

### **DRAFT - Air Screening Results**

For

Pond Island Municipal Waste Disposal Site and Temporary Debris Site International Advisory Support for Debris Management and Short Term Solid Waste Priorities for the Hurricane Irma Reconstruction, Recovery and Resilience Program Sint Maarten World Bank Contract: 7187552

Presented to

World Bank Group 1818 H. Street, NW Washington DC, 20443

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# EXECUTIVE SUMMARY

EE&G Disaster Response, LLC (EE&G) has been retained by the World Bank (the "Client") to perform a preliminary screening of smoke from subsurface fires at the Pond Island municipal waste disposal site and temporary debris site (collectively referred to as the "debris and disposal sites"), in support of the Hurricane Irma Restoration, Recovery and Resilience Program in Sint Maarten.

The intent of this screening was to provide information that can be used in scoping activities for World Bank financing, in particular related to the general types and scale of activities to be included in the proposed fire suppression at the municipal waste disposal site and temporary debris site.

EE&G performed air testing at the debris and disposal sites over three consecutive days between August 28 and 30, 2018. Each day the testing was focused on a specific portion of the debris and disposal sites, testing locations were as follows:

- Day 01 (August 28, 2018) The northwest portion of the municipal waste disposal site.
- Day 02 (August 29, 2018) The south portion of municipal waste disposal site, located to the northwest of the settlement.
- Day 03 (August 30, 2018) The southeast portion of the temporary debris site.

The objective of the screening activities was to obtain a general understanding of what chemicals (or 'constituents') of concern (COCs) were present in the smoke plumes emanating from cracks/fissures on the surfaces of the debris and disposal sites. The tests were performed in the following locations:

- Upwind of smoke plumes ("upwind" samples), to establish background levels of the COCs in the air prior to reaching the areas where smoke was visibly emanating.
- From the smoke plumes ("smoke" samples), to obtain "worst-case" scenario levels of the COCs at their originating source.
- In the cabs of equipment performing normal operations at the active face of the municipal waste disposal site (MWDS) and on the temporary disposal site (TDS) that were reported to be part of a typical work day ("personnel" samples), to gauge COC levels relative to occupational limits.

Four samples were collected from the smoke plumes and one upwind sample was collected each day. Personnel samples were collected on days 2 and 3.

Determination of the COCs to be tested was based upon a general knowledge of which byproducts of incineration can be found in a landfill setting and common components that make up landfill gasses, and the input of other World Bank consultants. The COCs that were tested for included the following:

- Landfill gases, which include methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), and carbon monoxide (CO). These gasses are produced when bacteria break down organic waste.
- Lower Explosive Limit (LEL), the concentration level at which gas has the potential to explode.
- Volatile Organic Compounds (VOCs), other gasses besides landfill gasses (listed above) that can be produced by the breaking down/decomposition of waste.
- Hydrogen sulfide  $(H_2S)$ , a gas that can be the source of most landfill odors.
- Polycyclic aromatic hydrocarbons (PAHs), compounds found in coal and tar and produced by burning of organic matter.
- Respirable particulates (PM 2.5), solid particles generated by mechanical action or burning. Composition depends on the parent material. Can be non-organic (silica, asbestos, metals or plastics) or organic (cellulose, mold or bacteria). PM 2.5 are 'fine' or 'tiny' particles that are less than 2.5 micrometers in size.
- Ozone  $(O_3)$ , a COC that may be formed by landfill gasses.
- Dioxins and Furans, byproducts of combustion of plastic waste and other materials, particularly those containing chlorine.
- Polychlorinated biphenyls (PCBs), man-made chemicals that can be released into the environment through burning of waste. PCBs typically are associated with electronics.
- Heavy metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver), environmental pollutants that can be released into the environment through burning of waste.
- Asbestos fibers, carcinogens associated with the disturbance or incineration of building materials

The air testing results were compared to the most stringent of the threshold levels established by the American Council of Governmental Industrial Hygienists (ACGIH), the European Union (EU) Occupational Exposure Levels (OELs), United States (US) Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) or the US National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs).

Prior to discussing the testing results, it is important to note that monitoring data collected directly from the smoke plumes, near the ground surface does not accurately reflect the levels of airborne concentrations at which the general public or workers at the site will be exposed. However, these data provide a preliminary understanding of what exposure risks may be anticipated during fire suppression activities. Air quality testing that will be performed during fire suppression activities can be focused on "indicator" parameters based on what was detected in the smoke samples.

The below table shows locations where concentrations of COCs exceeded exposure limits.

сос	Smoke - Northwest Municipal Waste Disposal Site	Smoke - South Municipal Waste Disposal Site	Smoke - Temporary Disposal Site	Upwind	Personnel
Carbon Monoxide	х	Х	х	-	-
Respirable Particulates (PM 2.5)	х	Х	х	Х	Х
Volatile Organic Compounds - Benzene	х	Х	х	-	-
Hydrogen Sulfide	Х	-	-	-	-
PAH (All)	Х	Х	Х	-	-
Acenapthylene	-	Х	Х	-	-
Benzo(a)pyrene	Х	Х	-	-	-
Ozone	Х	Х	-	-	-
Dioxin/Furans (TCDD TEQ)	х	Х	X	-	-

X – Denotes locations with results that exceed the exposure limits

Denotes concentrations not exceeding exposure limits

The above table shows that concentrations of the COCs were highest within the smoke plumes this was supported by the number of locations where results were above exposure limits. Exceptions were respirable particulates which were found in upwind and personnel samples.

Although there were some similarities in the test results collected from the debris and disposal sites, the findings showed that more COCs were at concentrations greater than threshold levels in the samples collected at the municipal waste disposal site than the temporary debris site. This may be due to the age and thickness of debris of the municipal waste disposal site, reported duration of the fires at the municipal waste disposal site or different mix of debris types at the two locations.

Results of the upwind and personnel samples showed significantly lower concentrations of the COCs when compared to the smoke samples and exceedances were not found in these samples, with the exception of respirable particulates. This suggested that the COCs identified in the samples were primarily associated with the smoke/vapor sources and likely did not originate from other offsite sources.

Potential routes of exposure to COCs resulting from the smoke would primarily be through inhalation. However, exposure through skin contact or ingestion from residues around smoke sources (fissures) or around/near active or inactive areas of smoldering or burning may also be

possible. Risks of potential exposure may likely be increased during fire suppression activities, when the fires are excavated and burning waste is exposed.

Based upon the findings and conclusions of the air testing, EE&G has developed an air monitoring plan and provided recommendations for training, personal protective equipment, safe work practices, and decontamination which are described in the Recommendations section of this document. The air monitoring plan will be delivered under separate cover.

These results and conclusions presented in this report do not contain reference to or discussion of potential for offsite migration of COCs, or the potential for impacting surrounding populations. Perimeter air monitoring of the debris and disposal sites and potential impacts to the surrounding areas from emissions is recommended to be performed as part of the fire suppression activities to be protective of human health and the environment. This sampling and analysis event was performed to assess the "worse case" exposure scenarios for workers (without excavating waste) that will be performing fire suppression and working within active combustion and smoke impacted areas. These data should not be used for other purposes, in particular speculation as to what offsite concerns may or may not be occurring.

## SECTION 1.0 – INTRODUCTION

## 1.1 INTRODUCTION

EE&G Disaster Response, LLC (EE&G) has been retained by the World Bank (the "Client") to perform a preliminary screening of smoke from subsurface fires at the Pond Island municipal waste disposal site and temporary debris site (collectively referred to as the "debris and disposal sites"), in support of the Hurricane Irma Restoration, Recovery and Resilience Program in Sint Maarten. EE&G's testing services described herein was provided in accordance with EE&G's Technical Proposal Contract 7187552, Modification "B", issued by the World Bank on August 22, 2018 (hereafter referred to as "the Contract").

The objectives of EE&G's advisory services were as follows:

- To perform a preliminary screening for chemical constituents of concern (COCs) identified by EE&G and other third party consultants retained by the Client, that may be in the smoke emanating from smoldering waste and debris through fissures at the debris and disposal sites. The purpose of the screening was to assess for COCs that may be present during upcoming fire suppression activities.
- To develop an air monitoring plan to be followed during upcoming fire suppression activities. This plan will be based upon the results of the preliminary screening activities summarized in this document and will be provided as a separate document.
- To make recommendations for the appropriate level of respiratory protection for landfill workers and fire suppression workers based on the data collected.

The intent of this screening was to provide information that can be used in scoping activities for World Bank financing, in particular related to the general types and scale of activities to be included in the proposed fire suppression at the municipal waste disposal site and temporary debris site. It can be used by Government of Sint Maarten as a reference in the development and implementation of these activities; however, the results are strictly advisory, and the contents are not ready or endorsed for use under World Bank financing.

Any recommendations are provided by EE&G to the World Bank as advice and do not represent the views of the World Bank, and its Executive Directors or the Government of Sint Maarten. While every reasonable effort was made to ensure the information is accurate, any use of the information by third parties is not the responsibility of the World Bank, the Government of Sint Maarten or EE&G and should be done by professionals qualified in the field and in the context of the time, method and scope of the analysis with due consideration of any limitations it may present.

The Government of Sint Maarten is responsible for doing the necessary analysis to comply with environmental and social safeguards policies of the World Bank and local regulations, develop an associated documentation and the mitigation measures therein and for obtaining World Bank clearance and approval for those activities financed under World Bank administered financing as per World Bank Policies and the terms of the associated financing.

# 1.2 LIMITATIONS

The intent of this work is to provide advice in helping scoping activities for World Bank financing. The work is strictly advisory, and the contents do not represent an endorsement for financing or implementation.

This report has been prepared by EE&G in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty, expressed or implied, is made. EE&G's interpretations and recommendations are based upon the results of sample analyses, as well as investigative work conducted on August 28, 29 and 30, 2018. Other conditions elsewhere at the site may differ from those in the sampled locations and such conditions are unknown, may change over time and have not been considered.

Adverse weather, consisting of intermittent rainstorms and strong wind gusts were experienced during the testing. In some cases these conditions resulted in sample stations being washed out or knocked over, damage to sample media and equipment and shortened sampling intervals. The affect that these conditions had on the results was unclear, as the laboratory was able to read the majority of the samples. It is possible that data collected during favorable weather may show slightly different results that those presented in this report.

EE&G and the World Bank will not be responsible for the interpretation or use by others of data developed pursuant to the compilation of this report. This report reflects conditions, operations, and practices as observed on the dates and times of the site testing. The interpretations and recommendations, stated in this report, are based on previous environmental studies and research conclusions. EE&G and the World Bank do not warrant the use of segregated portions of this report.

EE&G and the World Bank will not be responsible for the interpretation or use by others of data developed pursuant to the compilation of this report. It is recommended that any implementing party should have a qualified industrial hygienist interpret the applicability of the information for implementation. Furthermore, a qualified occupational physician should interpret the information in this report before any clinical conclusions are drawn.

# SECTION 2.0 – METHODS

The primary objective of the air testing was to screen for COCs that may be associated with smoke and vapor emission plumes at the points of emanation from surface fissures located on the debris and disposal sites. Data was also collected upwind of the smoke samples and within two heavy equipment cabs that were operating at the debris and disposal sites.

### 2.1 SAMPLE COLLECTION

The sampling was accomplished by collecting instantaneous and analytical air samples. These methods are described below:

- Instantaneous samples were collected using direct read meters that provide real time data in the field.
- Analytical air samples were collected using various types of filtration cassettes and media which were shipped off-island to laboratories for analysis. Analytical air samples were collected by setting up sampling stations, each with multiple vacuum pumps drawing air through various different forms of test media, including evacuated grab sampling canisters.

Instantaneous and analytical samples were collected at fixed locations on the debris and disposal sites. The locations were designated as smoke, upwind and personnel, which are defined below:

- Smoke sampling Smoke samples were collected to screen for COCs at the emissions points at the surface of the debris and dump sites. The points of air intake of the sampling media, meters and grab canisters were positioned within approximately one foot above the ground directly in visible smoke plumes emanating from surface fissures on the debris and disposal sites. It was widely reported to and also observed by EE&G that the winds in the area blow consistently from the eastward direction to the west, making the flow of smoke from the ground fissures across the sampling media reasonably predictable.
- Upwind sampling Upwind samples were placed in locations where smoke and other visible emissions were not observed, to evaluate the analytical air entering into the subject site for the tested COCs prior to mixing with the smoke sources. The points of air intake of the sampling media, meters and grab canisters were positioned within approximately one foot above the ground upwind of the smoke samples described above. It was reported to and also observed by EE&G that the winds in the area blow consistently from the eastward direction to the west. The wind direction was visually confirmed by EE&G prior to placing the sampling equipment.
- Personnel sampling Personnel samples were placed in track hoes while operators performed activities that were reported to be typical of a work day managing incoming municipal solid waste and hurricane related debris. Test stations were set up in the cabs of heavy equipment behind the operator's chair, with the intakes of the sampling media drawing air from head levels near the

breathing zone (approximately one foot from the operator's face). Instantaneous readings were not collected as part of the personnel sampling.

The air testing was performed over a period of three days from August 28 through August 30, 2018. The testing was conducted on a different general area of debris and disposal sites each day. A summary of the sample areas are as follows:

- Day 01 (August 28, 2018) Smoke and upwind were collected from the northwest portion of the municipal waste disposal site. Personnel sampling was not collected this day.
- Day 02 (August 29, 2018) Smoke and upwind were collected from the south portion of municipal waste disposal site, in the vicinity of fissures associated with the unstable slope located to the northwest of the settlement. Personnel samples were collected from heavy equipment operating in the active face of the municipal waste disposal site and Temporary debris site.
- Day 03 (August 30, 2018) Smoke and upwind were collected from the southeast portion of the temporary debris site. Personnel samples also collected from heavy equipment operating in the active face of the municipal waste disposal site and on the temporary debris site.

Instantaneous and analytical test locations were designated using a project specific identification system where each location was marked with a 5-digit number. The first two numbers noted the day the sampling was performed (Days 01-03, corresponding to dates of August 28-30, 2018), followed by the last three numbers that noted the testing station (location) at the site. For example, sample #02-005 was collected on Day 2 (August 29, 2018) at sampling location 005, and each different COC tested for may have a sample numbered 02-005.

Samples were collected from fixed locations each day; which are shown on the sample location diagram that is provided in Figure 1. Below is a summary of the sampling activities:

- Smoke sampling Instantaneous and analytical testing was performed at a total of 12 locations, with sampling performed at locations 001-004 each day.
- Upwind sampling Instantaneous and analytical testing was performed at a total of 3 locations, with sampling performed at location 005 each day.
- Personnel sampling Analytical testing was performed on August 29 and 30, 2018 (days 02 and 03). A total of 4 personnel samples were collected over the two days, with 1 sample collected from the track hoe working on the active face of the municipal waste disposal site (sample 006) and 1 sample collected from the track hoe working on the temporary debris site (sample 007) each day.

Representative photographs of the sampling stations and test locations are included in Attachment A.

# 2.2 CONSTITUENTS OF CONCERN

Determination of which COCs to be tested for was based upon a general knowledge of which byproducts of waste burning or incineration are typically found in a landfill setting, observations of types of waste at the debris and disposal sites, common components contained within landfill gasses, and the input of other World Bank consultants. The COCs that were tested for included the following:

- Landfill gases<sup>1</sup>, specifically methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), and carbon monoxide (CO)
- Lower Explosive Limit (LEL)
- Volatile Organic Compounds<sup>1</sup> (VOCs)
- Hydrogen sulfide<sup>1</sup> ( $H_2S$ )
- Polycyclic aromatic hydrocarbons<sup>1</sup> (PAHs)
- Respirable particulates<sup>2</sup> (PM 2.5)
- $Ozone^2 (O_3)$
- Dioxins and Furans<sup>2</sup>
- Polychlorinated biphenyls<sup>2</sup> (PCBs)
- Heavy metals<sup>2</sup> (arsenic, barium, cadmium, chromium, lead, selenium, and silver)
- Asbestos fibers<sup>2</sup>

<sup>1</sup>The COCs were sampled both by methods requiring lab analysis and to the greatest extent feasible by direct read meters, which provide instantaneous results.

