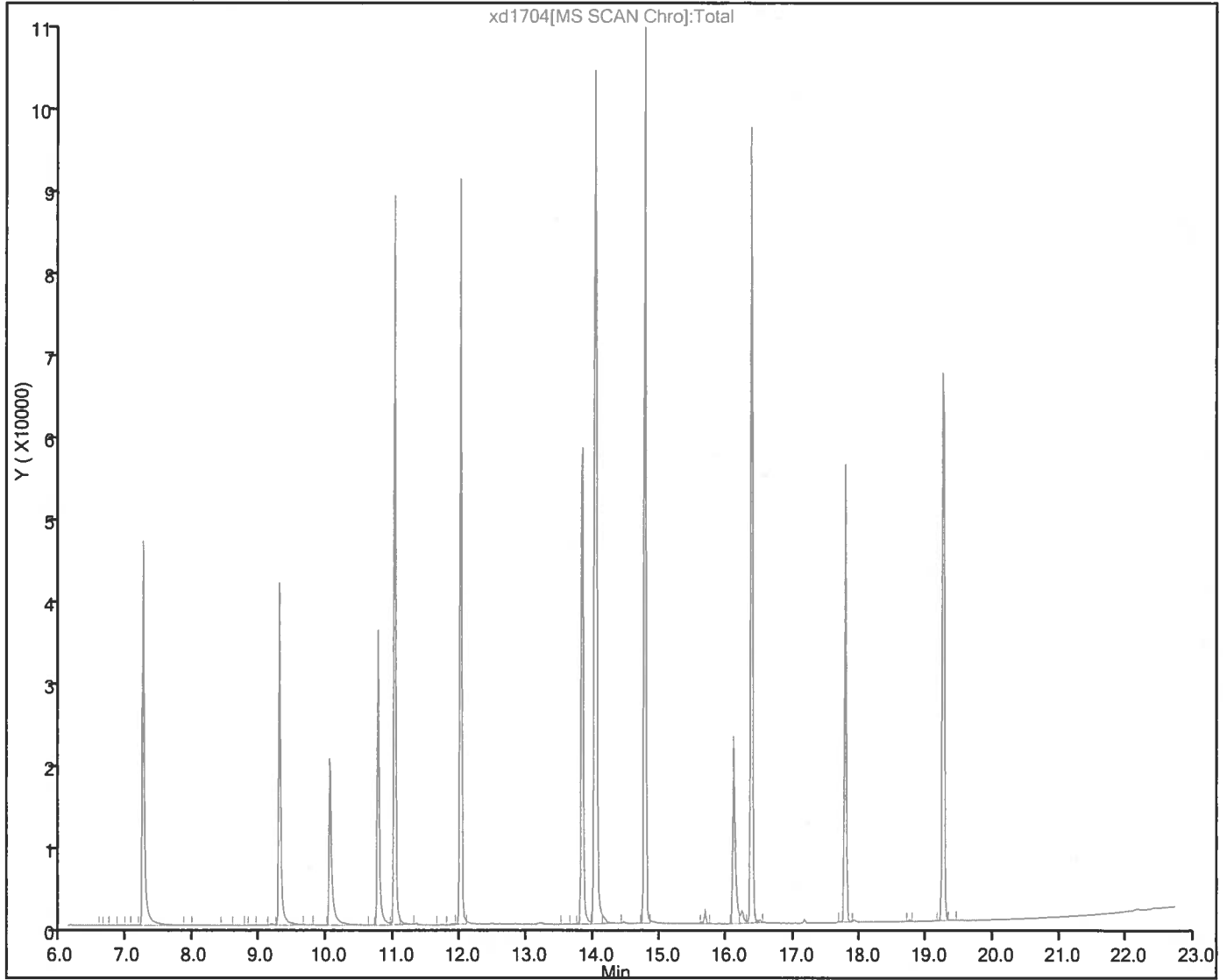
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1710.D

Injection Date: 17-Apr-2017 19:37:30

Instrument ID: CMSX

Lims ID: 240-77949-E-3-A

Lab Sample ID: 680-77949-3

Client ID: MRC-SW5A1-041017

Operator ID:

ALS Bottle#: 8

Worklist Smp#: 9

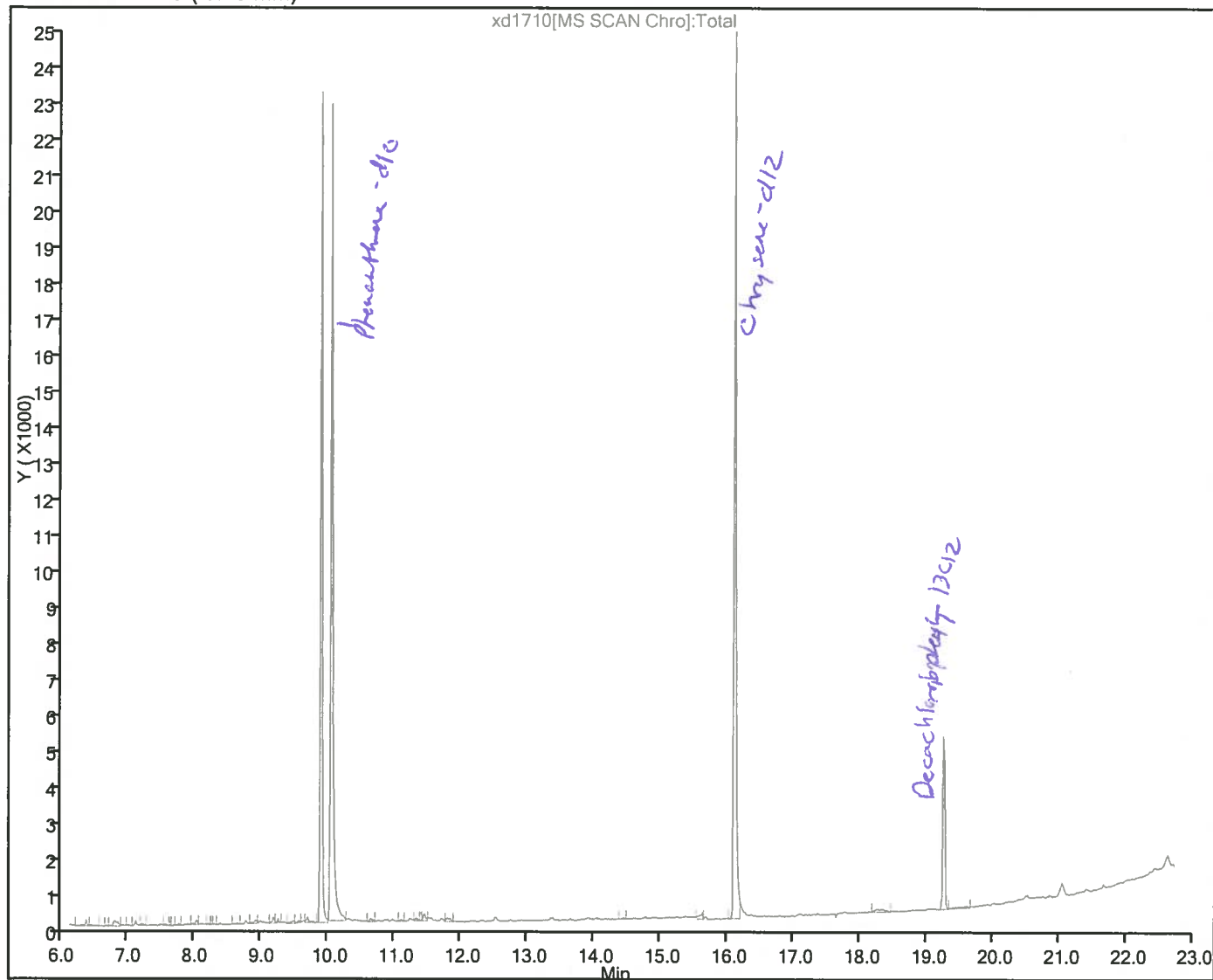
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1711.D

Injection Date: 17-Apr-2017 20:06:30

Instrument ID: CMSX

Lims ID: 240-77949-E-4-A

Lab Sample ID: 680-77949-4

Client ID: MRC-SW5A2-041017

Operator ID:

ALS Bottle#: 9

Worklist Smp#: 10

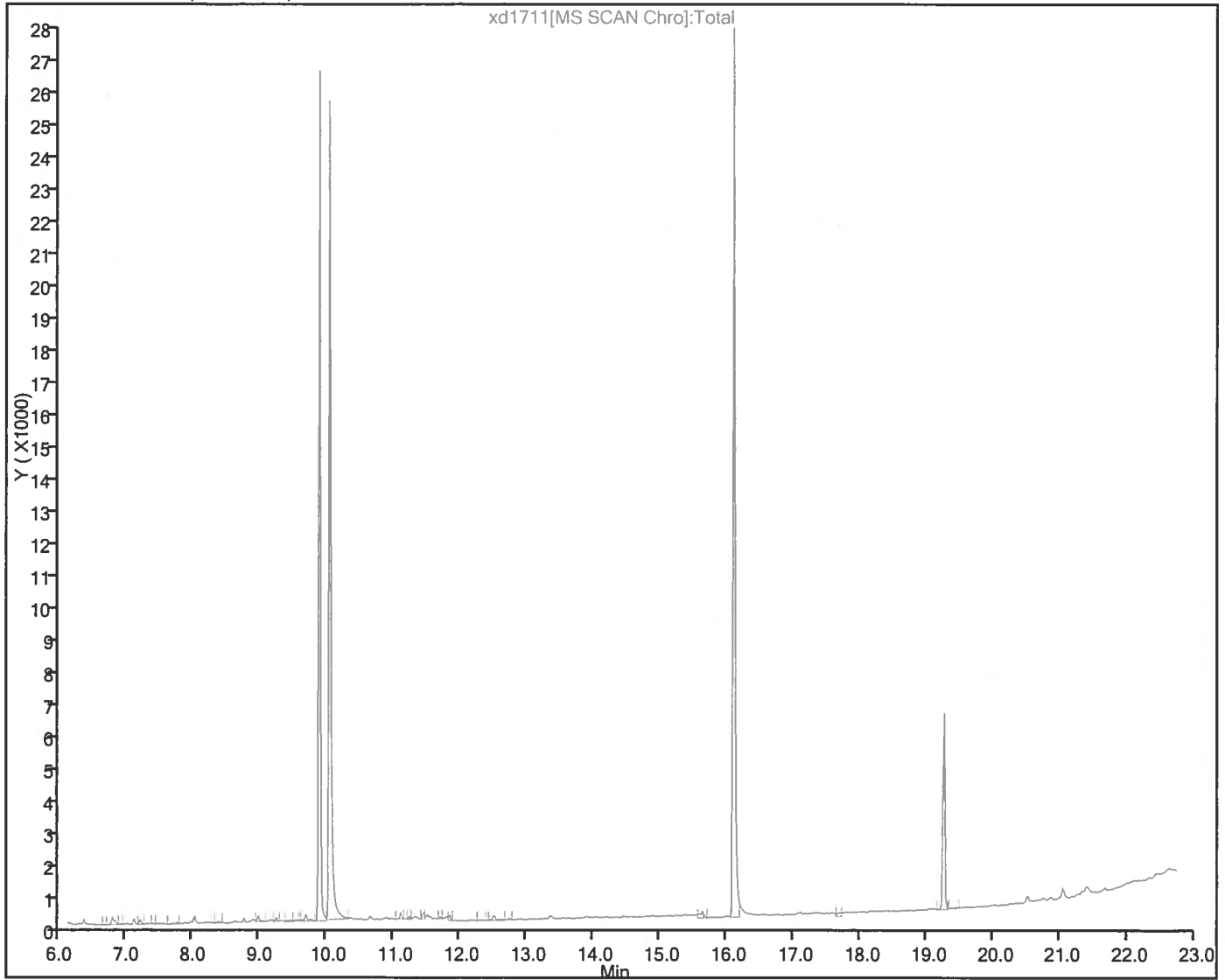
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:09:40

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1712.D

Injection Date: 17-Apr-2017 20:35:30

Instrument ID: CMSX

Lims ID: 240-77949-E-5-A

Lab Sample ID: 680-77949-5

Client ID: MRC-SW5B-041017

Operator ID:

ALS Bottle#: 10

Worklist Smp#: 11

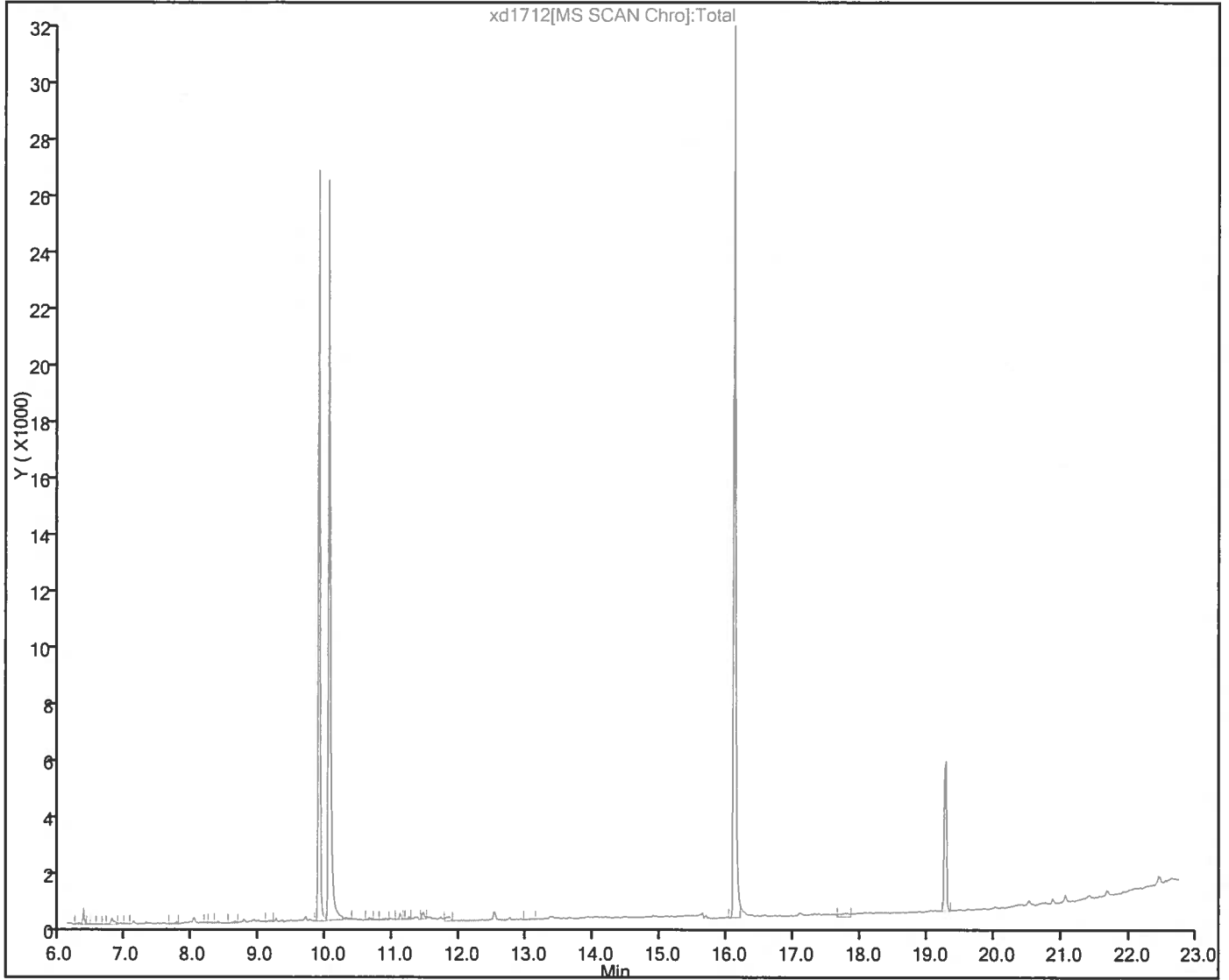
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:09:54

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1713.D

Injection Date: 17-Apr-2017 21:04:30

Instrument ID: CMSX

Lims ID: 240-77949-E-6-A

Lab Sample ID: 680-77949-6

Client ID: MRC-SW6A-041017

Operator ID:

ALS Bottle#: 11

Worklist Smp#: 12

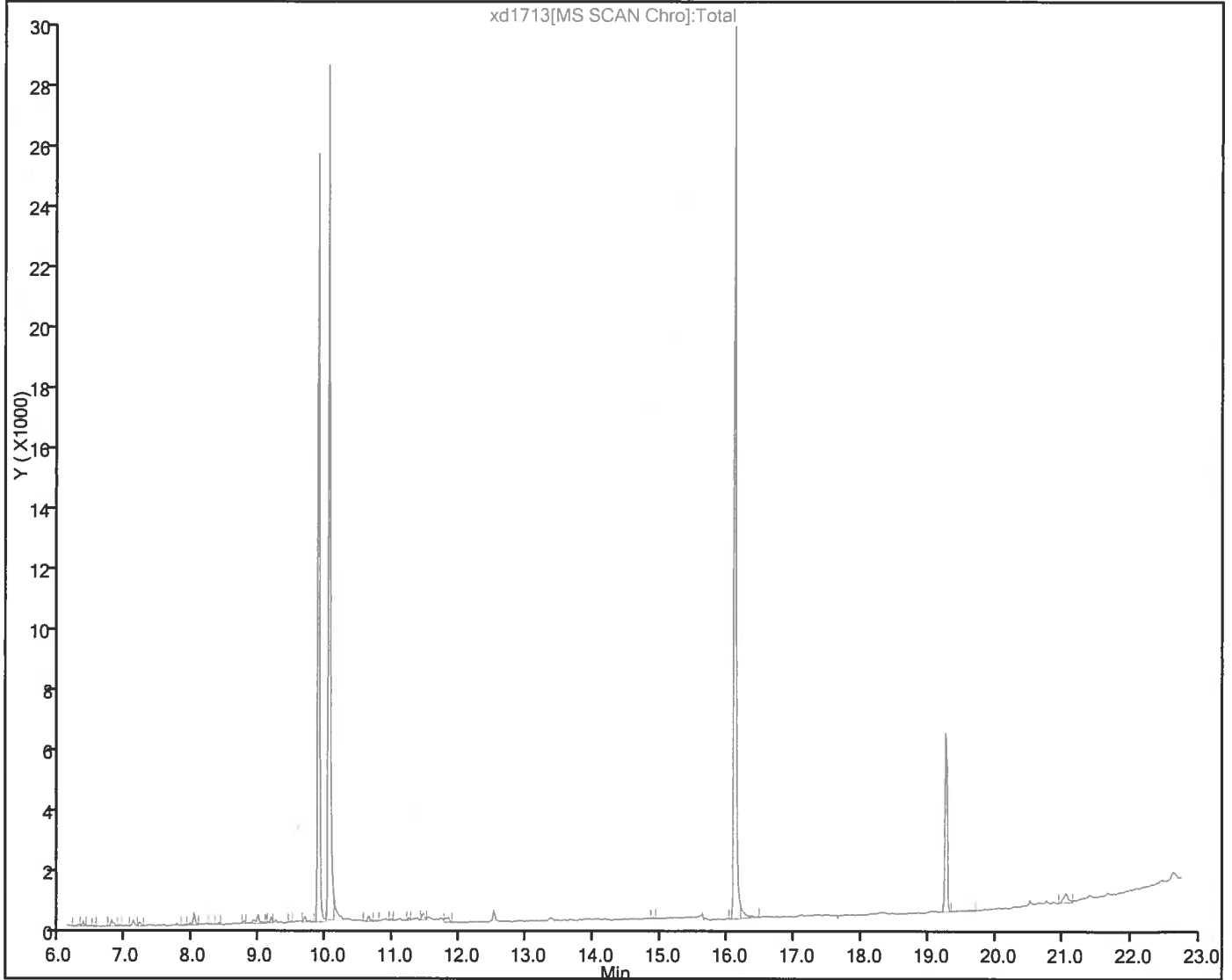
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:10:05

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1714.D

Injection Date: 17-Apr-2017 21:33:30

Instrument ID: CMSX

Lims ID: 240-77949-E-7-A

Lab Sample ID: 680-77949-7

Client ID: MRC-SW6B-041017

Operator ID:

ALS Bottle#: 12

Worklist Smp#: 13

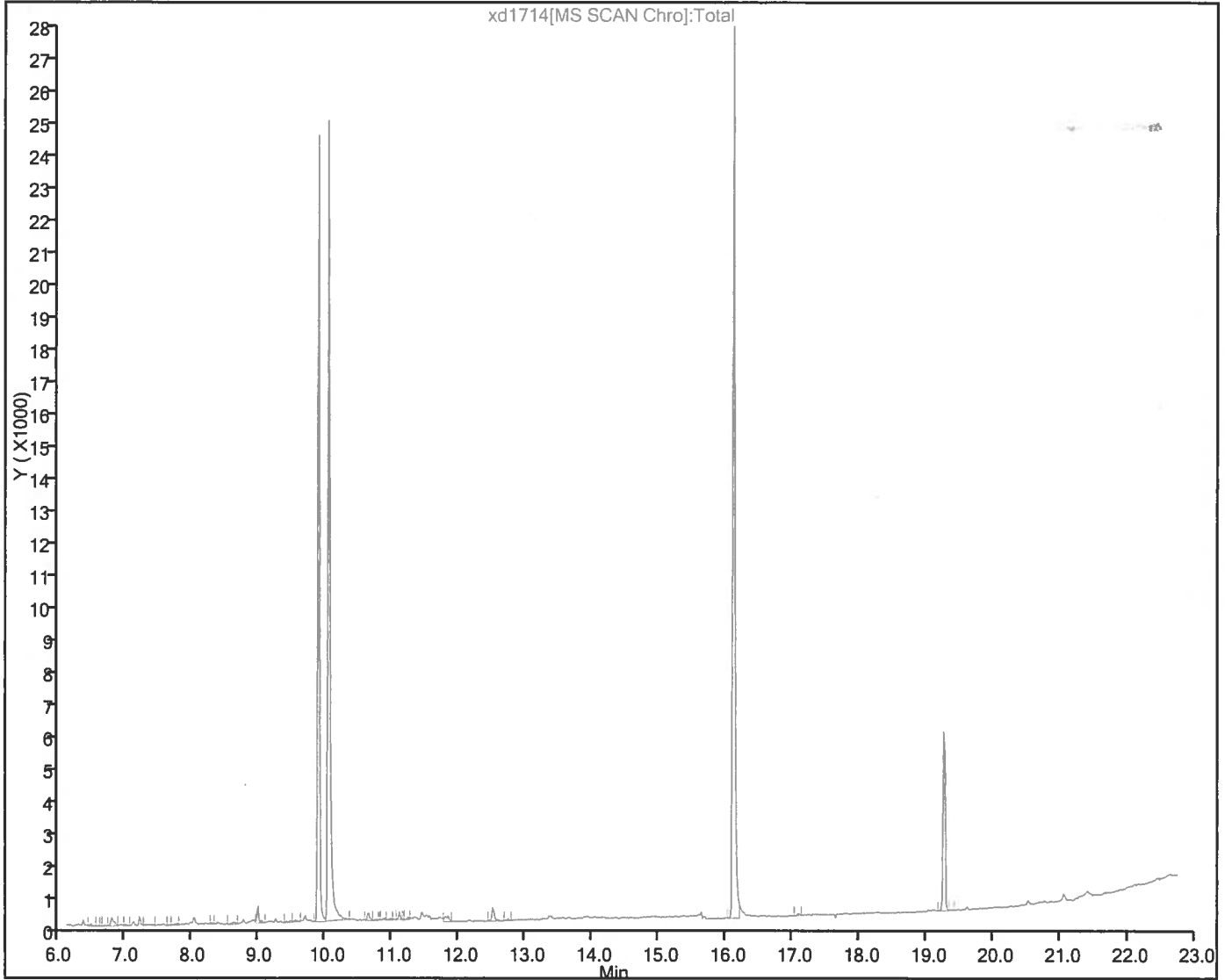
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:10:16

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1715.D

Injection Date: 17-Apr-2017 22:02:30

Instrument ID: CMSX

Lims ID: 240-77949-D-8-A

Lab Sample ID: 680-77949-8

Client ID: MRC-SW7A-041017

Operator ID:

ALS Bottle#: 13

Worklist Smp#: 14

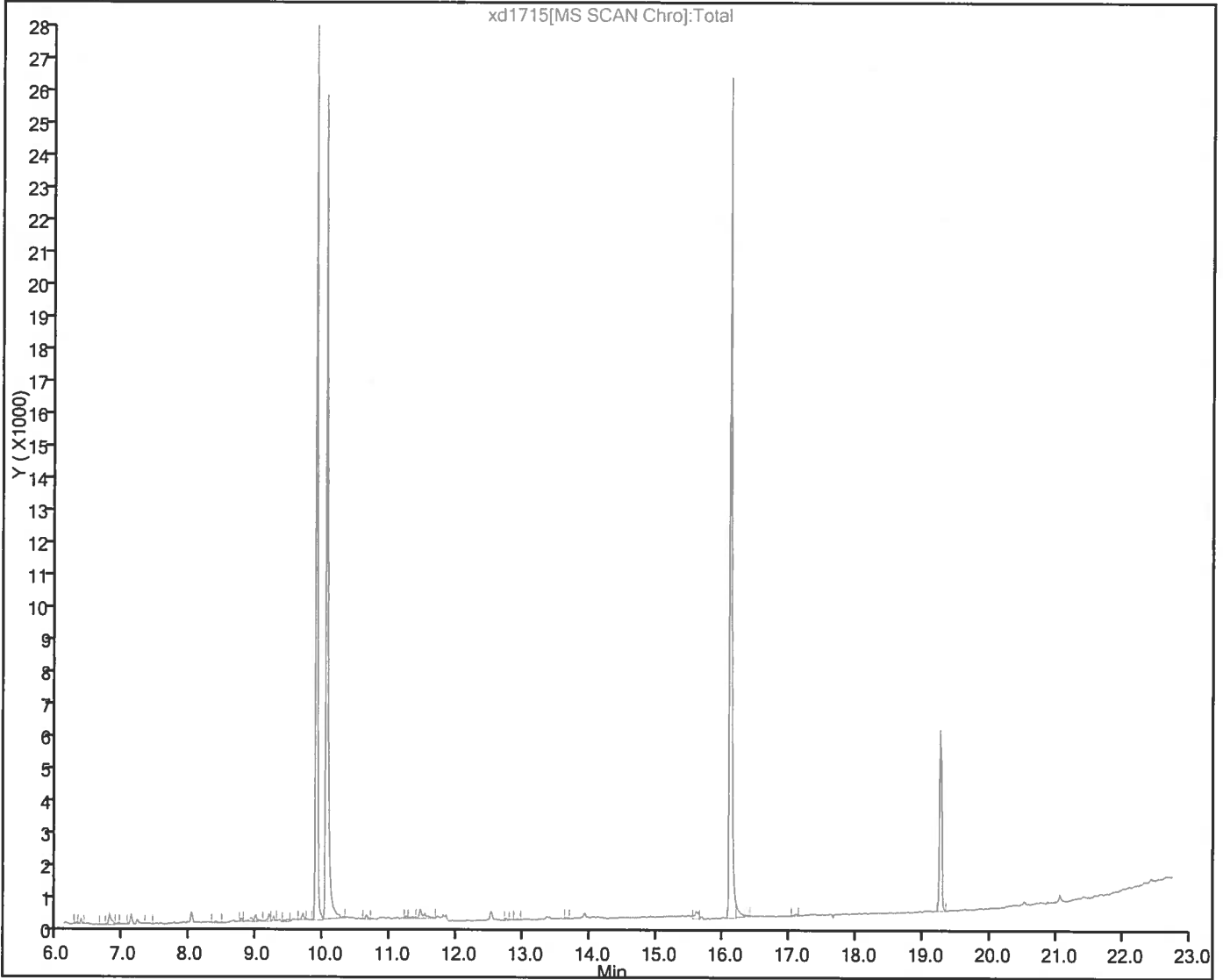
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:10:26

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1716.D

Injection Date: 17-Apr-2017 22:30:30

Instrument ID: CMSX

Lims ID: 240-77949-E-9-A

Lab Sample ID: 680-77949-9

Client ID: MRC-SW7B-041017

Operator ID:

ALS Bottle#: 14

Worklist Smp#: 15

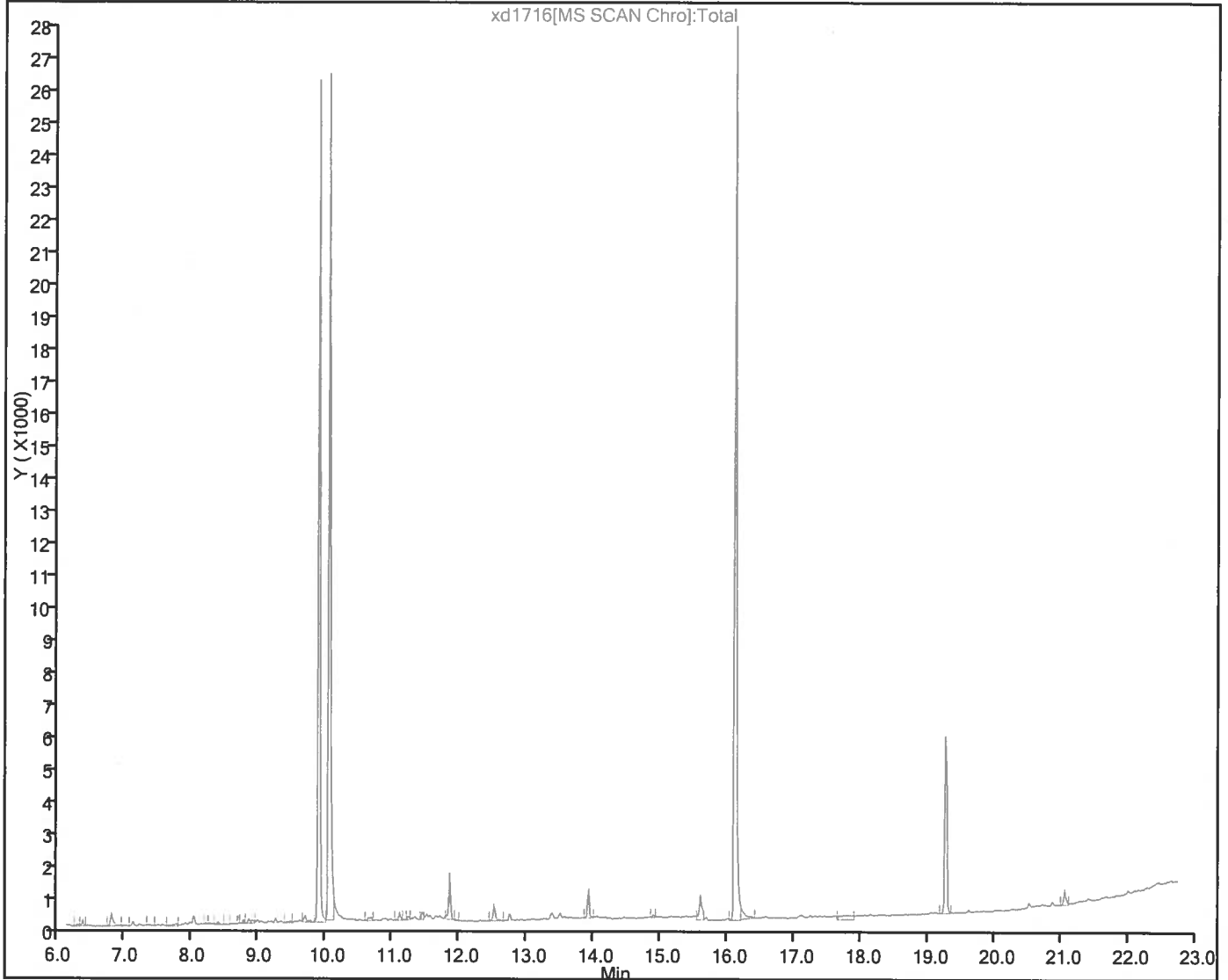
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:10:35

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1717.D

Injection Date: 17-Apr-2017 22:59:30

Instrument ID: CMSX

Lims ID: 240-77949-E-10-A

Lab Sample ID: 680-77949-10

Client ID: MRC-SW-8A--041017

Operator ID:

ALS Bottle#: 15

Worklist Smp#: 16

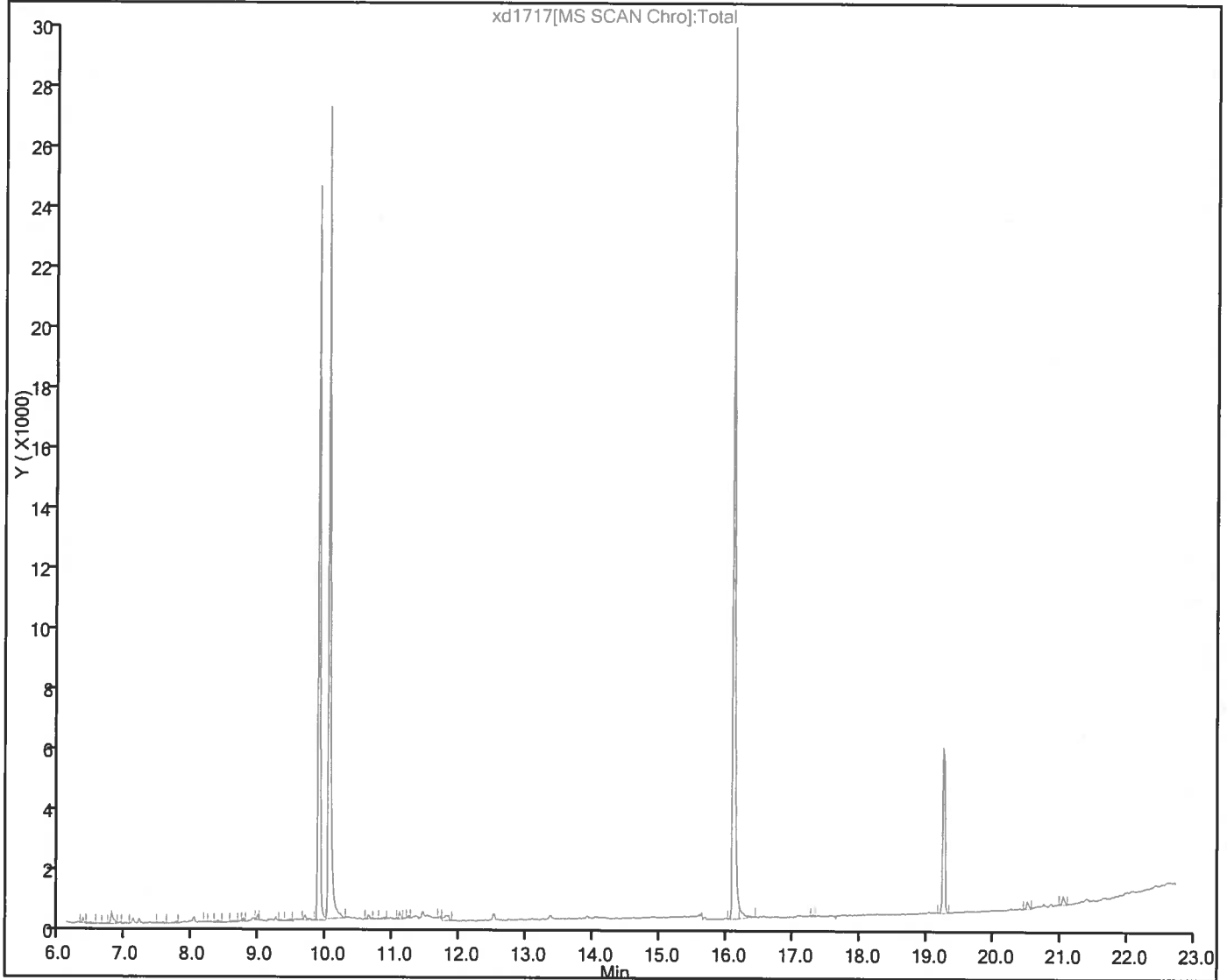
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\vd1718.D

Injection Date: 17-Apr-2017 23:28:30

Instrument ID: CMSX

Lims ID: 240-77949-E-12-A

Lab Sample ID: 680-77949-12

Client ID: MRC-SW8B-041017

Operator ID:

ALS Bottle#: 16

Worklist Smp#: 17

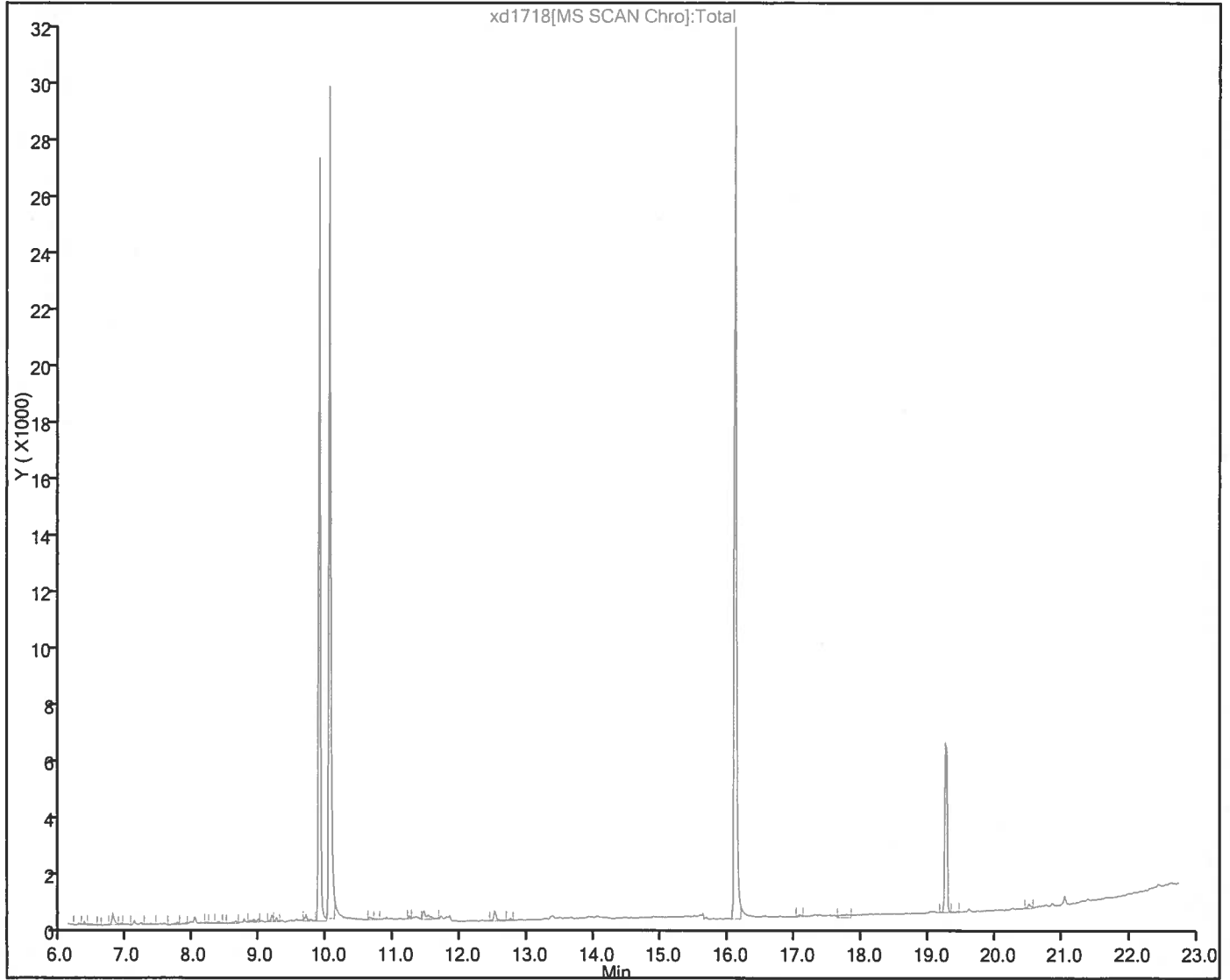
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:10:52