<sup>2</sup>The COCs were sampled only by methods requiring lab analysis and sampling with direct read meters was not feasible.

Attachment B contains a list of the above COCs that contains a link to NIOSH website that contains information regarding each chemical, including types of hazard, acute symptoms, routes of exposure and occupational exposure limits.

# 2.3 DETERMINATION OF INTERPRETIVE CRITERIA

In 2008, the UN Economic & Social Council published the following remark: "A number of environmental health rules and regulations are in place in the Netherlands Antilles but they are insufficient, a fact which is recognized by the Government. Environmental standards have been drawn up for priority areas (refineries, utility companies, waste-disposal companies) but have not yet come into force, pending the entry into force of the National Ordinance on Environmental Principles. In addition, a number of general island ordinances (e.g. the Waste Ordinance, Pollution Ordinance and the Police Ordinance), which allow the island authorities to act when there is a threat to public health or the environment, are already in force.

The former Netherlands Antilles had reportedly begun the process of establishing environmental norms and standards, but this was never concluded prior to establishing of the new countries within the Dutch Kingdom, including St. Maarten. Because of this, it was not clear which norms and standards would apply to the interpretation of the air testing data. The Environmental Legislation of Bonaire, Saba and Statia was proposed as an applicable reference standard, <u>https://zoek.officielebekendmakingen.nl/kst-32473-3.html</u> however it does not address air testing (Section 2.2 Environment and Environmental Regulations, Part d Other Environmental Issues – *"The air quality also deserves attention. At the moment there is no regulation in this* 

*area yet*"). Given that there are no specific guidelines for environmental air testing established by the Government of St. Maarten, there can be some flexibility in determination of applicable standards. For the purpose of the screening activities, the following standards were used to evaluate the data that was collected, when different values were found for a COC, the most stringent or lowest value was used.

- American Council of Governmental Industrial Hygienists (ACGIH) time weighted average (TWA) threshold limit values (TLVs) as required by The World Bank Group, International Finance Corporation Environmental Health and Safety Guidelines for Occupational Health and Safety dated April 30, 2007.
- European Union (EU) Occupational Exposure Limits (OELs) since the subject site was located in Sint Maarten, a country that is part of the Kingdom of the Netherlands, the data collected was compared to regulatory exposure limits applicable to the Netherlands or the European Union when possible. In Europe, there are two types of occupational exposure limits for chemical agents: EU community exposure limits and national exposure limits. The community limits are set by the European Agency for Safety and Health at Work. The EU Member States are required to establish national occupational exposure limit values for listed chemical agents, taking into account the community values. National exposure limit values may be different from the community values. Exposure limits that are specific to The Netherlands are noted with "NL".
- US Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) these are the legal limits in the United States for employee exposures to chemical substances or physical agents. PELs are typically expressed as an 8-hour time weighted average (TWA) concentration.
- US National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs) – these are occupational exposure limits that have been recommended to OSHA for adoption as regulatory PELs. RELs are generally considered as recommended updates to the OSHA exposure regulations.

# 2.4 SAMPLING METHODS, DEVICES AND MEDIA

The methods used for instantaneous, smoke and personnel sampling are described in Table 1 below. The collection periods for the samples described in Table 1 varied depending on circumstances at the site and may have been longer or shorter than the intended run time. Site conditions may have dictated that deviations to the below sampling methods were necessary. In these situations the condition and associated change in collection methodology will be discussed in the Findings Section of this report.

Constituents of Concern	Sampling Materials and Media ( <sup>†</sup> smoke/personnel samples, *direct read/instantaneous meters):	Lab Analyses:	Approximate Sample Collection Periods, Flow Rates and Total Volume (liters [L] and liters per minute [LPM]):
	Evacuated summa canister <sup>†</sup>	EPA TO-15 Method with Methane via TO-3 plus CO2 and CO via CMS Method	8-hour draw period
CO <sub>2</sub> , CO) plus VOCs	GEM 2000 meter (CH4 and CO2) and ppbRAE 3000 Photo-ionizing Detector (TVOCs)*		n/a
ЦС	Coconut shell solid sorbent tubes <sup>†</sup>	NIOSH 6013 Method	2.5 hours at flow rate of 0.25 LPM for a total of 37.5 L
Π <sub>2</sub> 3	GEM 2000 meter (H <sub>2</sub> S)*		n/a
CO, O <sub>2</sub> , LEL, H <sub>2</sub> S	Multi-RAE 6228 multi-gas meter*		n/a
PAH's (semi- VOCs)	XAD-2 sorbent tubes with PTFE pre-filter <sup>†</sup>	NIOSH 5506 Method (samples were wrapped in aluminum foil and shipped to lab on ice)	8 hours at flow rate of 2 LPM for a total of 960L
	ppbRAE 3000 Photo- ionizing Detector*		n/a
PM 2.5	Dust-Trak 2 (data logging) <sup>†</sup>		n/a
(Respirable Particulates)	TSI Sidepack AM 520 (data logging) <sup>†</sup>		n/a
Ozone (O <sub>3</sub> )	Nitrate-impregnated glass fiber filter <sup>†</sup>	OSHA ID214 Method	2.5 hours at flow rate of 0.25 LPM for a total of 37.5 L
Dioxins and Furans	Polyurethane foam tube <sup>†</sup>	Method TO-9A modified (samples were shipped to lab on ice)	8 hours at flow rate of 5 LPM for a total of 2400 L
PCBs	Florisil sorbent tube with glass fiber Swinnex pre- filter <sup>†</sup>	NIOSH 5503 modified Method	2.5 hours at flow rate of 0.25 LPM for a total of 37.5 L
Heavy Metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver)	5.0 pre-weighed PVC filter cassette <sup>†</sup>	RCRA 8 NIOSH 7300 modified Method	6 hours at flow rate of 4 LPM for a total of 1440L
Asbestos	TEM CEM cassette <sup>†</sup>	NIOSH 7402 Method (TEM)	100 minutes at flow rate of 4 LPM for a total of 400L

Table 1:	Sampling Methods	, Devices and	Media Used fo	or Suspected CC	)Cs.

# 2.5 COC COMPARISON CRITERIA

The results of the smoke, upwind and personnel testing were compared to the criteria of comparison presented in this section.

### Landfill Gases – Methane (CH<sub>4</sub>), Carbon Dioxide (CO<sub>2</sub>), and Carbon Monoxide (CO)

Instantaneous and analytical air testing were performed to screen for Methane,  $CO_2$  and CO. The analytical results were compared to the exposure limits shown below (the "criteria for comparison"). The values given are for 8-hour time weighted average exposures.

Constituent	EU OEL (Netherlands)	OSHA PEL	NIOSH REL	ACGIH TLV
Methane	N/A	N/A	N/A	1,800 mg/m <sup>3</sup> (1,000 ppm)
Carbon dioxide	9,000 mg/m <sup>3</sup>	9,000 mg/m <sup>3</sup>	9,000 mg/m <sup>3</sup>	9,000 mg/m <sup>3</sup>
	(5,000 ppm)	(5,000 ppm)	(5,000 ppm)	(5,000 ppm)
Carbon monoxide	29 mg/m <sup>3</sup>	55 mg/m <sup>3</sup>	40 mg/m <sup>3</sup>	29 mg/m <sup>3</sup>
	(25 ppm)	(50 ppm)	(35 ppm)	(25 ppm)

### Lower Explosive Level (LEL)

Instantaneous testing was performed to screen for LEL. Results were compared to the OSHA action level of 10%. Analytical sampling for LEL was not performed.

## Oxygen (O<sub>2</sub>)

Instantaneous testing was performed to screen for  $O_2$ . Results were compared to OSHA minimum levels of 195,000 ppm, or 19.5%. Analytical sampling for  $O_2$  was not performed.

### Respirable Particulates (PM 2.5)

Instantaneous testing was performed to screen for particles of less than 2.5 micrometers in size ("respirable particles"). Results were reported in milligrams per cubic meter (mg/m<sup>3</sup>) and compared to the EU OEL of 5 mg/m<sup>3</sup> (France) and OSHA PEL of 5 mg/m<sup>3</sup> based upon 8-hour time weighted average exposures. NIOSH and ACGIH have not established RELs or TLVs for respirable particulates.

Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
Respirable Particulates (PM 2.5)	5 mg/m <sup>3</sup> (France)	5 mg/m <sup>3</sup> (20 ppm)	N/A	N/A

# Volatile Organic Compounds (VOCs)

Instantaneous and analytical testing was performed to screen for VOCs, results were interpreted accordingly:

- Instantaneous testing A screening was performed using a photoionization detector (PID) to assess for the presence of total VOCs (TVOCs), to support the analytical sampling described below. The use of a PID allowed for the collection of multiple readings from different locations over the sampling periods. This analysis did not provide the composition of the gases that were being measured.
- Analytical sampling Results were compared to the exposure limits shown in the below table (the "criteria for comparison). The values given are for 8-hour time weighted average exposures.

VOC Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
Propylene	*N/A	240 mg/m <sup>3</sup> (100 ppm)	N/A	1,190 mg/m <sup>3</sup> (500 ppm)
Chloromethane	268 mg/m <sup>3</sup> (130 ppm)	207 mg/m <sup>3</sup> (100 ppm)	**LFC	104 mg/m <sup>3</sup> (50 ppm)
n-Butane	N/A	N/A	1,900 mg/m <sup>3</sup> (800 ppm)	2,400 mg/m <sup>3</sup> (1,000 ppm)
1,3-Butadiene	4.6 mg/m <sup>3</sup> (2 ppm)	2.2 mg/m <sup>3</sup> (1 ppm)	LFC	4.4 mg/m <sup>3</sup> (2 ppm)
Chloroethane	268 mg/m <sup>3</sup> (100 ppm)	2,600 mg/m <sup>3</sup> (1,000 ppm)	LFC	264 mg/m <sup>3</sup> (100 ppm)
Ethanol	260 mg/m <sup>3</sup> (500 ppm)	1,900 mg/m <sup>3</sup> (1,000 ppm)	1,900 mg/m <sup>3</sup> (1,000 ppm)	1,900 mg/m <sup>3</sup> (1,000 ppm)
Isopropyl alcohol	N/A	980 mg/m3 (400 ppm)	980 mg/m3 (400 ppm)	490 mg/m <sup>3</sup> (200 ppm)
Acetone	1,210 mg/m <sup>3</sup> (505 ppm)	2,400 mg/m <sup>3</sup> (1,000 ppm)	590 mg/m <sup>3</sup> (250 ppm)	1,200 mg/m <sup>3</sup> (500 ppm)
Acetonitrile	34 mg/m <sup>3</sup> (20 ppm)	68 mg/m <sup>3</sup> (40 ppm)	34 mg/m <sup>3</sup> (20 ppm)	34 mg/m <sup>3</sup> (20 ppm)
Acrylonitrile	N/A	4.4 mg/m <sup>3</sup> (2 ppm)	2.2 mg/m <sup>3</sup> (1 ppm)	4.4 mg/m <sup>3</sup> (2 ppm)

VOC Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
n-Hexane	72 mg/m <sup>3</sup>	1,800 mg/m <sup>3</sup>	180 mg/m <sup>3</sup>	180 mg/m <sup>3</sup>
	(20 ppm)	(500 ppm)	(50 ppm)	(50 ppm)
2-Butanone	N/A	590 mg/m <sup>3</sup> (200 ppm)	590 mg/m <sup>3</sup> (200 ppm)	590 mg/m <sup>3</sup> (200 ppm)
Ethyl acetate	N/A	1,400 mg/m <sup>3</sup> (400 ppm)	1,400 mg/m <sup>3</sup> (400 ppm)	1,400 mg/m <sup>3</sup> (400 ppm)
Tetrahydrofuran	300 mg/m <sup>3</sup>	590 mg/m <sup>3</sup>	590 mg/m <sup>3</sup>	150 mg/m <sup>3</sup>
	(101 ppm)	(200 ppm)	(200 ppm)	(50 ppm)
Cyclohexane	700 mg/m <sup>3</sup>	1,050 mg/m <sup>3</sup>	1,050 mg/m <sup>3</sup>	350 mg/m <sup>3</sup>
	(200 ppm)	(300 ppm)	(300 ppm)	(100 ppm)
n-Heptane	1,200 mg/m <sup>3</sup>	2,000 mg/m <sup>3</sup>	350 mg/m <sup>3</sup>	1,600 mg/m <sup>3</sup>
	(300 ppm)	(500 ppm)	(85 ppm)	(400 ppm)
Benzene	3.2 mg/m <sup>3</sup>	3.2 mg/m <sup>3</sup>	0.3 mg/m <sup>3</sup>	1.6 mg/m <sup>3</sup>
	(1 ppm)	(1 ppm)	(0.1 ppm)	(0.5 ppm)
Methyl Methacrylate	205 mg/m <sup>3</sup>	410 mg/m <sup>3</sup>	410 mg/m <sup>3</sup>	205 mg/m <sup>3</sup>
	(50 ppm)	(100 ppm)	(100 ppm)	(50 ppm)
1,4-Dioxane	20 mg/m <sup>3</sup>	360 mg/m <sup>3</sup>	3.6 mg/m <sup>3</sup>	72 mg/m <sup>3</sup>
	(5 ppm)	(100 ppm)	(1 ppm)	(20 ppm)
4-Methyl-2-	104 mg/m <sup>3</sup>	410 mg/m <sup>3</sup>	200 mg/m <sup>3</sup>	200 mg/m <sup>3</sup>
pentanone	(25 ppm)	(100 ppm)	(50 ppm)	(50 ppm)
Toluene	150 mg/m <sup>3</sup>	750 mg/m <sup>3</sup>	375 mg/m <sup>3</sup>	190 mg/m3
	(40 ppm)	(200 ppm)	(100 ppm)	(50 ppm)
2-Hexanone	N/A	410 mg/m <sup>3</sup> (100 ppm)	4.1 mg/m <sup>3</sup> (1 ppm)	21 mg/m <sup>3</sup> (5 ppm)
Chlorobenzene	23 mg/m <sup>3</sup> (5 ppm)	350 mg/m <sup>3</sup> (75 ppm)	N/A	45 mg/m3 (10 ppm)
Ethylbenzene	215 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>
	(50 ppm)	(100 ppm)	(100 ppm)	(100 ppm)
Xylene (p,m)	210 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>
	(50 ppm)	(100 ppm)	(100 ppm)	(100 ppm)

VOC Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
Xylene (Ortho)	210 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>	435 mg/m <sup>3</sup>
	(50 ppm)	(100 ppm)	(100 ppm)	(100 ppm)
Styrene	N/A	430 mg/m <sup>3</sup> (100 ppm)	210 mg/m <sup>3</sup> (50 ppm)	86 mg/m <sup>3</sup> (20 ppm)
Isopropylbenzene	100 mg/m <sup>3</sup>	250 mg/m <sup>3</sup>	250 mg/m <sup>3</sup>	250 mg/m <sup>3</sup>
(cumene)	(25 ppm)	(50 ppm)	(50 ppm)	(50 ppm)
4-Ethyltoluene	N/A	N/A	N/A	N/A
1,3,5-	100 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>
Trimethylbenzene	(21 ppm)	(25 ppm)	(25 ppm)	(25 ppm)
1,2,4-	100 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>
Trimethylbenzene	(21 ppm)	(25 ppm)	(25 ppm)	(25 ppm)
Naphthalene	50 mg/m3	50 mg/m3	50 mg/m3	50 mg/m3
	(10 ppm)	(10 ppm)	(10 ppm)	(10 ppm)

\*N/A – Not Applicable

\*\*LFC – Lowest Feasible Concentration

## Hydrogen Sulfide (H<sub>2</sub>S)

Instantaneous and analytical sampling was performed to screen for  $H_2S$ . Results were compared to the following exposure limits (the "criteria for comparison"). The values given are for 8-hour time weighted average exposures unless otherwise noted:

Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
H₂S	1.65 ppm	28 mg/m <sup>3</sup> (20 ppm) 10-minute ceiling	14 mg/m <sup>3</sup> (10 ppm) 10-minute ceiling	1.4 mg/m <sup>3</sup> (1 ppm)

## Polycyclic Aromatic Hydrocarbons (PAHs)

Analytical sampling was performed to screen for PAHs. The PAH sampling results were compared to the regulatory and recommended exposure limits summarized in the table below (the "criteria for comparison"). Only criteria for comparison of constituents that were identified above detectable levels are listed. The values given are for 8-hour time weighted average exposures.