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1719.D

Injection Date: 17-Apr-2017 23:57:30

Instrument ID: CMSX

Lims ID: 240-77949-E-13-A

Lab Sample ID: 680-77949-13

Client ID: MRC-SW9A-041017

Operator ID:

ALS Bottle#: 17

Worklist Smp#: 18

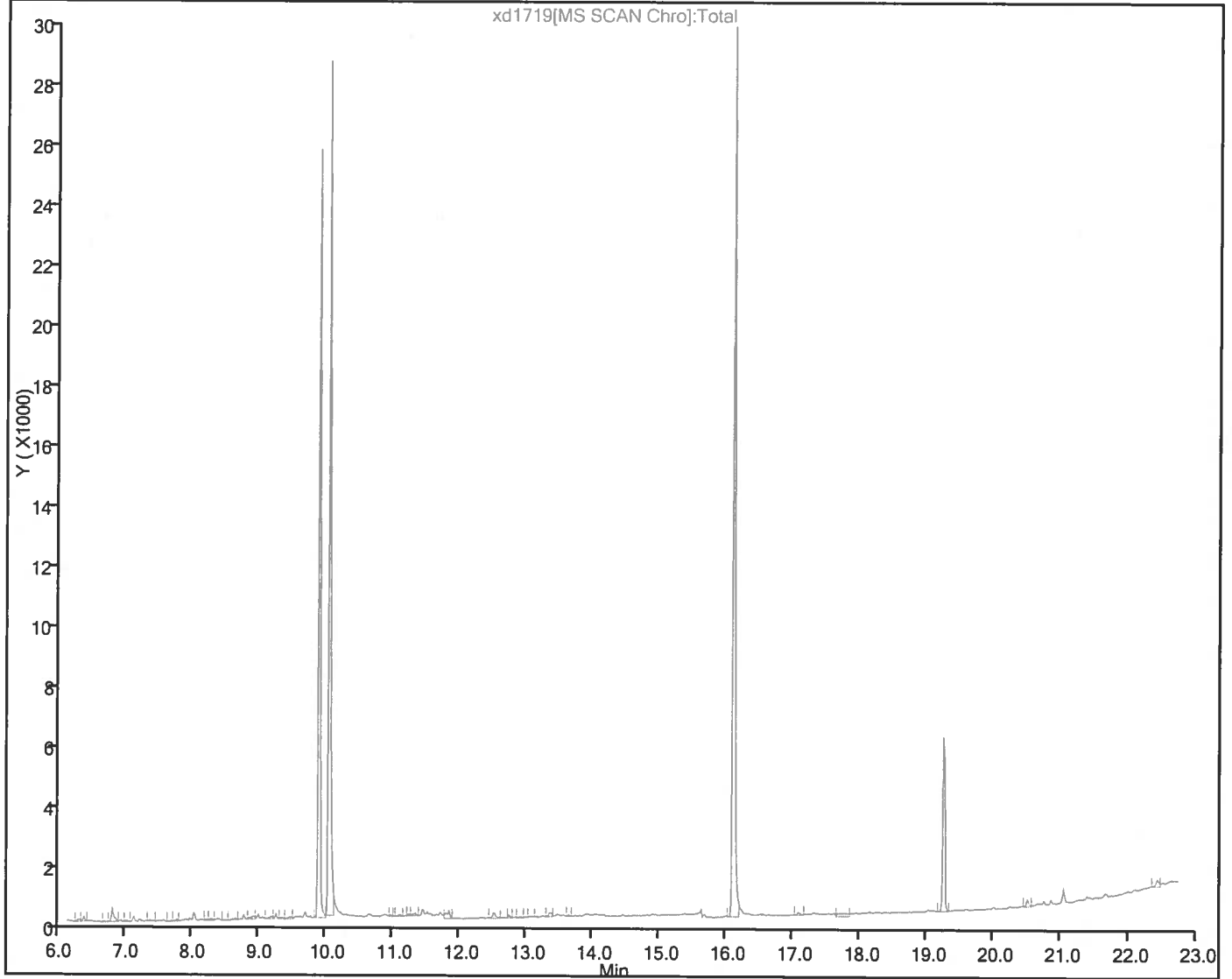
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:10:59

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\xd1720.D

Injection Date: 18-Apr-2017 00:26:30

Instrument ID: CMSX

Lims ID: 240-77949-E-14-A

Lab Sample ID: 680-77949-14

Client ID: MRC-SW9B-041017

Operator ID:

ALS Bottle#: 18

Worklist Smp#: 19

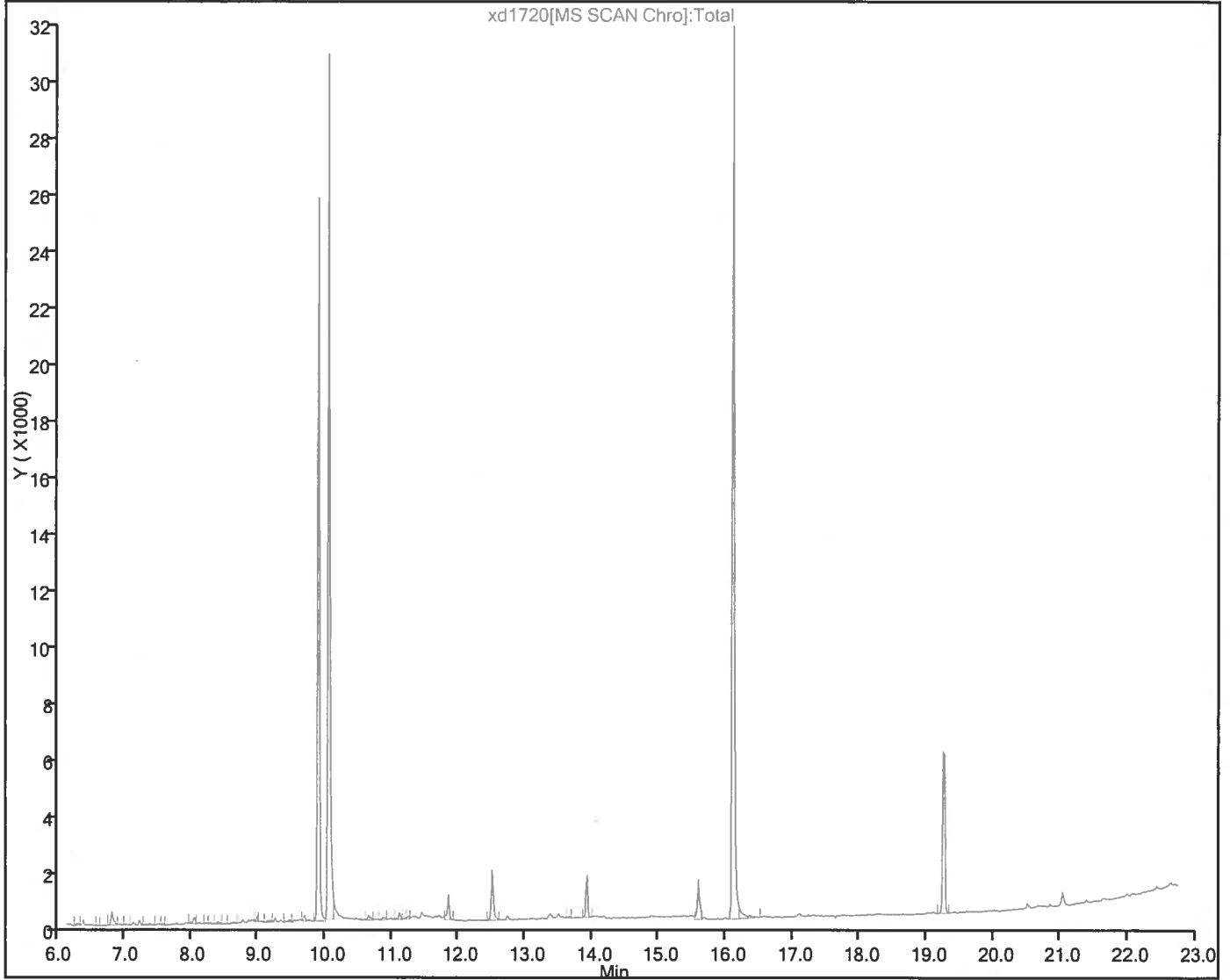
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



Report Date: 20-Apr-2017 14:11:07

Chrom Revision: 2.2 18-Apr-2017 07:43:58

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170417-37858.b\vd1721.D

Injection Date: 18-Apr-2017 00:55:30

Instrument ID: CMSX

Lims ID: 240-77949-D-33-A

Lab Sample ID: 680-77949-33

Client ID: MRC-SWDUP2-041017

Operator ID:

ALS Bottle#: 19

Worklist Smp#: 20

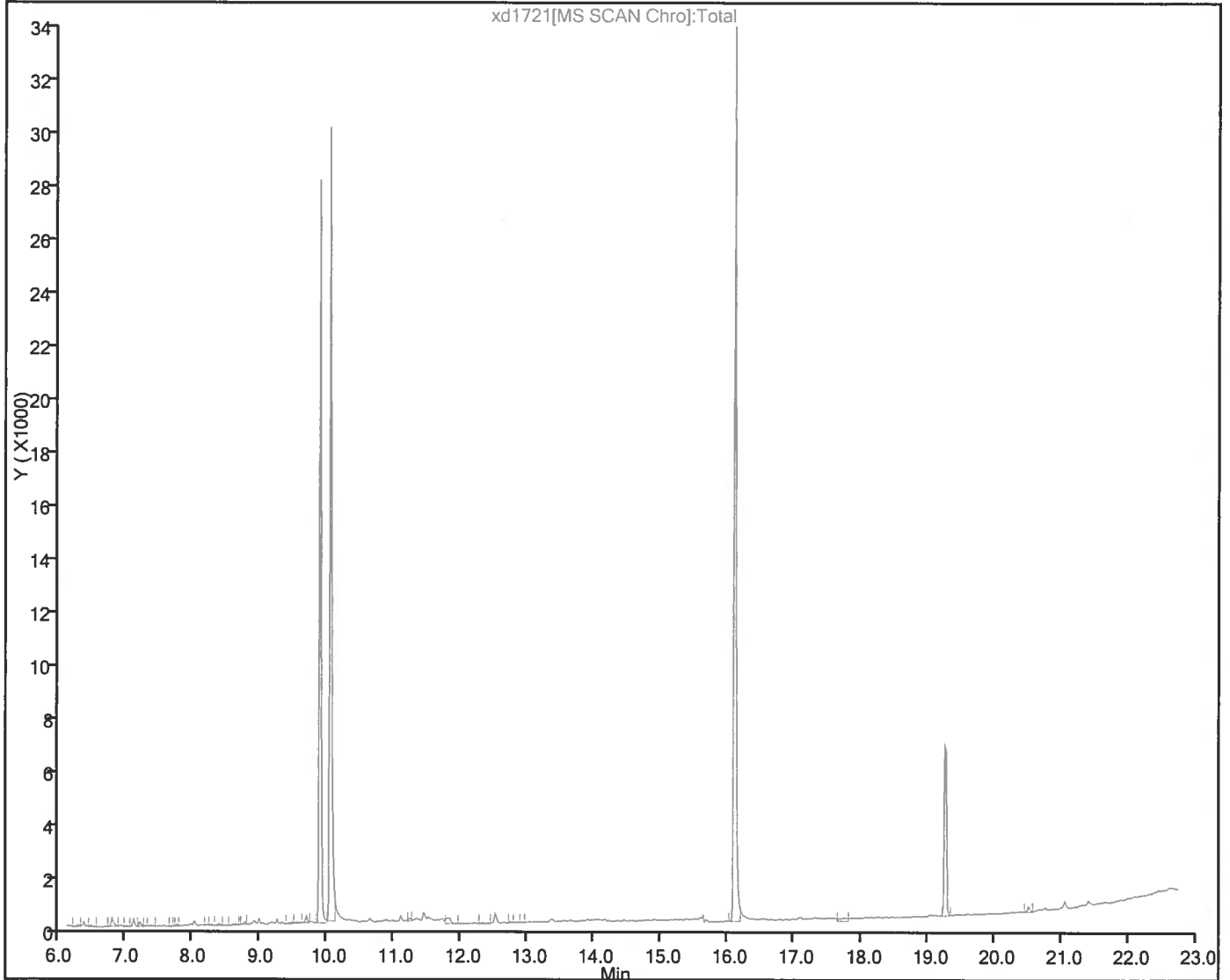
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680 - AQ

Column: HP-5MS (0.25 mm)



TestAmerica Savannah
Target Compound Quantitation Report

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3004.D
 Lims ID: ccvis
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 30-Jun-2017 10:37:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVIS
 Operator ID: Instrument ID: CMSX
 Sublist: chrom-680\CMSX*sub13
 Method: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\680\CMSX.m
 Limit Group: 680
 Last Update: 30-Jun-2017 11:12:58 Calib Date: 09-Jun-2017 12:18:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Savannah\ChromData\CMSX\20170608-39244.b\xf0909.D
 Column 1 : HP-5MS (0.25 mm) Det: MS SCAN
 Process Host: XAWRK023

First Level Reviewer: davisn Date: 30-Jun-2017 11:12:58

Compound	Sig	RT	EXP RT	DLT RT	Q	Response	On-Col Amt ug/ml	Flags
A 23 Total Monochlorobiphenyls	188	7.567	7.112 - 8.022		0	19916	0.9719	
A 24 Total Dichlorobiphenyls	222	9.247	8.324 - 10.171		0	14284	0.9355	
* 5 Phenanthrene-d10	188	9.979	9.979 0.0		100	19492	0.7500	
A 25 Total Trichlorobiphenyls	256	10.849	9.535 - 12.163		0	10636	0.9535	
9 PCB-104	326	11.950	11.950 0.0		100	20141	2.15	
A 26 Total Tetrachlorobiphenyls	292	12.318	10.620 - 14.016		0	15721	1.90	
A 27 Total Pentachlorobiphenyls	326	13.717	11.890 - 15.544		0	12811	1.85	
12 PCB-77	292	13.956	13.956 0.0		98	23376	2.10	
A 28 Total Hexachlorobiphenyls	360	14.989	13.043 - 16.935		0	13402	1.86	
* 15 Chrysene-d12	240	16.048	16.048 0.0		100	18613	0.7500	
A 29 Total Heptachlorobiphenyls	394	16.106	14.645 - 17.567		0	17636	2.66	
A 30 Total Octachlorobiphenyls	430	17.181	16.120 - 18.242		0	16376	2.63	
19 PCB-208	464	17.732	17.732 0.0		100	8225	3.51	
A 31 Total Nonachlorobiphenyls	464	18.225	17.672 - 18.779		0	8225	5.82	
\$ 22 Decachlorobiphenyl-13C12	510	19.201	19.201 0.0		59	7124	4.23	
32 DCB Decachlorobiphenyl	498	19.221	19.221 0.0		97	5828	4.12	

Reagents:

680isomerCal3_00034 Amount Added: 1.00 Units: mL

Report Date: 30-Jun-2017 11:12:58

Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3004.D

Injection Date: 30-Jun-2017 10:37:30

Instrument ID: CMSX

Lims ID: ccvis

Client ID:

Operator ID:

ALS Bottle#: 3

Worklist Smp#: 3

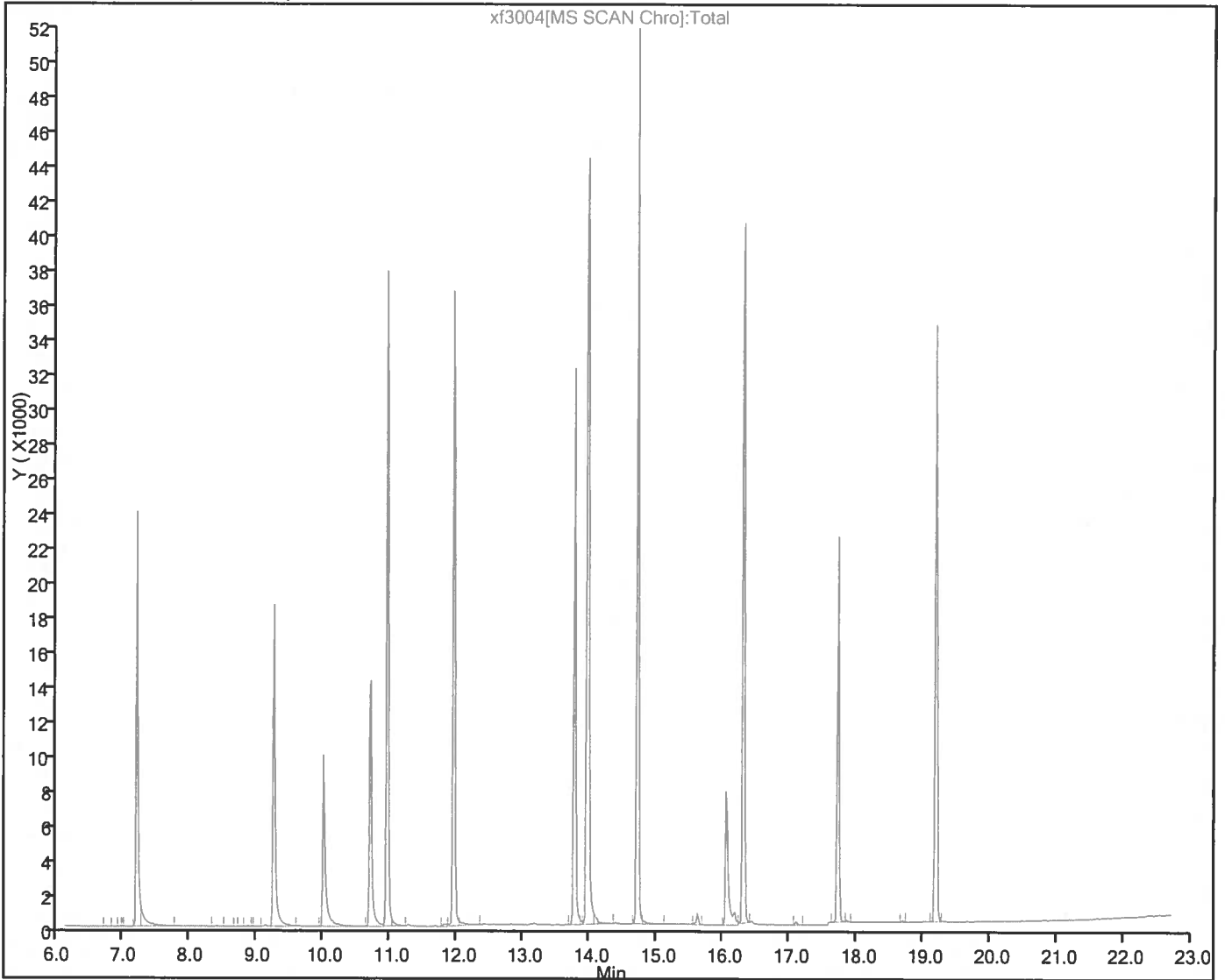
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3010.D

Injection Date: 30-Jun-2017 13:30:30

Instrument ID: CMSX

Lims ID: 240-81286-D-5-A

Lab Sample ID: 680-81286-5

Client ID: MRC-SW5A1-061917

Operator ID:

ALS Bottle#: 9

Worklist Smp#: 9

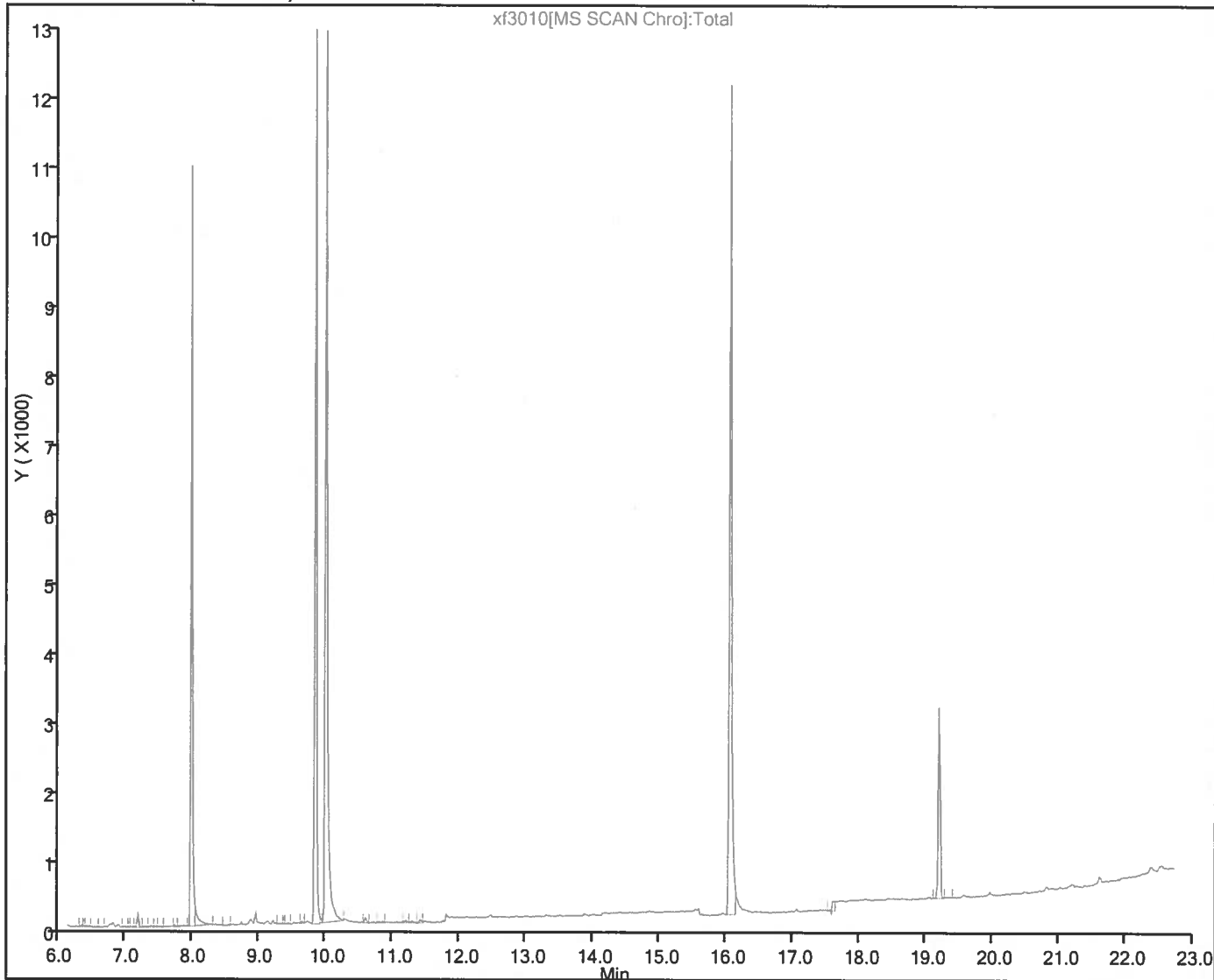
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3011.D

Injection Date: 30-Jun-2017 13:59:30

Instrument ID: CMSX

Lims ID: 240-81286-D-6-A

Lab Sample ID: 680-81286-6

Client ID: MRC-SW5A2-061917

Operator ID:

ALS Bottle#: 10 Worklist Smp#: 10

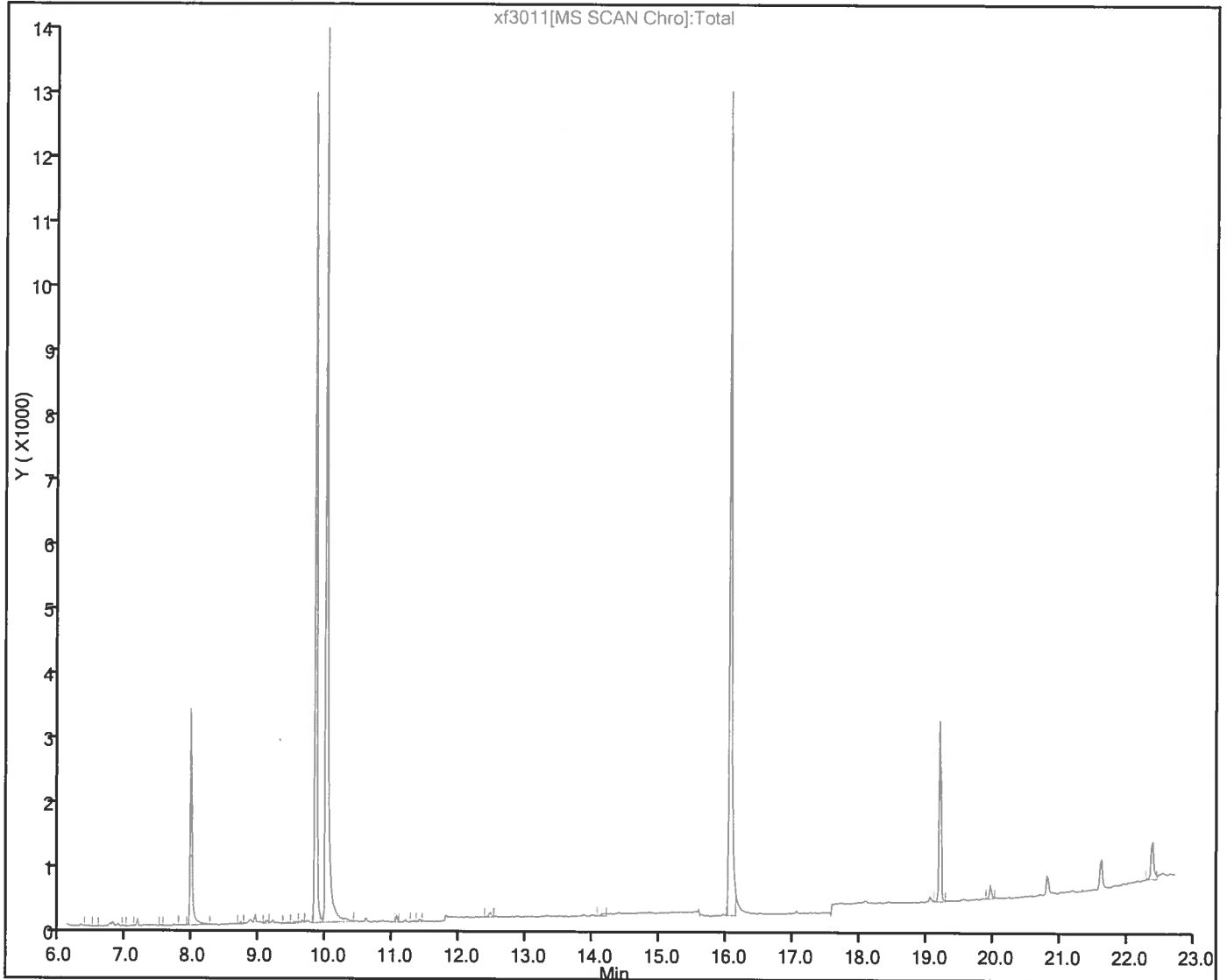
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3012.D

Injection Date: 30-Jun-2017 14:28:30

Instrument ID: CMSX

Lims ID: 240-81286-D-7-A

Lab Sample ID: 680-81286-7

Client ID: MRC-SW5B-061917

Operator ID:

ALS Bottle#: 11 Worklist Smp#: 11

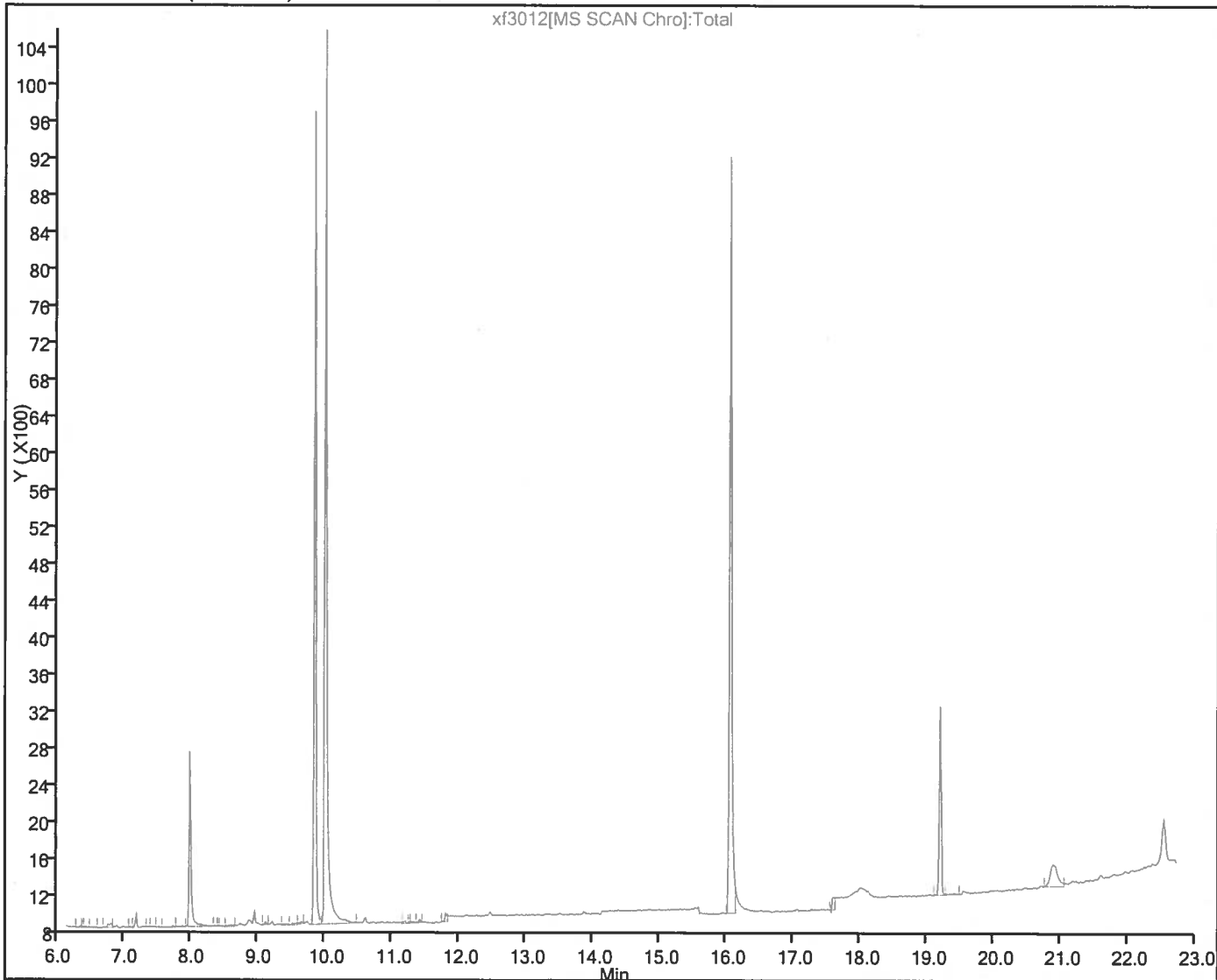
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)

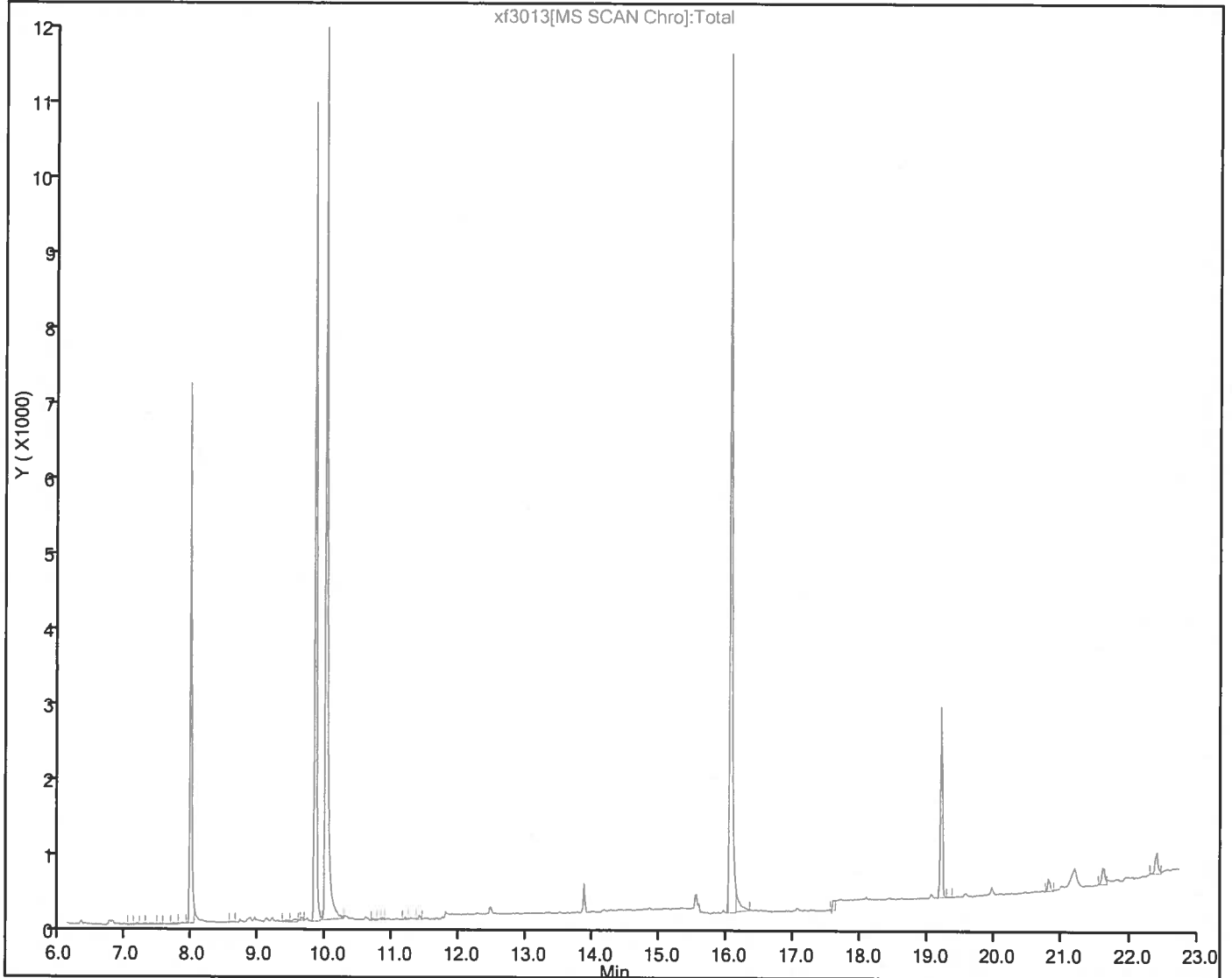


Report Date: 05-Jul-2017 13:04:33

Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3013.D
Injection Date: 30-Jun-2017 14:58:30 Instrument ID: CMSX
Lims ID: 240-81286-D-8-A Lab Sample ID: 680-81286-8
Client ID: MRC-SW6A-061917
Operator ID: ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 680\CMSX Limit Group: 680
Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3014.D

Injection Date: 30-Jun-2017 15:27:30

Instrument ID: CMSX

Lims ID: 240-81286-D-9-A

Lab Sample ID: 680-81286-9

Client ID: MRC-SW6B-061917

Operator ID:

ALS Bottle#: 13

Worklist Smp#: 13

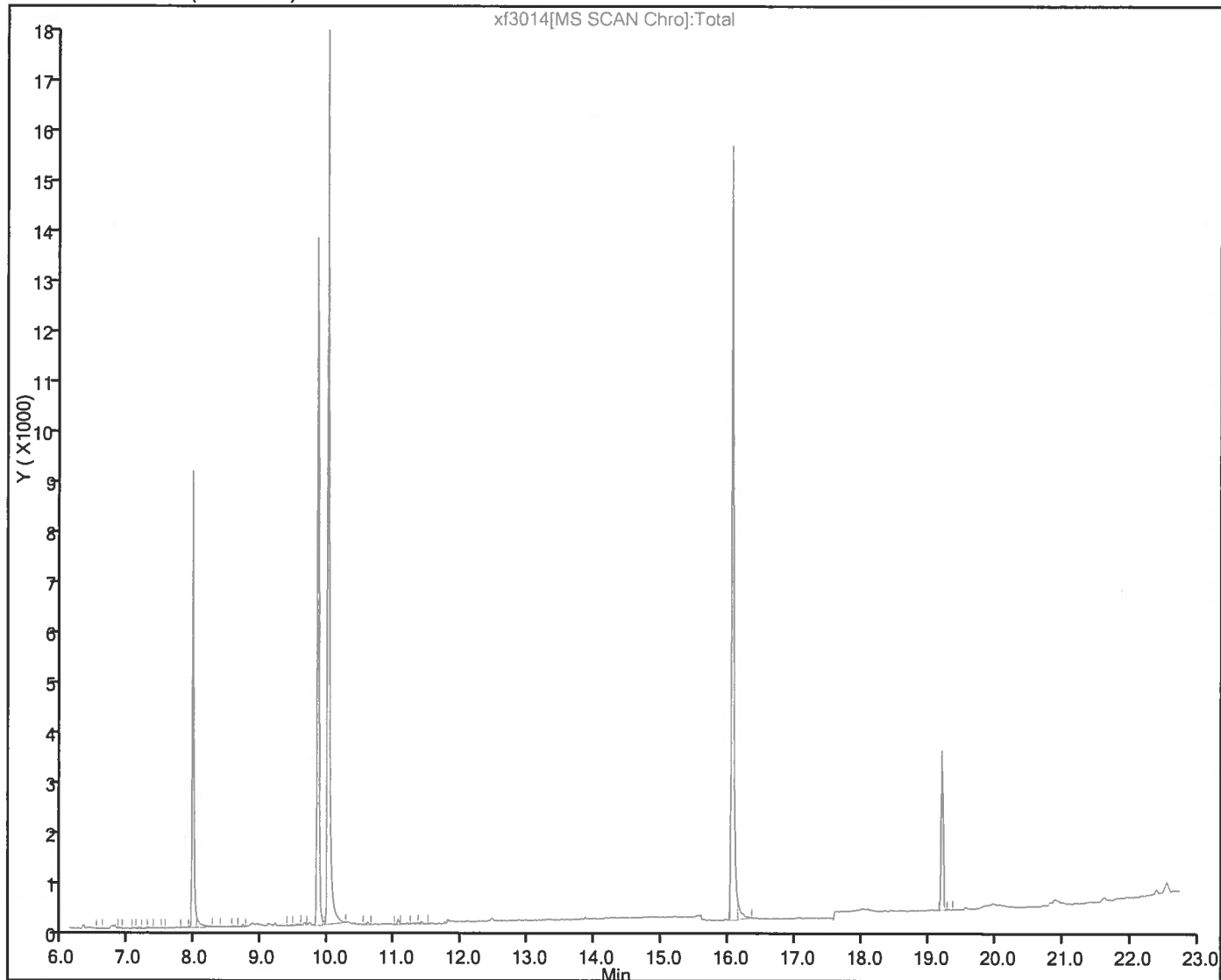
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3015.D

Injection Date: 30-Jun-2017 15:56:30

Instrument ID: CMSX

Lims ID: 240-81286-D-10-A

Lab Sample ID: 680-81286-10

Client ID: MRC-SW7A-061917

Operator ID:

ALS Bottle#: 14

Worklist Smp#: 14

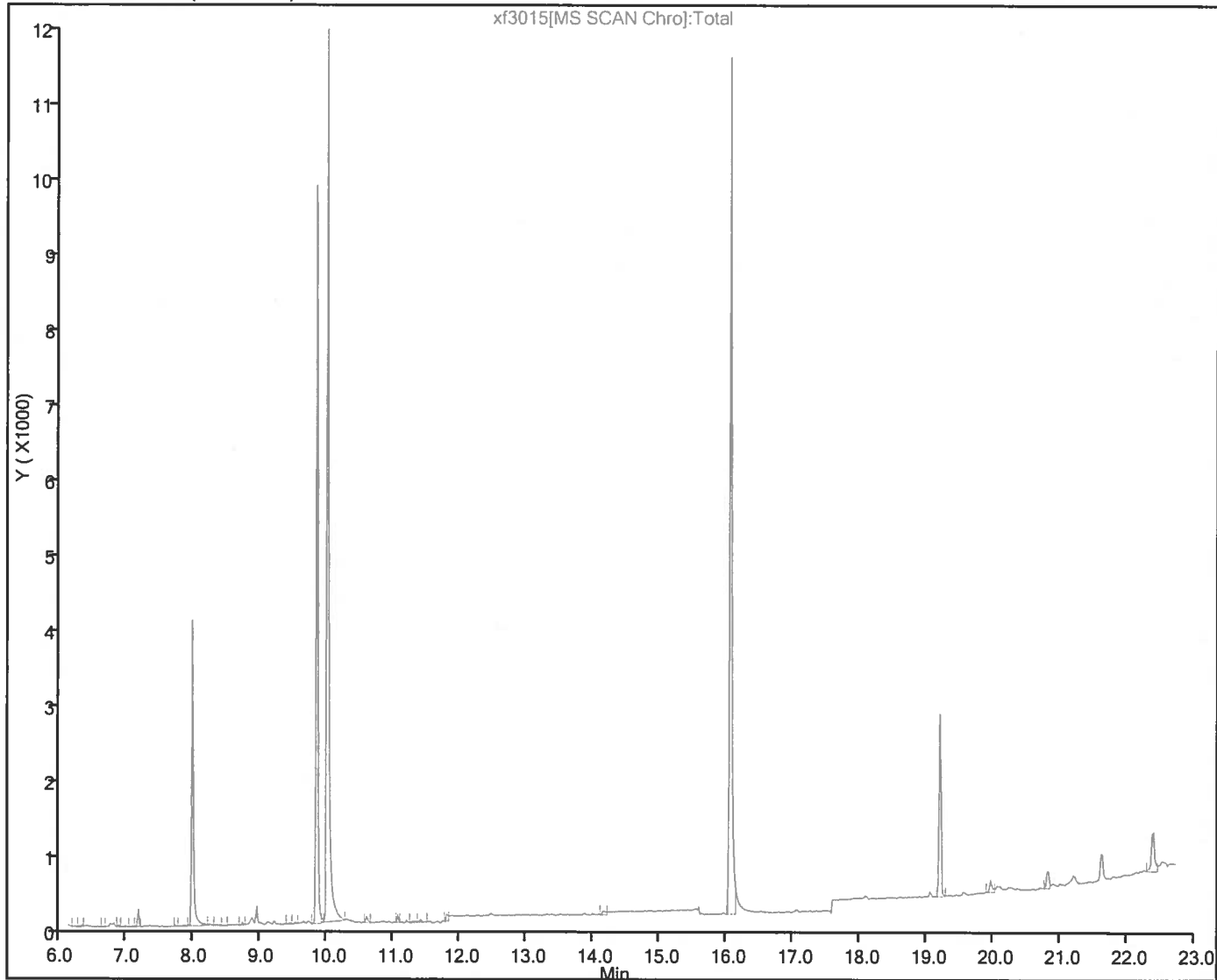
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3016.D

Injection Date: 30-Jun-2017 16:25:30

Instrument ID: CMSX

Lims ID: 240-81286-D-11-A

Lab Sample ID: 680-81286-11

Client ID: MRC-SW7B-061917

Operator ID:

ALS Bottle#: 15

Worklist Smp#: 15

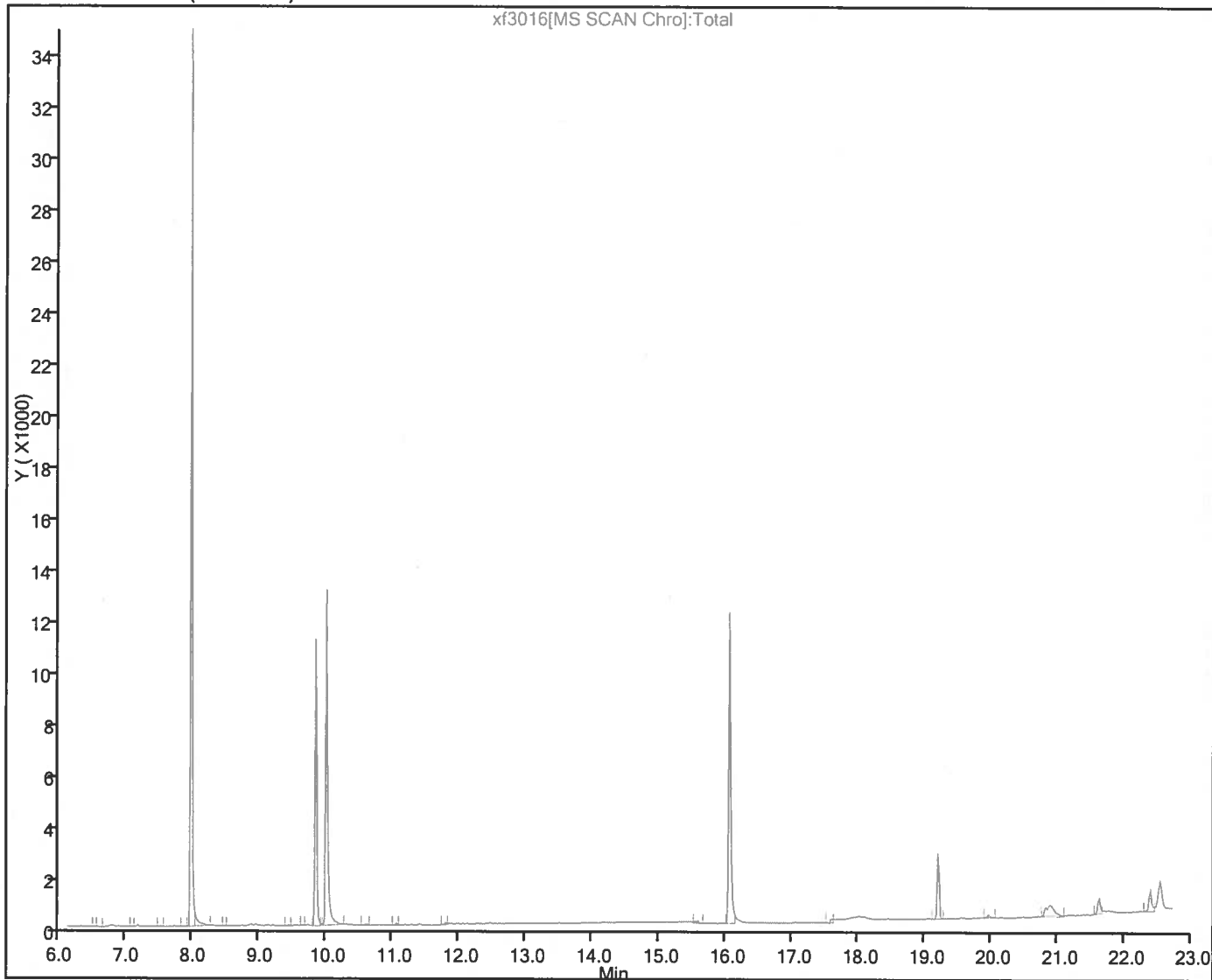
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3017.D

Injection Date: 30-Jun-2017 16:54:30

Instrument ID: CMSX

Lims ID: 240-81286-D-12-A

Lab Sample ID: 680-81286-12

Client ID: MRC-SWDUP2-061917

Operator ID:

ALS Bottle#: 16

Worklist Smp#: 16

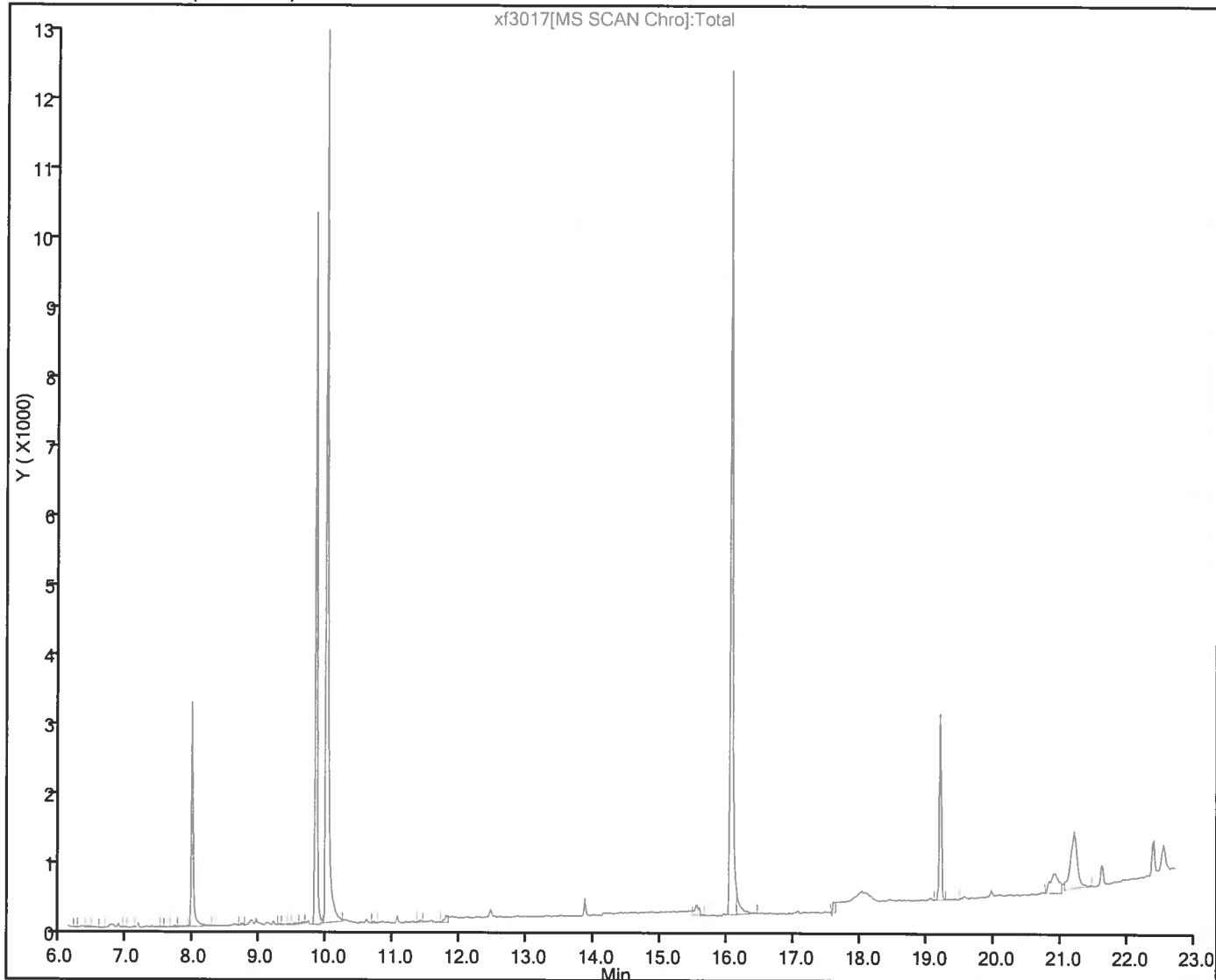
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3018.D

Injection Date: 30-Jun-2017 17:23:30

Instrument ID: CMSX

Lims ID: 240-81286-D-13-A

Lab Sample ID: 680-81286-13

Client ID: MRC-SW8A-061917

Operator ID:

ALS Bottle#: 17 Worklist Smp#: 17

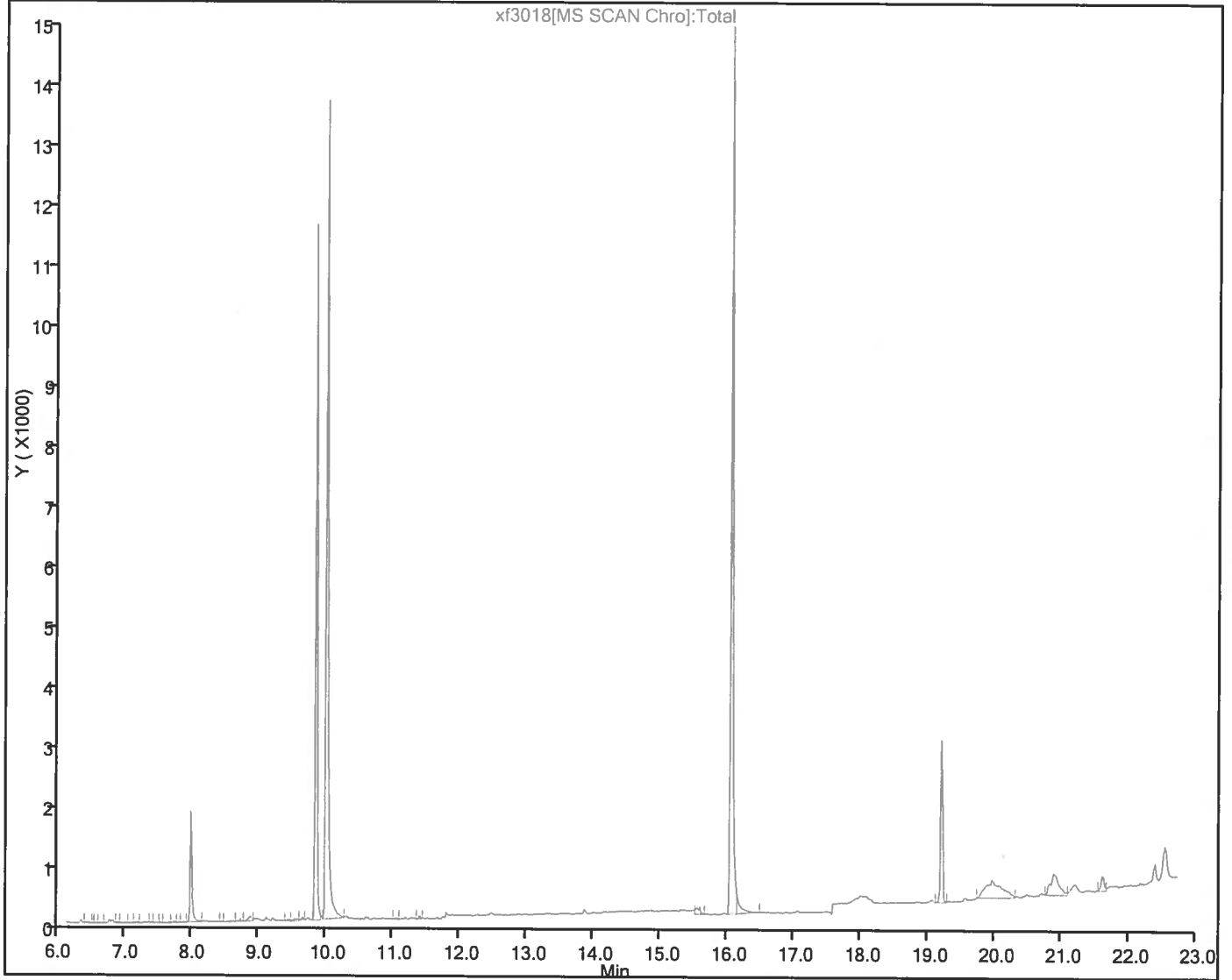
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3019.D

Injection Date: 30-Jun-2017 17:53:30

Instrument ID: CMSX

Lims ID: 240-81286-D-14-A

Lab Sample ID: 680-81286-14

Client ID: MRC-SW8B-061917

Operator ID:

ALS Bottle#: 18

Worklist Smp#: 18

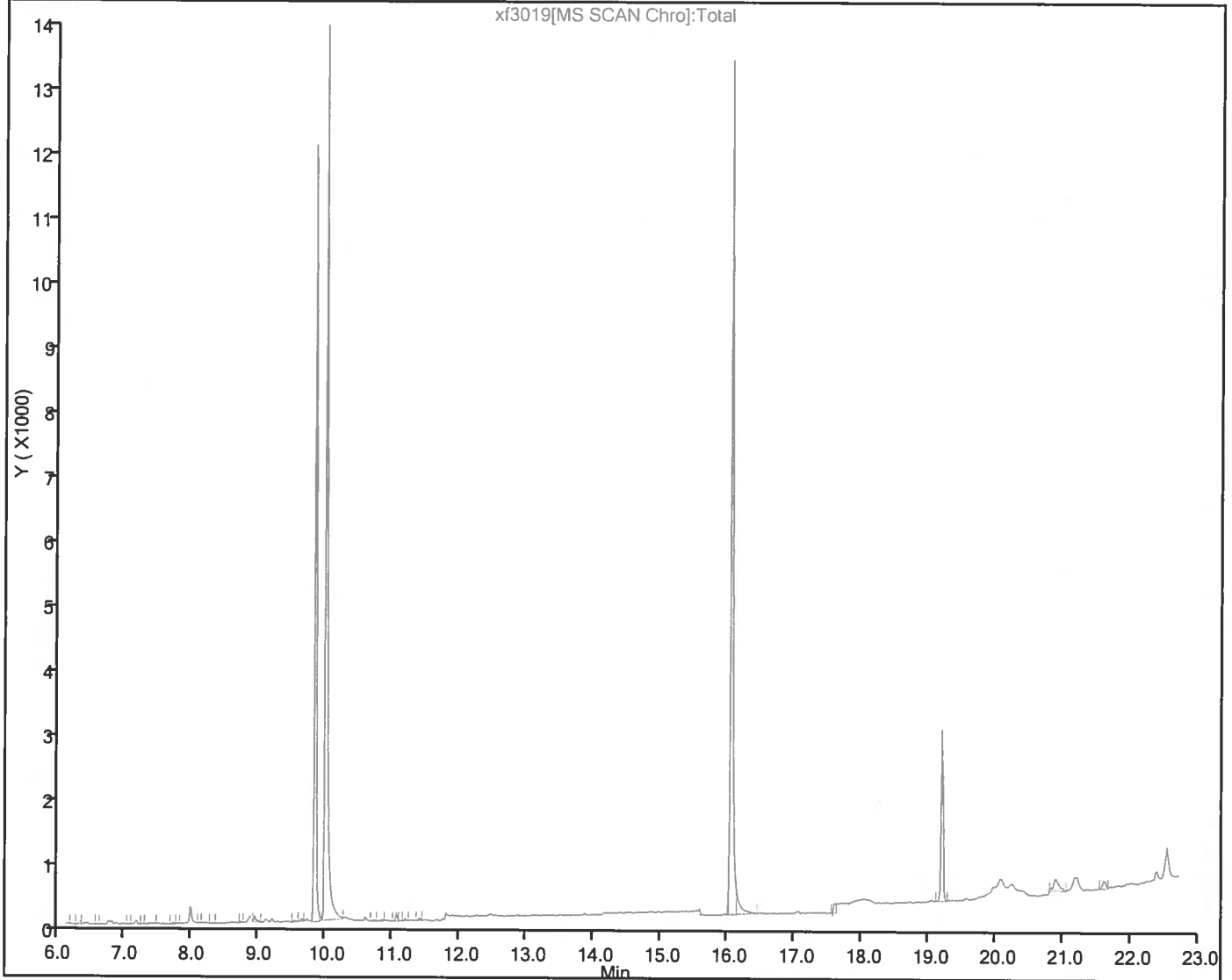
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3020.D

Injection Date: 30-Jun-2017 18:22:30

Instrument ID: CMSX

Lims ID: 240-81286-D-15-A

Lab Sample ID: 680-81286-15

Client ID: MRC-SW9A-061917

Operator ID:

ALS Bottle#: 19

Worklist Smp#: 19

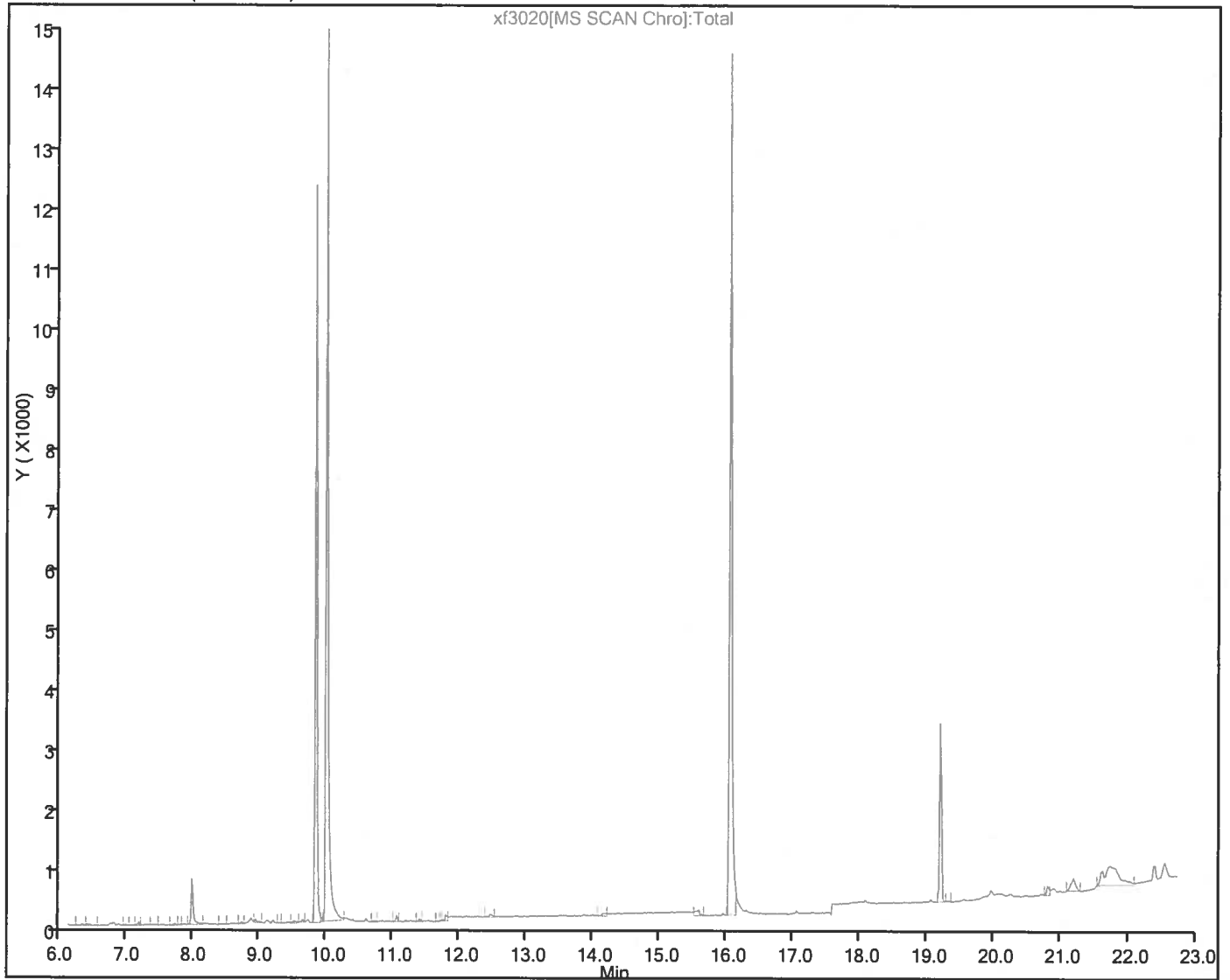
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170630-39841.b\xf3021.D

Injection Date: 30-Jun-2017 18:51:30

Instrument ID: CMSX

Lims ID: 240-81286-D-16-A

Lab Sample ID: 680-81286-16

Client ID: MRC-SW9B-061917

Operator ID:

ALS Bottle#: 20

Worklist Smp#: 20

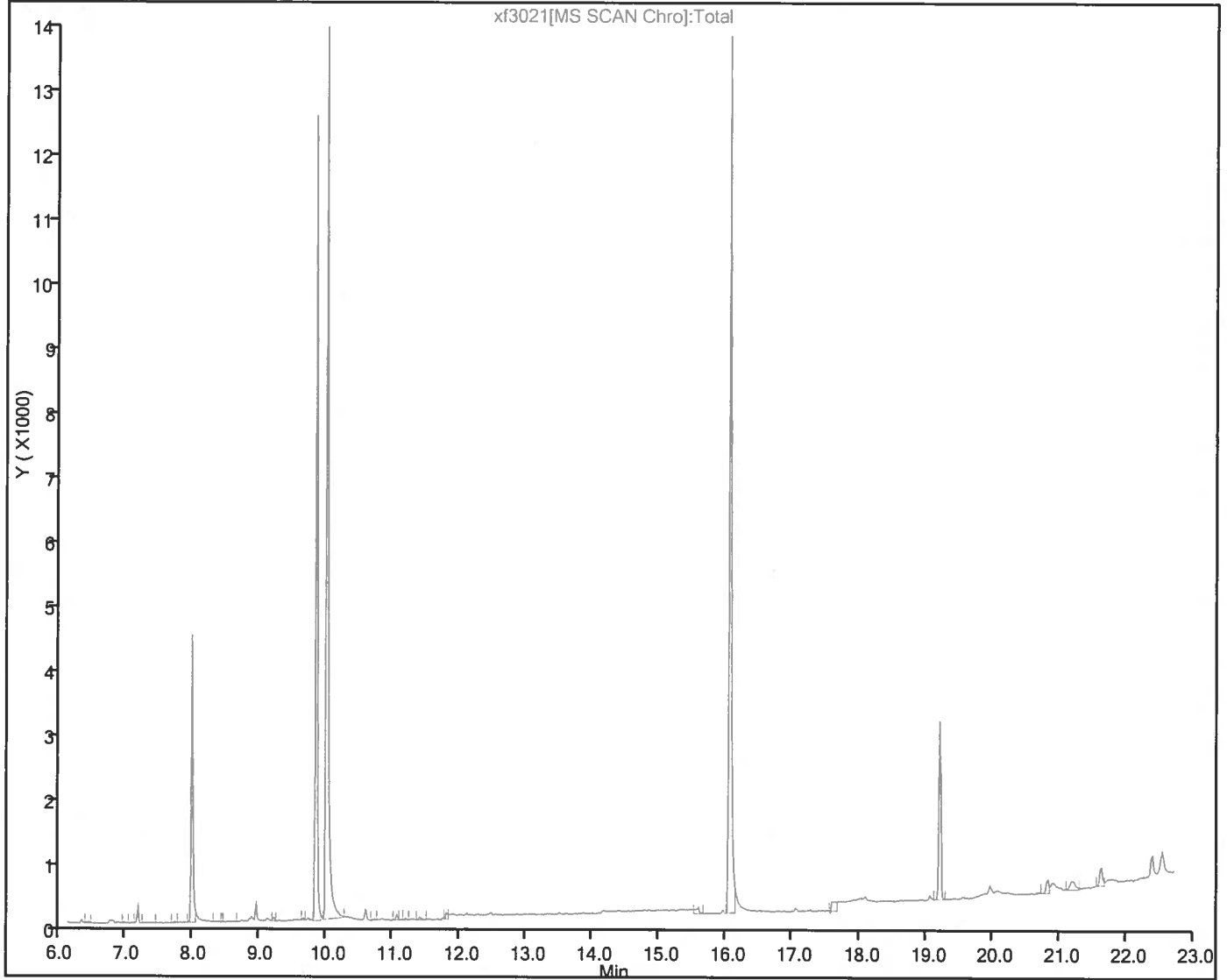
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah
Target Compound Quantitation Report

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\i2229.D
 Lims ID: ccvis
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 23-Sep-2017 01:32:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVIS
 Misc. Info.: 680-0041735-003
 Operator ID: Instrument ID: CMSX
 Sublist: chrom-680\CMSX*sub13
 Method: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\680\CMSX.m
 Limit Group: 680
 Last Update: 26-Sep-2017 13:29:10 Calib Date: 14-Jul-2017 00:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Savannah\ChromData\CMSX\20170713-40109.b\iG1323.D
 Column 1 : HP-5MS (0.25 mm) Det: MS SCAN
 Process Host: XAWRK028

First Level Reviewer: davisn Date: 26-Sep-2017 13:29:10

Compound	Sig	RT	EXP RT	DLT RT	Q	Response	On-Col Amt ug/ml	Flags
A 23 Total Monochlorobiphenyls	188	7.136	6.691 - 7.580		0	73726	0.8064	
A 24 Total Dichlorobiphenyls	222	8.769	7.861 - 9.677		0	59426	0.8012	
* 5 Phenanthrene-d10	188	9.489	9.489 0.0		100	75485	0.7500	
A 25 Total Trichlorobiphenyls	256	10.270	9.051 - 11.489		0	43470	0.8404	
9 PCB-104	326	11.428	11.428 0.0		88	75604	1.72	
A 26 Total Tetrachlorobiphenyls	292	11.804	10.115 -13.494		0	59632	1.66	
A 27 Total Pentachlorobiphenyls	326	13.193	11.368 -15.018		0	54520	1.75	
12 PCB-77	292	13.434	13.434 0.0		87	100005	1.84	
A 28 Total Hexachlorobiphenyls	360	14.468	12.528 -16.409		0	52672	1.74	
* 15 Chrysene-d12	240	15.516	15.516 0.0		100	109653	0.7500	
A 29 Total Heptachlorobiphenyls	394	15.575	14.119 -17.031		0	70040	2.64	
A 30 Total Octachlorobiphenyls	430	16.644	15.583 -17.705		0	69132	2.77	
19 PCB-208	464	17.183	17.183 0.0		98	35893	4.05	
A 31 Total Nonachlorobiphenyls	464	17.677	17.123 -18.232		0	35893	7.08	
\$ 22 Decachlorobiphenyl-13C12	510	18.652	18.652 0.0		61	30795	5.27	
32 DCB Decachlorobiphenyl	498	18.652	18.652 0.0		61	25880	5.11	

Reagents:

680isomerCal3_00038 Amount Added: 1.00 Units: mL

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2229.D

Injection Date: 23-Sep-2017 01:32:30

Instrument ID: CMSX

Lims ID: ccvis

Client ID:

Operator ID:

ALS Bottle#: 3

Worklist Smp#: 3

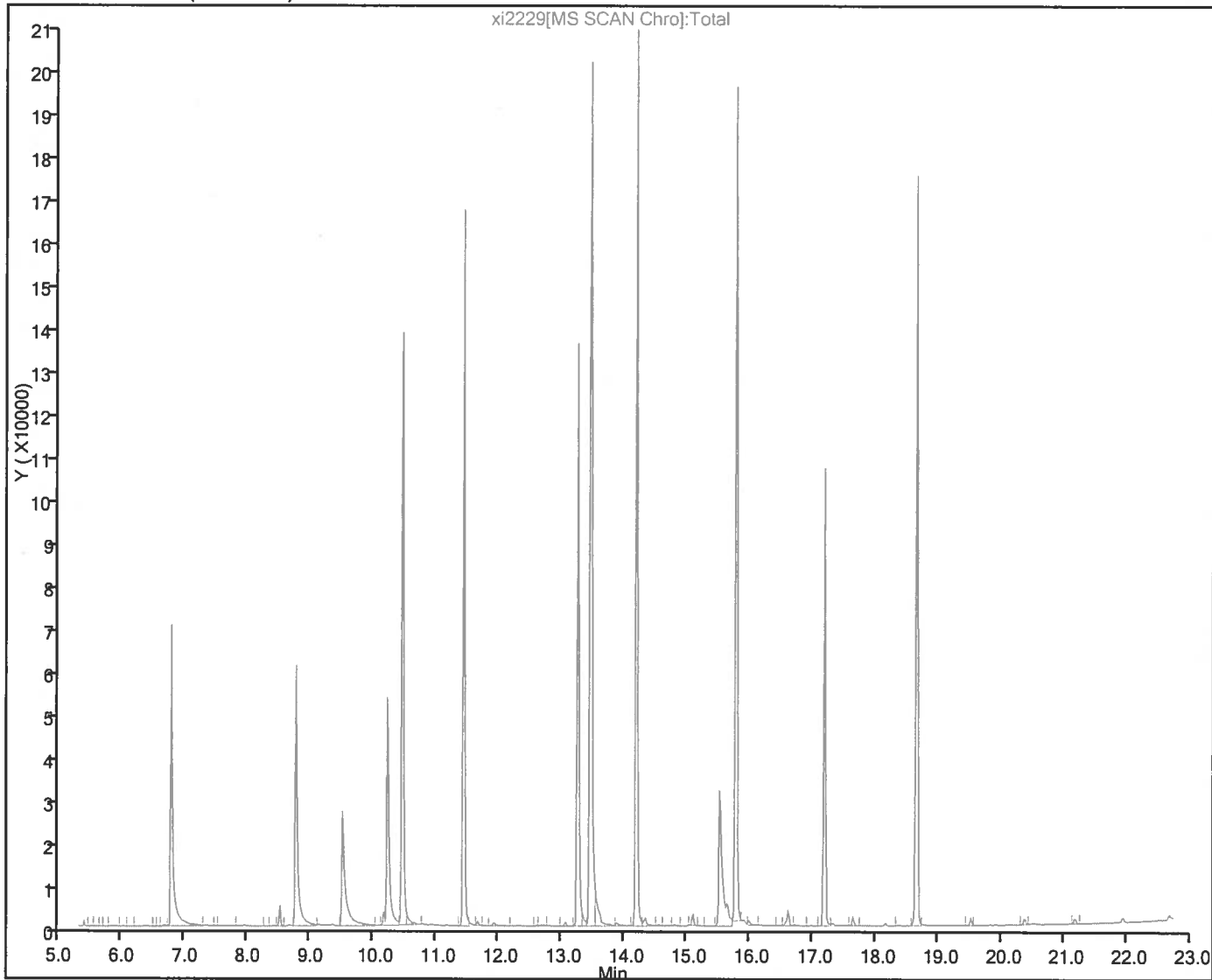
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:04:03

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2235.D

Injection Date: 23-Sep-2017 04:24:30

Instrument ID: CMSX

Lims ID: 240-84856-D-4-A

Lab Sample ID: 680-84856-4

Client ID: MRC-SW5A1-091217

Operator ID:

ALS Bottle#: 29

Worklist Smp#: 9

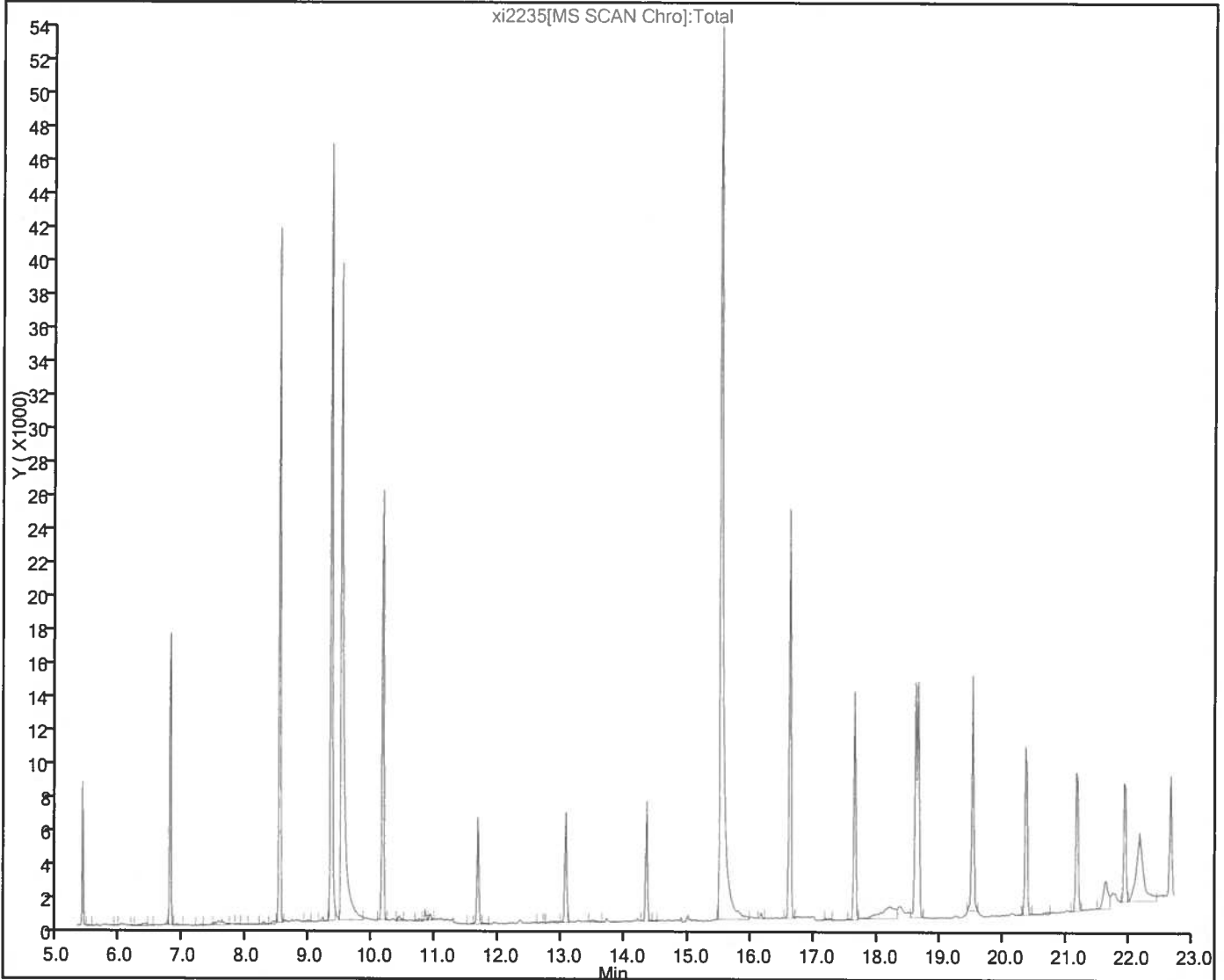
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Savannah Job No.: 240-84856-1
 SDG No.: _____
 Client Sample ID: MRC-SW5A2-091217 Lab Sample ID: 240-84856-5
 Matrix: Water Lab File ID: xi2236.D
 Analysis Method: 680 Date Collected: 09/12/2017 08:49
 Extract. Method: 680 Date Extracted: 09/18/2017 15:45
 Sample wt/vol: 1011.1(mL) Date Analyzed: 09/23/2017 04:52
 Con. Extract Vol.: 1(mL) Dilution Factor: 1
 Injection Volume: 2(uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 495755 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
28655-71-2	Heptachlorobiphenyl	0.030	U	0.30	0.030
26601-64-9	Hexachlorobiphenyl	0.015	U	0.20	0.015
53742-07-7	Nonachlorobiphenyl	0.048	U	0.49	0.048
55722-26-4	Octachlorobiphenyl	0.038	U	0.30	0.038
27323-18-8	Monochlorobiphenyl	0.0055	U	0.099	0.0055
2051-24-3	DCB Decachlorobiphenyl	0.069	U	0.49	0.069
25512-42-9	Dichlorobiphenyl	0.0053	U	0.099	0.0053
25429-29-2	Pentachlorobiphenyl	0.014	U	0.20	0.014
26914-33-0	Tetrachlorobiphenyl	0.014	J	0.20	0.013
25323-68-6	Trichlorobiphenyl	0.0064	U	0.099	0.0064