PAH Constituent	EU OEL (NL)	OSHA PEL	NIOSH REL	ACGIH TLV
Naphthalene	50 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>
Acenaphthylene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Acenaphthene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Fluorene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Phenanthrene	800 (Latvia)	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Anthracene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Fluoranthene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Pyrene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Chrysene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Benzo(e)pyrene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Benzo(b)fluoranthene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Benzo(k)fluoranthene	N/A	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Benzo(a)pyrene	0.00055 mg/m <sup>3</sup> (Netherlands)	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>

# <u>Ozone (O<sub>3</sub>)</u>

Analytical sampling was performed to screen for  $O_3$ . Results were compared to the following exposure limits (the "criteria for comparison"). The values given are for 8-hour time weighted average exposures.

Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
Ozone	0.12 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
	(0.05 ppm)	(0.1 ppm)	(0.1 ppm)	(0.1 ppm)

## **Dioxins and Furans**

Analytical sampling was performed to screen for dioxins/furans. Results were reported in picograms per cubic meter of air (pg/m<sup>3</sup>), which were given for 8-hour time weighed average exposures. The results were normalized by toxicity equivalence factors to a toxicity equivalence (TEQ) value based on the dioxin compound tetra-chloro-dibenzo-dioxin (TCDD).

The TEQ was calculated by the laboratory as prediction of the potency of the mixture of dioxins and furans present in a sample and expressed as a concentration of 2,3,7,8 Tetrachlorodibenzo-*p*-dioxin or TCDD alone. TCDD is commonly regarded as the most toxic compound (congener) in the dioxin group of chemicals and is used as a general measure of dioxin toxicity for the samples.

The TEQ was compared to exposure limits (the "criteria for comparison") presented below:

Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
TCDD	10 pg/m <sup>3</sup> (Germany)	*LFC	LFC	LFC

\*LFC – Lowest Feasible Concentration

## Polychlorinated Biphenyls (PCB's)

Analytical sampling was performed to screen for PCBs. Results were compared to the following exposure limits (the "criteria for comparison"). The values given are for 8-hour time weighted average exposures.

Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
PCB's	0.01 mg/m <sup>3</sup> (Denmark)	0.5 mg/m³ (skin)	0.001 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup> (skin)

## Heavy Metals (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, and Silver)

Analytical sampling was performed to screen for the following heavy metals: arsenic, barium, cadmium, chromium, lead, selenium and silver. Results were reported in mg/m<sup>3</sup> and compared to the following exposure limits (the "criteria for comparison"). The values given are for 8-hour time weighted average exposures.

Constituent	EU OEL	OSHA PEL	NIOSH REL	ACGIH TLV
Arsenic (As)	0.2 mg/m <sup>3</sup> (Israel)	0.01 mg/m <sup>3</sup>	N/A	0.01 mg/m <sup>3</sup>
Lead (Pb)	0.15 mg/m <sup>3</sup> (EU)	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Barium (Ba)	0.5 mg/m³ (Finland)	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Chromium (Cr)	2.0 mg/m <sup>3</sup> (EU)	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Cadmium (Cd)	0.004 mg/m <sup>3</sup> (Finland)	0.005 mg/m <sup>3</sup>	*LFC	0.002 mg/m <sup>3</sup>
Silver (Ag)	0.01 mg/m <sup>3</sup> (Germany)	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Selenium (Se)	0.1 mg/m <sup>3</sup> (Finland)	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>

\*N/A – Not Applicable

\*\*LFC – Lowest Feasible Concentration

## Asbestos Fibers

Analytical sampling was performed to screen for airborne asbestos fibers. Asbestos sample results were reported in Structures per square millimeter (S/mm<sup>2</sup>). The TEM analytical method allows for identification of asbestos fibers. Therefore the interpretive criteria for this constituent were based upon the presence/absence of asbestos fibers in the samples, with detectable concentrations being deemed significant.

## SECTION 3.0 – FINDINGS

## 3.1 SCREENING RESULTS

Instantaneous and analytical samples were collected from upwind, smoke and personnel locations shown on sample location diagram that is provided in Figure 1.

- Instantaneous sampling was performed at the smoke and upwind locations. The readings were observed to fluctuate with changes in wind speed, wind direction and in the density of the smoke plumes. The data was collected from 13 test locations (11 smoke and 2 upwind control samples) and shown in Table 2 which is attached to this report. The values for CO, H<sub>2</sub>S, and particulates were higher when sampling equipment was placed directly in the smoke plumes. The instantaneous meters typically displayed no readings (zeroes) or near zeroes for the above COCs when not placed in visible smoke plumes which also are associated with landfill gasses. One exception was O<sub>2</sub>, which did not show zero readings outside of the smoke plumes.
- Analytical sampling consisted of 12 smoke, 3 upwind and 4 personnel samples.

This Section contains a summary of the data collected during the testing. Results will be presented by constituent and grouped by test location (smoke, upwind and personnel). Instantaneous and analytical sampling was not performed for each constituent; only information was provided for the testing performed.

## Landfill Gases – Methane (CH<sub>4</sub>), Carbon Dioxide (CO<sub>2</sub>), and Carbon Monoxide (CO)

A summary of testing for landfill gasses, which include Methane, Carbon Dioxide and Carbon Monoxide is presented below.

### Methane

Methane screening results were compared to 1,000 ppm. Instantaneous testing results are shown on Table 2 and analytical testing results are provided in Table 3 and Attachment C. A summary of findings is presented below:

### Smoke Sampling

Analytical sampling results were below the limit values presented in the comparison criteria of 1,000 ppm, with smoke and upwind control samples ranging from 8.7 to 160 ppm.

Instantaneous readings ranged from 0 to 28,000 ppm. The locations with the highest values were limited to the temporary debris site, which was sampled on Day 3. Detectable concentrations of methane were not identified in the other test locations.

### Upwind Sampling

The results of the analytical sampling were below the comparison criteria of 1,000 ppm. Analytical sampling results showed that methane was not detected in the test locations with reported concentrations ranging from 2.6 to 5.0 ppm.

### Personnel Sampling

The analytical sampling showed that methane was not detected in the test locations, with reported concentrations ranging from 2.6 to 5.0 ppm.

### Carbon Dioxide

Carbon dioxide instantaneous testing results are shown on Table 2 and analytical testing results are provided in Table 3 and Attachment C. Analytical readings were compared to 5,000 ppm.

#### Smoke Sampling

Analytical CO<sub>2</sub> results were below the limit values presented in the comparison criteria of 5,000 ppm, with results ranging from 480 to 1,900 ppm.

Instantaneous CO<sub>2</sub> readings ranged from 1,000 to 6,000 ppm.

#### Upwind Sampling

Analytical CO<sub>2</sub> readings were below the criteria for comparison of 5,000 ppm. Instantaneous results ranged from 0 to 1,000 ppm and analytical results ranged from 550 to 600 ppm.

#### Personnel Sampling

The results of the analytical sampling were below the comparison criteria of 5,000 ppm with results ranging from 650 to 1,500 ppm.

#### Carbon Monoxide

Carbon monoxide analytical testing results are shown on Table 3 and Figure 2 with laboratory reports provided in Attachment C. Analytical readings were compared to 25 ppm. Instantaneous testing results are shown on Table 2.

#### Smoke Sampling

Analytical CO results exceeded comparison criteria of 25 ppm in 4 of 12 smoke samples (1 on northwest municipal waste disposal site, 2 on south municipal waste disposal site and 1 on the temporary debris site), with results ranging from below detection limits (BDL) to 130 ppm.

Instantaneous CO readings ranged from 5 to 500 ppm.

#### Upwind Sampling

CO was not detected in the analytical samples. Instantaneous CO readings were 0 and 24 ppm.

#### Personnel Sampling

CO was not detected in the personnel samples.

### Lower Explosive Limit

Instantaneous testing for LEL was performed. The results were compared to an action level of 10%. A summary of LEL readings is presented in Table 2.

#### Smoke Sampling

Explosive environment testing or LEL did not exceed the 10% action level. Results ranged from 0 to 9%, with 2 samples collected from the south municipal waste disposal site that were just below the action level of 10% with readings of 9%.

#### Upwind Sampling

Explosive environment testing or LEL did not exceed the 10% action level. Results in the test locations were 0%.

#### Personnel Sampling

LEL testing was not performed in these locations.

### Oxygen (O<sub>2</sub>)

Instantaneous testing was performed for  $O_2$ . Readings were compared to OSHA minimum levels of 195,000 ppm or 19.5%. A summary of  $O_2$  readings is presented in Table 2.

#### Smoke Sampling

Oxygen gas readings exceeded the minimum levels in the smoke samples with results ranging from 196,000 to 209,000 ppm (19.5-20.9%).

#### Upwind Sampling

Oxygen gas readings exceeded the minimum levels in the upwind samples with results of 204,000 to 209,000 ppm (20.4-20.9%).

#### Personnel Sampling

Oxygen gas testing was not performed in these locations.

### **Respirable Particulates (PM 2.5)**

Instantaneous testing was performed to screen for particles of less than 2.5 micrometers in size ("respirable particles"). The sampling was performed over approximate 8-hour periods; averages of the particulate concentrations and peak concentrations at the types of test locations (smoke, personnel and upwind control) for respirable particulate readings were recorded and compared to 5 mg/m<sup>3</sup>. A summary of the results is presented in Table 4 and Figure 3.

## Smoke Sampling

Average results of the instantaneous smoke tests exceeded the 5.0 mg/m<sup>3</sup> criteria for comparison in 9 of 12 sample locations (3 on northwest municipal waste disposal site, 3 on south municipal waste disposal site and 3 on the temporary debris site). Averages at the test locations ranged from 0 to 161 mg/m<sup>3</sup> and peaks ranged from 15 to 400 mg/m<sup>3</sup>.

### Upwind Sampling

Average results of instantaneous tests of upwind control locations exceeded the 5.0 mg/m<sup>3</sup> criteria for comparison in 2 of 3 samples (1 on northwest municipal waste disposal site and 1 on south municipal waste disposal site). Averages at the test locations ranged from 05 to 78 mg/m<sup>3</sup> and peaks ranged from 31 to 218 mg/m<sup>3</sup>.

### Personnel Sampling

Average results of the instantaneous tests of personnel sample locations exceeded the 5.0 mg/m<sup>3</sup> criteria for comparison in all four samples. Averages at the test locations ranged from 12 to 43 mg/m<sup>3</sup> and peaks ranged from 77 to 428 mg/m<sup>3</sup>.

## Volatile Organic Compounds (VOCs) –

Instantaneous testing was performed for total TVOCs and the results were used to determine the presence of these constituents at the test locations. The analytical testing allowed for analysis for specific compounds and results were compared to the lowest exposure limit presented in the criteria for comparison. Instantaneous testing results are shown on Table 2 and analytical testing results are shown on Table 5 and Figure 4 (Benzene only) with laboratory reports provided in Attachment D.

### Smoke Sampling

Instantaneous TVOC results showed the presence of these constituents at the test locations (3 on northwest municipal waste disposal site, 4 on south municipal waste disposal site and 4 on the temporary debris site), with results ranging from 0 to 850 ppm.

Analytical sample results were as follows:

- Benzene exceeded the criteria for comparison of 0.3 mg/m<sup>3</sup> (NIOSH REL) in 11 of 12 smoke samples (4 on northwest municipal waste disposal site, 4 on south municipal waste disposal site and 3 on the temporary debris site), with results ranging from 0.2 to 13.0 mg/m<sup>3</sup>.
- Concentrations of other VOCs were either below the criteria for comparison or BDL.

## Upwind Sampling

Instantaneous TVOC results showed the presence of these constituents at the upwind test locations on the south municipal waste disposal site and the temporary debris site, with results of 100 and 7,000 ppm.

Analytical sample results showed that concentrations of VOCs, including Benzene were either below the criteria for comparison or BDL.

### Personnel Sampling

VOC and Benzene concentrations were below the criteria for comparison or BDL.

### Hydrogen Sulfide (H<sub>2</sub>S) –

Hydrogen Sulfide readings were compared to 1 ppm. Instantaneous testing results are shown on Table 2 and analytical testing results are shown on Table 6 and Figure 5 with laboratory reports provided in Attachment E.

### Smoke Sampling

Analytical  $H_2S$  results showed concentrations that exceeded the 1 ppm criteria for comparison (ACGIH TLV) in one smoke sample collected from the northwest municipal waste disposal site. Twelve smoke samples were collected with results ranging from BDL to 3.1 ppm.

Instantaneous H<sub>2</sub>S readings ranged from 0 to 8.8 ppm.

### Upwind Sampling

Instantaneous  $H_2S$  readings were 0 ppm and analytical testing results were either BDL or below exposure limits.

### Personnel Sampling

H<sub>2</sub>S levels in personnel samples were either BDL or below exposure limits.

### Polycyclic Aromatic Hydrocarbons (PAHs) –

The analytical testing provided analysis for specific PAH compounds. Results were compared to the lowest exposure limit presented in the criteria for comparison for each constituent. Results are shown on Table 7 and laboratory reports are provided in Attachment F.

The following is a summary of the PAH sampling results:

### Smoke Sampling

Acenaphthylene were found above the NIOSH REL of 0.1 mg/m<sup>3</sup> in 3 of 12 smoke samples (2 on south municipal waste disposal site and 1 on the temporary debris site), with results ranging from BDL to 0.6 mg/m<sup>3</sup>. The sample locations and results are shown on Figure 6.

Benzo(a)pyrene were found above the EU OEL (NL) of 0.00055 mg/m<sup>3</sup> in 3 of 12 (1 on northwest municipal waste disposal site and 2 on south municipal waste disposal site) smoke samples, with results ranging from BDL to 0.0044 mg/m<sup>3</sup>. The sample locations and results are shown on Figure 7.

Concentrations of other PAHs were either BDL or below the criteria for comparison.

## Upwind Sampling

Concentrations of PAHs, including Acenaphthylene and Benzo(a)pyrene were either BDL or below the criteria for comparison.

### Personnel Sampling

Concentrations of PAHs, including Acenaphthylene and Benzo(a)pyrene were either BDL or below the criteria for comparison.

## Ozone (O<sub>3</sub>) –

Ozone readings were compared to 0.12 mg/m<sup>3</sup>. Results are shown on Table 8 and Figure 8 with laboratory reports are provided in Attachment G.

The limit of detection for the  $O_3$  samples ranged from 0.20 to 0.31 mg/m<sup>3</sup>, which is at or above the criteria for comparison. This was because the samples were collected at a lower volume than recommended in the standard. Although the lower sample collection volume resulted in a higher limit of detection on the laboratory results, useful data was obtained. Some sample results were reported by the laboratory above the limits of detection and above the criteria for comparison. These data were useful in concluding that this constituent has the potential to cause overexposures and should be monitored during the fire suppression activities.

### Smoke Sampling

Three of 14 smoke samples showed  $O_3$  levels at or above the 0.12 mg/m<sup>3</sup> criteria of comparison (EU OEL, NL), with results of 0.91 on the northwest municipal waste disposal site and 0.26 and 0.20 mg/m<sup>3</sup> on the south municipal waste disposal site.  $O_3$  was not detected in the remaining smoke samples.