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00281	Decachlorobiphenyl-13C12	101		25-113

TestAmerica Savannah
Target Compound Quantitation Report

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\i2236.D
 Lims ID: 240-84856-D-5-A
 Client ID: MRC-SW5A2-091217
 Sample Type: Client
 Inject. Date: 23-Sep-2017 04:52:30 ALS Bottle#: 30 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 240-84856-D-5-A
 Misc. Info.: 680-0041735-010
 Operator ID: Instrument ID: CMSX
 Method: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\680\CMSX.m
 Limit Group: 680
 Last Update: 27-Sep-2017 12:04:28 Calib Date: 14-Jul-2017 00:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Savannah\ChromData\CMSX\20170713-40109.b\G1323.D
 Column 1 : HP-5MS (0.25 mm) Det: MS SCAN
 Process Host: XAWRK032

First Level Reviewer: davisn Date: 27-Sep-2017 12:04:28

Compound	Sig	RT	EXP RT	DLT RT	Q	Response	On-Col Amt ug/ml	Flags
* 5 Phenanthrene-d10	188	9.489	9.489	0.001	100	92477	0.7500	
A 26 Total Tetrachlorobiphenyls	292	11.804	10.115 -13.494		0	556	0.0142	
* 15 Chrysene-d12	240	15.516	15.516	0.0	100	119753	0.7500	s
\$ 22 Decachlorobiphenyl-13C12	510	18.652	18.652	0.0	44	16072	2.52	

QC Flag Legend

Processing Flags

s - Failed ISTD Recovery Test

Reagents:

SM-680istd_00042 Amount Added: 30.00 Units: uL Run Reagent

WorkSheet Quantitation Report

Sig	RT	Lower RT	Upper RT	Q	Response	On-Col Amt ug/ml	Ratio Range	Ratio	Flags
* 5 Phenanthrene-d10									
188	9.489	9.489	0.001	100	92477	0.7500			
189	9.489	9.489	0.001		14525		5.9- 7.5	6.4	
A 26 Total Tetrachlorobiphenyls									
292	11.272	10.115 -13.494		0	556	0.0142			
290	11.272				413		1.1- 1.5	1.3	
220	11.272				650		58.1- 138.1	0.6	
222	11.272				457		22.9- 102.9	0.9	
* 15 Chrysene-d12									
240	15.516	15.516	0.0	100	119753	0.7500			s
241	15.516	15.516	0.0		22787		4.3- 5.9	5.3	
\$ 22 Decachlorobiphenyl-13C12									
510	18.652	18.652	0.0	44	16072	2.52			
512	18.652	18.652	0.0		12998		0.9- 1.3	1.2	

QC Flag Legend

Processing Flags

s - Failed ISTD Recovery Test

Reagents:

SM-680istd_00042

Amount Added: 30.00

Units: uL

Run Reagent

Report Date: 27-Sep-2017 12:04:29

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2236.D

Injection Date: 23-Sep-2017 04:52:30

Instrument ID: CMSX

Lims ID: 240-84856-D-5-A

Lab Sample ID: 680-84856-5

Client ID: MRC-SW5A2-091217

Operator ID:

ALS Bottle#: 30

Worklist Smp#: 10

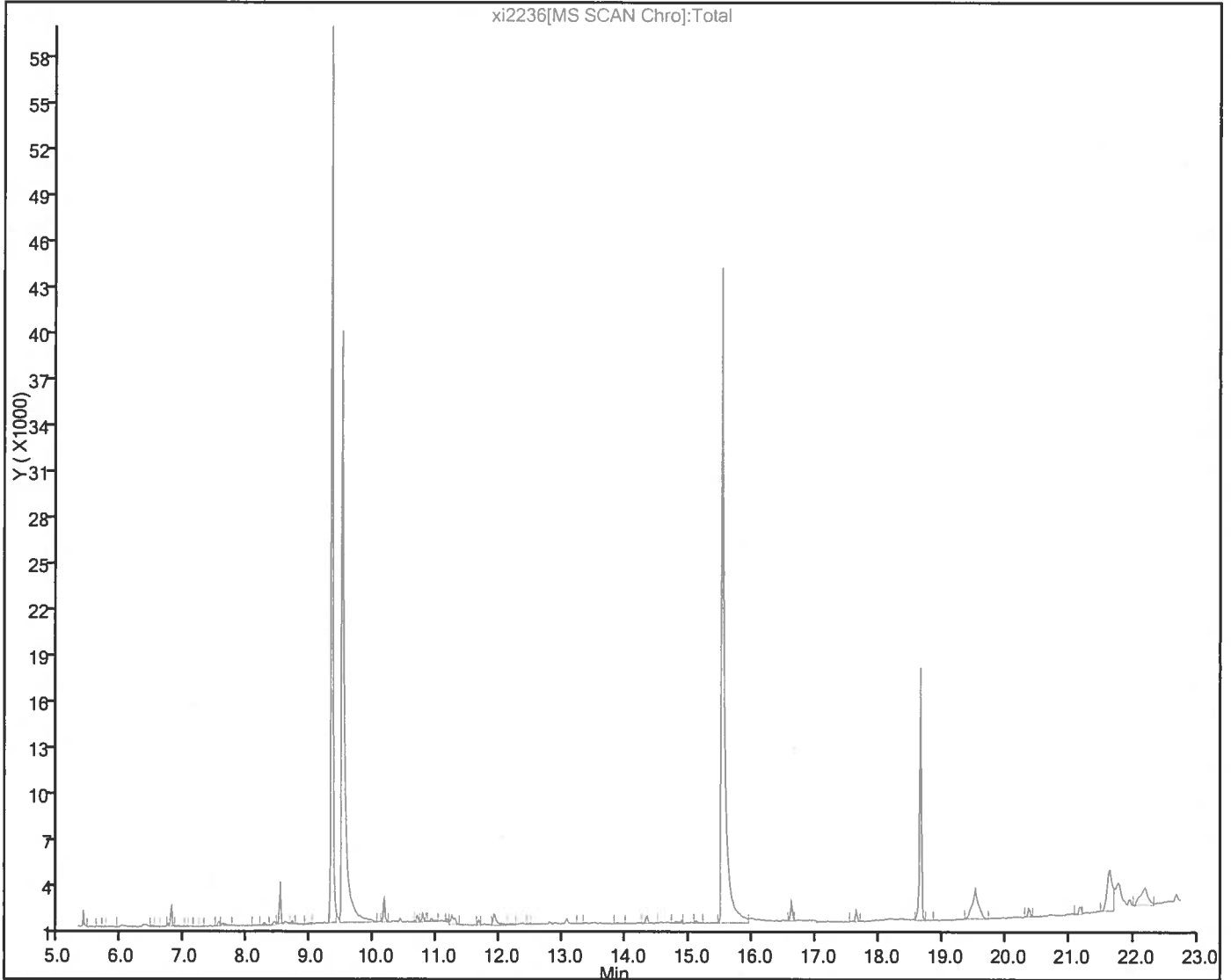
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:04:51

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2238.D

Injection Date: 23-Sep-2017 05:49:30

Instrument ID: CMSX

Lims ID: 240-84856-E-7-A

Lab Sample ID: 680-84856-7

Client ID: MRC-SW6A-091217

Operator ID:

ALS Bottle#: 32

Worklist Smp#: 12

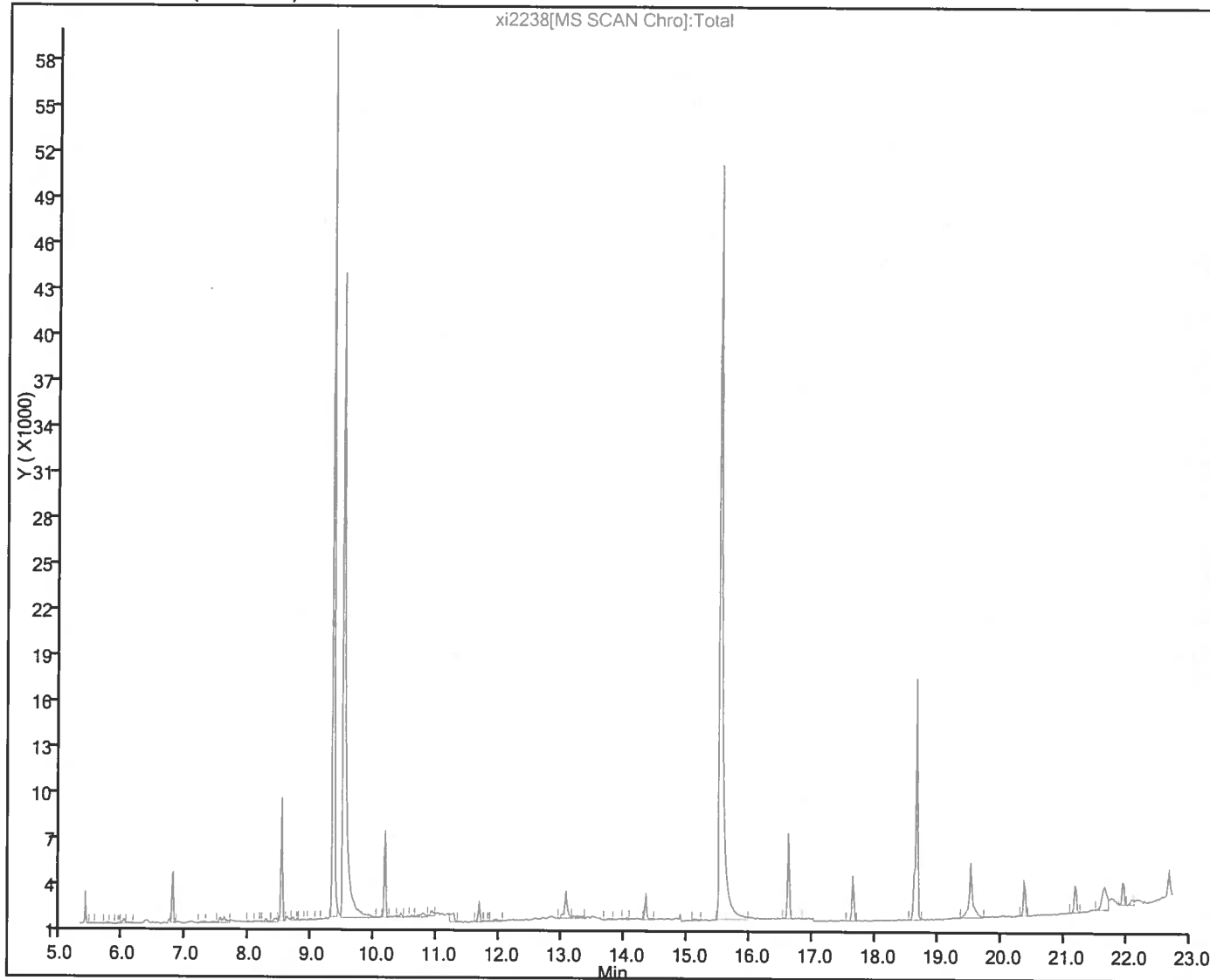
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:05:04

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2239.D

Injection Date: 23-Sep-2017 06:18:30

Instrument ID: CMSX

Lims ID: 240-84856-D-8-A

Lab Sample ID: 680-84856-8

Client ID: MRC-SW6B-091217

Operator ID:

ALS Bottle#: 33

Worklist Smp#: 13

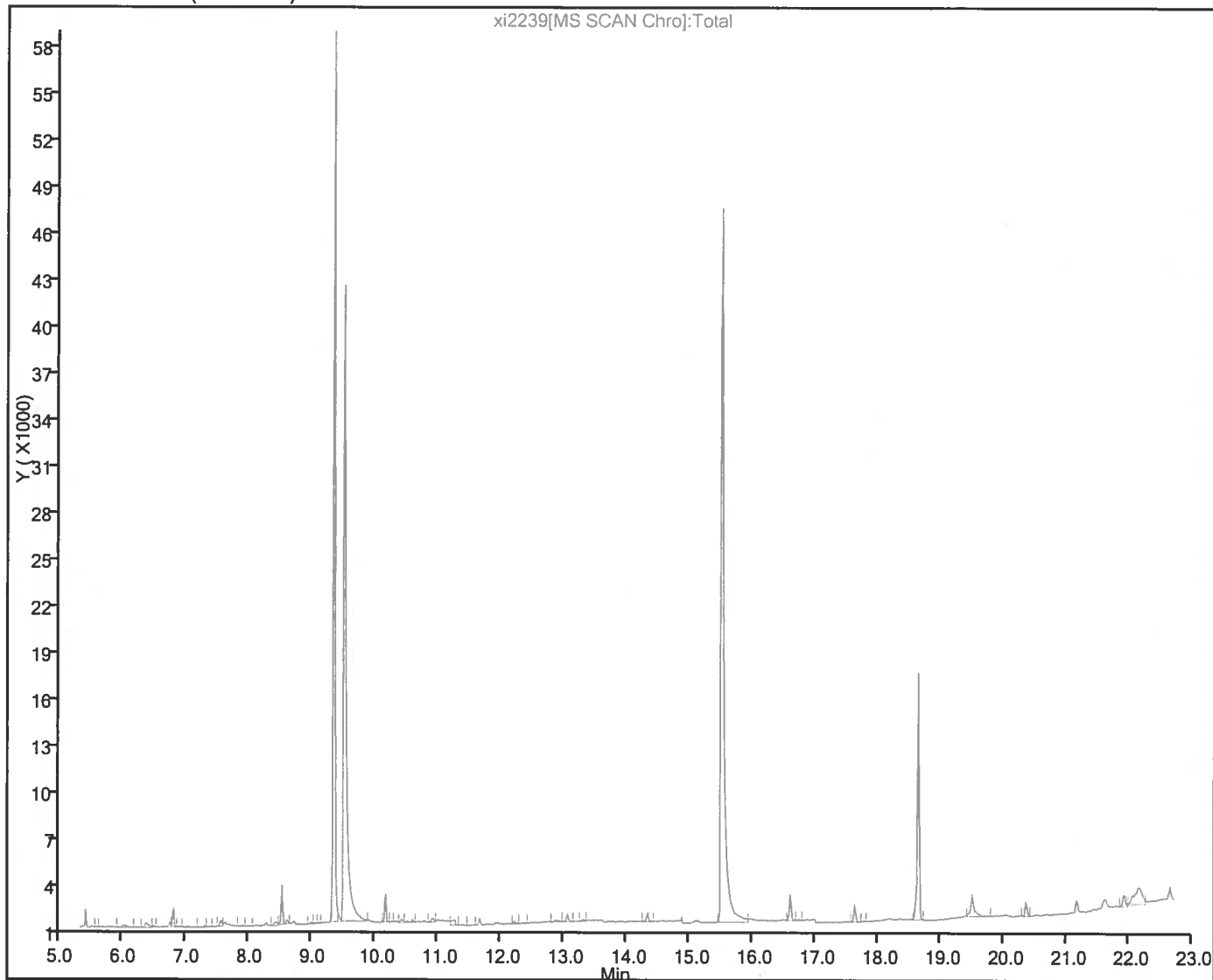
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:05:25

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\i2240.D

Injection Date: 23-Sep-2017 06:47:30

Instrument ID: CMSX

Lims ID: 240-84856-D-9-A

Lab Sample ID: 680-84856-9

Client ID: MRC-SW7A-091217

Operator ID:

ALS Bottle#: 34

Worklist Smp#: 14

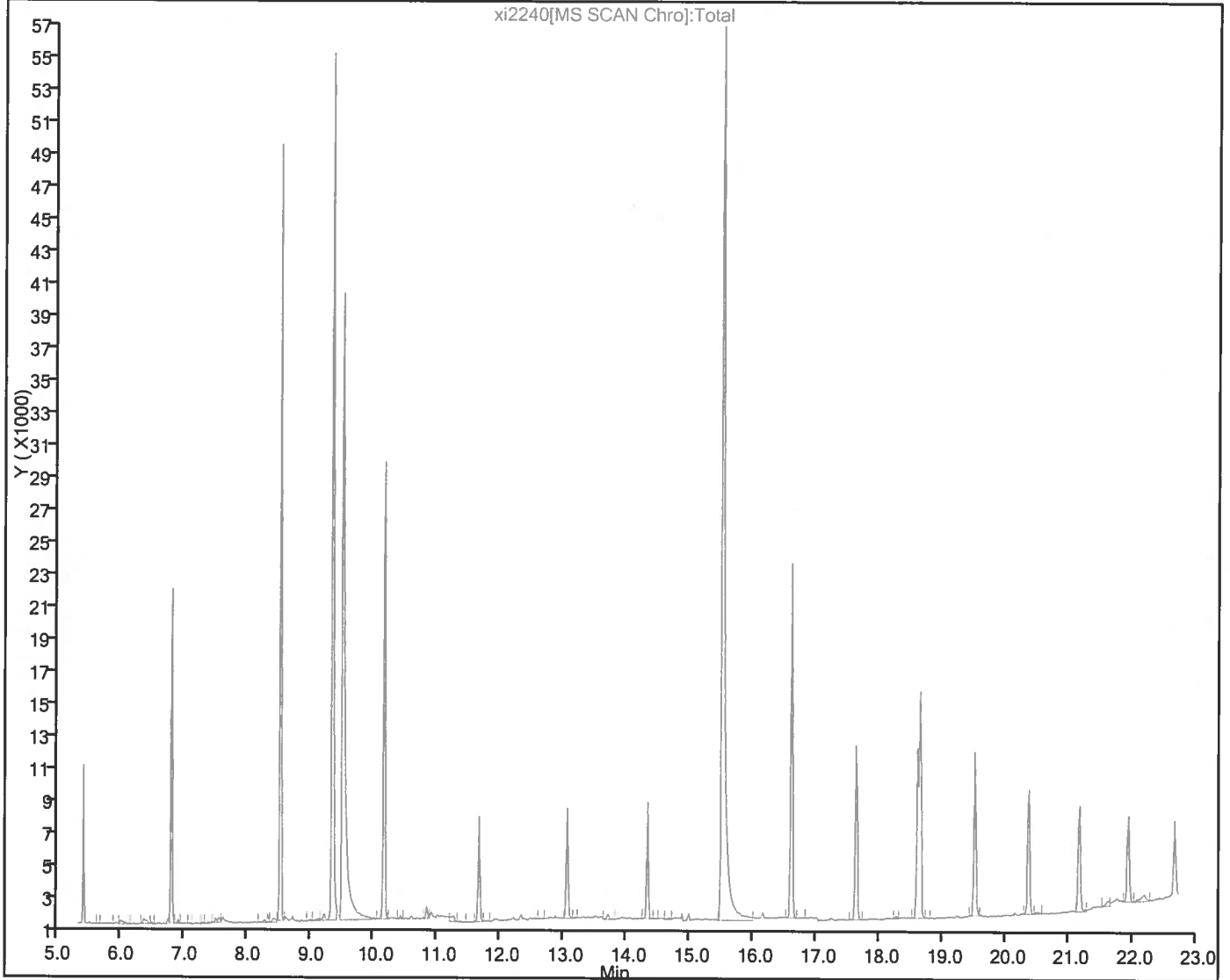
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:05:42

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2241.D

Injection Date: 23-Sep-2017 07:15:30

Instrument ID: CMSX

Lims ID: 240-84856-E-10-A

Lab Sample ID: 680-84856-10

Client ID: MRC-SW7B-091217

Operator ID:

ALS Bottle#: 35

Worklist Smp#: 15

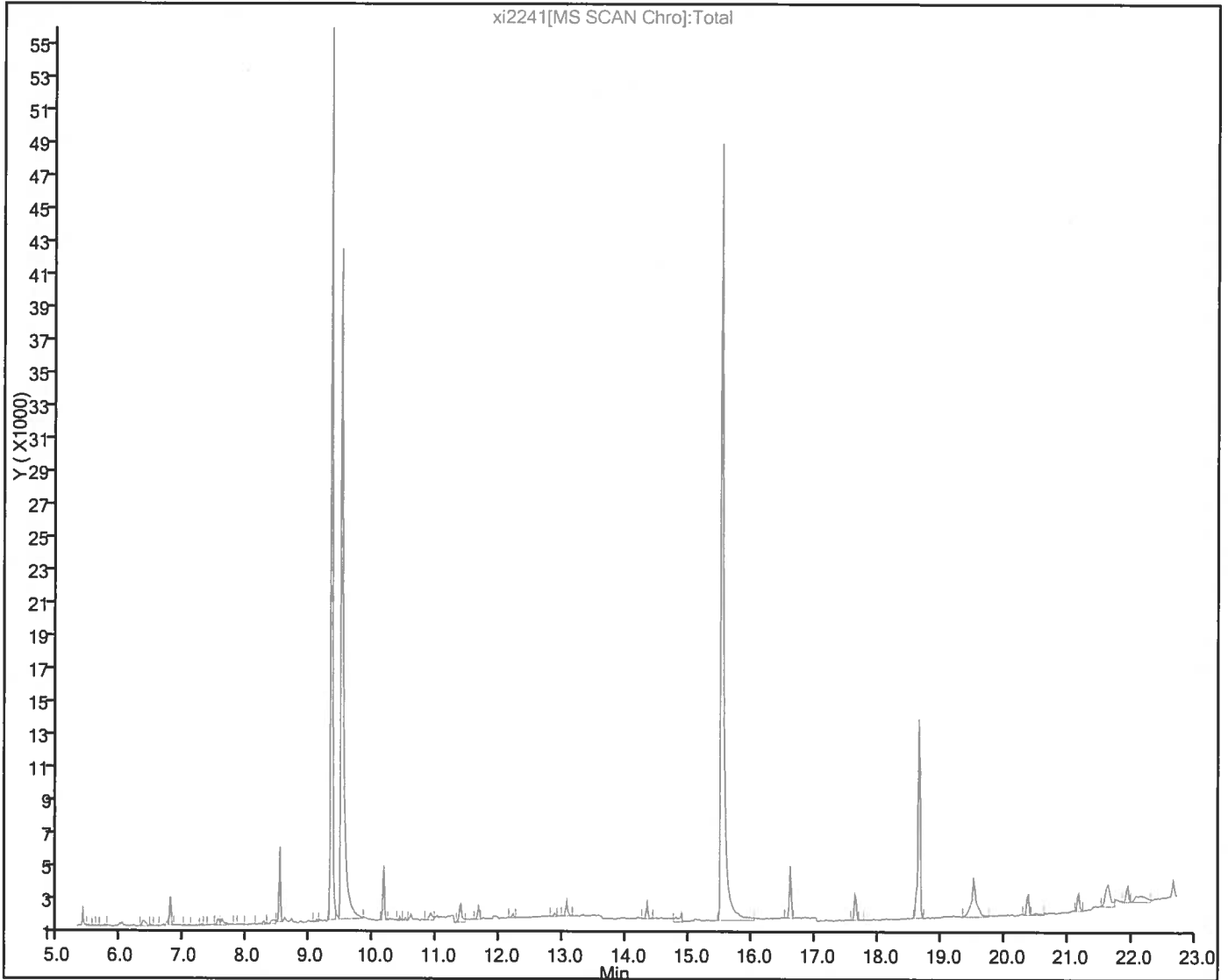
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:06:10

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\Xi2243.D

Injection Date: 23-Sep-2017 08:13:30

Instrument ID: CMSX

Lims ID: 240-84856-D-15-A

Lab Sample ID: 680-84856-15

Client ID: MRC-SW8A-091217

Operator ID:

ALS Bottle#:

37

Worklist Smp#:

17

Injection Vol: 2.0 ul

Dil. Factor:

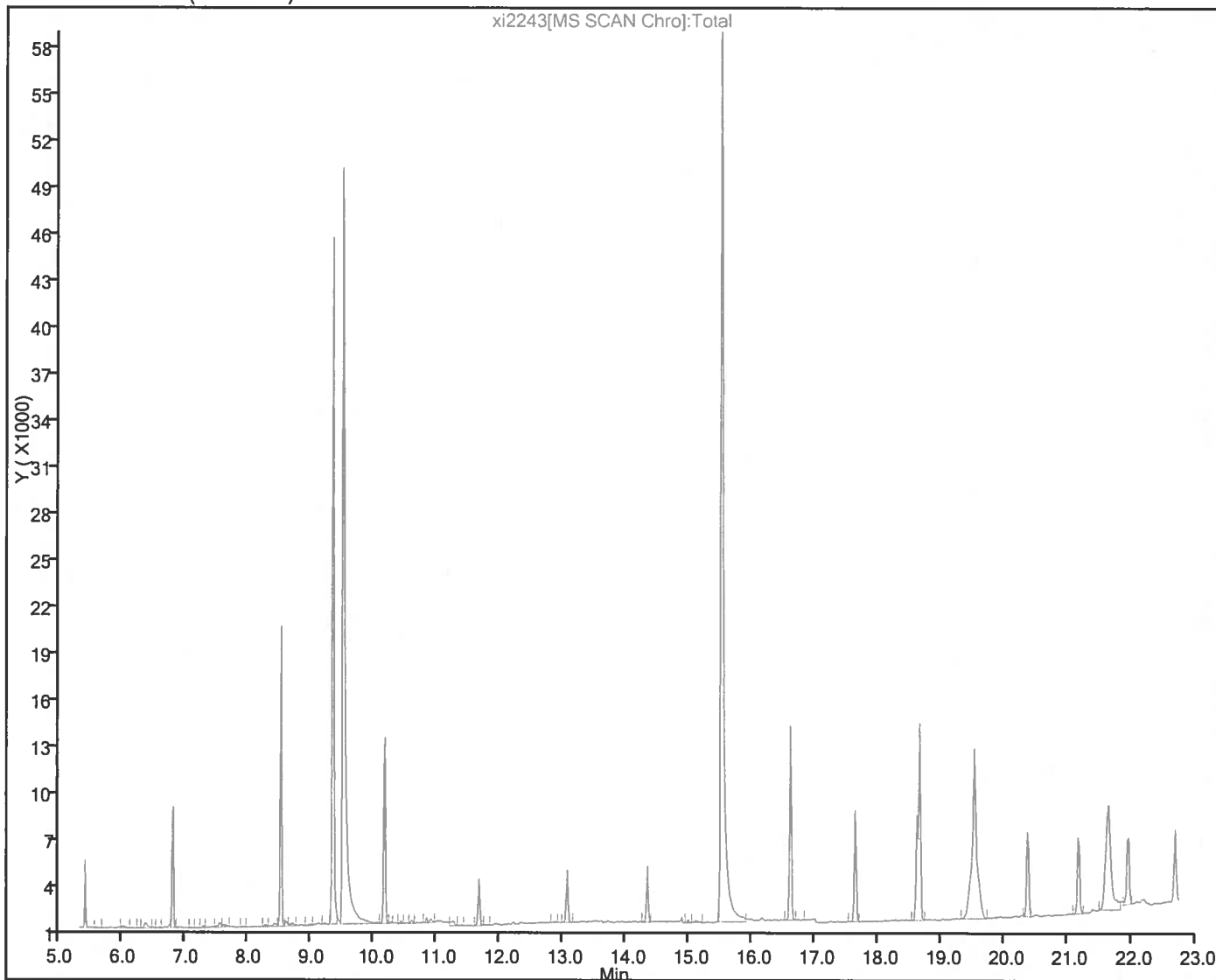
1.0000

Method: 680_CMSX

Limit Group:

680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:06:29

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\2244.D

Injection Date: 23-Sep-2017 08:41:30

Instrument ID: CMSX

Lims ID: 240-84856-D-16-A

Lab Sample ID: 680-84856-16

Client ID: MRC-SW8B-091217

Operator ID:

ALS Bottle#: 38

Worklist Smp#: 18

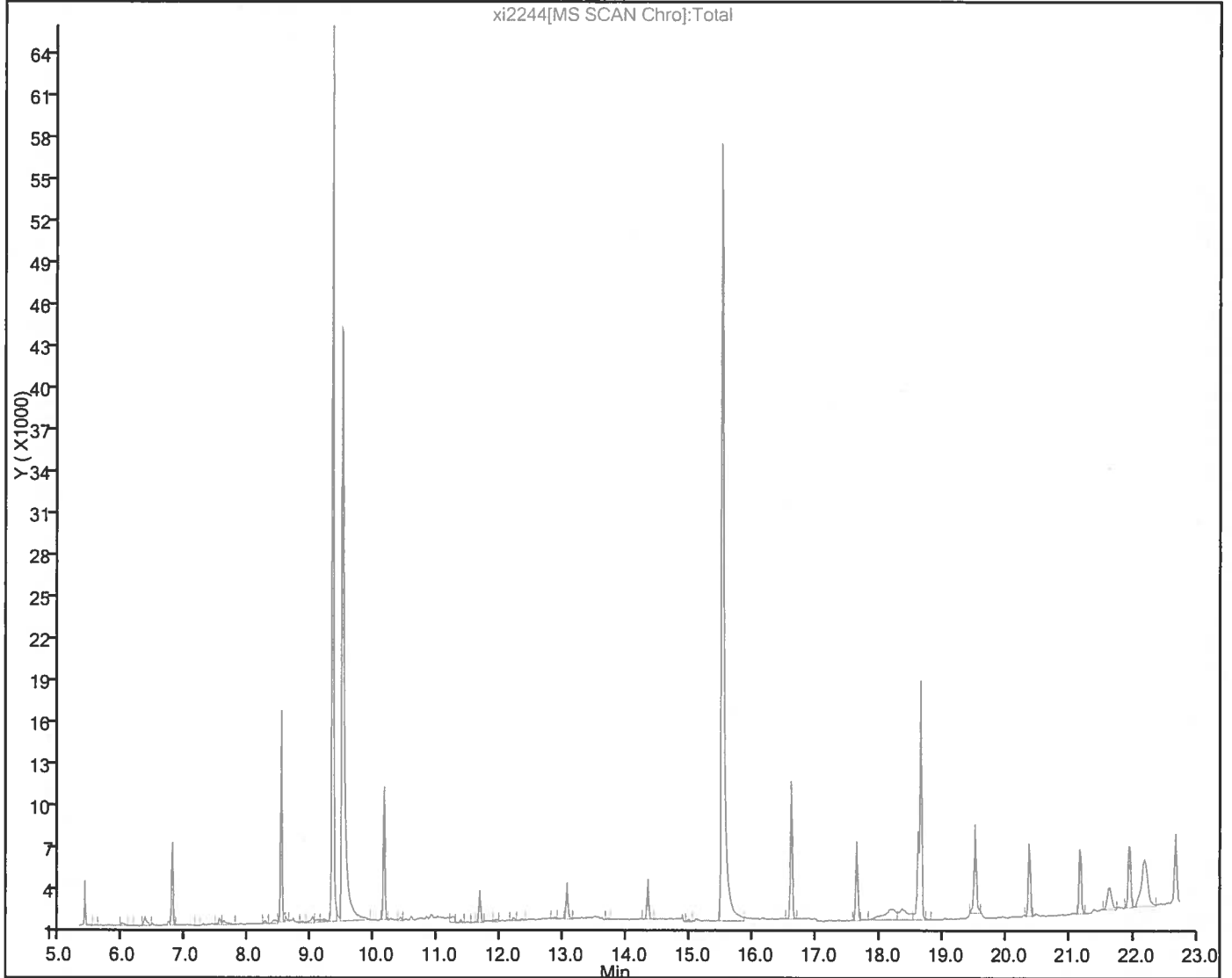
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:06:41

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170922-41735.b\Xi2245.D

Injection Date: 23-Sep-2017 09:10:30

Instrument ID: CMSX

Lims ID: 240-84856-D-17-A

Lab Sample ID: 680-84856-17

Client ID: MRC-SW9A-091217

Operator ID:

ALS Bottle#: 39

Worklist Smp#: 19

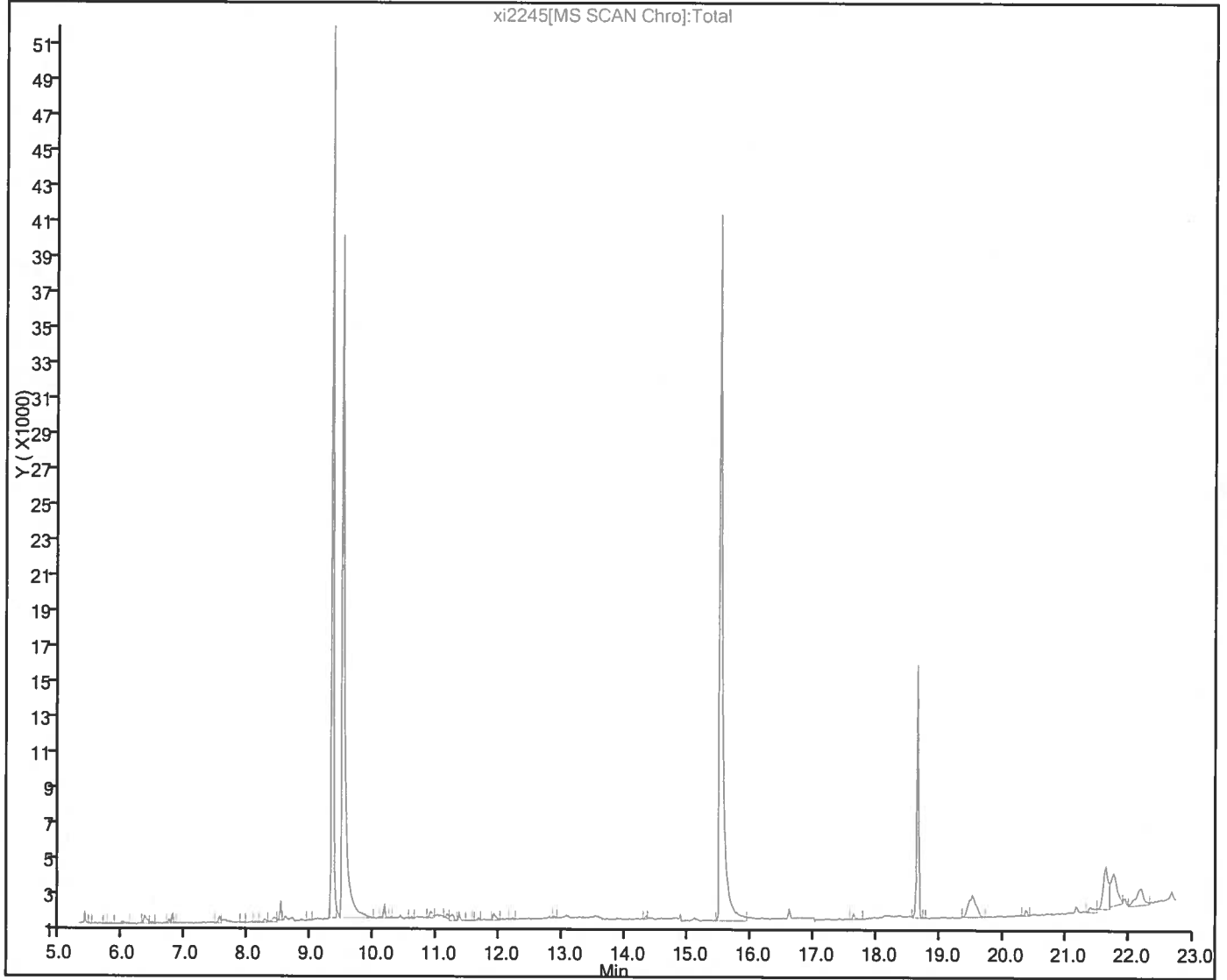
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



TestAmerica Savannah
Target Compound Quantitation Report

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170926-41790.b\i2604.D
 Lims ID: ccvis
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 26-Sep-2017 14:44:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVIS
 Misc. Info.: 680-0041790-003
 Operator ID: Instrument ID: CMSX
 Sublist: chrom-680\CMSX*sub13
 Method: \\ChromNA\Savannah\ChromData\CMSX\20170926-41790.b\680\CMSX.m
 Limit Group: 680
 Last Update: 26-Sep-2017 16:40:00 Calib Date: 14-Jul-2017 00:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Savannah\ChromData\CMSX\20170713-40109.b\iG1323.D
 Column 1 : HP-5MS (0.25 mm) Det: MS SCAN
 Process Host: XAWRK028

First Level Reviewer: davisn Date: 26-Sep-2017 16:40:00

Compound	Sig	RT	EXP RT	DLT RT	Q	Response	On-Col Amt ug/ml	Flags
A 23 Total Monochlorobiphenyls	188	7.125	6.681 - 7.570		0	80703	0.8566	
A 24 Total Dichlorobiphenyls	222	8.758	7.850 - 9.666		0	65052	0.8512	
* 5 Phenanthrene-d10	188	9.474	9.474 0.0		99	84143	0.7500	
A 25 Total Trichlorobiphenyls	256	10.260	9.041 - 11.478		0	46023	0.8635	
9 PCB-104	326	11.411	11.411 0.0		78	82097	1.81	
A 26 Total Tetrachlorobiphenyls	292	11.799	10.105 -13.494		0	65325	1.76	
A 27 Total Pentachlorobiphenyls	326	13.179	11.351 -15.008		0	59203	1.85	
12 PCB-77	292	13.434	13.434 0.0		94	109551	1.96	
A 28 Total Hexachlorobiphenyls	360	14.458	12.517 -16.398		0	57533	1.85	
* 15 Chrysene-d12	240	15.516	15.516 0.0		100	112989	0.7500	
A 29 Total Heptachlorobiphenyls	394	15.564	14.108 -17.020		0	76380	2.80	
A 30 Total Octachlorobiphenyls	430	16.633	15.573 -17.694		0	76109	2.96	
19 PCB-208	464	17.182	17.182 0.0		78	39123	4.29	
A 31 Total Nonachlorobiphenyls	464	17.672	17.122 -18.221		0	38676	7.41	
\$ 22 Decachlorobiphenyl-13C12	510	18.652	18.652 0.0		77	31704	5.27	
32 DCB Decachlorobiphenyl	498	18.652	18.652 0.0		77	27472	5.26	

Reagents:

680isomerCal3_00038 Amount Added: 1.00 Units: mL

Report Date: 26-Sep-2017 16:40:00

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170926-41790.b\2604.D

Injection Date: 26-Sep-2017 14:44:30

Instrument ID: CMSX

Lims ID: ccvis

Client ID:

Operator ID:

ALS Bottle#: 3

Worklist Smp#: 3

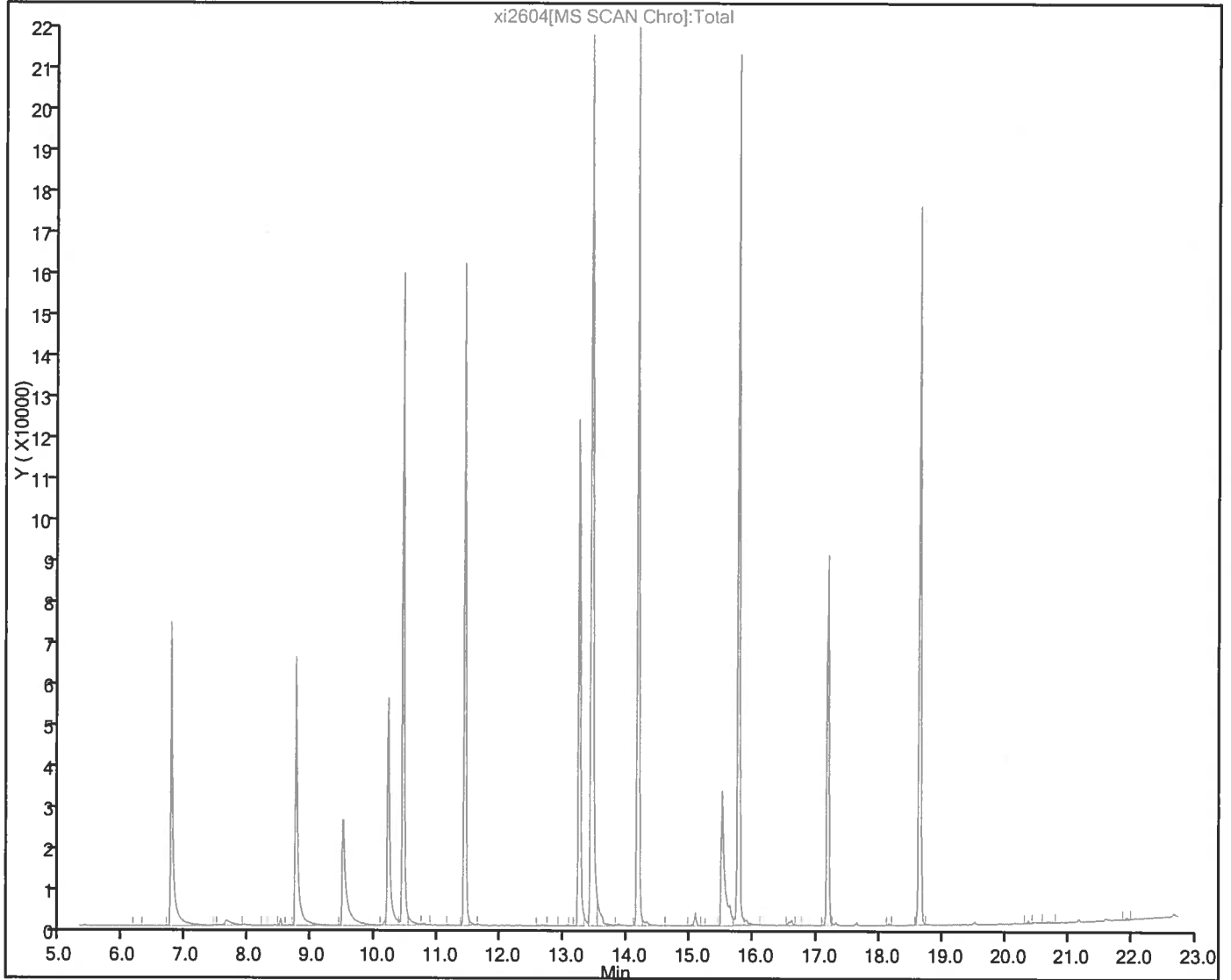
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:29:11

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170926-41790.b\2619.D

Injection Date: 26-Sep-2017 21:59:30

Instrument ID: CMSX

Lims ID: 240-84856-D-6-A

Lab Sample ID: 680-84856-6

Client ID: MRC-SW5B-091217

Operator ID:

ALS Bottle#: 18

Worklist Smp#: 18

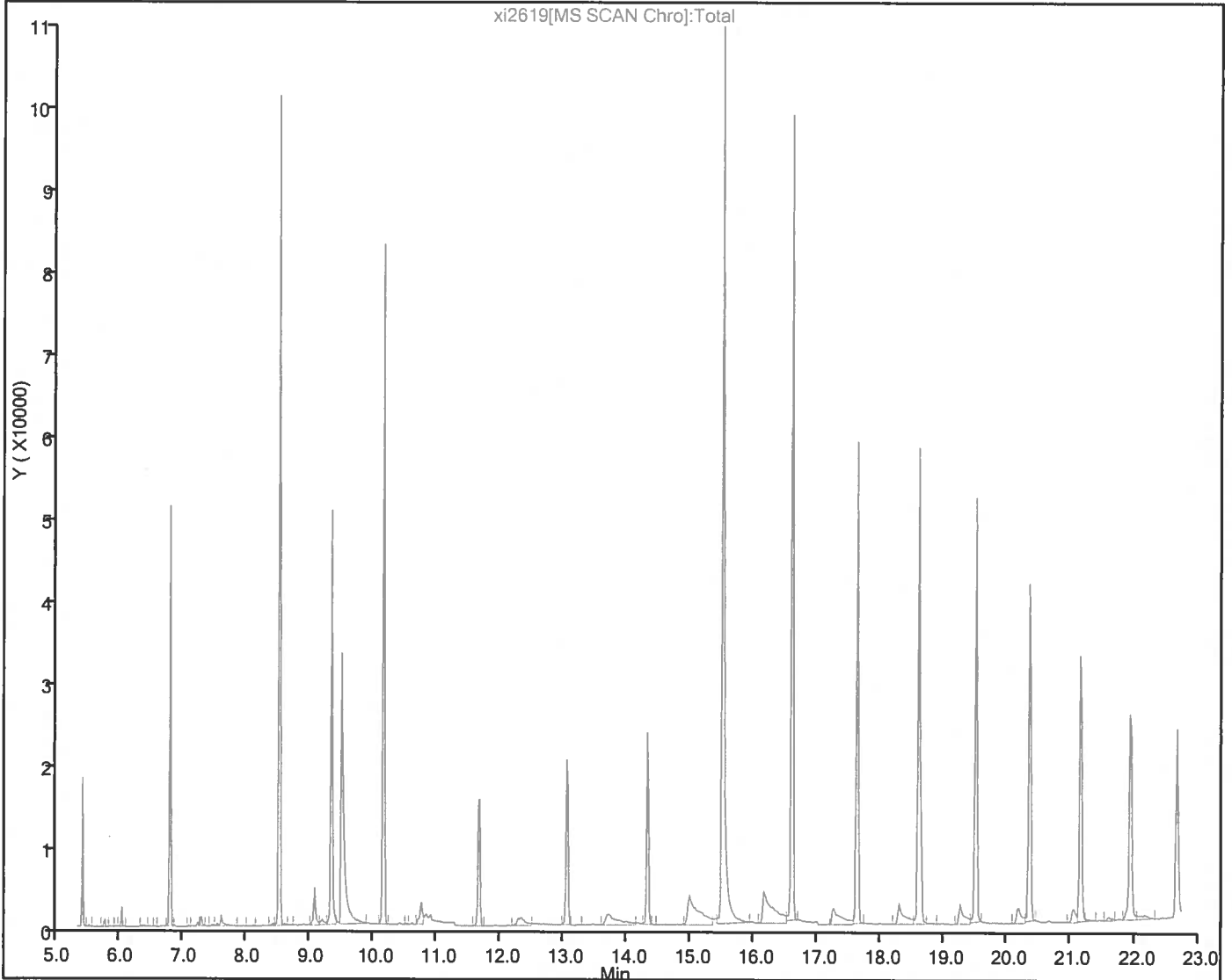
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680\CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:29:28

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170926-41790.b\2620.D

Injection Date: 26-Sep-2017 22:28:30

Instrument ID: CMSX

Lims ID: 240-84856-D-12-A

Lab Sample ID: 680-84856-12

Client ID: MRC-SWDUP2-091217

Operator ID:

ALS Bottle#: 19

Worklist Smp#: 19

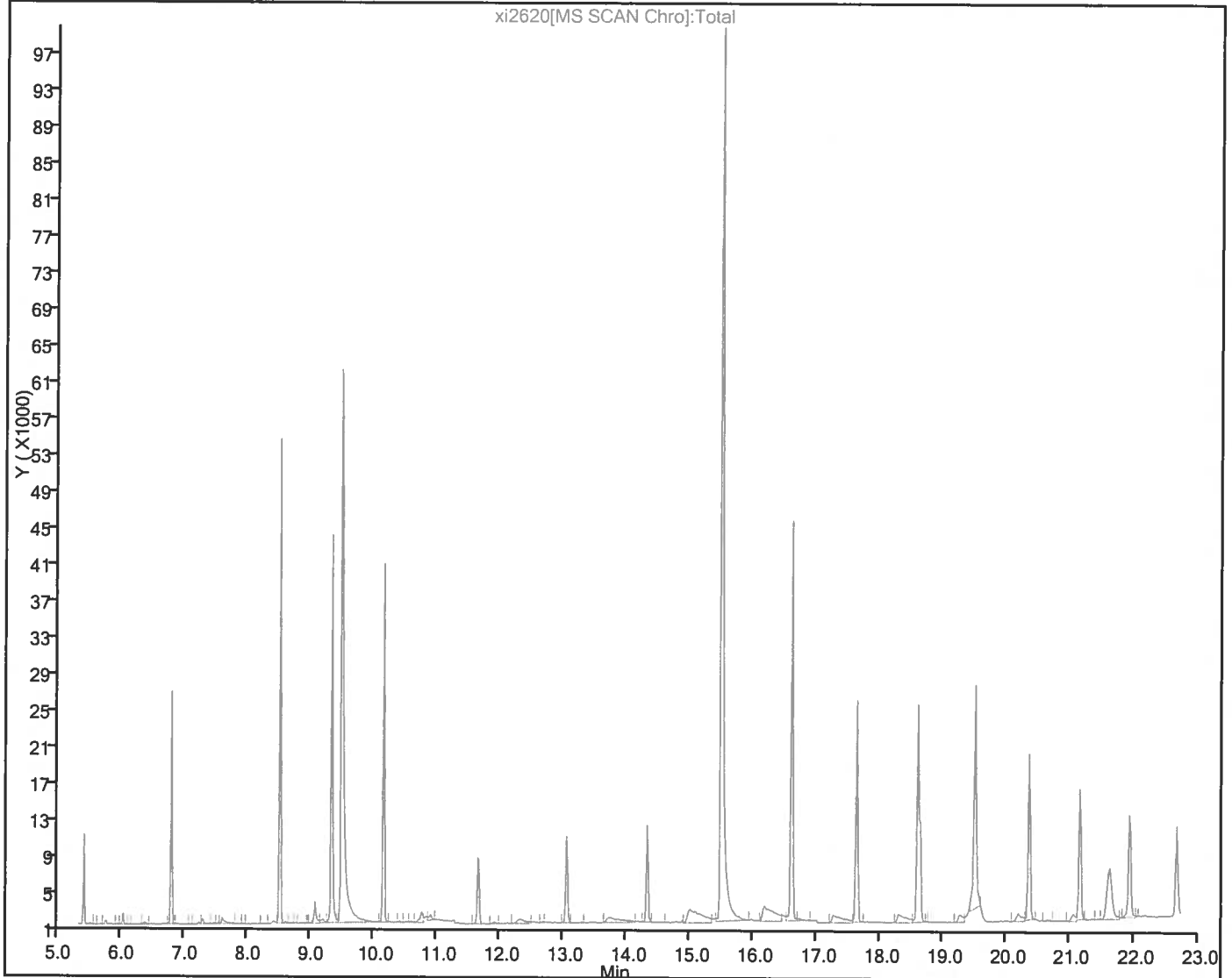
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



Report Date: 27-Sep-2017 12:29:39

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Savannah

Data File: \\ChromNA\Savannah\ChromData\CMSX\20170926-41790.b\2621.D

Injection Date: 26-Sep-2017 22:57:30

Instrument ID: CMSX

Lims ID: 240-84856-E-18-A

Lab Sample ID: 680-84856-18

Client ID: MRC-SW9B-091217

Operator ID:

ALS Bottle#: 20

Worklist Smp#: 20

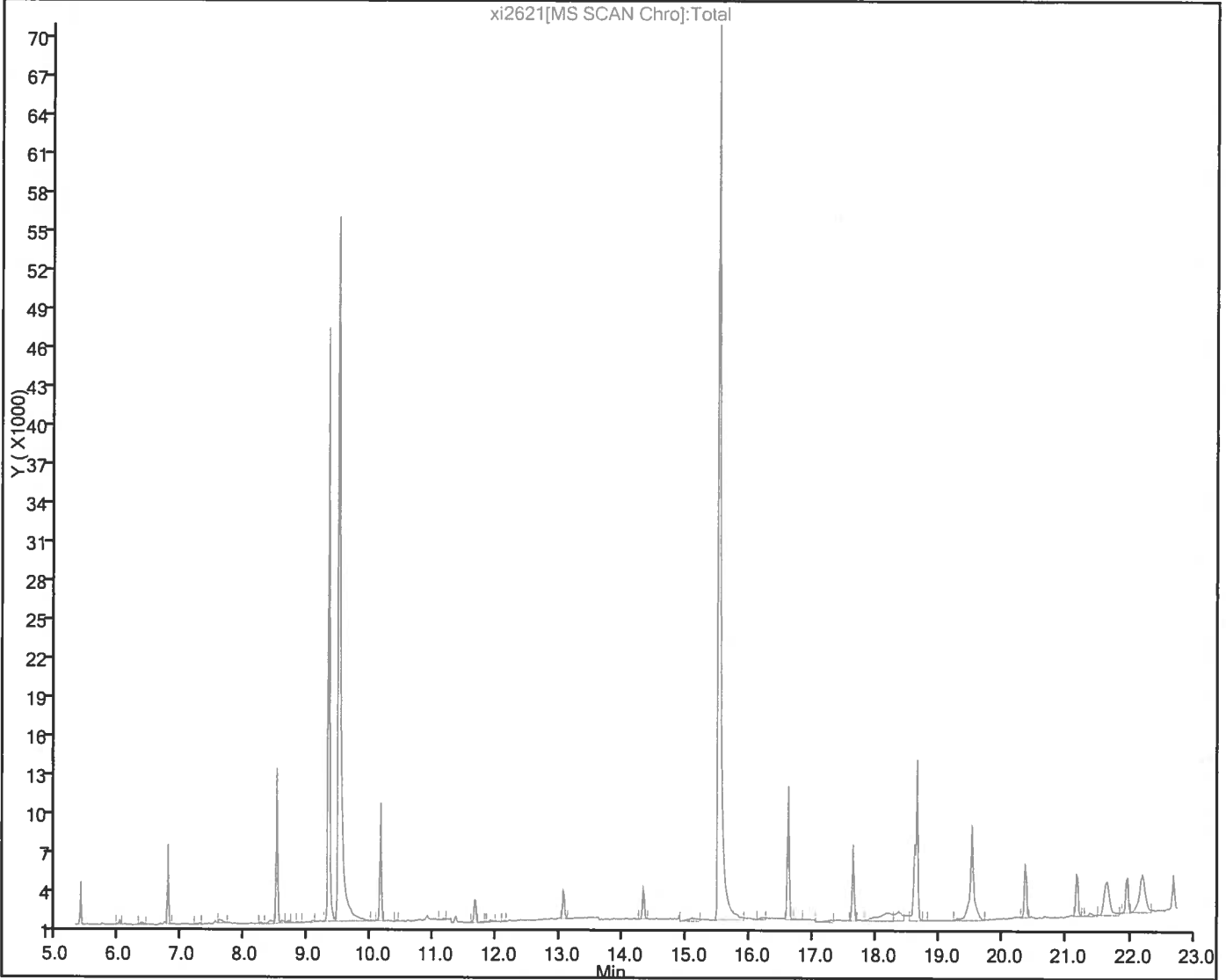
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 680_CMSX

Limit Group: 680

Column: HP-5MS (0.25 mm)



ALS-Rochester Chromatograms

Data Path : I:\ACQUDATA\5973B\DATA\042418\
 Data File : DN218.D
 Acq On : 24 Apr 2018 6:24 pm
 Operator : J.Misiurewicz
 Sample : R1803359-002
 Misc : 312039 680 PCB
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 27 06:13:06 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680121817B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Wed Dec 20 14:44:32 2017
 Response via : Initial Calibration

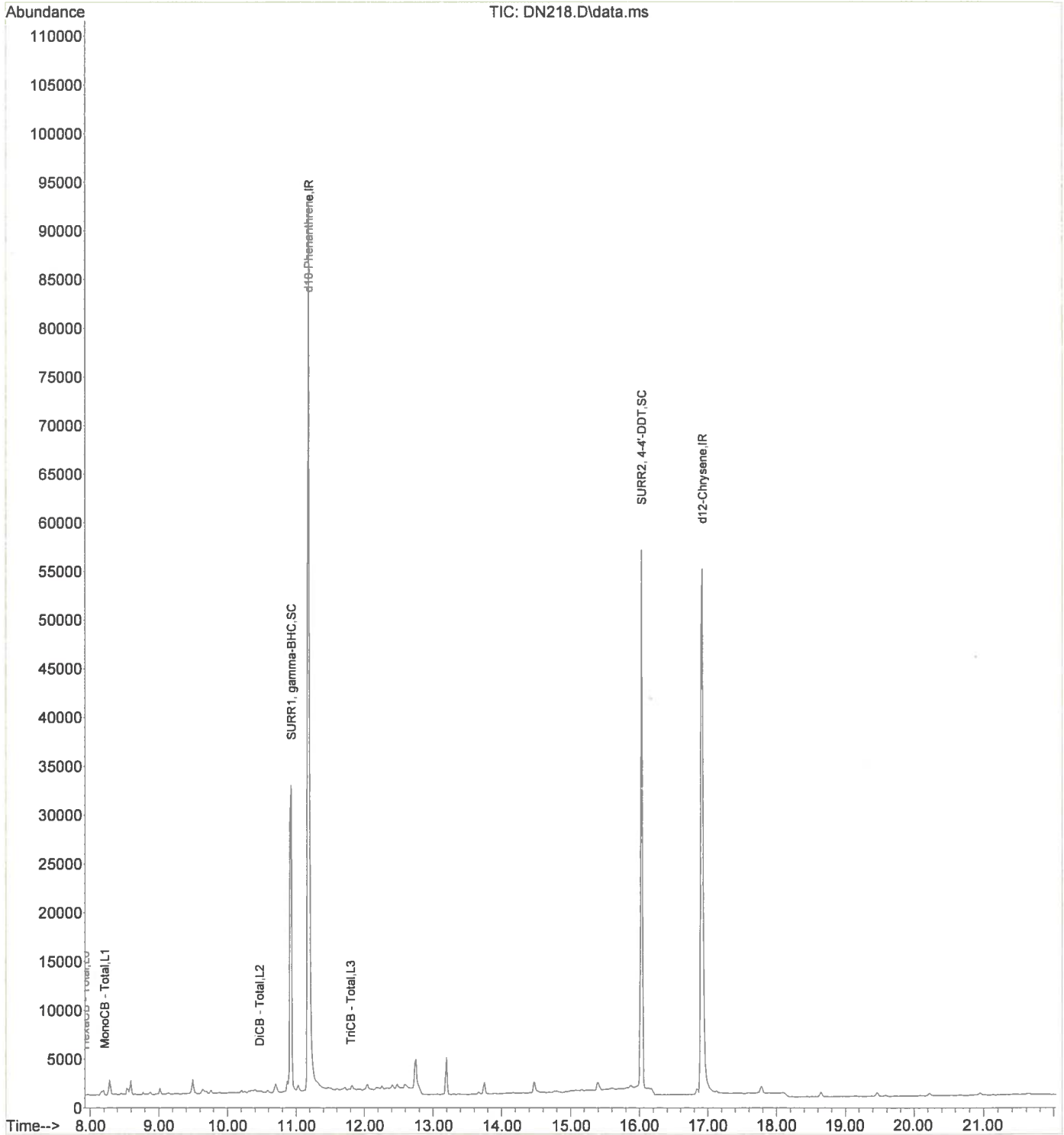
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	

Internal Standards							
1) d10-Phenanthrene	11.183	188	138020	0.75	ppm	0.00	
2) d12-Chrysene	16.915	240	115775	0.75	ppm	0.00	
System Monitoring Compounds							
5) SURR1, gamma-BHC	10.929	219	13665m	0.89	ppm	0.00	
Spiked Amount	1.000	Range 63 - 119	Recovery	=	89.00%		
13) SURR2, 4-4'-DDT	16.025	235	39764	1.10	ppm	0.00	
Spiked Amount	1.000	Range 62 - 181	Recovery	=	110.00%		
Target Compounds							
27) MonoCB - Total	8.208	188	1155m	0.009	ppm		Qvalue
38) DiCB - Total	10.465	222	1464m	0.018	ppm		
52) TriCB - Total	11.796	256	596m	0.011	ppm		
100) HexaCB - Total	0.000	360	129m	0.005	ppm		

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

Data Path : I:\ACQUDATA\5973B\DATA\042418\
Data File : DN218.D
Acq On : 24 Apr 2018 6:24 pm
Operator : J.Misiurewicz
Sample : R1803359-002
Misc : 312039 680 PCB
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 27 06:13:06 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680121817B.M
Quant Title : 680.PCB by SIM
QLast Update : Wed Dec 20 14:44:32 2017
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN317.D
 Acq On : 26 Apr 2018 11:08 pm
 Operator : J.Misiurewicz
 Sample : R1803542-001
 Misc : 312299 680 PCB
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 27 13:49:49 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

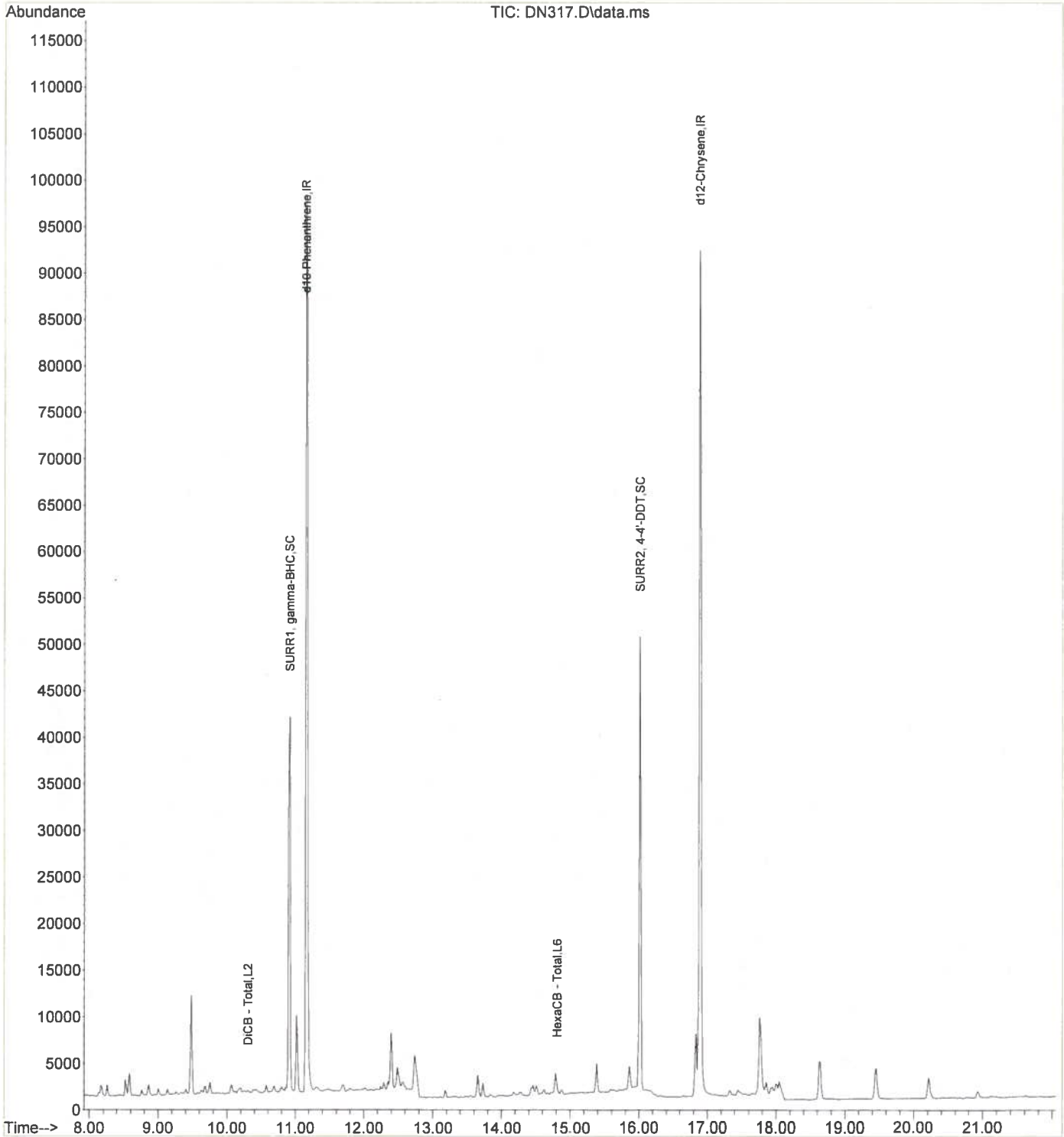
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	

Internal Standards							
1) dl0-Phenanthrene	11.156	188	135366	0.75	ppm	-0.01	
2) dl2-Chrysene	16.883	240	149296	0.75	ppm	-0.02	
System Monitoring Compounds							
5) SURR1, gamma-BHC	10.917	219	17288	0.80	ppm	0.00	
Spiked Amount	1.000	Range 63 - 119	Recovery	=	80.00%		
13) SURR2, 4-4'-DDT	16.009	235	36963	0.86	ppm	0.00	
Spiked Amount	1.000	Range 62 - 181	Recovery	=	86.00%		
Target Compounds							
38) DiCB - Total	10.304	222	1050m	0.009	ppm		Qvalue
100) HexaCB - Total	14.807	360	120m	0.003	ppm		#

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN317.D
Acq On : 26 Apr 2018 11:08 pm
Operator : J.Misiurewicz
Sample : R1803542-001
Misc : 312299 680 PCB
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Apr 27 13:49:49 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\043018\
 Data File : DN361.D
 Acq On : 30 Apr 2018 11:06 am
 Operator : J.Misiurewicz
 Sample : R1803542-002
 Misc : 312299 680 PCB
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 30 11:45:49 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

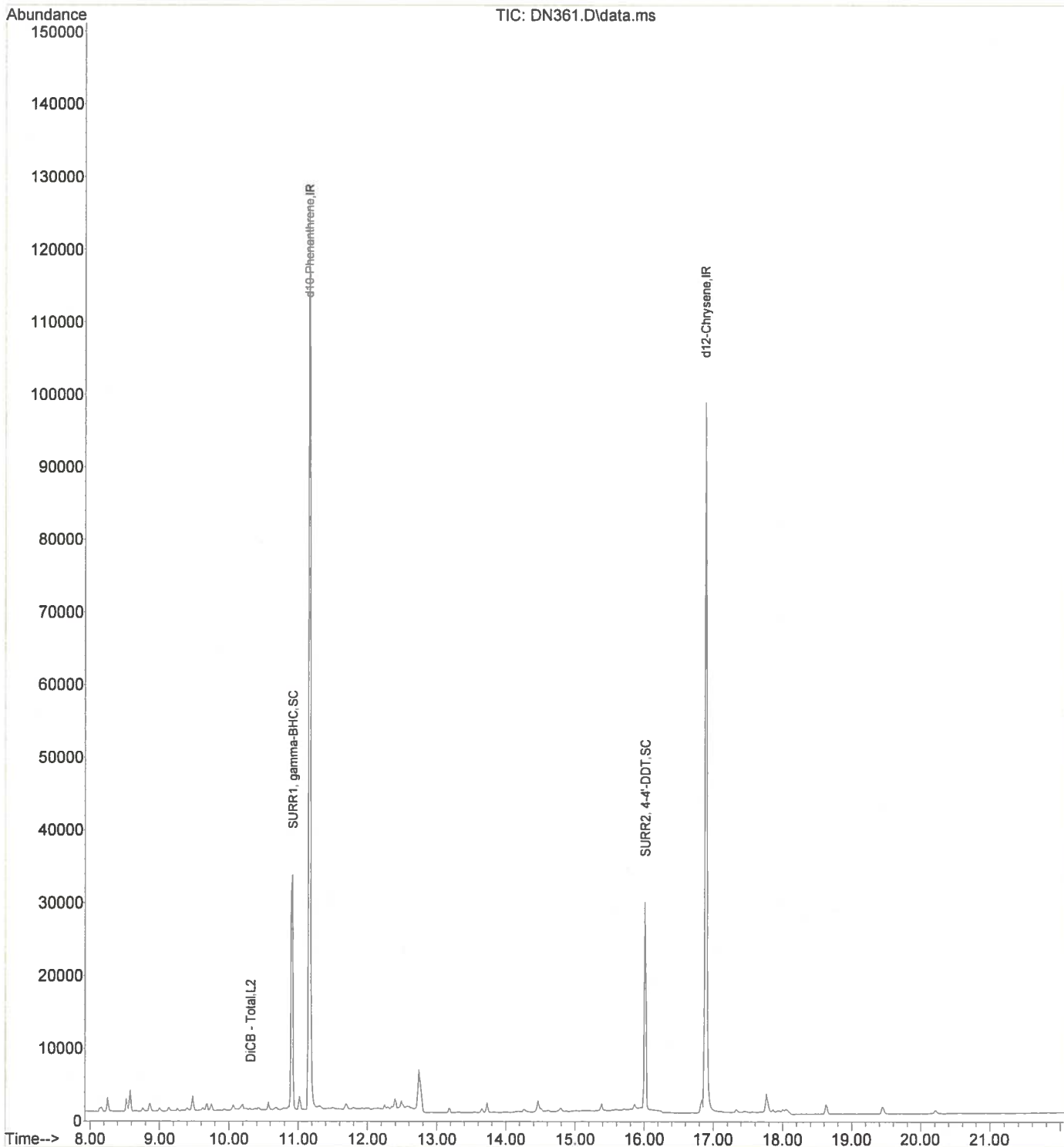
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.155	188	170443	0.75	ppm	-0.01
2) d12-Chrysene	16.883	240	158522	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.916	219	14465	0.63	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	63.00%	
13) SURR2, 4-4'-DDT	16.008	235	22986	0.56	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	56.00%#	
Target Compounds						
38) DiCB - Total	10.303	222	882m	0.007	ppm	Qvalue

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

Data Path : I:\ACQUATA\5973B\DATA\043018\
Data File : DN361.D
Acq On : 30 Apr 2018 11:06 am
Operator : J.Misiurewicz
Sample : R1803542-002
Misc : 312299 680 PCB
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Apr 30 11:45:49 2018
Quant Method : I:\ACQUATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN319.D
 Acq On : 27 Apr 2018 12:06 am
 Operator : J.Misiurewicz
 Sample : R1803542-003
 Misc : 312299 680 PCB
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 27 13:50:06 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

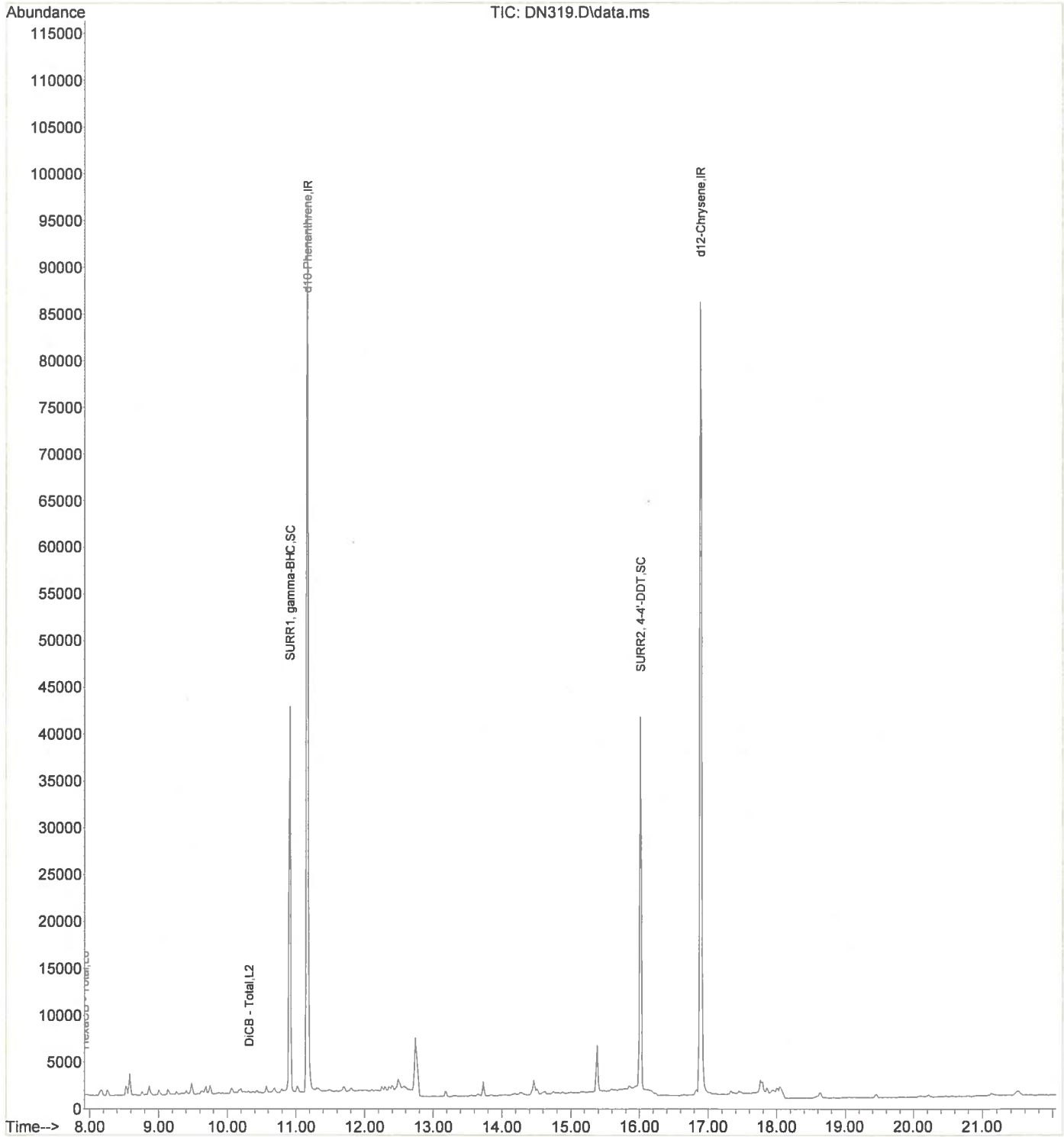
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.170	188	127021	0.75	ppm	0.00
2) d12-Chrysene	16.883	240	145164	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.915	219	15234	0.73	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	73.00%	
13) SURR2, 4-4'-DDT	16.010	235	31504	0.77	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	77.00%	
Target Compounds						
38) DiCB - Total	10.318	222	951m	0.009	ppm	Qvalue
100) HexaCB - Total	0.000	360	107m	0.003	ppm	

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN319.D
Acq On : 27 Apr 2018 12:06 am
Operator : J.Misiurewicz
Sample : R1803542-003
Misc : 312299 680 PCB
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Apr 27 13:50:06 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN320.D
 Acq On : 27 Apr 2018 12:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-004
 Misc : 312299 680 PCB
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 27 13:50:14 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

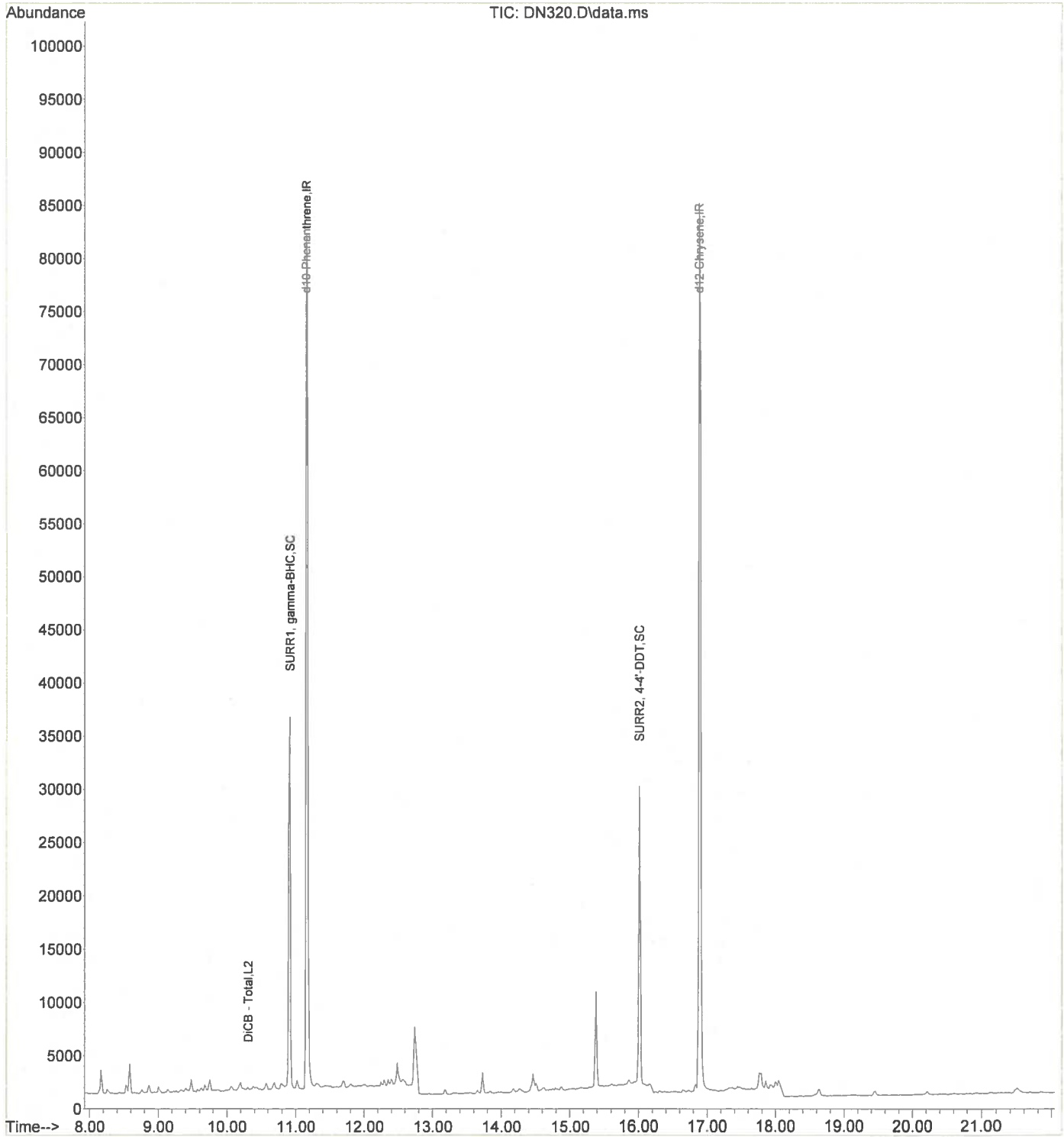
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.156	188	117278	0.75	ppm	-0.01
2) d12-Chrysene	16.883	240	142028	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.917	219	14246	0.70	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	70.00%	
13) SURR2, 4-4'-DDT	16.009	235	22840	0.61	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	61.00%#	
Target Compounds						
38) DiCB - Total	10.304	222	1485m	0.014	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN320.D
Acq On : 27 Apr 2018 12:35 am
Operator : J.Misiurewicz
Sample : R1803542-004
Misc : 312299 680 PCB
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Apr 27 13:50:14 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN321.D
 Acq On : 27 Apr 2018 1:03 am
 Operator : J.Misiurewicz
 Sample : R1803542-005
 Misc : 312299 680 PCB
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 27 13:50:23 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