Only 3 smoke samples were collected on Day 3, at the temporary debris site. The  $O_3$  sampling media was damaged due to weather impacts (location #001).

### Upwind Sampling

 $O_3$  was not detected in the upwind samples. An upwind sample was not collected during the testing of the temporary debris site, the sampling station

### Personnel Sampling

 $O_3$  was not detected in the personnel samples.

### Dioxins and Furans –

Dioxin results were compared to the TCDD TEQ of 10 pg/m<sup>3</sup>. Results are shown on Table 9 and Figure 9, with laboratory reports provided in Attachment H.

#### Smoke Sampling

Concentrations of dioxin/furan constituents were above the TCDD TEQ of 10 pg/m<sup>3</sup> in 9 of 11 smoke samples (2 on northwest municipal waste disposal site, 4 on south municipal waste

disposal site and 3 on the temporary debris site). TCDD TEQ of the samples values ranged from 1.0 to 590  $pg/m^3$ .

Only 3 smoke samples were collected on Day 3, at the temporary debris site, the sampling media was reported by the laboratory to be damaged and not analyzed

### Upwind Sampling

TCDD TEQ values were below the comparison criteria of 10 pg/m<sup>3</sup>, with results ranging from 1.1 to 4.4 pg/m<sup>3</sup>.

#### Personnel Sampling

TCDD TEQ values were below the comparison criteria of 10 pg/m<sup>3</sup> and ranged from 0.0016 to 0.33 pq/m<sup>3</sup>.

#### Polychlorinated Biphenyls (PCBs) -

Polychlorinated Biphenyl results were compared to 0.001 mg/m<sup>3</sup>. The laboratory report is provided in Attachment I.

#### Smoke Sampling

Detectable concentrations of PCBs were not found within the smoke samples.

#### Upwind Sampling

Detectable concentrations of PCBs were not found within the upwind samples.

#### Personnel Sampling

Detectable concentrations of PCBs were not found within the personnel samples.

The limit of detection, or minimum concentration detectable by the analytical method used, was reported by the laboratory as ranging from  $0.0028 - 0.00062 \text{ mg/m}^3$ , which was above the criteria for comparison, but less than other exposure limits (EU OEL –  $0.01 \text{ mg/m}^3$ , OSHA PEL –  $0.5 \text{ mg/m}^3$  and ACGIH TLV of  $0.5 \text{ mg/m}^3$ ). Since detectable concentrations of PCBs were not identified and the results were significantly lower than other exposure limits this should not pose a significant concern.

The samples were collected at a flowrate of 0.25 liters per minute, which is slightly higher than the flowrate 0.20 liters per minute, which is recommended in the NIOSH 5503 Method. It is the opinion of EE&G that this difference did not have a significant impact on the validity or usefulness of the results.

#### Heavy Metals (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, and Silver)

Heavy metal samples were compared to the lowest established exposure limit for each constituent. The results are presented in Table 10 and the laboratory results are provided in Attachment J.

### Smoke Sampling

The following metals were identified in smoke test samples at concentrations above the limits of detection reported by the laboratory:

- Arsenic was not found in concentrations above the 0.2 mg/m<sup>3</sup> criteria for comparison in the samples, with results ranging from 0.000073 to 0.0013 mg/m<sup>3</sup>.
- Barium was not detected in the samples.
- Lead was not found in concentrations above the 0.15 mg/m<sup>3</sup> criteria for comparison in the samples, with results ranging from 0.000038 to 0.0023 mg/m<sup>3</sup>.
- Chromium was not found in concentrations above the 2.0 mg/m<sup>3</sup> criteria for comparison in the samples, with results ranging from 0.00068 to 0.00083 mg/m<sup>3</sup>.
- Cadmium was detected in 1 of 15 smoke samples (1 on south municipal waste disposal site) and not found in upwind control or personnel samples. The result was 0.000071 mg/m<sup>3</sup>, which is below the EU OEL (Finland) of 0.004 mg/m<sup>3</sup> and OSHA PEL of 0.005 mg/m<sup>3</sup>, but above the NIOSH REL of lowest feasible concentration. It is the opinion of EE&G that a result at this concentration is not statistically significant.
- Selenium was not found in concentrations above the 0.1 mg/m<sup>3</sup> criteria for comparison in the samples, with results ranging from 0.000047 to 0.00014 mg/m<sup>3</sup>.
- Silver was not detected in the samples.

### Upwind Sampling

Metals were not detected in the upwind samples, with exception of a 0.00073 mg/m<sup>3</sup> concentration of chromium identified in sample 01-005, which was collected on the south municipal waste site. This result was below the comparison criteria of 2.0 mg/m<sup>3</sup>.

### Personnel Sampling

Metals were not detected in the personnel samples, with exception of a 0.00083 mg/m<sup>3</sup> concentration of chromium identified in sample 02-007, which was collected from the track hoe working on the temporary debris site. This result was below the comparison criteria of 2.0 mg/m<sup>3</sup>.

### Asbestos Fibers –

Asbestos fiber samples were compared to 70 S/mm<sup>2</sup>, laboratory results are provided in Attachment K. Below is a summary of the asbestos sampling results:

## Smoke Sampling

Asbestos fibers were not detected in the smoke samples. Sample 02-001, collected from the south municipal waste disposal site was not analyzed by the laboratory and was reported to be too heavily loaded with particulates.

### Upwind Sampling

Asbestos fibers were not detected in the upwind samples.

### Personnel Sampling

Asbestos fibers were not detected in the personnel samples.

### 3.2 DATA INTERPRETATION

Below is a discussion of significant findings of sampling data described in the above section. Upwind and personnel sampling did not identify COCs that were not also found in the smoke samples. Therefore, the information presented in this Section will focus on the COCs that were found to have concentrations above exposure limits in the smoke and compare them to the results of the upwind and personnel samples.

### Smoke Sampling

Constituents of concern were found above exposure limits in the smoke testing. Below is a table showing these COCs, the number of samples, their average concentration, range, comparison value and number of exceedances.

сос	Number of Samples	Average	Range	Exposure Limit	Number of Exceedances
Carbon Monoxide (Analytical)	12	31 ppm	<5.6 – 130 ppm	25 ppm	4
Respirable Particulates (PM 2.5)	12	45 mg/m <sup>3</sup>	0.0 – 161 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	9
Volatile Organic Compounds - Benzene	12	4.2 mg/m <sup>3</sup>	0.2 – 13.0 mg/ <sup>3</sup>	0.3 mg/m <sup>3</sup>	11
Hydrogen Sulfide (Analytical)	12	0.51 ppm	<0.24 – 3.1 ppm	1 ppm	1
Acenapthylene (Analytical)	12	0.1 mg/m <sup>3</sup>	BDL – 0.6 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	3
Benzo(a)pyrene (Analytical)	12	0.00061 mg/m <sup>3</sup>	BDL – 0.0044 mg/m <sup>3</sup>	0.00055 mg/m <sup>3</sup>	3
Ozone (Analytical)	12	0.11 mg/m <sup>3</sup>	BDL – 0.91 mg/m <sup>3</sup>	0.12 mg/m <sup>3</sup>	3

сос	Number of Samples	Average	Range	Exposure Limit	Number of Exceedances
Dioxin/Furans (TCDD TEQ) (Analytical)	11	149 pg/m <sup>3</sup>	1 – 590 pg/m <sup>3</sup>	10 pg/m <sup>3</sup>	9

# Upwind Sampling

Below is a table showing the COCs, the number of samples, their average concentration, range, comparison value and number of exceedances for upwind samples.

сос	Number of Samples	Average	Range	Exposure Limit	Number of Exceedances
Carbon Monoxide (Analytical)	3	6 ppm	<5 – <6 ppm	25 ppm	0
Respirable Particulates (PM 2.5)	3	32 mg/m <sup>3</sup>	5 – 78 mg/m³	5 mg/m <sup>3</sup>	2
Volatile Organic Compounds - Benzene	3	0.04 mg/m <sup>3</sup>	0.02 – 0.08 mg/ <sup>3</sup>	0.3 mg/m <sup>3</sup>	0
Hydrogen Sulfide (Analytical)	3	0.29 ppm (Not Detected)	<0.25 – <0.35 ppm	1 ppm	0
Acenapthylene (Analytical)	3	0.004 mg/m <sup>3</sup>	BDL – 0.005 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0
Benzo(a)pyrene (Analytical)	3	0.00033 mg/m <sup>3</sup> (Not Detected)	<0.31 - <0.35 mg/m <sup>3</sup>	0.00055 mg/m <sup>3</sup>	0
Ozone (Analytical)	3	0.21 mg/m <sup>3</sup> (Not Detected)	<.020 – <0.23 mg/m <sup>3</sup>	0.12 mg/m <sup>3</sup>	0 (Not Detected)
Dioxin/Furans (TCDD TEQ) (Analytical)	3	1.8 pg/m <sup>3</sup>	0 – 4.4 pg/m <sup>3</sup>	10 pg/m <sup>3</sup>	0

Detectable concentrations (below exposure limits) of other COCs were identified in the upwind samples, which included:

- Carbon Dioxide
- Carbon Monoxide
- VOCs
- PAHs
- Dioxin/Furans
- Metals

# Personnel Sampling

Below is a table showing COCs, the number of samples, their average concentration, range, comparison value and number of exceedances for personnel samples.

сос	Number of Samples	Average	Range	Exposure Limit	Number of Exceedances
Carbon Monoxide (Analytical)	4	6 ppm	<5 – <6 ppm	25 ppm	0
Respirable Particulates (PM 2.5)	4	22 mg/m <sup>3</sup>	12 – 43 mg/m³	5 mg/m <sup>3</sup>	4
Volatile Organic Compounds - Benzene	4	0.05 mg/m <sup>3</sup>	0.02 – 0.08 mg/ <sup>3</sup>	0.3 mg/m <sup>3</sup>	0
Hydrogen Sulfide (Analytical)	4	0.40 ppm	<0.24 – 0.81 ppm	1 ppm	0
Acenapthylene (Analytical)	4	0.002 mg/m <sup>3</sup>	BDL – 0.004 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0
Benzo(a)pyrene (Analytical)	4	0.00034 mg/m <sup>3</sup> (Not Detected)	<0.31 - <0.35 mg/m <sup>3</sup>	0.00055 mg/m <sup>3</sup>	0
Ozone (Analytical)	4	0.24 mg/m <sup>3</sup> (Not Detected)	<.020 – <0.31 mg/m <sup>3</sup>	0.12 mg/m <sup>3</sup>	0 (Not Detected)
Dioxin/Furans (TCDD TEQ) (Analytical)	4	0.1 pg/m <sup>3</sup>	0.00 – 0.33 pg/m <sup>3</sup>	10 pg/m <sup>3</sup>	0

Detectable concentrations (below exposure limits) of other COCs were identified in the personnel samples, which included:

- Hydrogen Sulfide Gas
- VOCs
- PAHs
- Dioxin/Furans
- Metals

The above information shows the following:

- Smoke samples contained more COCs, with higher peak and average concentrations than the upwind and personnel samples.
- Respirable Particulates were found to exceed exposure limits in smoke, upwind and personnel samples.

- TVOCs were found in smoke and upwind samples. Personnel sampling was not performed, so the possibility exists that VOCs also may be a concern for operators.
- COC exceedances were not found in upwind and personnel samples that were not also found in the smoke samples. However concentrations of several COCs were found at the debris sites, outside of the smoke plumes.

## SECTION 4.0 – CONCLUSIONS

Based on the findings of the preliminary screening activities, EE&G presents the following specific conclusions related to the air sampling data.

### 4.1 SMOKE SAMPLING

The smoke samples showed that concentrations of the following COCs were found to be at or above exposure limits. Figures 10a, 10b and 10c show locations of these samples for the northwest municipal waste disposal site, south municipal waste disposal site and the temporary debris site respectively:

сос	Smoke - Northwest Municipal Waste Disposal Site	Smoke - South Municipal Waste Disposal Site	Smoke - Temporary Disposal Site
Carbon Monoxide	Х	Х	Х
Respirable Particulates (PM 2.5)	х	х	х
Volatile Organic Compounds - Benzene	х	Х	Х
Hydrogen Sulfide	х	-	-
PAH (all)	Х	Х	Х
Acenapthylene	-	Х	Х
Benzo(a)pyrene	Х	Х	-
Ozone	Х	Х	-
Dioxin/Furans (TCDD TEQ)	Х	Х	Х

X – Denotes location where concentrations exceeded exposure limits.

Given the location of the samples (collected from within the smoke plumes, within 1 foot of the surfaces of the debris and disposal sites), these results do not necessarily mean that the debris and disposal site employees or the general public are being exposed to these COCs at these concentrations. The results support that these COCs were present and that personnel performing work directly in the smoke at the debris and disposal sites have potential for exposure to these constituents at some level.

The instantaneous instrument testing supported the conclusion that the concentrations of the COCs were greater near the fissures/smoke sources. The potential exists that some COCs may originate from different locations other than where smoke was observed or in soils surrounding the fissures/smoke sources. Testing in these areas was outside of the scope of this screening.

The municipal waste disposal site had exceedances for 3 more COCs than the temporary debris site. This supported the understanding that the trash and waste smoldering beneath the surface at the sites may have different chemical compositions at different times. Also, fires have been burning deeper within the waste and for many more years at the municipal waste disposal site versus the more recently developed temporary debris site. The fact that several of COCs with exceedances were found at both sites suggested that there were some similarities in the smoke composition, with similar potential for exposure to firefighting crews and employees at the site.

The potential routes of exposure would primarily be through inhalation. However, exposure through dermal contact or ingestion from precipitated residues around smoke sources (fissures) or around/near active or inactive areas of smoldering or burning may also be possible. The risk of potential exposure may likely be increased once the fires are excavated and burning waste is exposed.

# 4.2 UPWIND SAMPLING

The results of the upwind control samples showed significantly lower concentrations of the COCs tested for when compared to the smoke test samples and with the exception of respirable particulates, showed no exceedances. This suggested that the COCs identified in the test samples primarily originated from the smoke/vapor sources evaluated at the site and likely did not originate from other offsite sources.

Detectable concentrations (below exposure limits) of other COCs were identified in the upwind samples, which included:

- Carbon Dioxide
- Carbon Monoxide
- VOCs
- PAHs
- Dioxin/Furans
- Metals

These results support that these COCs were present and that personnel working at the debris and disposal sites have potential for exposure to these constituents at some level, even when not working in visible smoke.

Particulate sample results were above the criteria for comparison in the upwind samples. These results were not likely due to the smoke, but to the lack of dust control at the debris and disposal sites.

## 4.3 PERSONNEL SAMPLING

The results of the personnel sampling performed in the equipment cabs did not identify concentrations of COCs above the referenced exposure limits, with the exception of particulates. Detectable concentrations (below exposure limits) of other COCs were identified in the personnel samples, which included:

- Hydrogen Sulfide Gas
- VOCs
- PAHs
- Dioxin/Furans
- Metals

These results support that these COCs were present and that there is potential for exposure to these constituents at some level.

The particulate sampling results were significant for the following reasons:

- Some COCs can bind to dust particles which can be inhaled, ingested or contaminate clothing.
- The results support the need for implementation of dust control at the debris and disposal sites.

The equipment operators were performing normal solid waste landfilling activities near the active face and temporary debris site; therefore, these data are not representative of what the conditions may be for operators performing fire suppression activities, who will presumably be within close proximity to active fire and associated smoke and landfill gas vapors.
# SECTION 5.0 – RECOMMENDATIONS

This Section contains recommendations for the purpose of scoping the fire suppression activity. The implementation of the recommendations presented herein will need to be considered by the fire suppression contractor and other on-site operators. This will need to be confirmed at the time of mobilization and included in a final environmental and social safeguards instrument, duly cleared by the relevant authorities and in the case of World Bank financing, the World Bank. These recommendations should be revisited after the fires are suppressed and normal municipal waste disposal site activities are resumed.

EE&G's recommendations are based upon the understanding that the following personnel may be at the debris and disposal sites during fire suppression activities:

- Fire suppression crews and related staff personnel that are expected to be working in the immediate vicinity of the fires.
- Landfill workers and contractors personnel that are expected to spend the majority of their shifts working at the debris and disposal sites, but not in the immediate vicinity of the fires.
- Government employees, site visitors and waste haulers personnel that are expected to spend a limited amount of time at the debris and disposal sites, but not in the immediate vicinity of the fires.
- Salvagers individuals that are not employees of the Government, landfill operator or Government-authorized contractor. Salvagers work on the debris and disposal sites removing metal and other items of scrap value from waste that has been discarded.

EE&G's recommendations are presented below:

- The Government, authorized contractors and fire suppression contractors that work at the debris and disposal sites should have a health and safety plan developed that is specific to their on-site activities. Among other things, these plans should address hazard communication, use of personal protective equipment and smoke/fire safety.
- All personnel should be instructed to avoid working near fissures and downwind of smoke or areas where pungent landfill gas odors are observed. Workers operating directly in the visible smoke sources or in areas where smoke migration may be anticipated at the site should employ respiratory protection consisting of atmosphere supplying respirators (airline, self-contained breathing apparatus, or combination of the two). Air purifying respirators should not be allowed for such work. In addition to this level of respiratory protection, additional personal protection for high heat, fire and hot surfaces may also be required, depending on the nature of the work near the smoke sources.
- All personnel working on the debris and disposal sites should be provided with respiratory protection, at a minimum consisting of half-face respirators equipped with high efficiency particulate air (P100)/multi-gas/organic vapor cartridges. Prior

to being outfitted with a negative pressure respirator, employees should pass a basic physical. The physical should be performed by an occupational physician or equivalent health care professional and may include a medical history review, spirometry to assess lung capacity and any other assessment deemed necessary by the health care professional to determine fitness to wear a respirator. Furthermore, fit testing and respiratory use training should be conducted before any person is outfitted and asked to work/salvage on the debris and disposal sites.

- Consideration should be made to improve site security to reduce potential for unauthorized site visitors to access areas near fissures, smoke sources, fires or fire suppression exclusion zones. Unauthorized personnel should not be allowed inside fire suppression exclusion or contamination reduction zones.
- Fire suppression and government employees working on the debris and disposal sites, should be equipped with direct-read monitors to test for the presence of CO, H<sub>2</sub>S, LEL, O<sub>2</sub>, Hydrogen Cyanide (HCN), VOCs and other potentially harmful landfill gas components. These monitoring devices should be set to sound an alarm when the concentrations of the COCs reach the PEL, and workers instructed to immediately vacate any area where the alarm activates and move upwind. Equipment cabs should also be outfitted with these monitors. In addition, periodic analytical sampling for the original list of target COCs (at a minimum) referenced in Section 2.2 should be performed during fire suppression activities to monitor for changes in concentration and presence of airborne hazards. Work practices and personal protective equipment should be modified accordingly based on the results of this testing.
- Authorized visitors and salvagers, should be equipped with CO monitors as an indicator of the presence of CO, H<sub>2</sub>S, VOCs and other potentially harmful landfill gas components. These monitoring devices should be set to sound an alarm when the concentrations of CO reach 1 ppm.
- Employees and salvagers working on the debris and disposal sites should be provided with disposable suits to wear over their work clothes, or alternatively, be provided uniforms, that are donned when reporting to work and removed following completion of their shift and laundered professionally. Employees should have a decontamination area with showers and lockers where uniforms are donned and doffed each day. The residue from the smoke was observed to contain oils and particulates that should not be taken back in personal vehicles to worker's/salvager's homes where exposure to children and others is possible in a residential scenario.
- Employees/Salvagers should be outfitted with rubber boots than can be decontaminated and are not taken to their house. Foot wear used on the debris and disposal sites also will potentially be impacted with oils and particulates that may represent a concern in a residential exposure scenario.
- Employees/Salvagers should be provided awareness training about the COCs and associated landfill gasses, monitoring devices, personal protective equipment use and decontamination processes. An 8 hour mini "HAZWOPER"

type awareness training is recommended by a qualified company, with certificates issued to document the training.

These results and conclusions contained herein <u>DO NOT</u> contain reference to or discussion of potential for offsite migration of COCs, or the potential for impacting surrounding populations. Perimeter air monitoring of the debris and disposal sites and potential impacts to the surrounding areas from emissions is recommended to be performed as part of the fire suppression activities to be protective of human health and the environment. This sampling and analysis event was performed to assess the "worse case" exposure scenarios for workers (without excavating waste) that will be performing fire suppression and working within active combustion and smoke impacted areas. These data should not be used for other purposes, in particular speculation as to what offsite concerns may or may not be occurring.

# TABLES

Table 2 – Instantaneous Testing ResultsTable 3 – Landfill Gas Testing ResultsTable 4 – Particulate (PM 2.5) ResultsTable 5 – VOC Analytical Testing ResultsTable 6 – H2S Analytical Testing ResultsTable 7 – PAH Testing ResultsTable 8 – Ozone (O3) Testing ResultsTables 9a, 9b and 9c – Dioxin/Furan Testing ResultsTable 10 – Heavy Metal Testing Results

				Constituents of Concern						
7	Comunita Truno	Sample ID	<b>CO</b> (mmm)	<b>CO</b> (ana)			O <sub>2</sub> (ppm) -		TVOC Rar	nge (ppm)
Zone	Sample Type	(Day-Location)	CO <sub>2</sub> (ppm)	CO (ppm)	п <sub>2</sub> 5 (рртт)	LEL (%)	Minimum	Сн <sub>4</sub> (рртт)	Low	High
		01-001	5,000	136	1.7	ND	20,100	ND	160	200
	Smalea	01-002	6,000	9.0	ND	ND	20,900	ND	30	40
Northwest - MWDS	SITIOKE	01-003	6,000	5.0	ND	ND	20,900	ND	16	17
		01-004								
	Upwind									
		02-001	1,000	499	9.0	9.0	20,400	ND	300	600
	Smoko	02-002	1,000	19	2.5	4.0	20,100	ND	150	250
	SITIORE	02-003	1,000	500	8.8	4.0	20,100	ND	250	350
South - MWDS	S	02-004	1,000	11	ND	ND	20,300	ND	250	350
	Upwind	02-005	1,000	24	ND	ND	20,400	ND	ND	7000
	Porconnol	02-006								
	Personner	02-007								
		03-001	ND	499	2.5	ND	20,500	ND	750	850
	Smoke	03-002	6,000	500	7.0	ND	19,600	ND	250	300
	SHOKE	03-003	5,000	200	2.5	2.0	19,800	28,000	350	400
Temporary Debris Site		03-004	3,000	40	1.2	ND	20,900	1,000	200	300
	Upwind	03-005	ND	ND	ND	ND	20,900	ND	ND	100
	Dersennel									
Personnei		03-007								
		EU OEL				10				
Compariso	n Critoria	OSHA PEL				10				
Companse		NIOSH REL				10	195,000			
		ACGIH TLV					180,000			

#### Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site Table 2 - Instantaneous Testing Results

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria (Except O<sub>2</sub>)

ppm: parts per million

ND: None Detected

--: Data not available

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

					Constituents o	f Concern (ppi	m)	
		Sample ID	Meth	ane *	Carbon	dioxide	Carbon m	nonoxide
Zone	Sample Type	(Dav-Location)	Detection	Sample	Detection	Sample	Detection	Sample
		( ) )	Limit	Result	Limit	Result	Limit	Result
		01-001	1,000	22	260	760	6.6	26
	Smoke	01-002	1,000	13	200	560	5.0	6.7
Northwest - MWDS	SITIONE	01-003	1,000	16	250	680	6.2	13
		01-004	1,000	35	300	740	7.5	18
	Upwind	01-005	1,000	4.0	220	600	5.6	<5.6
		02-001	1,000	160	210	1,400	5.4	92
Smake		02-002	1,000	69	240	870	6.0	130
	SHICKE	02-003	1,000	8.7	250	730	6.2	9.5
South - MWDS		02-004	1,000	39	240	1,900	6.0	15
	Upwind	02-005	1,000	2.6	250	550	6.2	<6.2
	Personnel	02-006 (P)	1,000	3.0	270	1,100	6.6	<6.6
	reisonnei	02-007 (P)	1,000	2.7	220	650	5.6	<5.6
		03-001	1,000	12	400	480	10	26
	Smoke	03-002	1,000	7.9	210	710	5.4	15
	SHICKE	03-003	1,000	4.3	220	670	5.6	<5.6
Temporary Debris Site		03-004	1,000	13	590	810	15	18
	Upwind		1,000	2.6	210	600	5.3	<5.3
Personnel		03-006 (P)	1,000	3.1	260	1,500	6.4	<6.4
Personner		03-007 (P)	1,000	3.7	270	650	6.8	<6.8
		EU OEL	-	-	5,000 p	pm (NL)	25 ppr	n (NL)
Comparison (	Tritoria	OSHA PEL	-	-	5,000	) ppm	50 p	pm
companson		NIOSH REL	-	-	5,000	) ppm	35 ppm	
		ACGIH TLV	1,000	) ppm	5,000	) ppm	25 ppm	

Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site Table 3 - Landfill Gas Testing Results

\* Methane was compared to the ACGIH TLV of 1,000 ppm.

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

ppm: parts per million

NL: Netherlands Specific

--: Data not avalaible

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

Zone	Sample Type	Sampling ID (Day-Location)	Average (mg/m <sup>3</sup> )	Minimum (mg/m³)	Maximum (mg/m <sup>3</sup> )
		01-001	0.14	0.04	0.76
	Smake	01-002	16.81	0.01	46.00
Northwest - MWDS	SHIOKE	01-003	45.70	0.81	97.30
		01-004	40.30	4.37	97.00
	Upwind	01-005	13.10	1.82	30.80
		02-001	0.04	0.01	0.13
	Smoke	02-002	112.00	2.96	349.00
	SHICKE	02-003	161.00	1.24	400.00
South - MWDS		02-004	19.60	0.61	176.00
	Upwind	02-005	78.30	8.47	218.00
	Dorconnol	02-006	11.61	0.04	76.67
	Personner	02-007	16.70	3.78	134.82
		03-001	0.01	0.01	0.02
	Smoke	03-002	44.90	6.96	153.00
	SHICKE	03-003	97.40	0.04	356.00
Temporary Debris Site		03-004	6.72	0.05	39.70
	Upwind	03-005	4.81	0.99	14.50
	Dorconnol	03-006	42.77	0.00	427.64
	Personner	03-007	15.36	2.54	105.99
		EU OEL		5.00 mg/m <sup>3</sup> (France)	
Companya Critoria		OSHA PEL		5.00 mg/m <sup>3</sup>	
Comparison Criteria		NIOSH REL			
		ACGIH TLV			

# Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site Table 4 - Particulate (PM 2.5) Testing Results

Bold - Indicates that value was equal to or greater than one or more of the Comparison Criteria

mg/m<sup>3</sup>: Milligrams per cubic meter of air

--: Data not avaliable

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

			Sample Types					Comparis	on Criteria	
Constituent of Concern	Smoke Sample	Range (mg/m <sup>3</sup> )	Upwind (mg	Samples /m <sup>3</sup> )	Personne (mg	el Samples ;/m <sup>3</sup> )	EU OEL (mg/m <sup>3</sup> )	OSHA PEL (mg/m <sup>3</sup> )	NIOSH REL (mg/m <sup>3</sup> )	ACGIH TLV (mg/m <sup>3</sup> )
Bropylopo	0.12				L0W			240		1 100
Chloromothano	0.12	4.4		0.020	0.023	0.04	 268 (NIL)	240		1,190
n Butano				0.024	0.017	0.023	208 (NL)	1 000	1 000	2,400
1 2 Putadiana	0.012	0.21		ND	0.020	0.070	 46.2 (NIL)	1,900	1,500	2,400
1,3-Butadielle	0.012	0.51	ND	ND	ND	ND	40.2 (NL)	2.2	LFC	4.4
Chloroethane	0.022	0.077	0.25	2.2		10	208 (NL)	2,600	LFC 1.000	204
Ethanol	0.087	40	0.35	2.2	0.57	10	260 (NL)	1,900	1,900	1,900
Isopropyl alcohol	0.015	0.072	ND	0.013	0.021	0.026		980	980	490
Acetone	0.26	4.3	0.015	0.03	0.021	0.081	1,210 (NL)	2,400	590	1,200
Acetonitrile	0.038	1.1	ND	ND	ND	ND	34 (NL)	67	34	34
Acrylonitrile	0.013	0.018	ND	ND	ND	ND		4.3	2.2	4.4
n-Hexane	ND	1	ND	ND	ND	ND	72	1,800	180	180
2-Butanone	0.065	1.4	ND	ND	0.02	ND		590	590	590
Ethyl acetate	0.019	0.068	ND	0.018	0.022	0.026		1,400	1,400	1,400
Tetrahydrofuran	0.022	0.72	ND	ND	ND	ND	300 (NL)	590	590	150
Cyclohexane	0.019	0.025	ND	ND	ND	ND	700 (NL)	1,000	1,000	350
n-Heptane	0.05	0.75	ND	ND	ND	ND	1,200 (NL)	2,000	350	1,600
Benzene	0.21	13	0.025	0.075	0.052	0.076	3.25 (NL)	3.2	0.32	1.6
Methyl Methacrylate	ND	0.083	ND	-	ND	ND	205 (NL)	410	410	205
1,4-Dioxane	0.021	0.6	ND	-	ND	ND	20 (NL)	360	3.6	72
4-Methyl-2-pentanone	0.024	0.041	ND	-	ND	ND	104 (NL)	410	200	200
Toluene	0.11	7.1	ND	0.033	0.028	0.085	150 (NL)	750	380	190
2-Hexanone	0.049	0.17	ND	ND	ND	ND		410	4.1	21
Chlorobenzene	0.025	0.048	ND	ND	ND	ND	23 (NL)	350		45
Ethylbenzene	0.077	7.2	ND	0.035	0.023	0.045	215 (NL)	430	430	435
Xylene (p,m)	0.058	1.0	ND	ND	ND	0.064	210 (NL)	430	430	435
Xylene (Ortho)	0.035	0.74	ND	ND	ND	0.025	221	430	430	435
Styrene	0.023	1.6	ND	0.023	ND	ND		430	210	86
Isopropylbenzene	0.094	2.1	ND	ND	ND	ND	100 (NL)	250	250	250
4-Ethyltoluene	0.029	0.39	ND	ND	ND	ND	(			
1,3,5-Trimethylbenzene	0.03	0.38	ND	ND	ND	ND	100 (NL)	120	120	120
1.2.4-Trimethylbenzene	0.03	0.27	ND	ND	ND	ND	100 (NL)	120	120	120
Naphthalene	0.026	0.62	ND	ND	ND	ND	50 (NL)	52	52	50

#### Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site Table 5 - VOC Testing Results