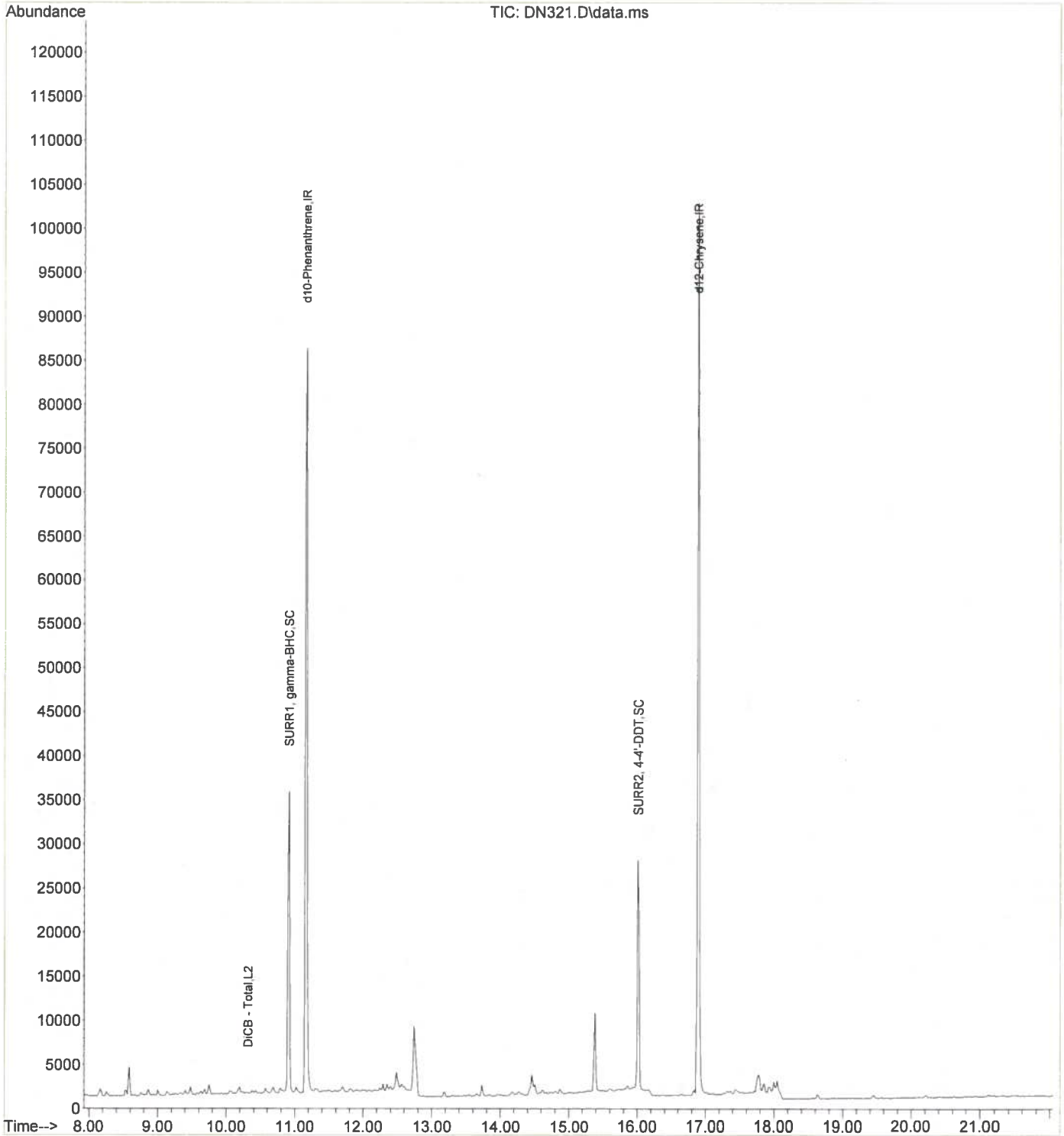
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.170	188	119128	0.75	ppm	0.00
2) d12-Chrysene	16.883	240	150908	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.916	219	13464	0.62	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	62.00%#	
13) SURR2, 4-4'-DDT	16.009	235	22643	0.57	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	57.00%#	
Target Compounds						
38) DiCB - Total	10.318	222	936m	0.008	ppm	Qvalue

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

Data Path : I:\ACQUADATA\5973B\DATA\042618\
Data File : DN321.D
Acq On : 27 Apr 2018 1:03 am
Operator : J.Misiurewicz
Sample : R1803542-005
Misc : 312299 680 PCB
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Apr 27 13:50:23 2018
Quant Method : I:\ACQUADATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\043018\
 Data File : DN362.D
 Acq On : 30 Apr 2018 11:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-006
 Misc : 312299 680 PCB
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

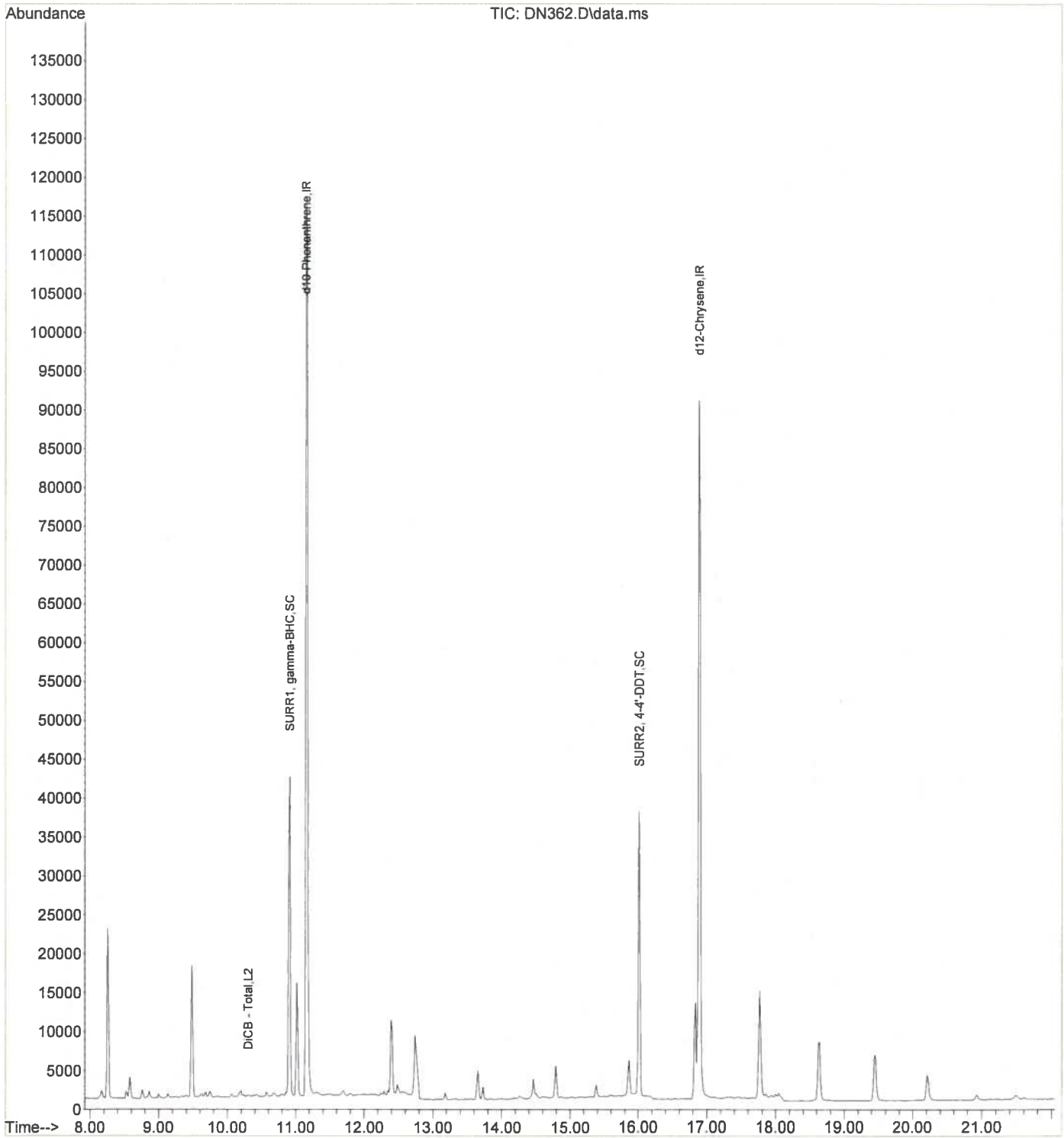
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.153	188	168078	0.75	ppm	-0.02
2) d12-Chrysene	16.882	240	152885	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	16945	0.77	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	77.00%	
13) SURR2, 4-4'-DDT	16.009	235	27060	0.66	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	66.00%	
Target Compounds						
38) DiCB - Total	10.301	222	675m	0.006	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\043018\
Data File : DN362.D
Acq On : 30 Apr 2018 11:35 am
Operator : J.Misiurewicz
Sample : R1803542-006
Misc : 312299 680 PCB
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN323.D
 Acq On : 27 Apr 2018 2:01 am
 Operator : J.Misiurewicz
 Sample : R1803542-007
 Misc : 312299 680 PCB
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 27 13:50:39 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

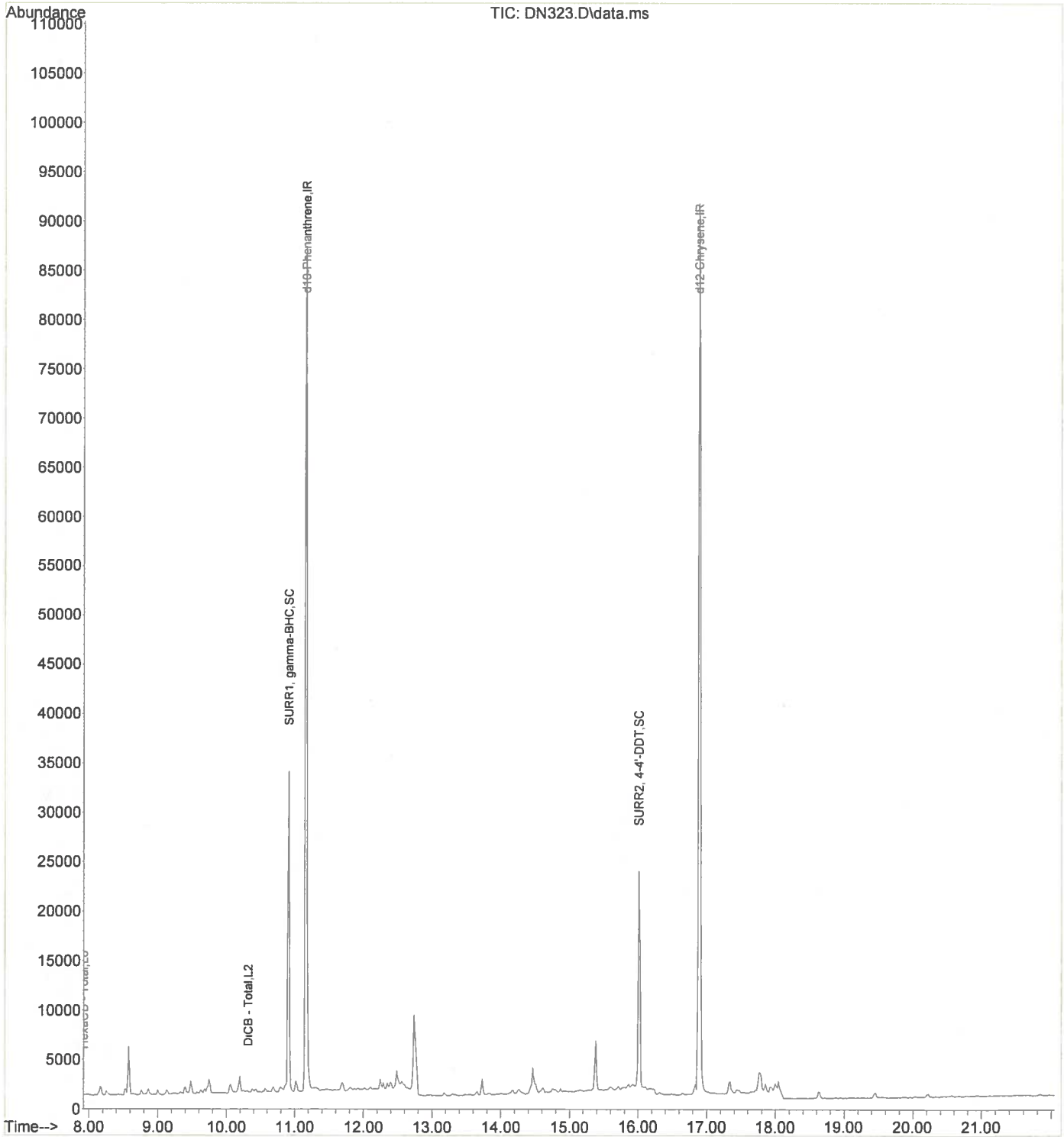
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.169	188	120387	0.75	ppm	0.00
2) d12-Chrysene	16.882	240	148730	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.915	219	12734	0.59	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	59.00%#	
13) SURR2, 4-4'-DDT	16.009	235	18189	0.48	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	48.00%#	
Target Compounds						
38) DiCB - Total	10.317	222	717m	0.006	ppm	Qvalue
100) HexaCB -Total	0.000	360	125m	0.003	ppm	

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN323.D
Acq On : 27 Apr 2018 2:01 am
Operator : J.Misiurewicz
Sample : R1803542-007
Misc : 312299 680 PCB
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Apr 27 13:50:39 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN324.D
 Acq On : 27 Apr 2018 2:30 am
 Operator : J.Misiurewicz
 Sample : R1803542-008
 Misc : 312299 680 PCB
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 27 13:50:48 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

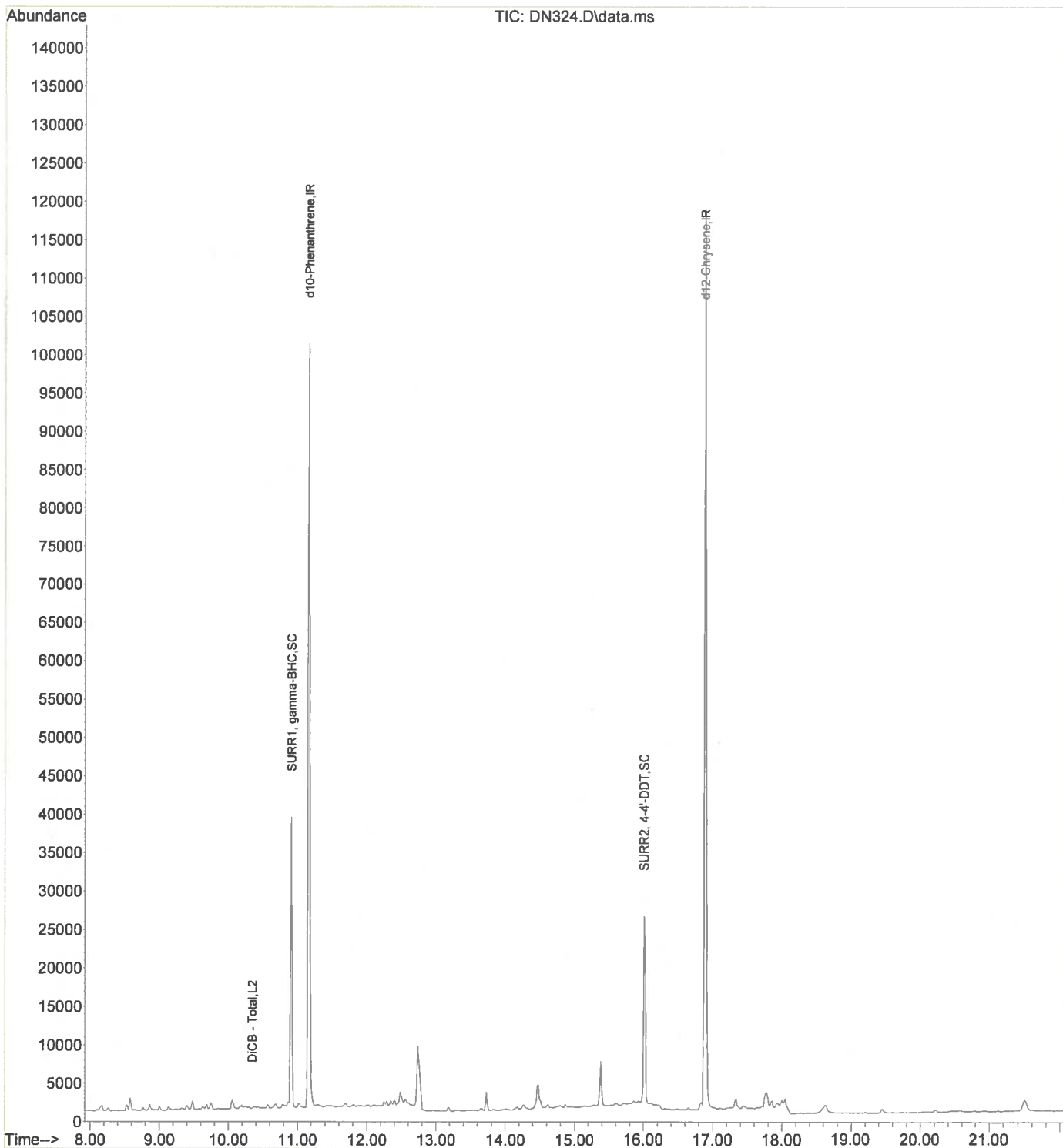
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.167	188	125792	0.75	ppm	0.00
2) d12-Chrysene	16.883	240	169724	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.913	219	14282	0.58	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	58.00%#	
13) SURR2, 4-4'-DDT	16.008	235	21719	0.50	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	50.00%#	
Target Compounds						
38) DiCB - Total	10.345	222	1301m	0.010	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN324.D
 Acq On : 27 Apr 2018 2:30 am
 Operator : J.Misiurewicz
 Sample : R1803542-008
 Misc : 312299 680 PCB
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Apr 27 13:50:48 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN325.D
 Acq On : 27 Apr 2018 2:58 am
 Operator : J.Misiurewicz
 Sample : R1803542-009
 Misc : 312299 680 PCB
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 27 13:50:56 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

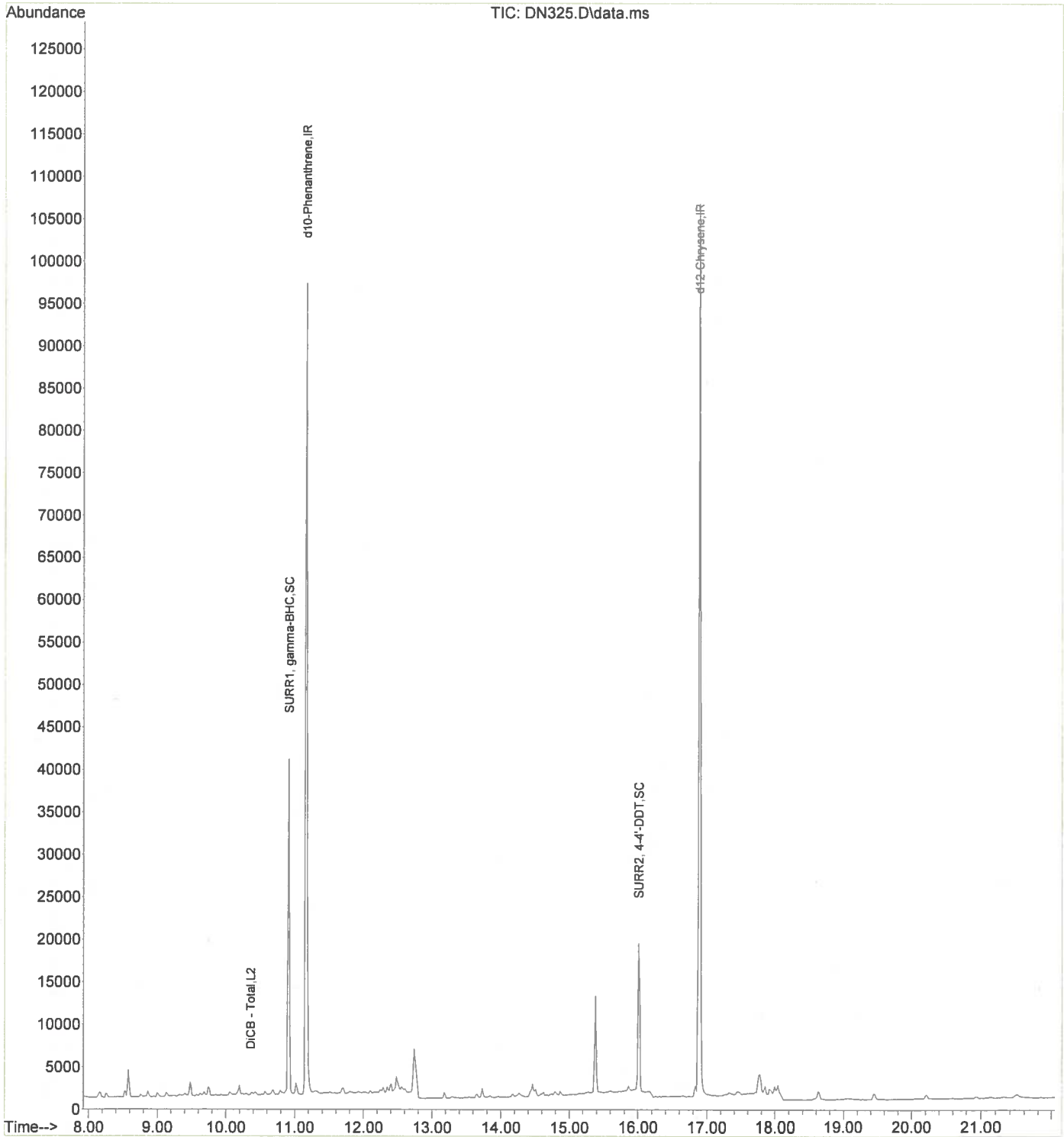
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.167	188	118946	0.75	ppm	0.00
2) d12-Chrysene	16.883	240	157413	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.913	219	13774	0.61	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	61.00%#	
13) SURR2, 4-4'-DDT	16.008	235	14832	0.38	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	38.00%#	
Target Compounds						
38) DiCB - Total	10.360	222	1021m	0.009	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN325.D
Acq On : 27 Apr 2018 2:58 am
Operator : J.Misiurewicz
Sample : R1803542-009
Misc : 312299 680 PCB
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Apr 27 13:50:56 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN326.D
 Acq On : 27 Apr 2018 3:27 am
 Operator : J.Misiurewicz
 Sample : R1803542-010
 Misc : 312299 680 PCB
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 27 13:51:06 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

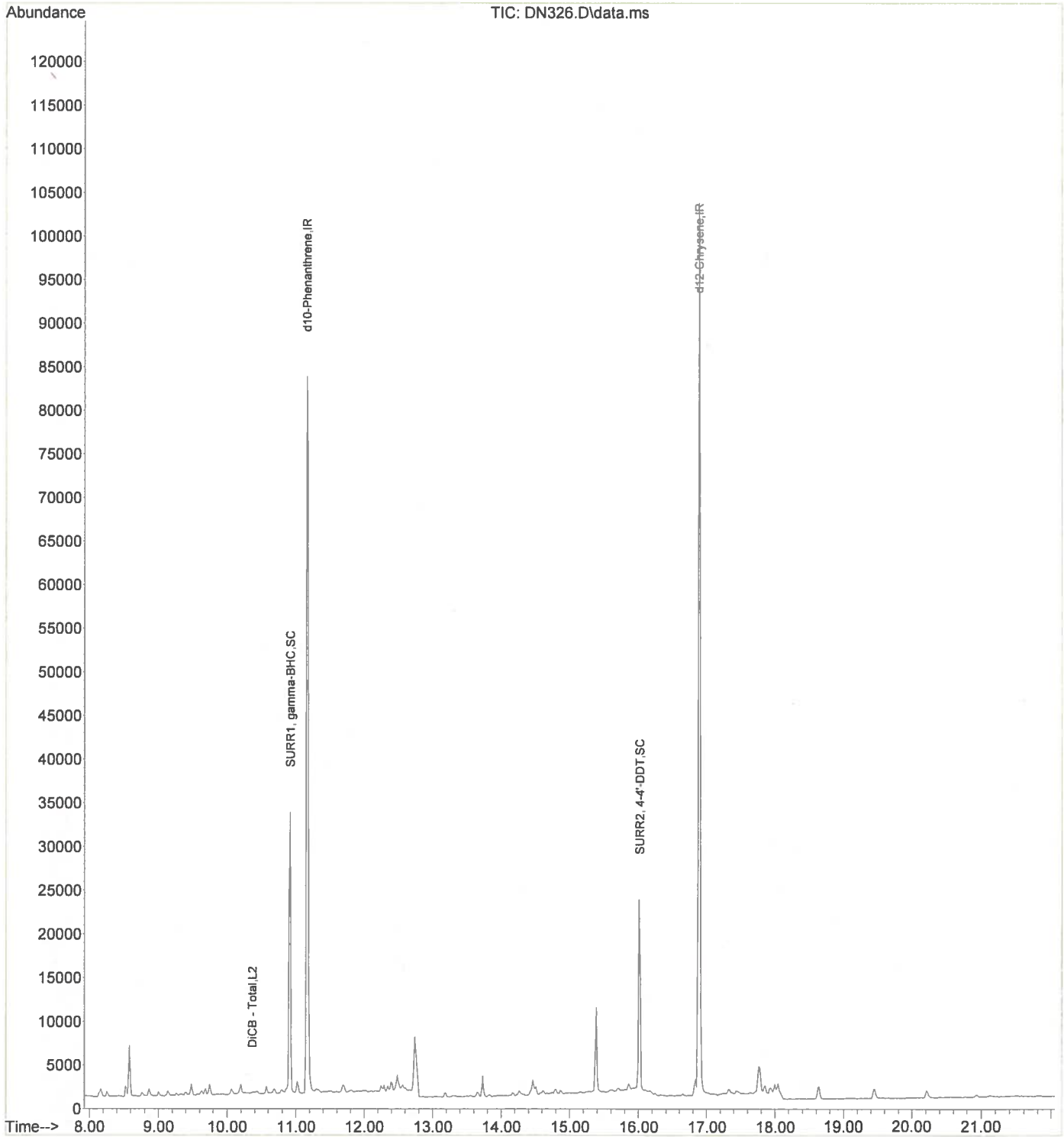
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue

Internal Standards							
1) d10-Phenanthrene	11.155	188	115469	0.75	ppm	-0.01	
2) d12-Chrysene	16.883	240	156531	0.75	ppm	-0.02	
System Monitoring Compounds							
5) SURR1, gamma-BHC	10.916	219	13098	0.58	ppm	0.00	
Spiked Amount	1.000	Range 63 - 119	Recovery	=	58.00%#		
13) SURR2, 4-4'-DDT	16.008	235	18646	0.47	ppm	0.00	
Spiked Amount	1.000	Range 62 - 181	Recovery	=	47.00%#		
Target Compounds							
38) DiCB - Total	10.363	222	456m	0.004	ppm		

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN326.D
Acq On : 27 Apr 2018 3:27 am
Operator : J.Misiurewicz
Sample : R1803542-010
Misc : 312299 680 PCB
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Apr 27 13:51:06 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN327.D
 Acq On : 27 Apr 2018 3:56 am
 Operator : J.Misiurewicz
 Sample : R1803542-011
 Misc : 312299 680 PCB
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 27 13:51:15 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

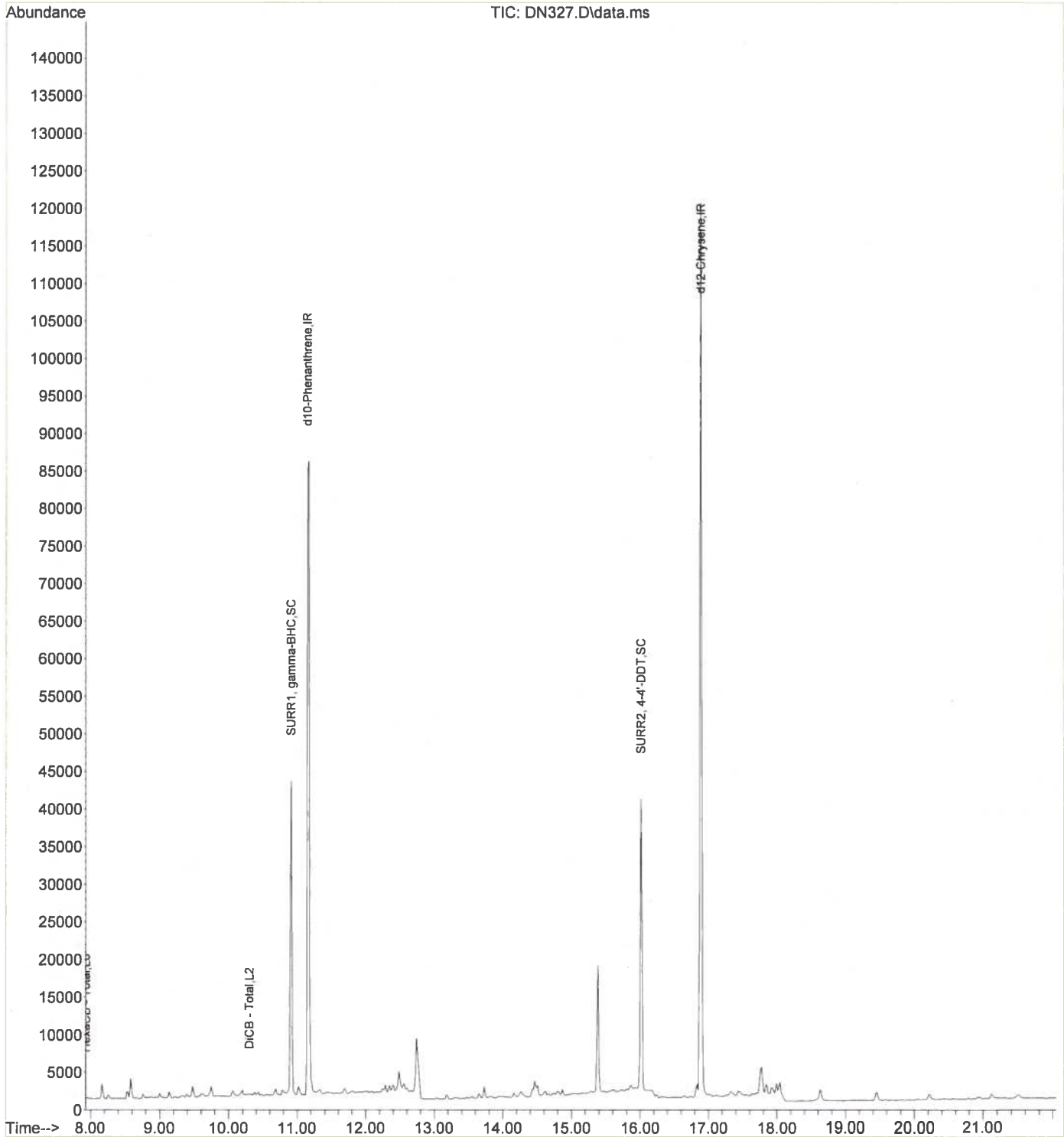
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue

Internal Standards							
1) dl0-Phenanthrene	11.153	188	122554	0.75	ppm	-0.02	
2) dl2-Chrysene	16.883	240	167542	0.75	ppm	-0.02	
System Monitoring Compounds							
5) SURR1, gamma-BHC	10.914	219	15465	0.64	ppm	0.00	
Spiked Amount	1.000	Range 63 - 119	Recovery	=	64.00%		
13) SURR2, 4-4'-DDT	16.009	235	30106	0.66	ppm	0.00	
Spiked Amount	1.000	Range 62 - 181	Recovery	=	66.00%		
Target Compounds							
38) DiCB - Total	10.301	222	1184m	0.009	ppm		
100) HexaCB - Total	0.000	360	112m	0.003	ppm		

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN327.D
Acq On : 27 Apr 2018 3:56 am
Operator : J.Misiurewicz
Sample : R1803542-011
Misc : 312299 680 PCB
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Apr 27 13:51:15 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN328.D
 Acq On : 27 Apr 2018 4:25 am
 Operator : J.Misiurewicz
 Sample : R1803542-012
 Misc : 312299 680 PCB
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Apr 27 13:51:23 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

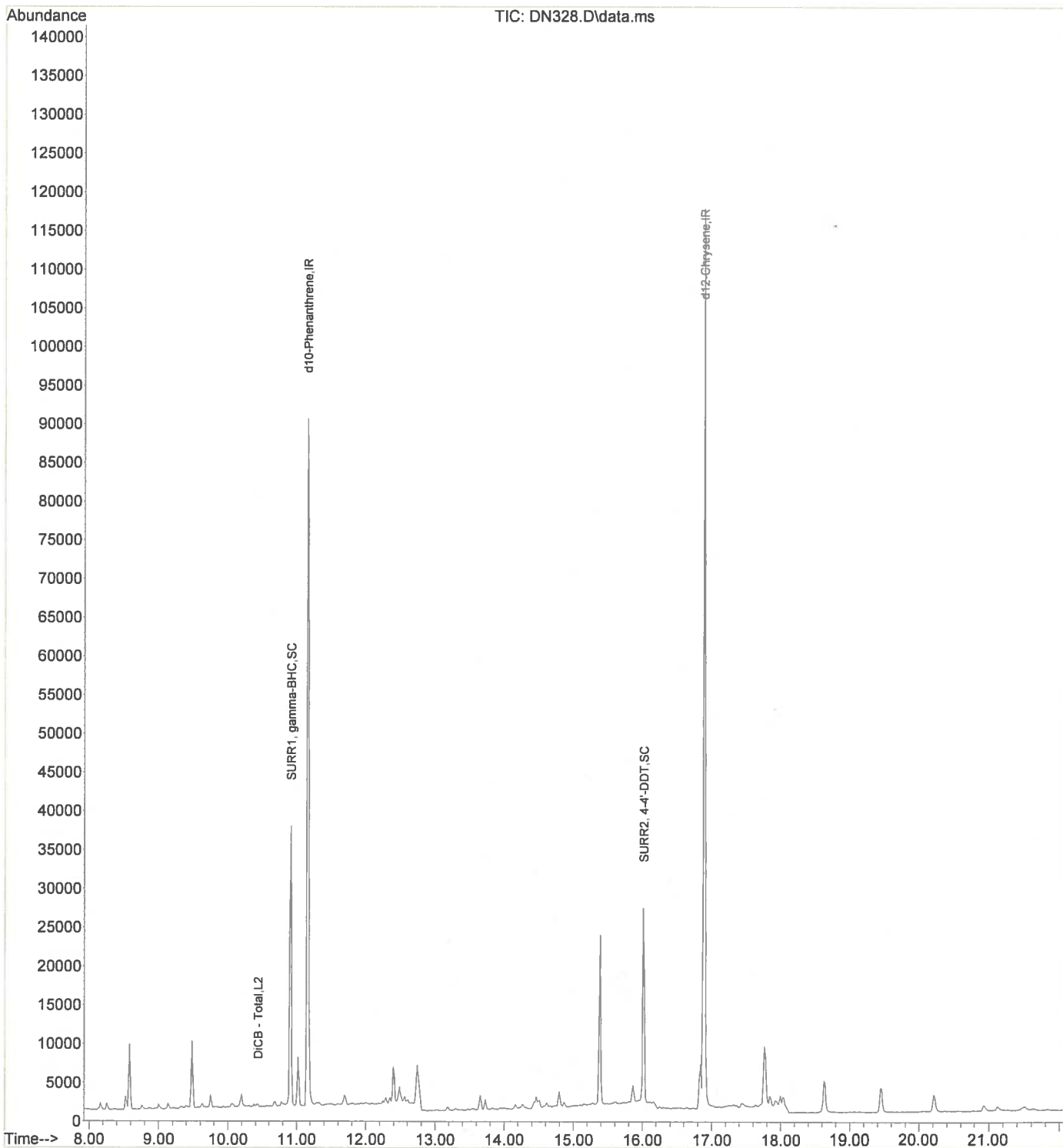
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.155	188	119491	0.75	ppm	-0.01
2) d12-Chrysene	16.884	240	157427	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.916	219	14331	0.63	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	63.00%	
13) SURR2, 4-4'-DDT	16.009	235	20819	0.51	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	51.00%#	
Target Compounds						
38) DiCB - Total	10.438	222	953m	0.008	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN328.D
Acq On : 27 Apr 2018 4:25 am
Operator : J.Misiurewicz
Sample : R1803542-012
Misc : 312299 680 PCB
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Apr 27 13:51:23 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

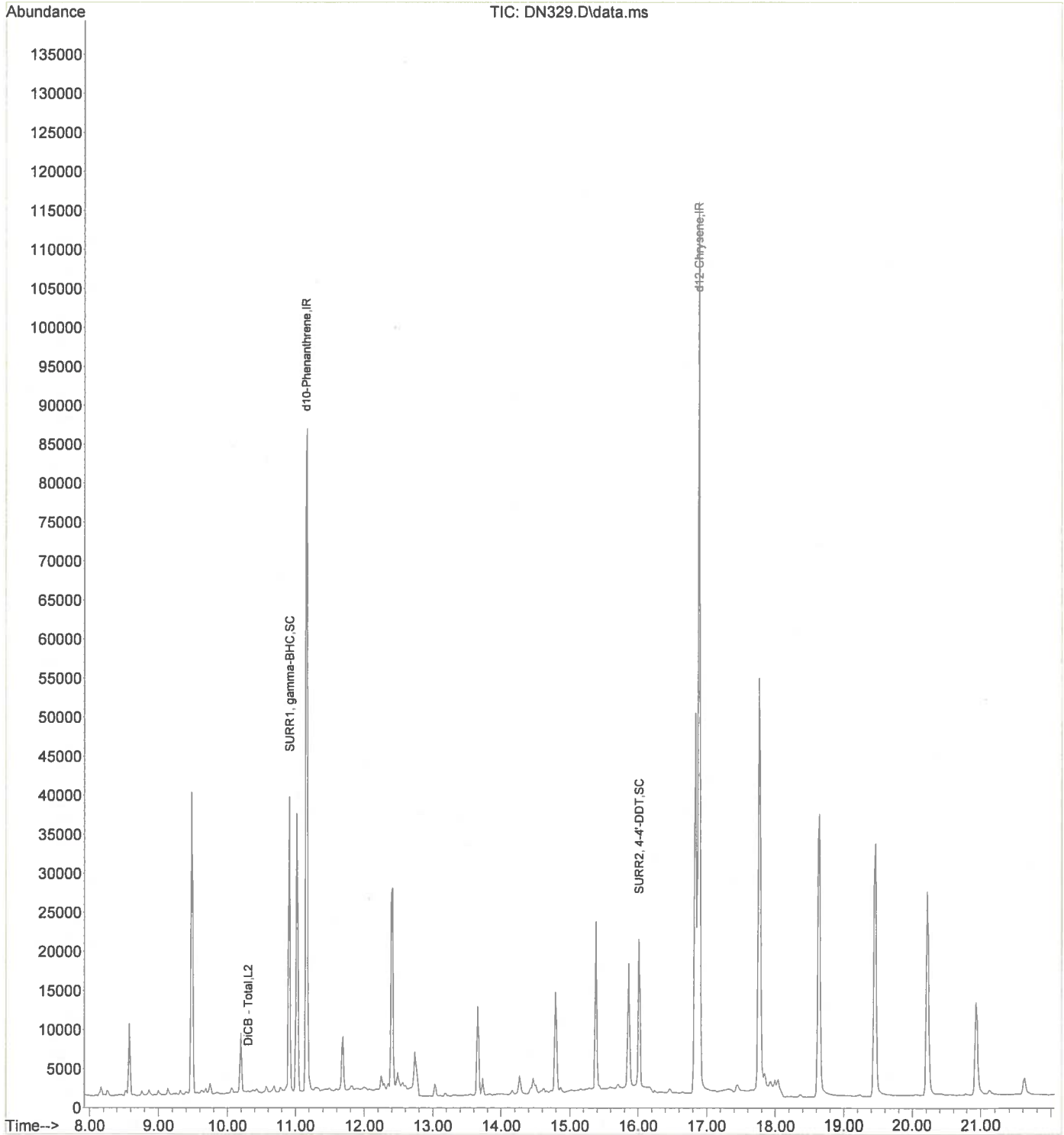
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.153	188	120467	0.75	ppm	-0.02
2) d12-Chrysene	16.883	240	157253	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	14283	0.63	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	63.00%	
13) SURR2, 4-4'-DDT	16.009	235	15758	0.41	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	41.00%#	
Target Compounds						
38) DiCB - Total	10.301	222	1154m	0.010	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN329.D
Acq On : 27 Apr 2018 4:53 am
Operator : J.Misiurewicz
Sample : R1803542-013
Misc : 312299 680 PCB
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN330.D
 Acq On : 27 Apr 2018 5:22 am
 Operator : J.Misiurewicz
 Sample : R1803542-014
 Misc : 312299 680 PCB
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Apr 27 13:51:39 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

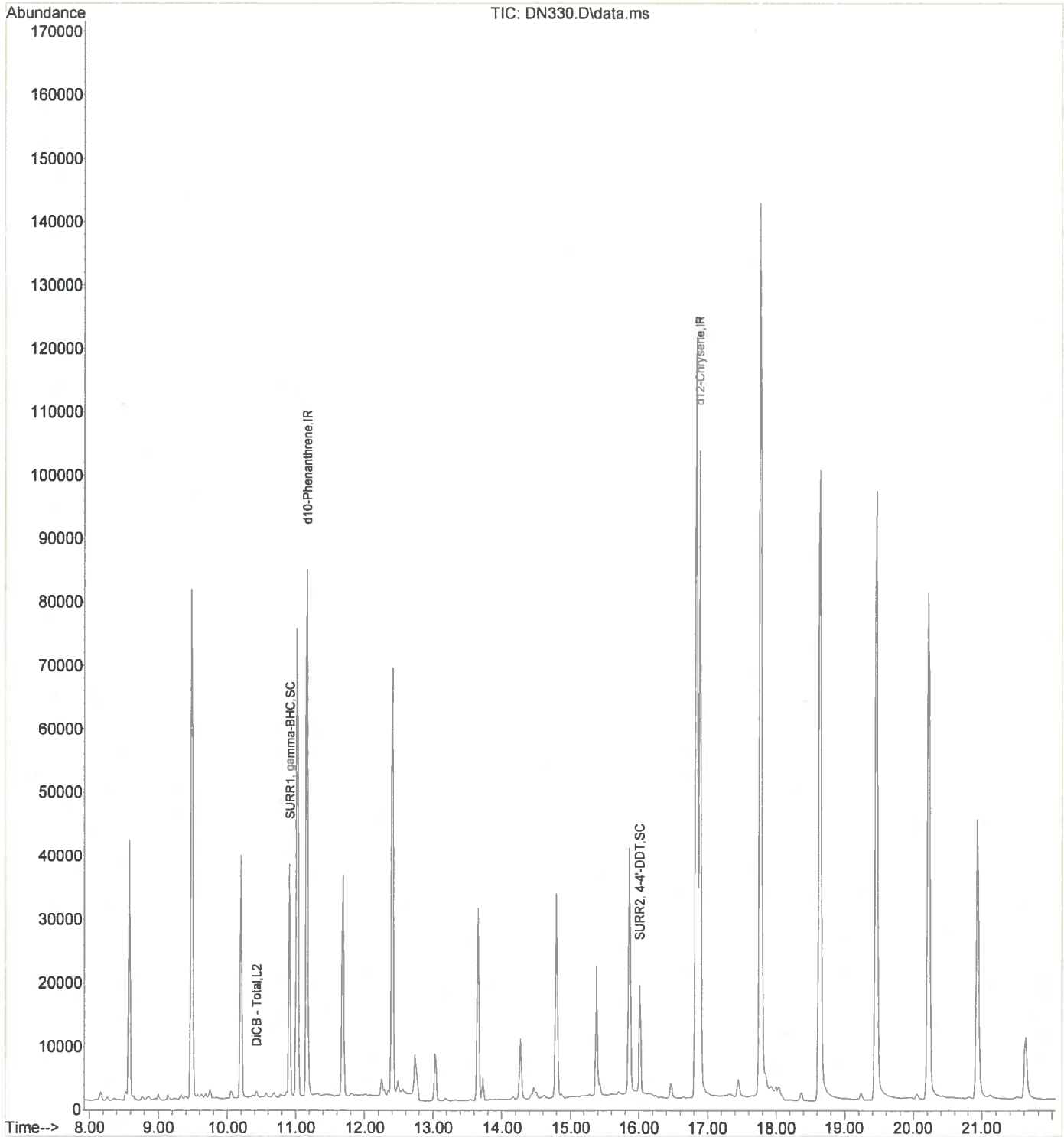
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.168	188	110226	0.75	ppm	0.00
2) d12-Chrysene	16.883	240	138645	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	13920	0.70	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	70.00%	
13) SURR2, 4-4'-DDT	16.008	235	14745	0.43	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	43.00%#	
Target Compounds						
38) DiCB - Total	10.420	222	878m	0.008	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\DATA\042618\
Data File : DN330.D
Acq On : 27 Apr 2018 5:22 am
Operator : J.Misiurewicz
Sample : R1803542-014
Misc : 312299 680 PCB
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Apr 27 13:51:39 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\DATA\042618\
 Data File : DN331.D
 Acq On : 27 Apr 2018 5:51 am
 Operator : J.Misiurewicz
 Sample : R1803542-015
 Misc : 312299 680 PCB
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: Apr 27 13:51:46 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

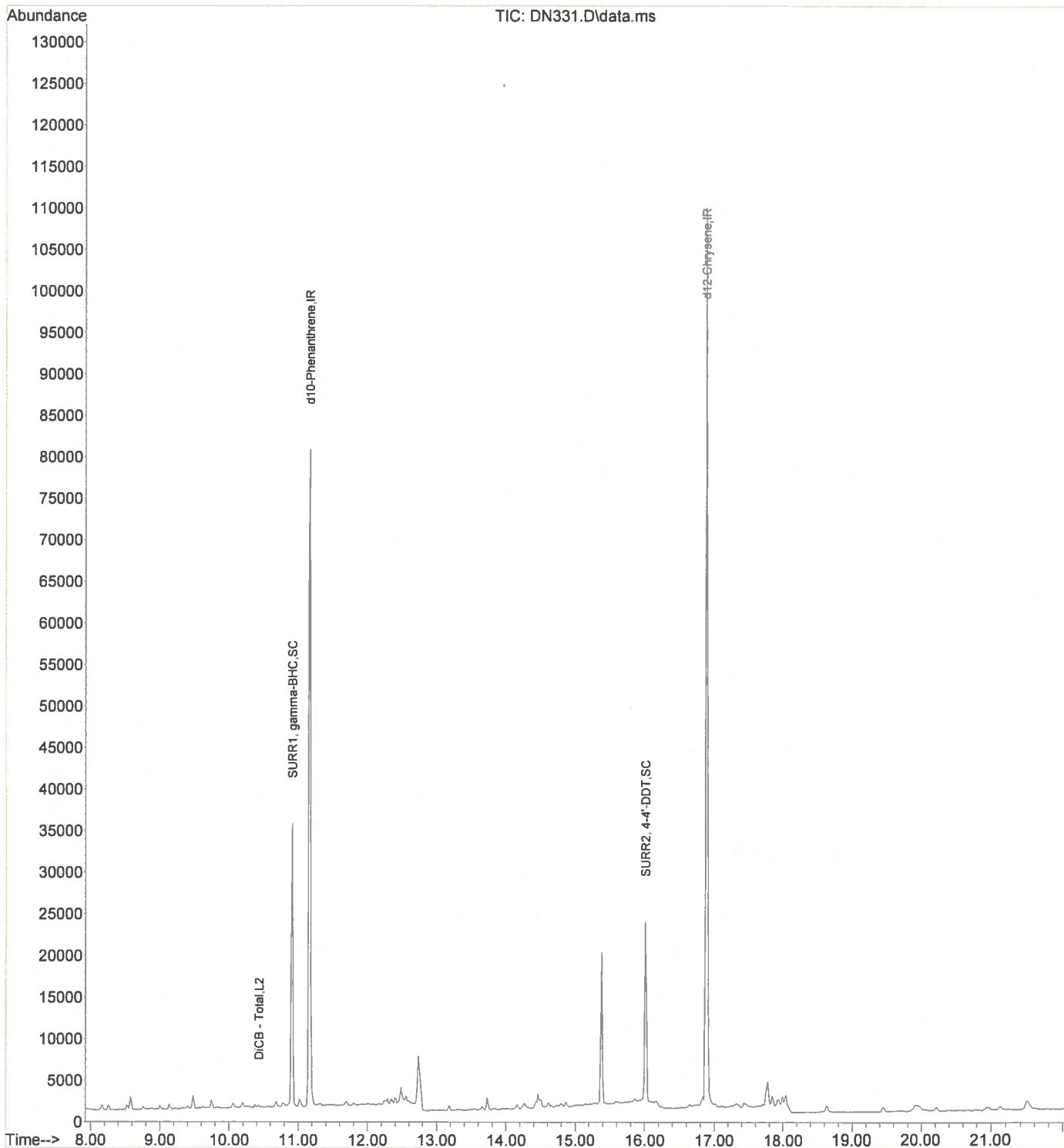
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) d10-Phenanthrene	11.168	188	108962	0.75	ppm	0.00
2) d12-Chrysene	16.882	240	152845	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	12938	0.59	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	59.00%#	
13) SURR2, 4-4'-DDT	16.010	235	17808	0.46	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	46.00%#	
Target Compounds						
38) DiCB - Total	10.436	222	822m	0.007	ppm	Qvalue

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

Data Path : I:\ACQDATA\5973B\DATA\042618\
Data File : DN331.D
Acq On : 27 Apr 2018 5:51 am
Operator : J.Misiurewicz
Sample : R1803542-015
Misc : 312299 680 PCB
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Apr 27 13:51:46 2018
Quant Method : I:\ACQDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



ALS-Rochester

Chromatograms Reviewed by ALS Analyst

(R1803542-006 and R1703542-013)

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\043018\
Data File : DN362.D
Acq On : 30 Apr 2018 11:35 am
Operator : J.Misiurewicz
Sample : R1803542-006
Misc : 312299 680 PCB
ALS Vial : 10 Sample Multiplier: 1

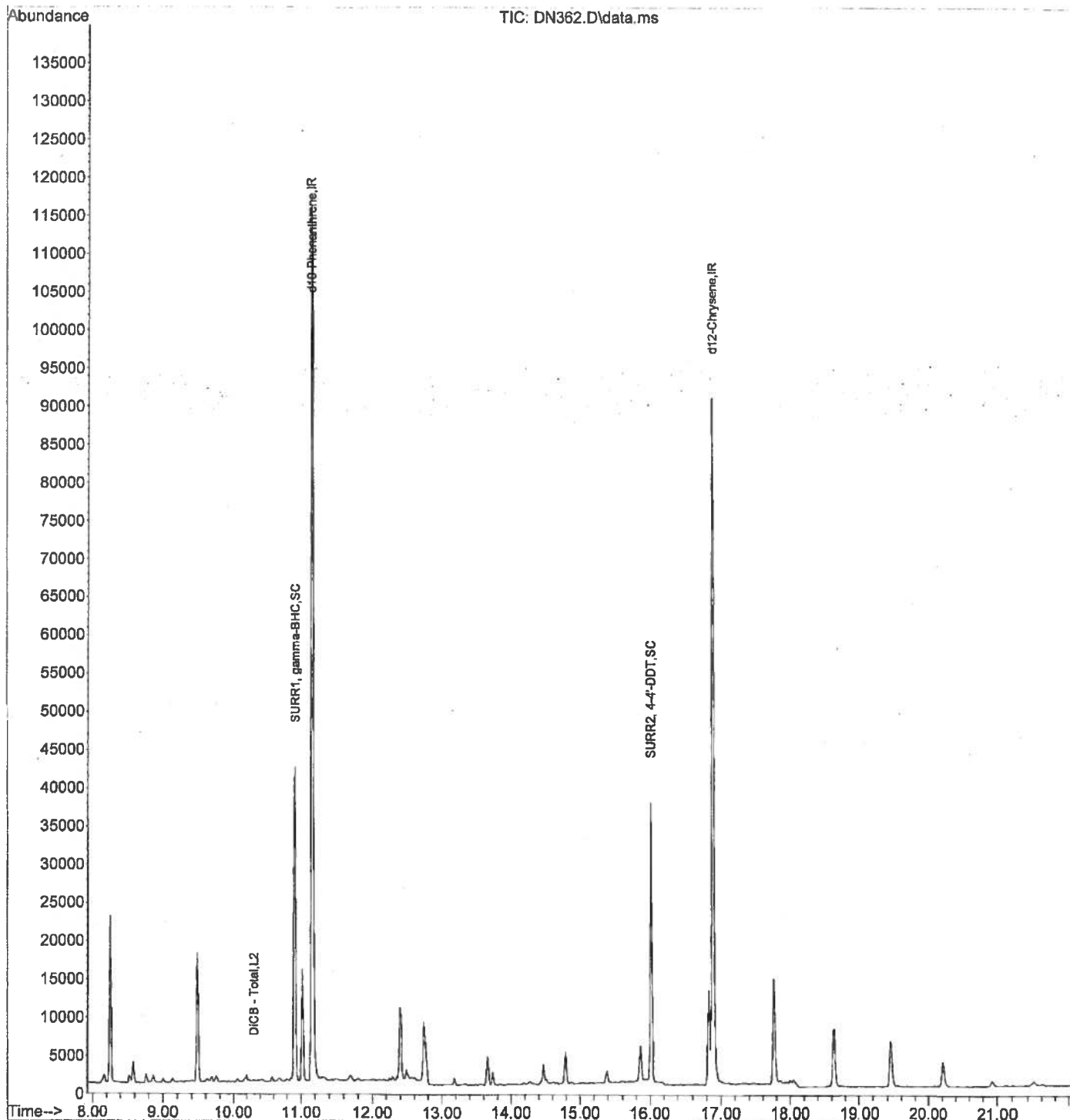
Quant Time: Apr 30 12:27:36 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d10-Phenanthrene	11.153	188	168078	0.75	ppm	-0.02
2) d12-Chrysene	16.882	240	152885	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	16945	0.77	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	77.00%	
13) SURR2, 4-4'-DDT	16.009	235	27060	0.66	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	66.00%	
Target Compounds						
38) DiCB - Total	10.301	222	865m	0.007	ppm	Qvalue

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

Data Path : I:\ACQDATA\5973B\OLDDATA\2018\043018\
Data File : DN362.D
Acq On : 30 Apr 2018 11:35 am
Operator : J.Misiurewicz
Sample : R1803542-006
Misc : 312299 680 PCB
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
Quant Method : I:\ACQDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\043018\
 Data File : DN362.D
 Acq On : 30 Apr 2018 11:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-006
 Misc : 312299 680 PCB
 ALS Vial : 10 Sample Multiplier: 1

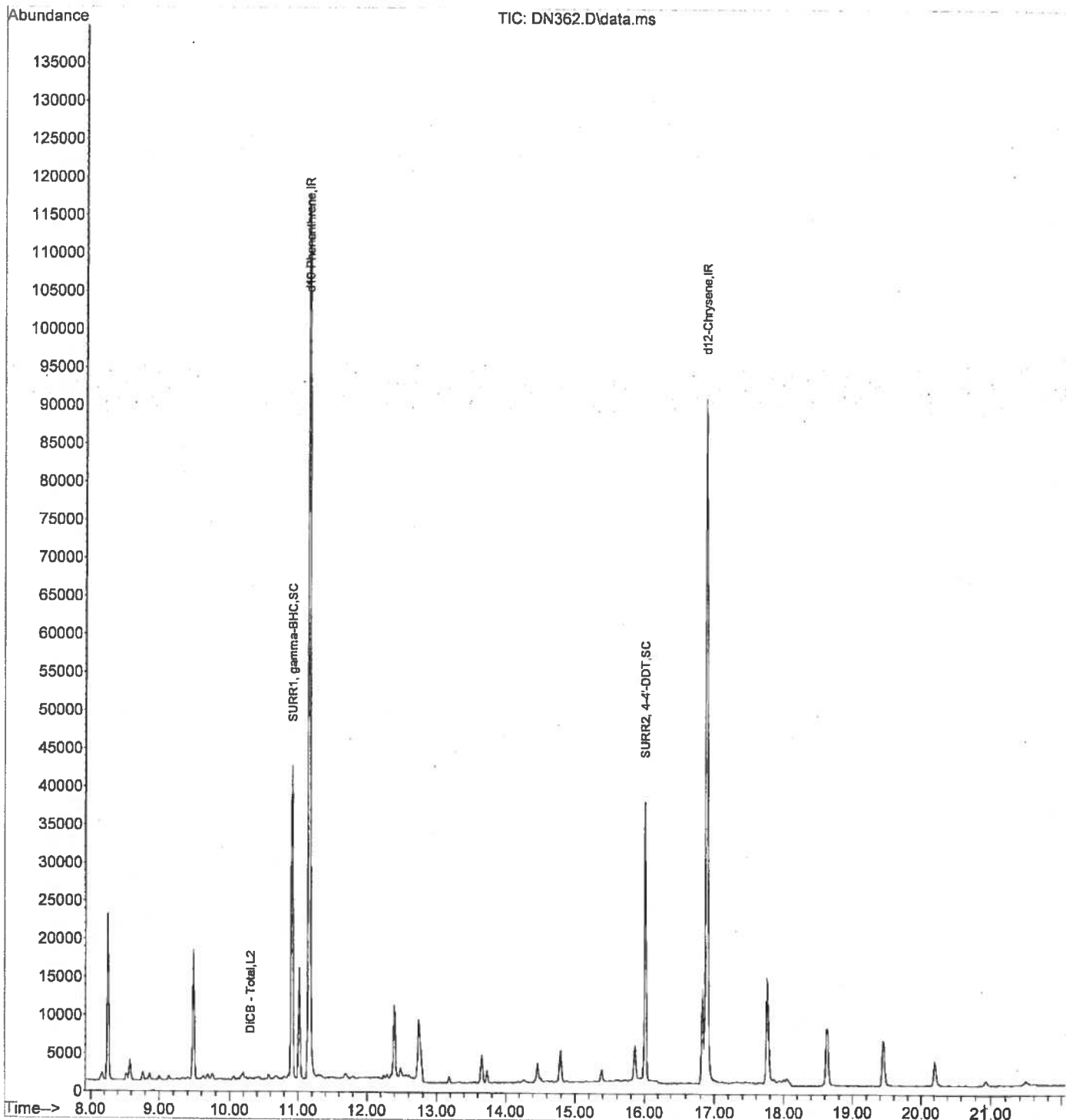
Quant Time: Apr 30 12:27:36 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) dl0-Phenanthrene	11.153	188	168078	0.75	ppm	-0.02
2) dl2-Chrysene	16.882	240	152885	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	16945	0.77	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	77.00%	
13) SURR2, 4-4'-DDT	16.009	235	27060	0.66	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	66.00%	
Target Compounds						
38) DiCB - Total	10.301	222	1088m	0.009	ppm	Qvalue

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

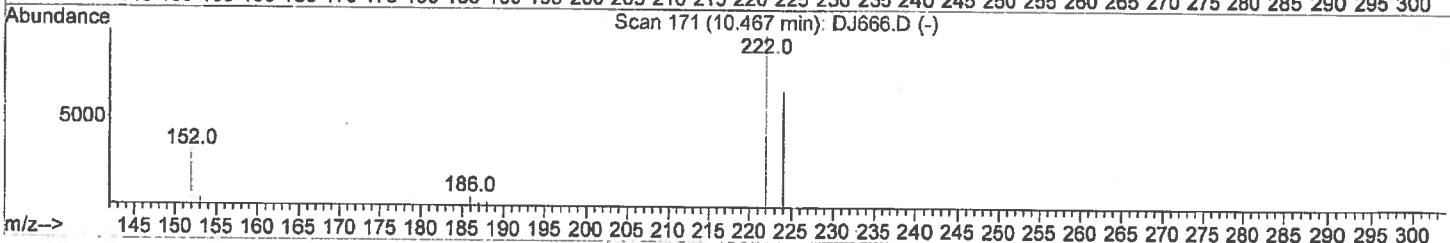
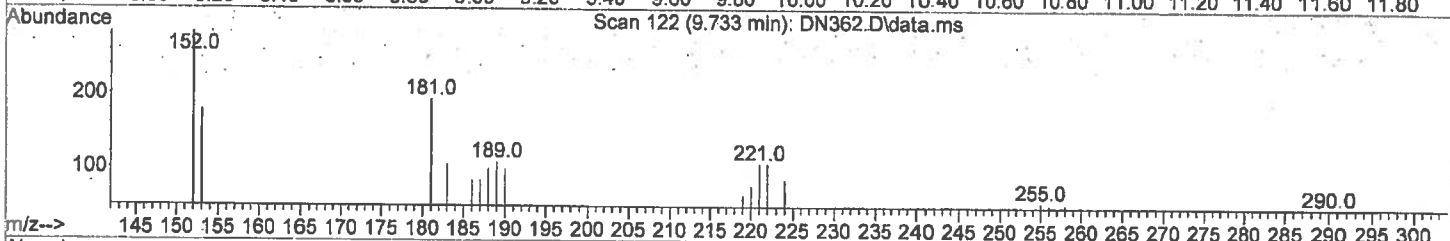
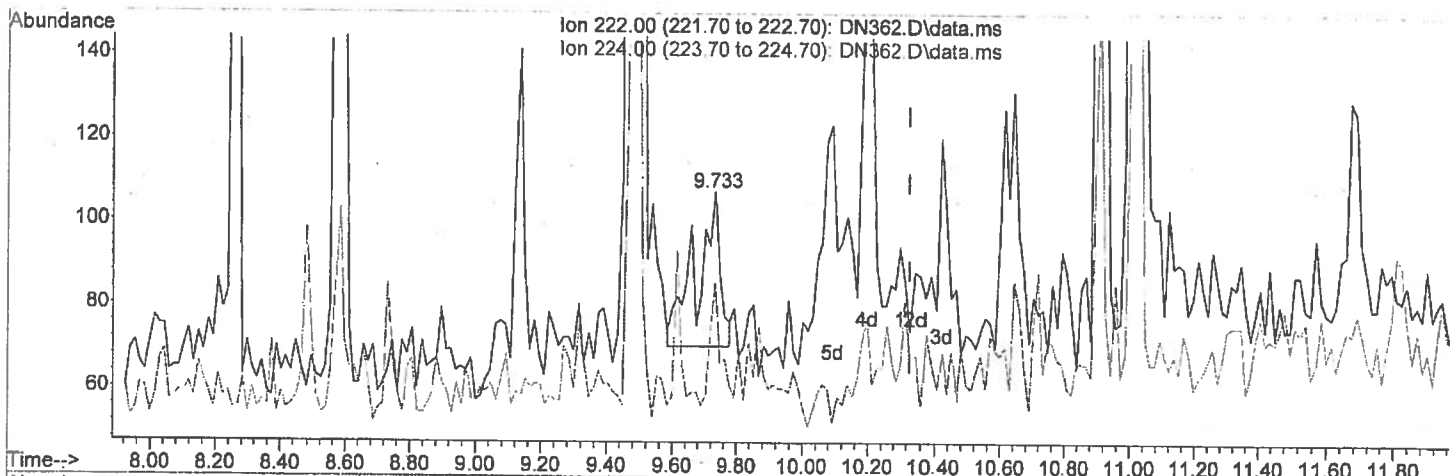
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Data File : DN362.D
Acq On : 30 Apr 2018 11:35 am
Operator : J.Misiurewicz
Sample : R1803542-006
Misc : 312299 680 PCB
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\043018\
 Data File : DN362.D
 Acq On : 30 Apr 2018 11:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-006
 Misc : 312299 680 PCB
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



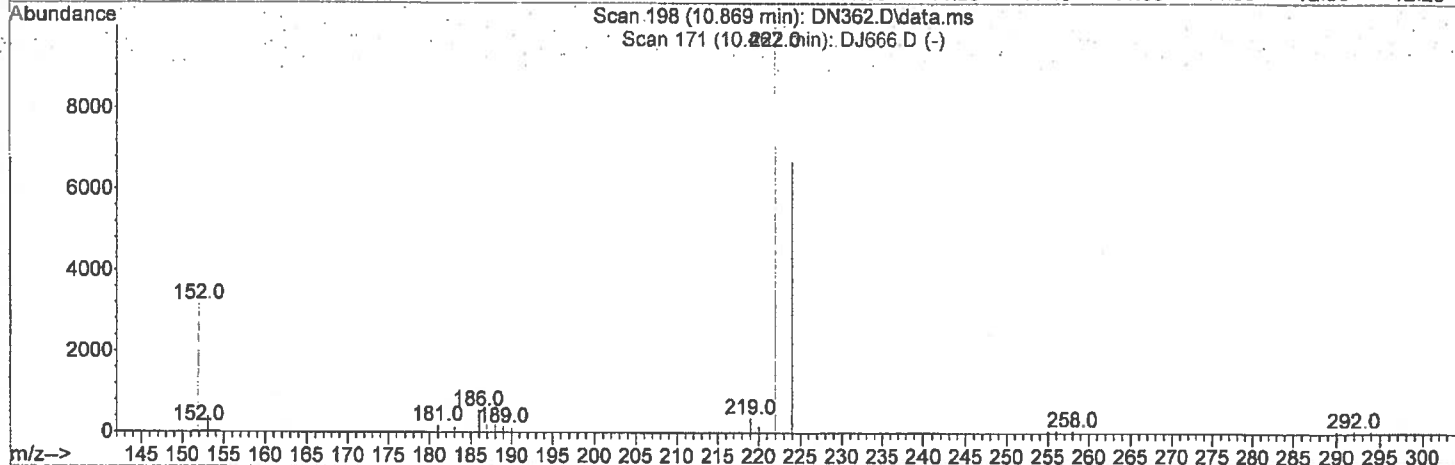
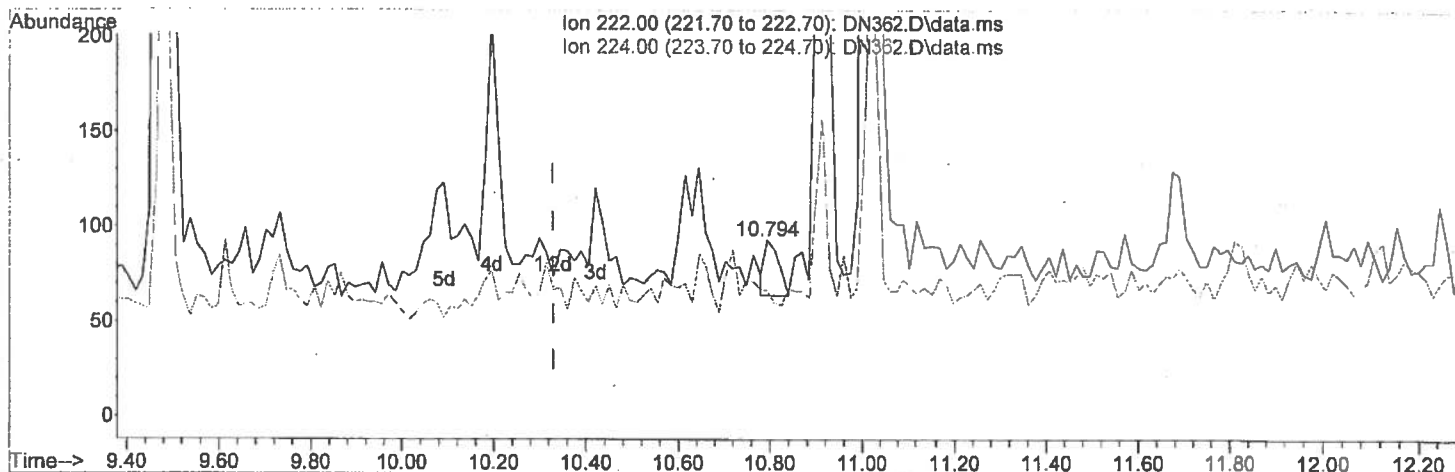
TIC: DN362.D\data.ms

(33) CL2 - #6 (L2)		
9.733min (-0.597) 0.00 ppm m		
response	190	
Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	79.44
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQDATA\5973B\OLDDATA\2018\043018\
Data File : DN362.D
Acq On : 30 Apr 2018 11:35 am
Operator : J.Misiurewicz
Sample : R1803542-006
Misc : 312299 680 PCB
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
Quant Method : I:\ACQDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



TIC: DN362.D\data.ms

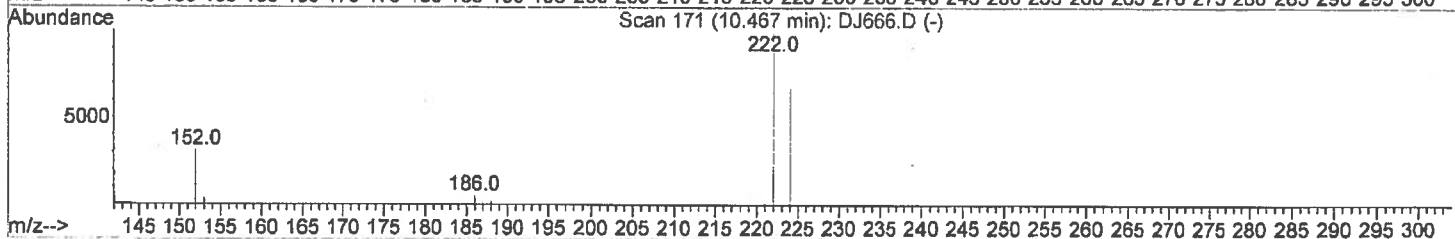
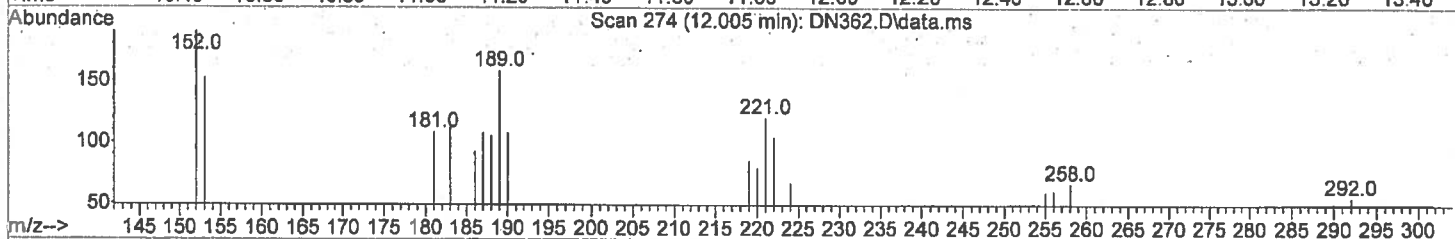
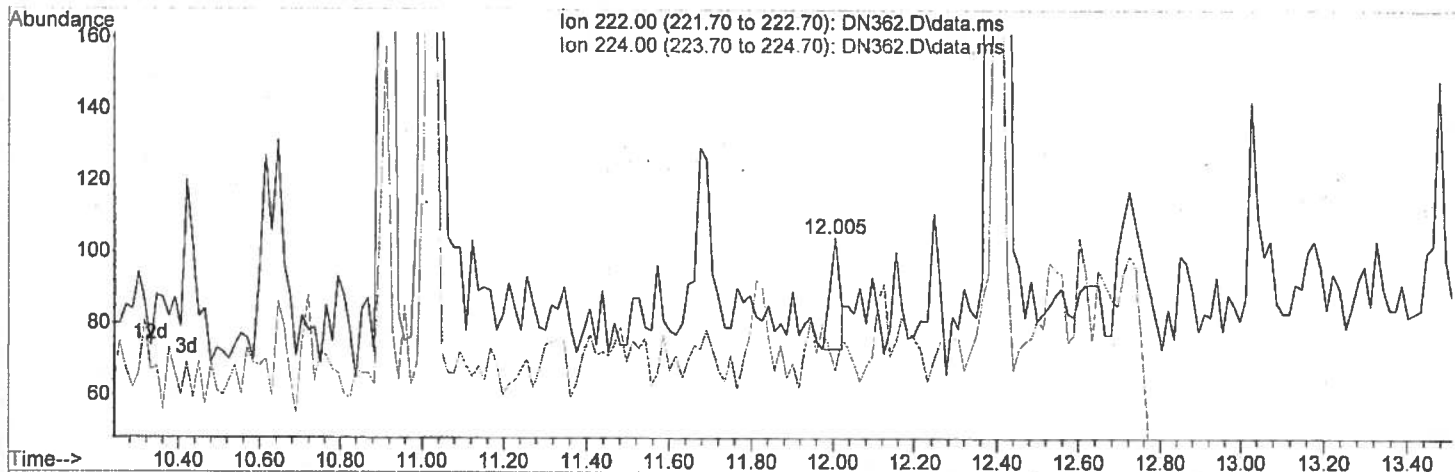
Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	70.97
0.00	0.00	0.00
0.00	0.00	0.00

(34) CL2 - #7 (L2)
10.794min (+ 0.464) 0.00 ppm m
response 61

Manual Integration:
After
Other -
01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\043018\
 Data File : DN362.D
 Acq On : 30 Apr 2018 11:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-006
 Misc : 312299 680 PCB
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



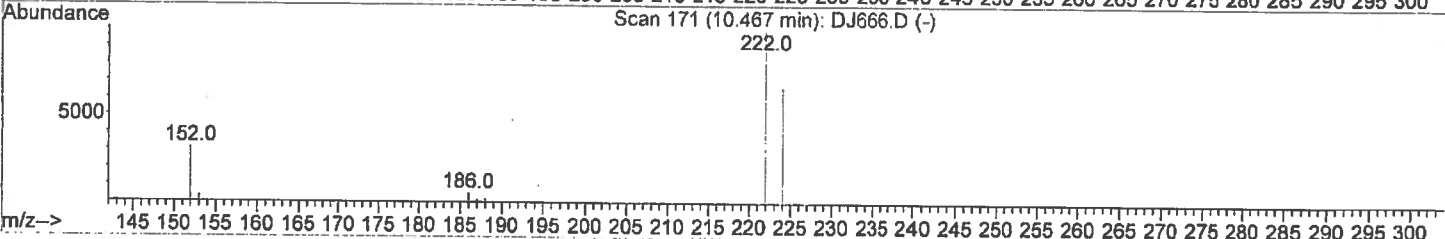
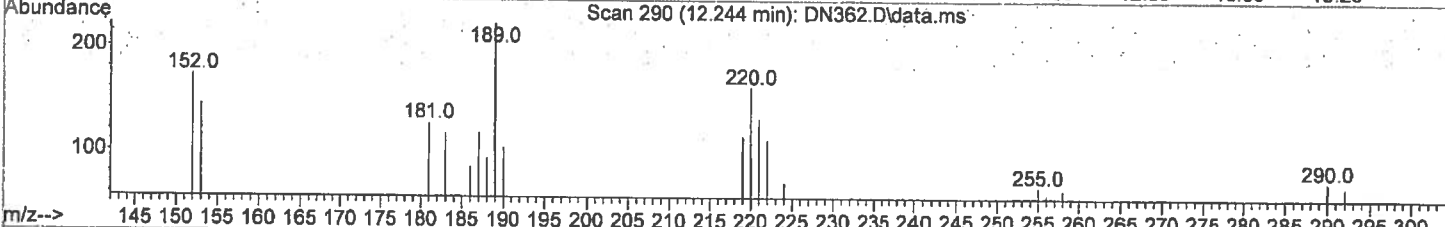
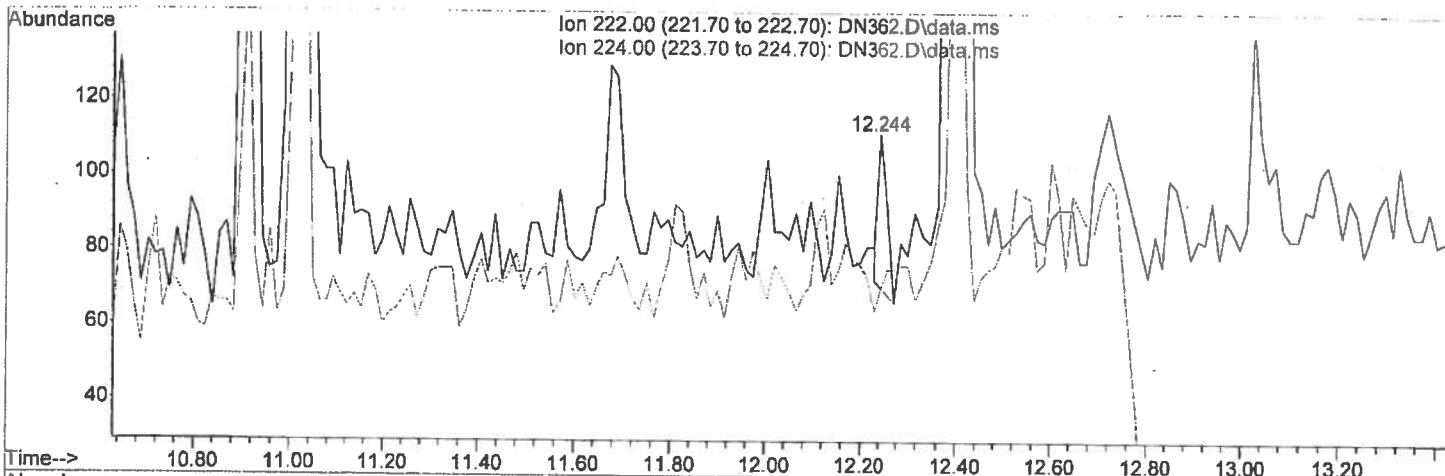
TIC: DN362.D\data.ms

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	64.42
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\043018\
 Data File : DN362.D
 Acq On : 30 Apr 2018 11:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-006
 Misc : 312299 680 PCB
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