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

LFC: Lowest Feasible Concentration

ND: None Detected

mg/m<sup>3</sup>: Milligrams per cubic meter of air

NL: Netherlands Specific

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

<sup>--:</sup> Data Not Available

7	Consulta Trus a	Sample ID (D	ay- Reporting Limit		Desult (asse)
Zone	Sample Type	Location)	(µg/tube)	Result (µg/tube)	Result (ppm)
		01-001	14	170	3.1
	Smoko	01-002	14	<14	<0.28
Northwest - MWDS	SITIOKE	01-003	14	<14	<0.30
		01-004	14	<14	<0.33
	Upwind	01-005	14	<14	<0.35
		02-001	14	<14	<0.24
	Smoko	02-002	14	<14	<0.24
	SITIORE	02-003	14	<14	<0.24
South - MWDS		02-004	14	<14	<0.25
	Upwind	02-005	14	<14	<0.25
	Dorsonnol	02-006	14	<14	<0.24
	Personner	02-007	14	<14	<0.25
		03-001	14	<14	<0.26
	Smoko	03-002	14	<14	<0.27
	SITIONE	03-003	14	<14	<0.27
Temporary Debris Site		03-004	14	<14	<0.28
	Upwind	03-005	14	<14	<0.26
	Dorsonnol	03-006	14	<14	<0.28
	Personner	03-007	14	38	0.81
			EU OEL		1.65 ppm
Comparison Critoria		09	HA PEL (10 minute Ceiling)		20.00 ppm
comparison criteria		NIC	SH REL (10 minute Ceiling)		10.00 ppm
			ACGIH TLV		1.00 ppm

# Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDP) and Temporary Debris Site Table 6 - H<sub>2</sub>S Testing Results

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

µg: micrograms

ppm: parts per million

--: data not available

NL: Netherlands Specific

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

#### Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site Table 7 - PAH Testing Results

				Constituent of Concern (mg/m <sup>3</sup> )											
Zone	Sample Type	Sample ID (Day- Location)	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo (e) pyrene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene
		01-001	0.029	0.083	0.02	0.013	0.0048	0.0028	0.0021	0.0033	ND	ND	ND	ND	0.00056
	Smoke	01-002	ND	0.025	ND	0.013	0.017	ND	0.0035	0.0045	ND	ND	ND	ND	0.00044
Northwest - MWDS	SHOKE	01-003	0.009	0.027	ND	0.003	ND	ND	0.0054	0.00037	ND	ND	ND	ND	0.00039
		01-004	0.012	0.028	0.0026	ND	ND	ND	ND	ND	0.013	0.0068	0.00073	0.00063	ND
	Upwind	01-005	ND	0.0048	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		02-001	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Smoke	02-002	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00053	0.0015
	SHOKE	02-003	ND	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
South - MWDS		02-004	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0044
	Upwind	02-005	ND	0.00093	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Personnel	02-006	0.002	0.0044	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	rersonner	02-007	ND	0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		03-001	ND	0.169	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND	ND
	Smoke	03-002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tomporary Debris	SHOKE	03-003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Site		03-004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Site	Upwind	03-005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Personnel	03-006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Personner	03-007	ND	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		EU OEL	50 (NL)				0.8 (Latvia)								0.00055 (NL)
Compariso	n Criteria	OSHA PEL	50	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
compariso	in criteria	NIOSH REL	50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
		ACGIH TLV	50	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

mg/m<sup>3</sup>: milligrams per cubic meter of air

ND: None Detected

--: Data not available

NL: Netherlands Specific

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

# Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site

Zone	Sample type	Sample ID (Day-Location)	Results (mg/m3)
		01-001	0.91
	Smoke	01-002	ND
Northwest - MWDS	SITIOKE	01-003	ND
		01-004	ND
	Upwind	01-005	ND
		02-001	ND
	Creates	02-002	0.26
	зтоке	02-003	ND
South - MWDS		02-004	0.20
	Upwind	02-005	ND
	Derconnol	02-006	ND
	Personner	02-007	ND
	Smale	03-002	ND
	SITIOKE	03-003	ND
Temporary Debris Site	Upwind	03-005	ND
	Dersonnol	03-006	ND
	Personner	03-007	ND
		EU OEL	0.12 (NL)
Comporis	on Critoria	OSHA PEL	0.20
Companse		NIOSH REL	0.20
		ACGIH TLV	0.20

# Table 8 - Ozone (O3) Testing Results

Bold - Value was equal to or greater than one or more of the Comparison Criteria

ND: None Detected (possible from reduced volume of air collected)

mg/m<sup>3</sup>: Milligrams per cubic meter of air

NL: Netherlands Specific

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

#### Environmental Air Sampling Results - Pond Island Municipal Wast Disposal Site (MWDS) and Temporary Debris Site Table 9a - Dioxin/Furan Testing Results

					Northwest - MWDS	vest - MWDS				
Constituent of Conce	rn		Smoke	(pg/m <sup>3</sup> )		Upwind (pg/m <sup>3</sup> )	Personne	el (pg/m³)		
		01-001	01-002	01-003	01-004	01-005				
2,3,7,8-TCDF		ND	ND	1.6	79	ND				
Total TCDF		11,000	200	120	5,600	160				
2,3,7,8-TCDD		16	ND	ND	35	ND				
Total TCDD		3,900	150	83	11,000	310				
1,2,3,7,8-PeCDF		110	1.5	1.0	ND	1.4				
2,3,4,7,8-PeCDF		130	3.8	1.5	8.4	ND				
Total PeCDF		2,000	36	19	1,500	40				
1,2,3,7,8-PeCDD		33	2.0	ND	96	4.2				
Total PeCDD		2,000	47	17	6,100	120				
1,2,3,4,7,8-HxCDF		30	ND	ND	39	ND				
1,2,3,6,7,8-HxCDF		62	1.6	ND	47	ND				
2,3,4,6,7,8-HxCDF		75	ND	ND	ND	ND				
1,2,3,7,8,9-HxCDF		13	1.2	ND	ND	ND				
Total HxCDF		720	16	4.1	410	2.4				
1,2,3,4,7,8-HxCDD		23	ND	ND	58	ND				
1,2,3,6,7,8-HxCDD		39	1.1	ND	100	3.7				
1,2,3,7,8,9-HxCDD		27	ND	ND	96	2.8				
Total HxCDD		1,500	45	20	3,200	63				
1,2,3,4,6,7,8-HpCDF		94	3.4		43	ND				
1,2,3,4,7,8,9-HpCDF		ND	ND	ND	ND	ND				
Total HpCDF		94	3.4	ND	43	ND				
1,2,3,4,6,7,8-HpCDD		120	6.6	ND	280	ND				
Total HpCDD		500	22	ND	830	9.3				
OCDF		ND	ND	ND	36	ND				
OCDD		53	13	3.4	230	ND				
Total 2,3,7,8-TCDD Equiva	alence:	150	3.9	1.00	140	4.4				
	EU OEL	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)				
Comparison Criteria	OSHA PEL	LFC	LFC	LFC	LFC	LFC				
companson citteria	NIOSH REL	LFC	LFC	LFC	LFC	LFC				
	ACGIH TLV	LFC	LFC	LFC	LFC	LFC				

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

pg/m<sup>3</sup>: picograms per cubic meter of air

ND: None Detected

--: Data not available

LFC: Lowest Feasible Concentration

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

#### Environmental Air Sampling Results - Pond Island Municipal Waste Disposal Site (MWDS) and Temporary Debris Site Table 9b - Dioxin/Furan Testing Results

			South - MWDS							
Constituent of Conce	rn		Smoke (	pg/m <sup>3</sup> )		Upwind (pg/m3)	Personne	el (pg/m3)		
		02-001	02-002	02-003	02-004	02-005	02-006	02-007		
2,3,7,8-TCDF		27	79	28	ND	ND	ND	ND		
Total TCDF		1700	3700	2100	17000	110	16	9.2		
2,3,7,8-TCDD		7.2	15	5.2	150	ND	ND	ND		
Total TCDD		1100	820	990	25000	280	34	11		
1,2,3,7,8-PeCDF		27	ND	23	170	ND	ND	ND		
2,3,4,7,8-PeCDF		ND	18	28	280	ND	ND	ND		
Total PeCDF		450	410	620	4000	22	6.2	1.9		
1,2,3,7,8-PeCDD		7.2	9.7	10	270	ND	ND	ND		
Total PeCDD		300	220	430	9300	110	13	ND		
1,2,3,4,7,8-HxCDF		7.7	ND	16	120	0.56	ND	ND		
1,2,3,6,7,8-HxCDF		ND	ND	16	150	ND	ND	ND		
2,3,4,6,7,8-HxCDF		ND	ND	18	ND	0.49	ND	ND		
1,2,3,7,8,9-HxCDF		ND	ND	3.7	19	ND	ND	ND		
Total HxCDF		63	26	200	1400	2.4	1.1	ND		
1,2,3,4,7,8-HxCDD		ND	ND	6.0	140	ND	ND	ND		
1,2,3,6,7,8-HxCDD		5.2	ND	8.2	300	1.4	ND	ND		
1,2,3,7,8,9-HxCDD		6.3	ND	6.6	240	0.87	ND	ND		
Total HxCDD		160	160	210	5700	64	9.9	1.7		
1,2,3,4,6,7,8-HpCDF		5.7	ND	23	400	ND	0.65	ND		
1,2,3,4,7,8,9-HpCDF		ND	ND	ND	17	ND	ND	ND		
Total HpCDF		5.7	ND	23	510	ND	0.65	ND		
1,2,3,4,6,7,8-HpCDD		17	16	22	720	2.8	ND	ND		
Total HpCDD		38	40	61	2200	8.0	2.6	ND		
OCDF		ND	ND	ND	27	ND	ND	ND		
OCDD		ND	22	34	480	ND	3.0	1.6		
Total 2,3,7,8-TCDD Equiva	alence:	23	40	36	590	1.1	0.021	0.0016		
	EU OEL	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)		
Comparison Criteria	OSHA PEL	LFC	LFC	LFC	LFC	LFC	LFC	LFC		
companson citteria	NIOSH REL	LFC	LFC	LFC	LFC	LFC	LFC	LFC		
	ACGIH TLV	LFC	LFC	LFC	LFC	LFC	LFC	LFC		

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

pg/m<sup>3</sup>: picograms per cubic meter of air

ND: None Detected

--: Data not available

LFC: Lowest Feasible Concentration

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

#### Environmental Air Sampling Results - Pond Island Municipal Wast Disposal Site (MWDS) and Temporary Debris Site Table 9c - Dioxin/Furan Testing Results

		Temporary Debris Site								
Constituent of Concer	'n		Smoke (pg/m <sup>3</sup> )		Upwind (pg/m3)	Personne	l (pg/m3)			
		03-001	03-003	03-004	03-005	03-006	03-007			
2,3,7,8-TCDF		ND	33	ND	ND	ND	ND			
Total TCDF		42,000	1,900	2,500	0.97	14	19			
2,3,7,8-TCDD		180	15	15	ND	ND	ND			
Total TCDD		54,000	4,400	3,300	ND	19	28			
1,2,3,7,8-PeCDF		200	15	19	ND	ND	ND			
2,3,4,7,8-PeCDF		300	23	34	ND	ND	ND			
Total PeCDF		6,700	580	740	ND	ND	2			
1,2,3,7,8-PeCDD		200	24	23	ND	ND	ND			
Total PeCDD		21,000	2,400	1,300	ND	ND	10			
1,2,3,4,7,8-HxCDF		82	6.3	14	ND	ND	ND			
1,2,3,6,7,8-HxCDF		75	6.1	13	ND	ND	ND			
2,3,4,6,7,8-HxCDF		90	6.7	13	ND	ND	ND			
1,2,3,7,8,9-HxCDF		10	ND	ND	ND	ND	ND			
Total HxCDF		1,100	58	150	ND	ND	ND			
1,2,3,4,7,8-HxCDD		76	7.3	12	ND	ND	ND			
1,2,3,6,7,8-HxCDD		130	13	17	ND	ND	ND			
1,2,3,7,8,9-HxCDD		100	12	15	ND	ND	ND			
Total HxCDD		8,700	780	620	ND	5.8	7.8			
1,2,3,4,6,7,8-HpCDF		64	5.0	19	ND	3.1	ND			
1,2,3,4,7,8,9-HpCDF		ND	ND	ND	ND	ND	ND			
Total HpCDF		64	5.0	19	ND	8.4	ND			
1,2,3,4,6,7,8-HpCDD		200	17	43	ND	12	ND			
Total HpCDD		790	87	210	ND	24	1.8			
OCDF		ND	ND	ND	ND	9.3	ND			
OCDD		54	ND	43	ND	160	1.6			
Total 2,3,7,8-TCDD Equiva	lence:	550	48	58	0.00	0.33	0.0016			
	EU OEL	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)	10 (Germany)			
Comparison Critoria	OSHA PEL	LFC	LFC	LFC	LFC	LFC	LFC			
Comparison Criteria	NIOSH REL	LFC	LFC	LFC	LFC	LFC	LFC			
	ACGIH TLV	LFC	LFC	LFC	LFC	LFC	LFC			

Bold: Indicates that value was equal to or greater than one or more of the Comparison Criteria

pg/m<sup>3</sup>: picograms per cubic meter of air

ND: None Detected

--: Data not available

LFC: Lowest Feasible Concentration

EU OEL: European Union Occupational Exposure Limit

OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit

NIOSH REL: National Institute for Occupational Safety and Health Recommended Exposure Limit

Zone	Sample Type	Sample ID (Day- Location)	Arsenic (mg/m3)	Barium (mg/m3)	Cadmium (mg/m3)	Chromium (mg/m3)	Lead (mg/m3)	Selenium (mg/m3)	Silver (mg/m3)
		01-001	0.000077	ND	ND	ND	ND	ND	ND
	Smoko	01-002	0.00016	ND	ND	ND	0.000088	ND	ND
Northwest - MWDS	SHIOKE	01-003	0.00018	ND	ND	0.00076	0.000047	ND	ND
		01-004	ND	ND	ND	ND	ND	ND	ND
	Upwind	01-005	ND	ND	ND	0.00073	ND	ND	ND
		02-001	0.000073	ND	ND	ND	ND	ND	ND
	Smoko	02-002	0.00020	ND	ND	ND	ND	ND	ND
	SHIOKE	02-003	0.00016	ND	ND	0.00068	0.000038	ND	ND
South - MWDS		02-004	0.00050	ND	0.000071	ND	0.0017	0.000047	ND
	Upwind	02-005	ND	ND	ND	ND	ND	ND	ND
	Dercennel	02-006	ND	ND	ND	ND	ND	ND	ND
	Personner	02-007	ND	ND	ND	0.00083	ND	ND	ND
		03-001	0.00065	ND	ND	ND	0.0023	0.00014	ND
	Cmake	03-002	0.00015	ND	ND	0.00080	ND	ND	ND
	Smoke	03-003	0.00018	ND	ND	0.00070	ND	ND	ND
Temporary Debris Site		03-004	0.0013	ND	ND	ND	ND	0.00014	ND
	Upwind	03-005	ND	ND	ND	ND	ND	ND	ND
	Dercennel	03-006	ND	ND	ND	ND	ND	ND	ND
	Personner	03-007	ND	ND	ND	ND	ND	ND	ND
		EU OEL	0.2 (Israel)	0.5 (Finland)	0.004 (Finland)	2.0 (EU)	0.15 (EU)	0.1 (Finland)	0.01 (Germany AGS)
Comparison	Critoria	OSHA PEL	0.5	0.5	0.005	0.5	0.05	0.2	0.01
Comparison	Comparison Criteria			0.5	LFC	0.5	0.05	0.2	0.01
		ACGIH TLV	0.01	0.5	0.002	0.5	0.05	0.2	0.1

#### Environmental Air Sampling Results - Pond Island Municipal Waste and Disposal Site (MWDS) and Temporary Debris Site Table 10 - Heavy Metal Testing Results

Bold - Indicates that value was equal to or greater than one or more of the Comparison Criteria

mg/m<sup>3</sup>: Milligrams per cubic meter of air

--: Data not avaliable

ND: None Detected

LFC: Lowest Feasible Concentration

EU OEL: Occupational Exposure Limit

OSHA PEL: Permissible Exposure Limit

NIOSH REL: Recommended Exposure Limit

ACGIH TLV: Threshold Limit Value

# FIGURES

Figure 1 – Site Sampling Plan Figure 2 – Locations of CO Analytical Sampling Results Figure 3 – Locations of Instantaneous Particulate (PM 2.5) Results Figure 4 – Locations of Benzene Sampling Results Figure 5 – Locations of H<sub>2</sub>S Sampling Results Figure 6 – Locations of Acenaphthylene Sampling Results Figure 7 – Locations of Benzo(a)pyrene Sampling Results Figure 8 – Locations of Ozone Sample Results Figure 9 – Locations of Dioxin and Furan Results Figure 10A – Locations with Results Above COCs – NW Municipal Waste Disposal Site Figure 10C – Locations with Results Above COCs – Temporary Debris Site



