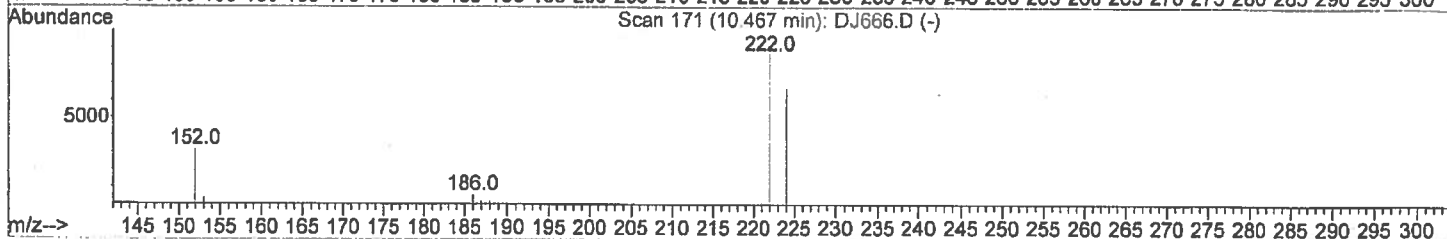
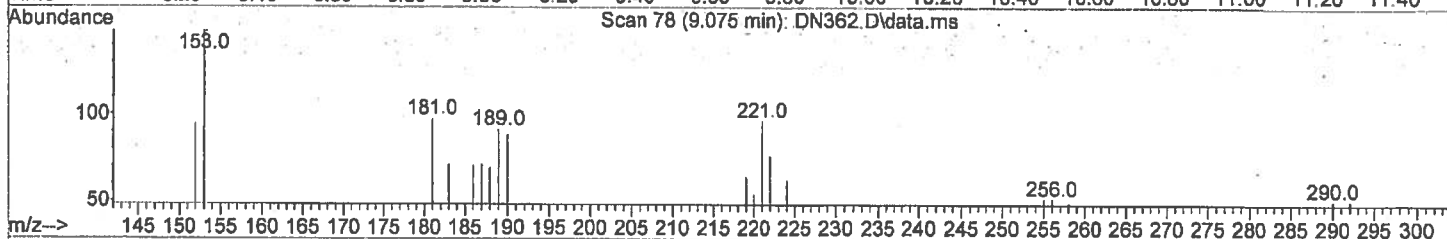
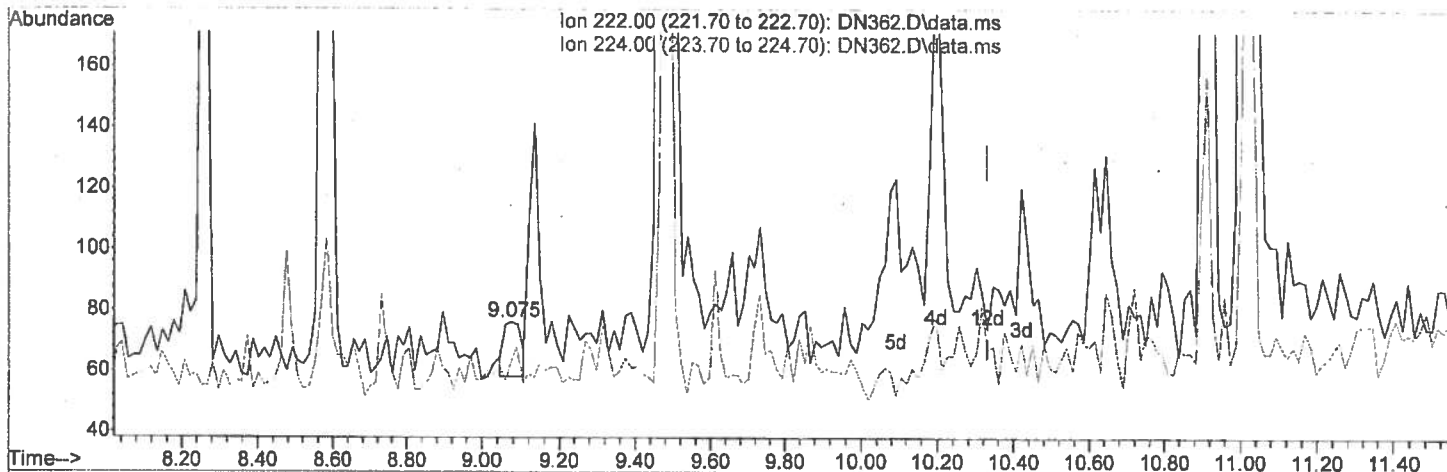
TIC: DN362.D\data.ms

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	63.06
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\043018\
 Data File : DN362.D
 Acq On : 30 Apr 2018 11:35 am
 Operator : J.Misiurewicz
 Sample : R1803542-006
 Misc : 312299 680 PCB
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Apr 30 12:27:36 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



TIC: DN362.D\data.ms

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	81.58
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

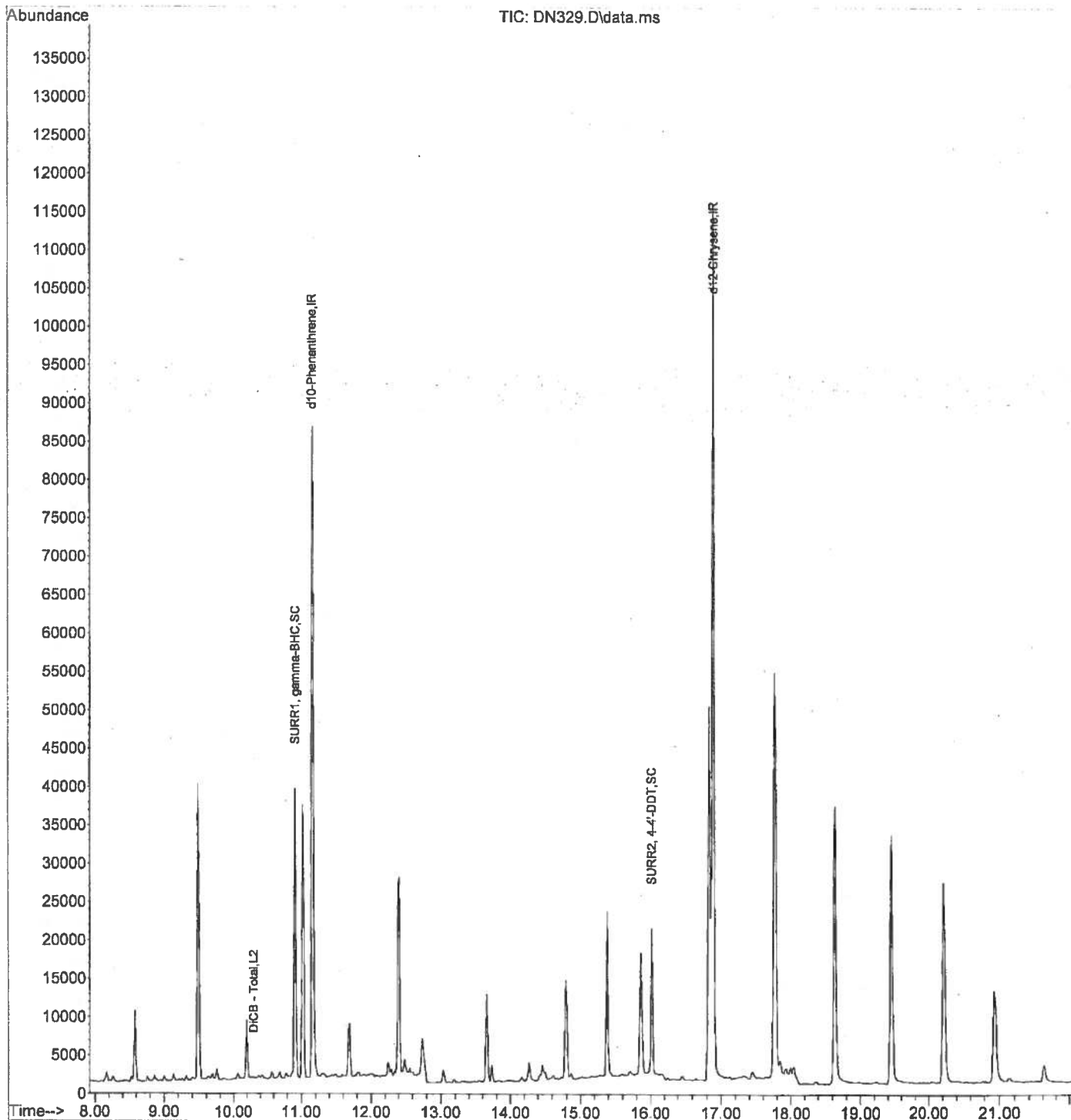
Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) dl0-Phenanthrene	11.153	188	120467	0.75	ppm	-0.02
2) dl2-Chrysene	16.883	240	157253	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	14283	0.63	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	63.00%	
13) SURR2, 4-4'-DDT	16.009	235	15758	0.41	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	41.00%#	
Target Compounds						
38) DiCB - Total	10.301	222	1403m	0.012	ppm	Qvalue

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

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
Data File : DN329.D
Acq On : 27 Apr 2018 4:53 am
Operator : J.Misiurewicz
Sample : R1803542-013
Misc : 312299 680 PCB
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

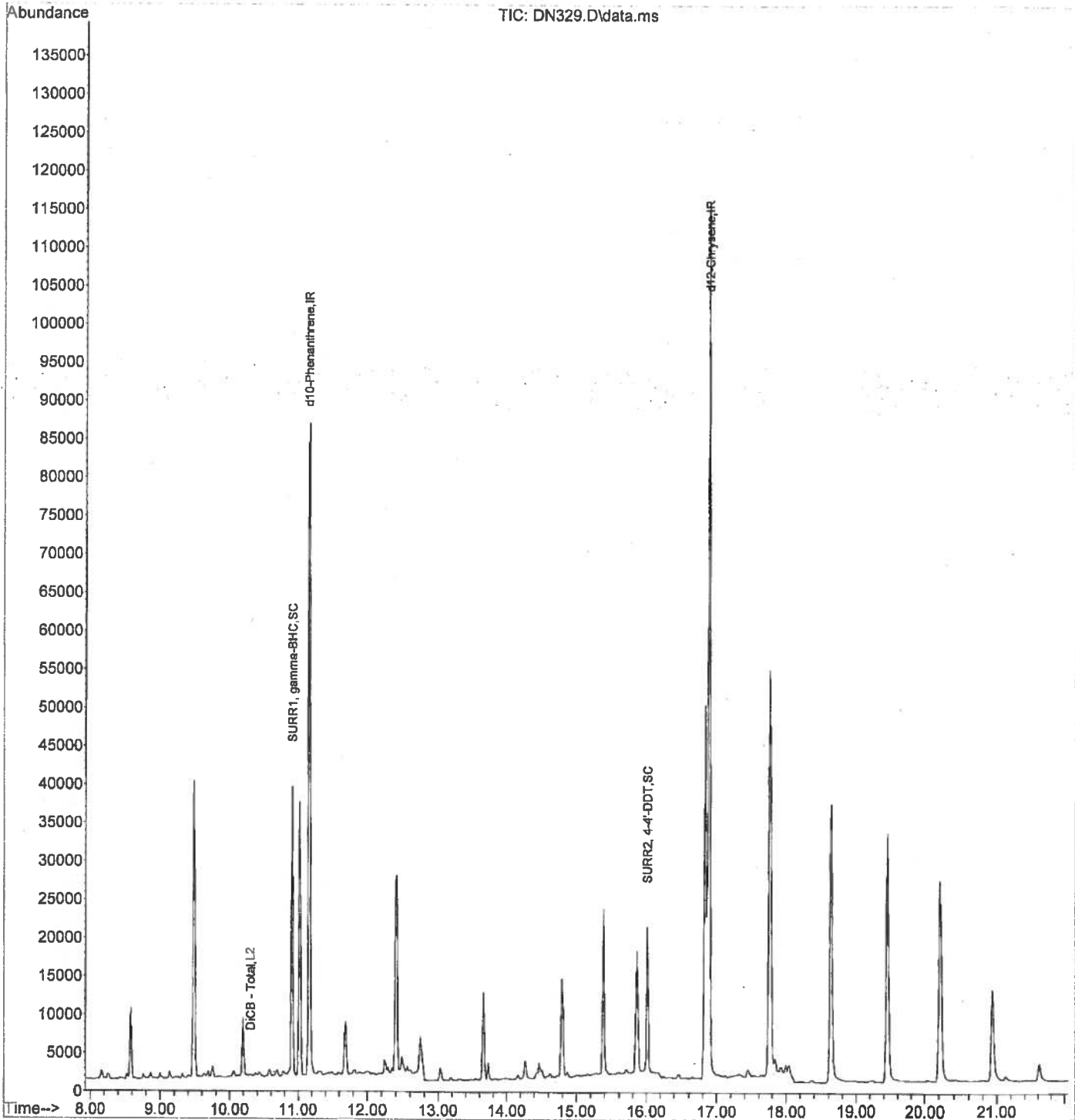
Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) d10-Phenanthrene	11.153	188	120467	0.75	ppm	-0.02
2) d12-Chrysene	16.883	240	157253	0.75	ppm	-0.02
System Monitoring Compounds						
5) SURR1, gamma-BHC	10.914	219	14283	0.63	ppm	0.00
Spiked Amount	1.000	Range 63 - 119	Recovery	=	63.00%	
13) SURR2, 4-4'-DDT	16.009	235	15758	0.41	ppm	0.00
Spiked Amount	1.000	Range 62 - 181	Recovery	=	41.00%#	
Target Compounds						
38) DiCB - Total	10.301	222	1589m	0.013	ppm	Qvalue

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

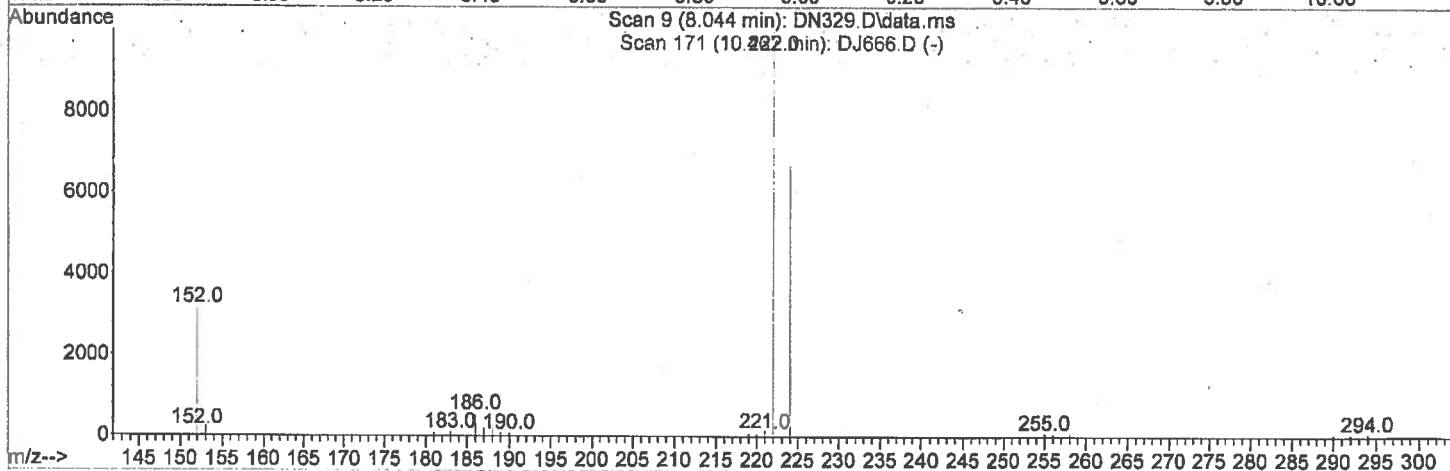
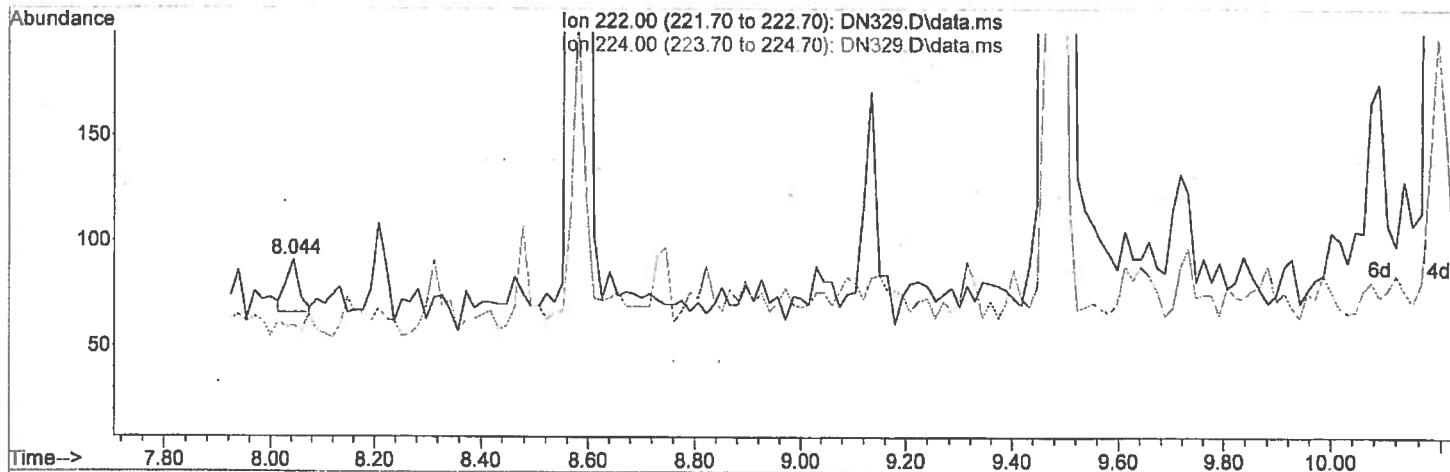
Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
Data File : DN329.D
Acq On : 27 Apr 2018 4:53 am
Operator : J.Misiurewicz
Sample : R1803542-013
Misc : 312299 680 PCB
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



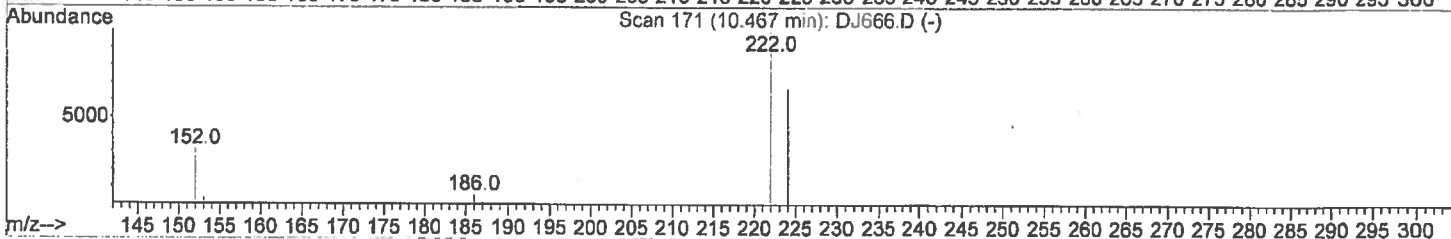
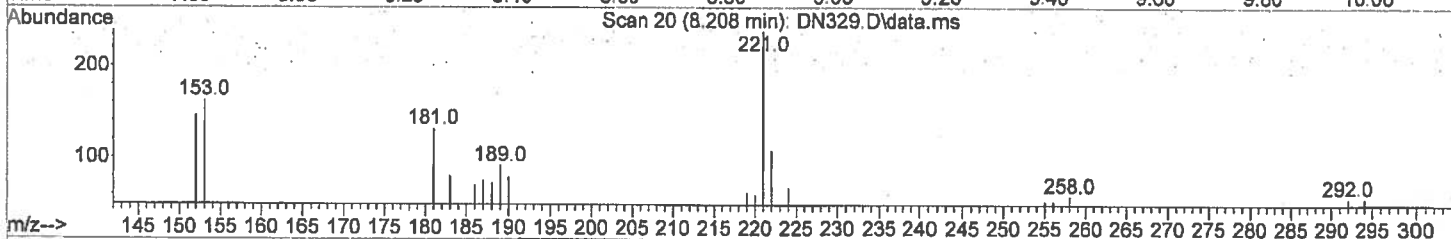
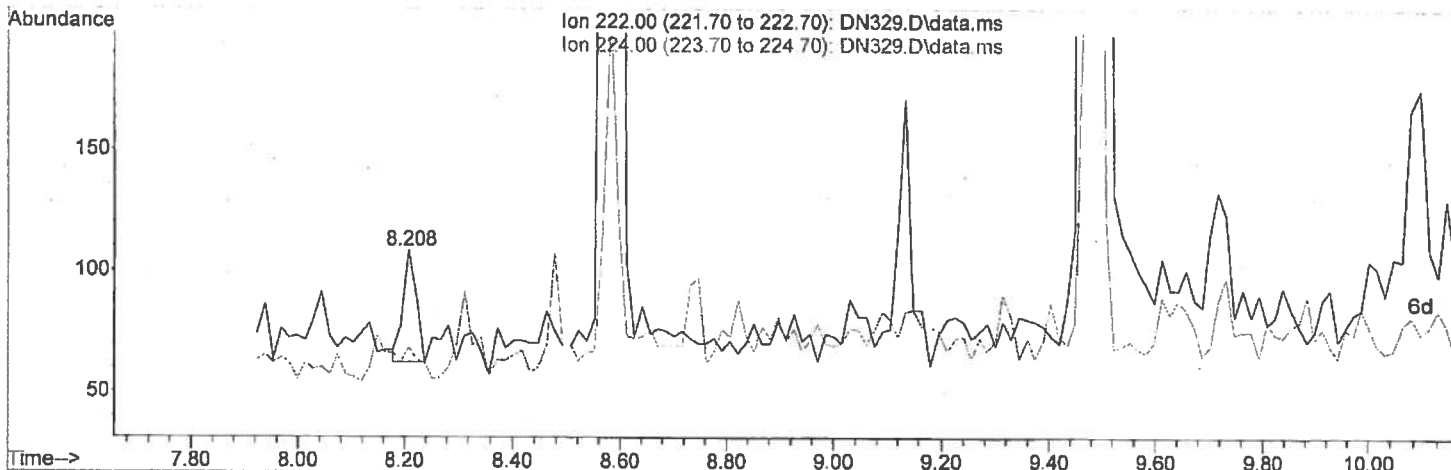
TIC: DN329.D\data.ms

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	65.93
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



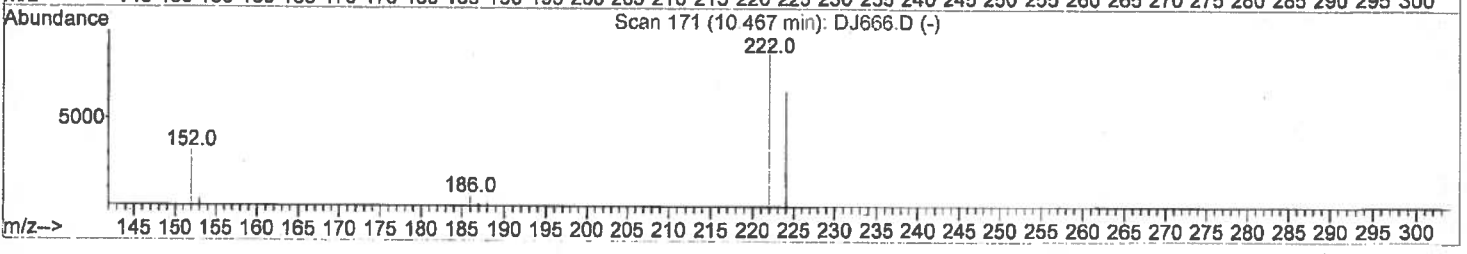
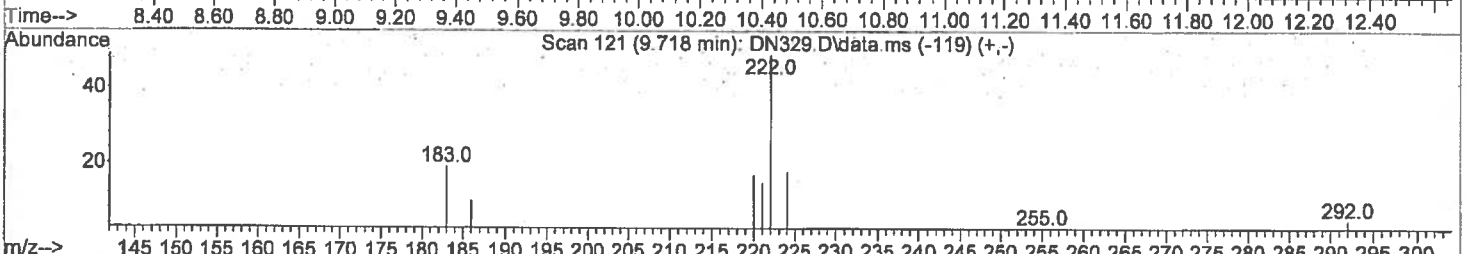
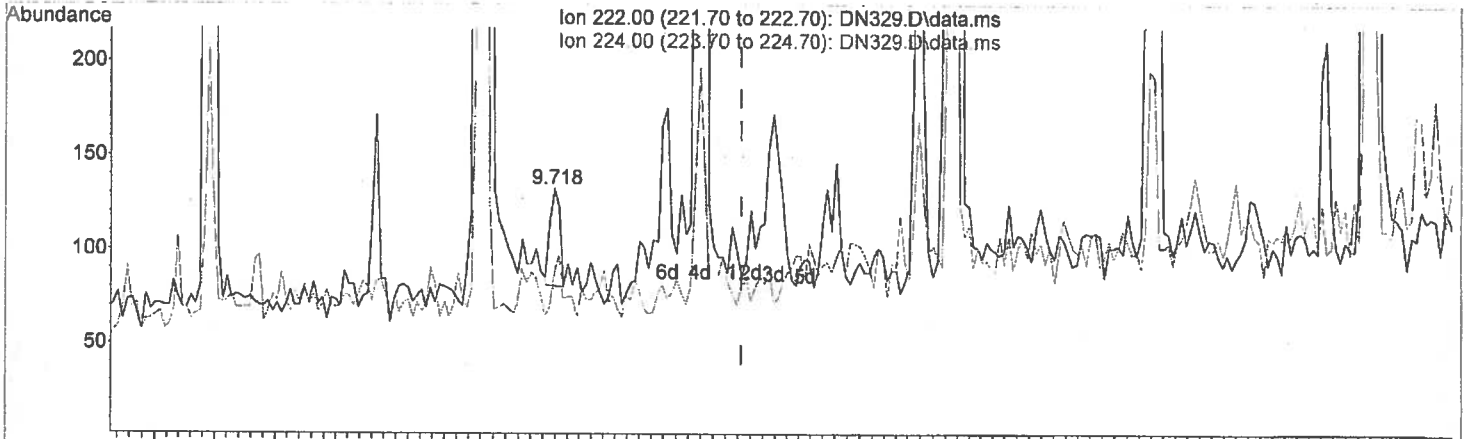
TIC: DN329.D\data.ms

(33) CL2 - #6 (L2)		
8.208min (-2.122) 0.00 ppm m		
response	78	
Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	62.96
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



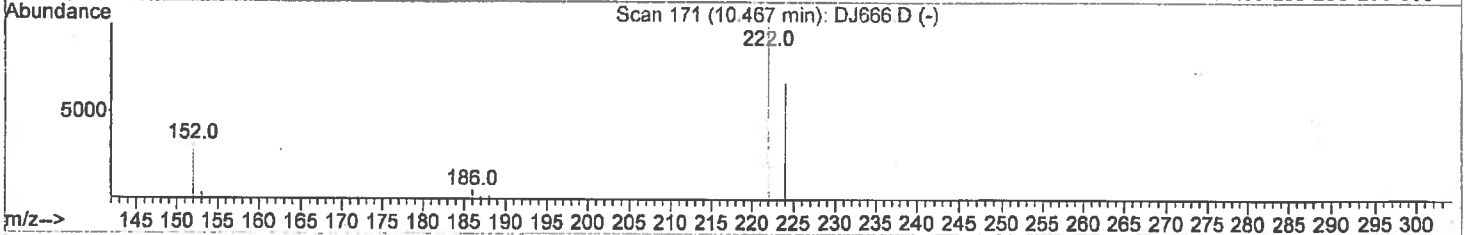
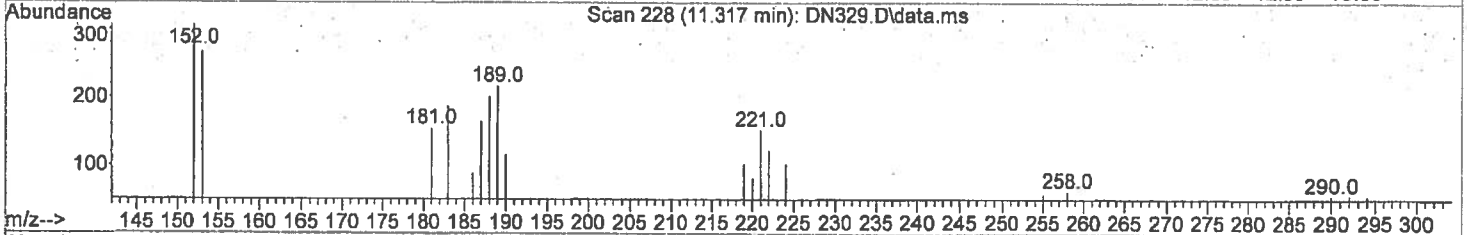
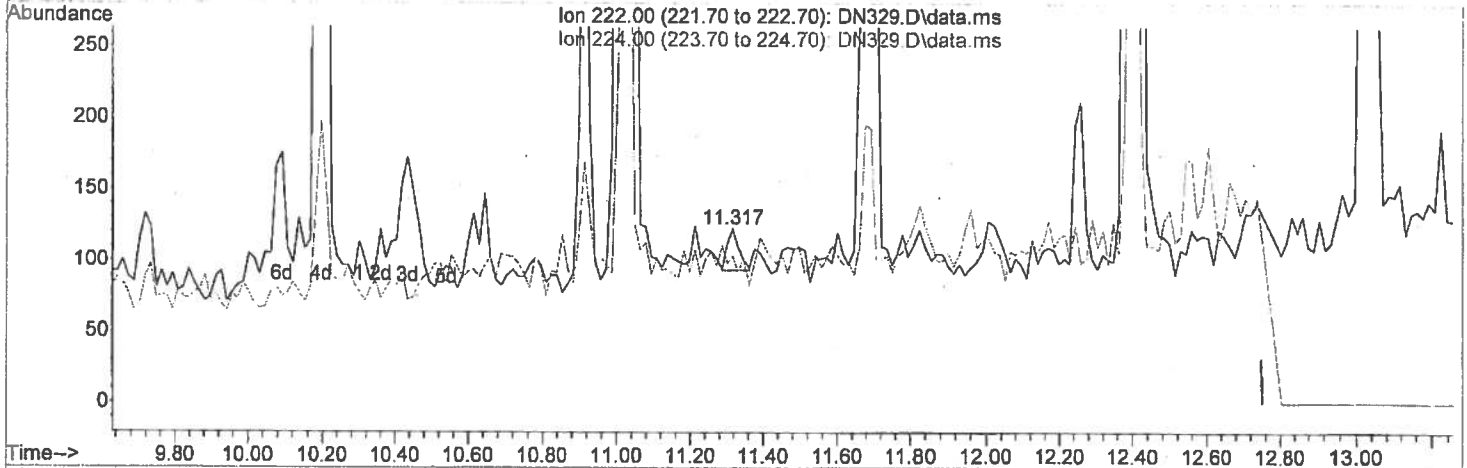
TIC: DN329.D\data.ms

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	66.67
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
Data File : DN329.D
Acq On : 27 Apr 2018 4:53 am
Operator : J.Misiurewicz
Sample : R1803542-013
Misc : 312299 680 PCB
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
Quant Title : 680.PCB by SIM
QLast Update : Fri Apr 27 13:02:51 2018
Response via : Initial Calibration



TIC: DN329.D\data.ms

(35) CL2 - #8 (L2)

Manual Integration:

11.317min (+ 0.987) 0.00 ppm m

After

response 65

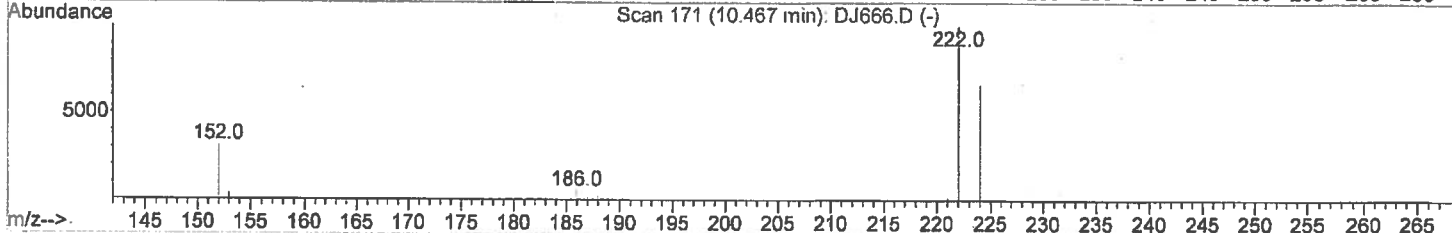
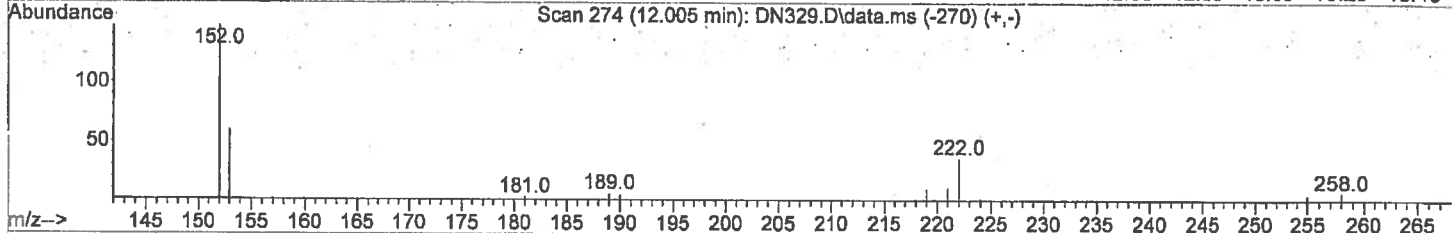
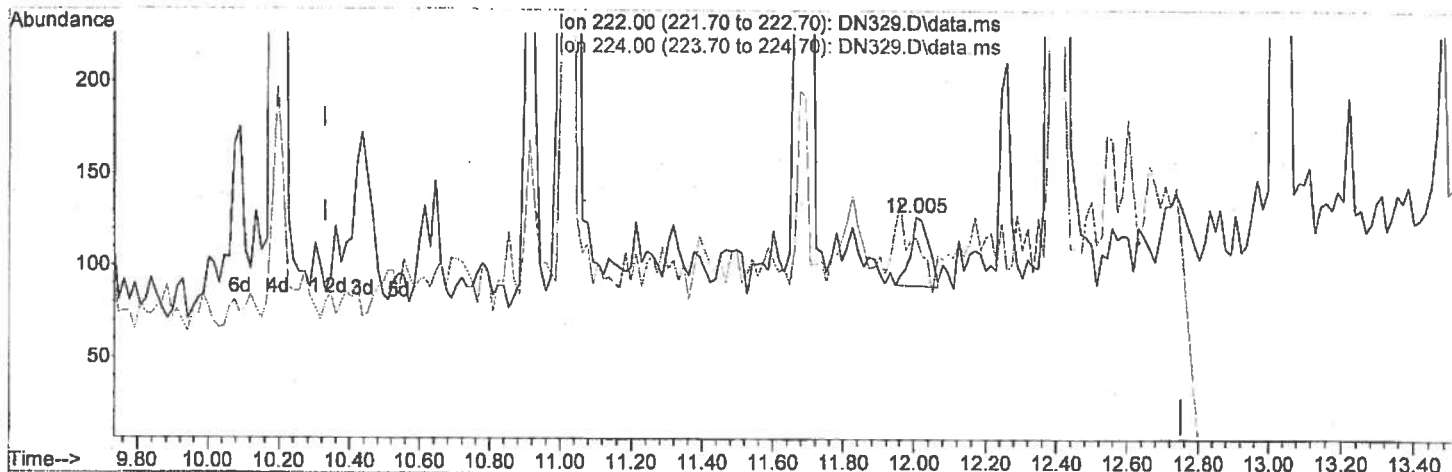
Other -

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	84.43
0.00	0.00	0.00
0.00	0.00	0.00

01/23/19

Data Path : I:\ACQUDATA\5973B\OLDDATA\2018\042618\
 Data File : DN329.D
 Acq On : 27 Apr 2018 4:53 am
 Operator : J.Misiurewicz
 Sample : R1803542-013
 Misc : 312299 680 PCB
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Apr 27 13:51:31 2018
 Quant Method : I:\ACQUDATA\5973B\METHODS\680042618B.M
 Quant Title : 680.PCB by SIM
 QLast Update : Fri Apr 27 13:02:51 2018
 Response via : Initial Calibration



TIC: DN329.D\data.ms

Ion	Exp%	Act%
222.00	100.00	100.00
224.00	61.00	91.34#
0.00	0.00	0.00
0.00	0.00	0.00

Manual Integration:
 After
 Other -
 01/23/19

APPENDIX C

Recalculation Equations

Appendix C – Equations from ALS Environmental – Rochester’s Standard Operating Procedure, SOC-680 PCBs by GCMS, Reference Method EPA 680 Dated 9/26/2016

$$RF_x = \frac{(A_x)(C_{ISTD})}{(A_{ISTD})(C_x)}$$

where:

A_x = integrated ion abundance of quantitation ion for a PCB calibration congener or a surrogate compound,

A_{iz} = integrated ion abundance of m/z 240, the quantitation ion when chrysene-d12 is used.

C_{iz} = Concentration (mg/L) of chrysene-d12

C_x = Concentration (mg/L) of PCB calibration congener or surrogate compound.

RF_x is a unitless number, units used to express quantities must be equivalent.

$$\%RSD = \frac{SD}{RF} \times 100$$

where:

RSD = relative standard deviation.

RF = mean of 5 initial RFs for a compound.

SD = standard deviation of average RFs for a compound.

$$SD = \sqrt{\frac{\sum_{i=1}^N (RF_i - RF)^2}{N - 1}}$$

where:

RF_i = RF for each of the 5 calibration levels

N = Number of RF values (i.e., 5)

$$\text{Concentration (ug/L)} = \frac{(A_x)(C_{is})(D)(V_i)}{(A_{is})(\overline{RF})(V_s)(V_i^*)}$$

where:

A_x = the sum of quantitation ion areas for all PCB isomers at a particular level of chlorination.

A_{is} = the area of internal standard quantitation ion, m/z 240 for chrysene-d12 or m/z 188 for phenanthrene-d10.

C_{is} = Concentration of the internal standard in the concentrated sample extract in mg/L.

\overline{RF} = Calculated response factor for the surrogate compound or the PCB calibration compound for the isomer group (level of chlorination)

V_s = Volume in liters of water extracted.

D = Dilution factor, if the sample or extract was diluted prior to analysis. If no dilution was made, $D=1$. The dilution factor is always dimensionless.

V_i = Volume of the extract injected (μL). The nominal injection volume for samples and calibration standards must be the same. $*V_i$ is not used in the equation. V_i is not needed when a mass/volume concentration (mg/L) is used for C_{is} . V_i is needed if only the mass (ng) is used for C_{is} .

V_i = Volume of the concentrated extract (μL).