Smoke 01-003								
Constituent of Concern	Concentration	Criteria						
CO (Direct Read)	5	NA						
H <sub>2</sub> S (Direct Read)	0	NA						
CH <sub>4</sub>	0	NA						
TVOCs	17	NA						
CO <sub>2</sub>	6000	NA						
Particulates	97	5 mg/m3						
CO	13	25 ppm						
Benzene	1.0	0.3 mg/m3						
H <sub>2</sub> S	<0.30	1 ppm						
Acenaphthylene	ND	0.1 mg/m3						
Benzo(a)Pyrene Equivalent	0.00039	0.00055 mg/m3						
Ozone	ND	0.05 ppm						
Dioxin/ Furans	1	10 pg/m3						

	Upwind 01-005	
Constituent of Concern	Concentration	Criteria
CO (Direct Read)	ND	NA
H <sub>2</sub> S (Direct Read)	ND	NA
$CH_4$	ND	NA
TVOCs	ND	NA
CO <sub>2</sub>	ND	NA
Particulates	31	5 mg/m3
CO	<6	25 ppm
Benzene	0.1	0.3 mg/m3
H <sub>2</sub> S	< 0.35	1 ppm
Acenaphthylene	ND	0.1 mg/m3
Benzo(a)Pyrene Equivalent	NR	0.00055 mg/m3
Ozone	ND	0.05 ppm
Dioxin/ Furans	4	10 pg/m3

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Smoke 01-002				
Constituent of Concern	Concentration	Criteria		
CO (Direct Read)	9	NA		
l <sub>2</sub> S (Direct Read)	0	NA		
$CH_4$	0	NA		
TVOCs	40	NA		
CO <sub>2</sub>	6000	NA		
Particulates	46	5 mg/m3		
CO	6.7	25 ppm		
Benzene	1.0	0.3 mg/m3		
$H_2S$	<0.28	1 ppm		
Acenaphthylene	ND	0.1 mg/m3		
Benzo(a)Pyrene Equivalent	0.44000	0.00055 mg/m3		
Ozone	ND	0.05 ppm		
Dioxin/ Furans	4	10 pg/m3		

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Smoke 01-001			
Constituent of Concern	Concentration	Criteria	
CO (Direct Read)	136	NA	
H <sub>2</sub> S (Direct Read)	2	NA	
CH <sub>4</sub>	0	NA	
TVOCs	200	NA	
CO <sub>2</sub>	5000	NA	
Particulates	1	5 mg/m3	
CO	26	25 ppm	
Benzene	6.0	0.3 mg/m3	
H <sub>2</sub> S	3.10	1 ppm	
Acenaphthylene	0.1	0.1 mg/m3	
Benzo(a)Pyrene Equivalent	0.00056	0.00055 mg/m3	
Ozone	0.91	0.05 ppm	
Dioxin/ Furans	150	10 pg/m3	

Smoke 01-004				
Constituent of Concern	Concentration	Criteria		
CO (Direct Read)	ND	NA		
H <sub>2</sub> S (Direct Read)	ND	NA		
CH <sub>4</sub>	ND	NA		
TVOCs	ND	NA		
CO <sub>2</sub>	ND	NA		
Particulates	97	5 mg/m3		
CO	18	25 ppm		
Benzene	8.4	0.3 mg/m3		
H <sub>2</sub> S	<0.33	1 ppm		
Acenaphthylene	ND	0.1 mg/m3		
Benzo(a)Pyrene Equivalent	NR	0.00055 mg/m3		
Ozone	ND	0.05 ppm		
Dioxin/ Furans	140	10 pg/m3		



Evidence of Sub-Surface Smoldering, Smoke, Or Thermal Vent at Surface Heavy Equipment Active Work Zone

NA = Not Applicable ND = Not Detected BOLD = Exceeds Criteria

NW MUNICIPAL WASTE DISPOSAL SITE RESULTS







# ATTACHMENT A

# PHOTO PAGES



Photo 1 – Typical Area Sampling Station Placement



Photo 2 – Typical Area Sampling Station Placement



Photo 3 – Typical Personnel Sample Placement



Photo 4 - Typical Personnel Sample Placement

# ATTACHMENT B

# COCS AND NIOSH LINKS

## Methane

https://www.cdc.gov/niosh/ipcsneng/neng0291.html

# Carbon Dioxide

https://www.cdc.gov/niosh/ipcsneng/neng0021.html

## Carbon Monoxide

https://www.cdc.gov/niosh/ipcsneng/neng0023.html

# Propylene

https://www.cdc.gov/niosh/ipcsneng/neng0559.html

## Chloromethane

https://www.cdc.gov/niosh/ipcsneng/neng0419.html

### n-Butane

https://www.cdc.gov/niosh/ipcsneng/neng0232.html

# 1,3-Butadiene

https://www.cdc.gov/niosh/ipcsneng/neng0017.html

### Chloroethane

https://www.cdc.gov/niosh/ipcsneng/neng0132.html

## Ethanol

https://www.cdc.gov/niosh/ipcsneng/neng0044.html

# Isopropyl alcohol

https://www.cdc.gov/niosh/ipcsneng/neng0554.html

## Acetone

https://www.cdc.gov/niosh/ipcsneng/neng0087.html

## Acetonitrile

https://www.cdc.gov/niosh/ipcsneng/neng0088.html

# Acrylonitrile

https://www.cdc.gov/niosh/ipcsneng/neng0092.html

### n-Hexane

https://www.cdc.gov/niosh/ipcsneng/neng0279.html

### 2-Butanone

https://www.cdc.gov/niosh/ipcsneng/neng0179.html

### Ethyl acetate

https://www.cdc.gov/niosh/ipcsneng/neng0367.html

# Tetrahydrofuran

https://www.cdc.gov/niosh/ipcsneng/neng0578.html

# Cyclohexane

https://www.cdc.gov/niosh/ipcsneng/neng0242.html

## n-Heptane

https://www.cdc.gov/niosh/ipcsneng/neng0657.html

## Benzene

https://www.cdc.gov/niosh/ipcsneng/neng0015.html

Methyl Methacrylate

https://www.cdc.gov/niosh/ipcsneng/neng0300.html

# 1,4-Dioxane

https://www.cdc.gov/niosh/ipcsneng/neng0041.html

### 4-Methyl-2-pentanone

https://www.cdc.gov/niosh/ipcsneng/neng0511.html

# Toluene

https://www.cdc.gov/niosh/ipcsneng/neng0078.html

### 2-Hexanone

https://www.cdc.gov/niosh/ipcsneng/neng0489.html

# Chlorobenzene

https://www.cdc.gov/niosh/ipcsneng/neng0642.html

# Ethylbenzene

https://www.cdc.gov/niosh/ipcsneng/neng0268.html

# Xylene (p,m)

https://www.cdc.gov/niosh/ipcsneng/neng0086.html https://www.cdc.gov/niosh/ipcsneng/neng0085.html

Xylene (Ortho)

https://www.cdc.gov/niosh/ipcsneng/neng0084.html

# Styrene

https://www.cdc.gov/niosh/ipcsneng/neng0073.html

Isopropylbenzene (cumene)

https://www.cdc.gov/niosh/ipcsneng/neng0170.html

4-Ethyltoluene
# 1,3,5-Trimethylbenzene

https://www.cdc.gov/niosh/ipcsneng/neng1155.html

# 1,2,4-Trimethylbenzene

https://www.cdc.gov/niosh/ipcsneng/neng1433.html

## Naphthalene

https://www.cdc.gov/niosh/ipcsneng/neng0667.html

# Hydrogen Sulfide

https://www.cdc.gov/niosh/ipcsneng/neng0165.html

## Acenaphthylene

https://www.cdc.gov/niosh/docs/2003-154/pdfs/5506.pdf

# Acenaphthene

https://www.cdc.gov/niosh/ipcsneng/neng1674.html

## Fluorene

https://www.cdc.gov/niosh/docs/2003-154/pdfs/5506.pdf

## Phenanthrene

https://www.cdc.gov/niosh/docs/2003-154/pdfs/5506.pdf

## Anthracene

https://www.cdc.gov/niosh/ipcsneng/neng0825.html

# Fluoranthene

https://www.cdc.gov/niosh/docs/2003-154/pdfs/5506.pdf

# Pyrene

https://www.cdc.gov/niosh/ipcsneng/neng1474.html

# Chrysene

https://www.cdc.gov/niosh/ipcsneng/neng1672.html

Benzo(e)pyrene

https://www.cdc.gov/niosh/ipcsneng/neng0104.html

## Benzo(b)fluoranthene

https://www.cdc.gov/niosh/ipcsneng/neng0720.html

Benzo(k)fluoranthene

https://www.cdc.gov/niosh/ipcsneng/neng0721.html

## Benzo(a)pyrene

https://www.cdc.gov/niosh/ipcsneng/neng0104.html

**Respirable Particulates** 

Ozone

https://www.cdc.gov/niosh/ipcsneng/neng0068.html

2,3,7,8 Tetrachlorodibenzo-p-dioxin

https://www.cdc.gov/niosh/ipcsneng/neng1467.html

PCBs

https://www.cdc.gov/niosh/ipcsneng/neng0939.html

Arsenic (As)

https://www.cdc.gov/niosh/ipcsneng/neng0013.html

Lead (Pb)

https://www.cdc.gov/niosh/ipcsneng/neng0052.html

Barium (Ba)

https://www.cdc.gov/niosh/ipcsneng/neng1052.html

Chromium (Cr)

https://www.cdc.gov/niosh/ipcsneng/neng0029.html

Cadmium (Cd)

https://www.cdc.gov/niosh/ipcsneng/neng0020.html

Silver (Ag)

https://www.cdc.gov/niosh/ipcsneng/neng0810.html

Selenium (Se)

https://www.cdc.gov/niosh/ipcsneng/neng0072.html

Asbestos

https://www.atsdr.cdc.gov/asbestos/

Hydrogen Cyanide

https://www.cdc.gov/niosh/ipcsneng/neng0492.html

https://www.cdc.gov/niosh/npg/npgd0333.html

# ATTACHMENT C

# LABORATORY RESULTS, LANDFILL GASES (CH<sub>4</sub>, CO<sub>2</sub>, AND CO)



Attn:

Project:

EMSL Analytical

200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com

Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014

SXM Debris

EMSL Order #: **491800829** Customer ID: **EEG50** Customer PO: **20184191DEBRIS** 

> Phone: **305-374-8300** Fax: **305-374-8301**

Date Collected: **8/30/2018** Date Received: **9/4/2018** 

# USEPA TO-3 Modified Laboratory Report- Sample Summary

EMSL Sample ID.	Client Sample ID.	Start Sampling Date	Start Sampling Time
491800829-0001	03-006 (P)	8/30/2018	9:25 AM
491800829-0002	01-005	8/28/2018	10:00 AM
491800829-0003	03-002	8/30/2018	8:50 AM
491800829-0004	03-003	8/30/2018	8:55 AM
491800829-0005	03-005	8/30/2018	9:05 AM
491800829-0006	03-004	8/30/2018	9:00 AM
491800829-0007	02-003	8/29/2018	8:25 AM
491800829-0008	02-005	8/29/2018	8:44 AM
491800829-0009	03-001	8/30/2018	8:45 AM
491800829-0010	02-001	8/29/2018	8:15 AM
491800829-0011	01-003	8/28/2018	9:45 AM
491800829-0012	03-007 (P)	8/30/2018	9:45 AM
491800829-0013	02-007 (P)	8/29/2018	9:15 AM
491800829-0014	02-004	8/29/2018	8:37 AM
491800829-0015	02-006 (P)	8/29/2018	8:55 AM
491800829-0016	01-002	8/28/2018	9:30 AM
491800829-0017	02-002	8/29/2018	8:20 AM
491800829-0018	01-001	8/28/2018	9:15 AM
491800829-0019	01-004	8/28/2018	10:00 AM

If "Preliminary Report" is displayed in the signature box; this indicates that there are samples that have not yet been analyzed, that are in a preliminary state, or that analysis is in progress but not completed at the time of report issue.

Report Date: Report 9/12/2018 10/2/2018

Report Revision R0 R1 Revision Comments Initial Report Wrong results reported for Sample 2.

Majour Howley

Marjorie Howley, Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified.

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The results are not blank corrected unless otherwise noted. Interpretation and use of test results are the responsibility of the client. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.



Attn:

# EMSL Analytical

200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com

Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014 EMSL Order #: **491800829** Customer ID: **EEG50** Customer PO: **20184191DEBRIS** 

> Phone: **305-374-8300** Fax: **305-374-8301**

 Date Collected:
 8/30/2018

 Date Received:
 9/4/2018

# **Case Narrative**

#### Method Reference

USEPA TO-3 Modified, Method for the Determination of Volatile Organic Compounds in Ambient Air using Gas Chromatography with Flame Ionization Detector. Rev 1.0, April 1984

#### Column

Varian CP-Sil 5 CB, 50m x 0.53mm ID x 5um

Project: SXM Debris

#### Concentrator Traps:

0.4cc Loop

Gas Standards:

Certified Gas standards were used for all analyses.

#### Sample Volumes:

Sample volume aliquots for this procedure is 0.4cc by loop injection. Other volumes for sample dilutions are reflected on each result page.

#### Holding Times:

Standard holding times of 30 days (Summa Canister) and 72 hours (Tedlar Bag) were met for all samples.

#### Sampling Pressures:

All samples (Summa Canister) were received at acceptable pressure/vacuum unless listed below.

#### Sample Dilutions:

Diluitions reported are designated by the sample # with a "DL" suffix resulting from initial analysis having compounds exceeding calibration as reported with an "E" qualifier.

Methane for 491800829-10 was reported with an E qualifier. A dilution could not be run due to instrument failure.

#### QA/QC criteria outside method specifications are listed below (if applicable).

#### Initial Calibration

All Initial Calibratiion criteria met method specification.

Initial Calibration Verification Standard (ICVS)- Second Source ICVS met method specification with 70-130% recovery for 100% of compounds.

#### Laboratory Control Sample (LCS)

LCS met method specification with 70-130% recovery for 100% of compounds.(If the LCS does not meet criteria but any compounds which have recoveries >130% are not found in the samples, samples may be reported)

Continuing Calibration Verification Standard (CCVS)

CCVS met method specification with all compounds within 30% deviation.

#### Ending Calibration Verification Standard (ECVS)

ECVS met method specification with all compounds within 30% deviation.

#### Method Blanks (MB)

Method Blank met method specification.

#### Sample Duplicate (DUP)

Sample Duplicate met method specification with all hits within 25% Relative Standard Deviation (RPD).

	EMSL Analytical 200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com	EMSL Order #: Customer ID: Customer PO:	491800829 EEG50 20184191DEBRIS
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014	Phone: Fax:	305-374-8300 305-374-8301
		Date Collected:	8/30/2018
Project:	SXM Debris	Date Received:	9/4/2018
	<u>Case Nar</u>	<u>rative</u>	

Manual Integration : -Listed below if applicable. Before and after documentation provided in extended deliverable packages.

### The following data qualifiers that may have been reported with the data,

ND- Non Detect. This notation would be used in the results column in lieu of a "U" qualifier.

U- Compound was analyzed for but not detected at a listed and appropriately adjusted reporting level.

J- Estimated value reported below adjusted reporting limit for target compounds or estimating a concentration for TICs where a 1:1 response is assumed

B- Compound found in associated method blank as well as in the sample.

E- Estimated value exceeding upper calibration range of instrument. Ethanol and isopropyl alcohol are not specifically targeted to dilute within calibration range.

- D- Compound reported from additional diluted analysis.
- N- indicates presumptive evidence of a compound based on library search match.

EMSL Analytical, Inc. certifies that this data package is in compliance with the terms and conditions of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer –readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature.

**Report Date** 07/18/2018

Report Revision

Revision Comments Initial Report

Majour Howley

Marjorie Howley, Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified.

EMISL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-1 EEG50 20184191DEBRIS			
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-006 (P)		
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	
Initial	09/06/2018	ТР	F1494.D	HD0183	1 cc	1.29	
Target Compound Results Summary							

Target Compounds	CAS#	MW	Result ppmv	RL ppmv	Q	Result mg/m3	RL mg/m3	Comments
Methane	74-82-8	16.04	3.1	2.6		2.1	1.7	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Typical Indoor Air Background Cevels OSHA PEL Hazard							
Methane         1.8 ppm         2-5 ppm         n/a         Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 : <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-2 EEG50 20184191DEBRIS			
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/28/2018 9/4/2018 01-005			
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor		
initiai	09/06/2018	IP	F1496.D	HD2155	1 CC	1.11		
Target Compound Results Summary								

Target Compounds	CAS#	MW	Result ppmv	RL ppmv	Q	Result mg/m3	RL mg/m3	Comments
Methane	74-82-8	16.04	4.0	2.2		2.6	1.5	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Typical Indoor Air Background Cevels OSHA PEL Hazard							
Methane         1.8 ppm         2-5 ppm         n/a         Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 to15lab@EMSL.com	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-3 EEG50 20184191DEBRIS					
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East		Phone: Fax: Date Collected: Date Received: Sample ID:	<b>305-374-8300</b> <b>305-374-8301</b> <b>8/30/2018</b> <b>9/4/2018</b> 03-002				
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	<u>Sample Vol.</u>	Dil. Factor			
Initial	09/06/2018	ТР	F1497.D	HD2275	1 cc	1.07			
	Target Compound Results Summary								

	U					1		
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	7.9	2.1		5.2	1.4	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Typical Indoor Air Background Cevels OSHA PEL Hazard							
Methane         1.8 ppm         2-5 ppm         n/a         Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMISL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-4 EEG50 20184191DEBRIS		
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-003	
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1498.D	<u>Canister ID</u> HD2282	<u>Sample Vol.</u> 1 cc	Dil. Factor 1.12
_		Target Con	npound Result	s Summarv		

		-						
Target Compounds	CA8#	N/1\A/	Result	RL	0	Result	RL	Commonts
rarger compounds	CA3#	101 0 0	ppinv	phine	3	mg/ms	my/ms	Comments
Methane	74-82-8	16.04	4.3	2.2		2.8	1.5	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte         Typical Atmospheric Background Levels         Typical Indoor Air Background Levels         OSHA PEL         Hazard							
Methane	n/a	Simple asphyxiant, flammable					

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 to15lab@EMSL.com	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-5 EEG50 20184191DEBRIS					
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-005				
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1499.D	<u>Canister ID</u> HD2291	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.06			
	Target Compound Results Summary								

		-						
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	2.6	2.1		1.7	1.4	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Levels OSHA PEL Hazard							
Methane         1.8 ppm         2-5 ppm         n/a         Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 to15lab@EMSL.com	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-6 EEG50 20184191DEBRIS						
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-004					
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor				
Initial	09/06/2018	TP	F1500.D	HD2298	1 cc	2.94				
	Target Compound Results Summary									

Target Compounds	CAS#	MW	Result ppmv	RL ppmv	Q	Result mg/m3	RL mg/m3	Comments
Methane	74-82-8	16.04	13	5.9		8.5	3.9	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Levels OSHA PEL Hazard							
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMISL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-7 EEG50 20184191DEBRIS		
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/29/2018 9/4/2018 02-003	
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1501.D	<u>Canister ID</u> HD2300	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.23
_		Target Con	npound Results	s Summary		

		-						
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	8.7	2.5		5.7	1.6	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Levels OSHA PEL Hazard							
Methane         1.8 ppm         2-5 ppm         n/a         Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMISL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-8 EEG50 20184191DEBRIS		
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/29/2018 9/4/2018 02-005	
<u>Analysis</u> Initial	Analysis Date 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1502.D	<u>Canister ID</u> HD2303	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.23
_		Target Con	npound Results	s Summary		

		-						
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	2.6	2.5		1.7	1.6	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte	Typical Atmospheric Background Levels	Typical Indoor Air Background Levels	OSHA PEL	Hazard			
Methane	1.8 ppm	2-5 ppm	n/a	Simple asphyxiant, flammable			

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMISL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-9 EEG50 20184191DEBRIS		
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-001	
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1503.D	<u>Canister ID</u> HD2702	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 2.01
_		Target Con	npound Results	s Summary		

		-						
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	12	4.0		7.8	2.6	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte	Typical Atmospheric Background Levels	Typical Indoor Air Background Levels	OSHA PEL	Hazard			
Methane	1.8 ppm	2-5 ppm	n/a	Simple asphyxiant, flammable			

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMISL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-10 EEG50 20184191DEBRIS						
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/29/2018 9/4/2018 02-001					
Analysis Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1505.D	<u>Canister ID</u> HD2705	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.07				
	Target Compound Results Summary									

	U							
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	160	2.1	Е	100	1.4	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Typical Indoor Air Background OSHA PEL Hazard Hazard							
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 015lab@EMSL.com	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-11 EEG50 20184191DEBRIS					
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/28/2018 9/4/2018 01-003				
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1506.D	<u>Canister ID</u> HD2727	<u>Sample Vol.</u> 1 cc	Dil. Factor 1.23			
	Target Compound Results Summary								

Target Compounds	CAS#	MW	Result ppmv	RL ppmv	Q	Result mg/m3	RL mg/m3	Comments
Methane	74-82-8	16.04	16	2.5		11	1.6	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte	Typical Atmospheric Background Levels	Typical Indoor Air Background Levels	OSHA PEL	Hazard			
Methane	1.8 ppm	2-5 ppm	n/a	Simple asphyxiant, flammable			

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 to15lab@EMSL.com			EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-12 EEG50 20184191DEBRIS				
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-007 (P)					
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1507.D	<u>Canister ID</u> HD2733	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.36				
	Target Compound Results Summary									

			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	3.7	2.7		2.4	1.8	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Levels OSHA PEL Hazard							
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammab							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-13 EEG50 20184191DEBRIS				
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/29/2018 9/4/2018 02-007 (P)			
<u>Analysis</u> Initial	Analysis Date 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1508.D	<u>Canister ID</u> HD2743	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.12		
Target Compound Results Summary								

			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	2.7	2.2		1.8	1.5	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte         Typical Atmospheric Background Levels         Typical Indoor Air Background Levels         OSHA PEL         Hazard							
Methane	1.8 ppm	2-5 ppm	n/a	Simple asphyxiant, flammable			

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-14 EEG50 20184191DEBRIS				
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East	Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/29/2018 9/4/2018 02-004					
<u>Analysis</u> Initial	Analysis Date 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1509.D	<u>Canister ID</u> HD2752	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.2			
	Target Compound Results Summary								

Target Compounds	CAS#	MW	Result ppmv	RL ppmv	Q	Result mg/m3	RL mg/m3	Comments
Methane	74-82-8	16.04	39	2.4		26	1.6	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Levels OSHA PEL Hazard							
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammable							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-15 EEG50 20184191DEBRIS				
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/29/2018 9/4/2018 02-006 (P)			
<u>Analysis</u> Initial	Analysis Date 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1510.D	Canister ID HD2768	<u>Sample Vol.</u> 1 cc	Dil. Factor 1.33		
Target Compound Results Summary								

	-	-						
Target Compounds	CAS#	MM	Result	RL	0	Result	RL mg/m3	Comments
raiger compounds	0.00#		ppinv	ppinv	ÿ	ing/ins	ilig/ilis	Commenta
Methane	74-82-8	16.04	3.0	2.7		2.0	1.7	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References							
Analyte Typical Atmospheric Background Levels Typical Indoor Air Background OSHA PEL Hazard							
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flamma							

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 015lab@EMSL.com	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-16 EEG50 20184191DEBRIS				
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/28/2018 9/4/2018 01-002			
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1511.D	<u>Canister ID</u> HD2786	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1		
Target Compound Results Summary								

	U							
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	13	2.0		8.3	1.3	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References								
Analyte Typical Atmospheric Typical Indoor Air Background Background Levels Levels OSHA PEL Hazard								
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammable								

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 : <u>o15lab@EMSL.com</u>			EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-17 EEG50 20184191DEBRIS
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East			Phone: Fax: Date Collected: Date Received: Sample ID:	<b>305-374-8300</b> <b>305-374-8301</b> <b>8/29/2018</b> <b>9/4/2018</b> 02-002
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/06/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> F1512.D	<u>Canister ID</u> HD2787	<u>Sample Vol.</u> 1 cc	<u>Dil. Factor</u> 1.24
_		Target Con	npound Result	s Summary		

Result RL Result RL									
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments	
Methane	74-82-8	16.04	69	2.5		46	1.6		

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References								
Analyte Typical Atmospheric Typical Indoor Air Background Background Levels Levels OSHA PEL Hazard								
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammable								

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 to15lab@EMSL.com	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-18 EEG50 20184191DEBRIS		
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East			Phone: Fax: Date Collected: Date Received: Sample ID:	<b>305-374-8300</b> <b>305-374-8301</b> <b>8/28/2018</b> <b>9/4/2018</b> 01-001
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/06/2018	TP	F1513.D	HD2802	1 cc	1.31
		Target Con	npound Result	s Summarv		

	U							
			Result	RL		Result	RL	
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	22	2.6		15	1.7	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References								
Analyte Typical Atmospheric Typical Indoor Air Background Background Levels Levels OSHA PEL Hazard								
Methane 1.8 ppm 2-5 ppm n/a Simple asphyxiant, flammable								

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-19 EEG50 20184191DEBRIS		
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East			Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/28/2018 9/4/2018 01-004
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/06/2018	ТР	F1514.D	HD2831	1 cc	1.5
		Tannal Oan	an arm d Deard(			

raiget compound Results Summary								
Result RL Result RL								
Target Compounds	CAS#	MW	ppmv	ppmv	Q	mg/m3	mg/m3	Comments
Methane	74-82-8	16.04	35	3.0		23	2.0	

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

ND = Non Detect

D= Result reported from diluted analysis.

Threshold References								
Analyte Typical Atmospheric Background Levels Typical Indoor Air Background Levels OSHA PEL Hazard								
Methane         1.8 ppm         2-5 ppm         n/a         Simple asphyxiant, flammable								

#### Agency Definitions

OSHA= Occupational Safety and Health Administration

#### Exposure Limit Definitions

PEL= Permissable Exposure Limit

#### Method Reference



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# **USEPA TO-15**

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Attn:

Project: SXM Debris

Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014 EMSL Order #: 491800829 Customer ID: EEG50 Customer PO: 20184191DEBRIS

> Phone: **305-374-8300** Fax: **305-374-8301**

Date Collected: 8/30/2018 Date Received: 9/4/2018

# Fixed Gas Analysis by Using The Draeger CMS (Chip Measurement System) Laboratory Report- Sample Summary

EMSL Sample ID.	Client Sample ID.	Compound	Detection Limit (ppmV)	Sample Result (ppmV)
491800829-0001	03-006 (P)	Carbon dioxide	260	1500
491800829-0002	01-005	Carbon dioxide	220	600
491800829-0003	03-002	Carbon dioxide	210	710
491800829-0004	03-003	Carbon dioxide	220	670
491800829-0005	03-005	Carbon dioxide	210	600
491800829-0006	03-004	Carbon dioxide	590	810
491800829-0007	02-003	Carbon dioxide	250	730
491800829-0008	02-005	Carbon dioxide	250	550
491800829-0009	03-001	Carbon dioxide	400	480
491800829-0010	02-001	Carbon dioxide	210	1400
491800829-0011	01-003	Carbon dioxide	250	680
491800829-0012	03-007 (P)	Carbon dioxide	270	650
491800829-0013	02-007 (P)	Carbon dioxide	220	650
491800829-0014	02-004	Carbon dioxide	240	1900
491800829-0015	02-006 (P)	Carbon dioxide	270	1100
491800829-0016	01-002	Carbon dioxide	200	560
491800829-0017	02-002	Carbon dioxide	240	870
491800829-0018	01-001	Carbon dioxide	260	760
491800829-0019	01-004	Carbon dioxide	300	740

If "Preliminary Report" is displayed in the signature box; this indicates that there are samples that have not yet been analyzed, that are in a preliminary state, or that analysis is in progress but not completed at the time of report issue.

Report Date: 9/12/2018 Report Revision R0 Revision Comments Initial Report

Majour Howley

Marjorie Howley, Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified.

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The results are not blank corrected unless otherwise noted. Interpretation and use of test results are the responsibility of the client. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.



EMSL Order #: 491800829 Customer ID: EEG50 Customer PO: 20184191DEBRIS

Attn: Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014

Project: SXM Debris

Phone: **305-374-8300** Fax: **305-374-8301** 

Date Collected: 8/30/2018 Date Received: 9/4/2018

# Fixed Gas Analysis by Using The Draeger CMS (Chip Measurement System) Laboratory Report- Sample Summary

EMSL Sample ID.	Client Sample ID.	Compound	Detection Limit (ppmV)	Sample Result (ppmV)
491800829-0001	03-006 (P)	Carbon monoxide	6.4	<6.4
491800829-0002	01-005	Carbon monoxide	5.6	<5.6
491800829-0003	03-002	Carbon monoxide	5.4	15
491800829-0004	03-003	Carbon monoxide	5.6	<5.6
491800829-0005	03-005	Carbon monoxide	5.3	<5.3
491800829-0006	03-004	Carbon monoxide	15	18
491800829-0007	02-003	Carbon monoxide	6.2	9.5
491800829-0008	02-005	Carbon monoxide	6.2	<6.2
491800829-0009	03-001	Carbon monoxide	10	26
491800829-0010	02-001	Carbon monoxide	5.4	92
491800829-0011	01-003	Carbon monoxide	6.2	13
491800829-0012	03-007 (P)	Carbon monoxide	6.8	<6.8
491800829-0013	02-007 (P)	Carbon monoxide	5.6	<5.6
491800829-0014	02-004	Carbon monoxide	6.0	15
491800829-0015	02-006 (P)	Carbon monoxide	6.6	<6.6
491800829-0016	01-002	Carbon monoxide	5.0	6.7
491800829-0017	02-002	Carbon monoxide	6.0	130
491800829-0018	01-001	Carbon monoxide	6.6	26
491800829-0019	01-004	Carbon monoxide	7.5	18

If "Preliminary Report" is displayed in the signature box; this indicates that there are samples that have not yet been analyzed, that are in a preliminary state, or that analysis is in progress but not completed at the time of report issue.

Report Date: 9/12/2018 Report Revision R0 Revision Comments Initial Report

Majour Howley

Marjorie Howley, Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified.

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The results are not blank corrected unless otherwise noted. Interpretation and use of test results are the responsibility of the client. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

# ATTACHMENT D

# LABORATORY RESULTS, VOLATILE ORGANIC COMPOUNDS (VOCS)

EMSL Analytical 200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com

EMSL Order #: **491800829** Customer ID: **EEG50** Customer PO: **20184191DEBRIS** 

Phone: 305-374-8300

Fax: 305-374-8301

Date Collected: **8/30/2018** Date Received: **9/4/2018** 

# Laboratory Report- Sample Summary

EMSL Sample ID.	Client Sample ID.	Start Sampling Date	Start Sampling Time
491800829-0001	03-006 (P)	8/30/2018	9:25 AM
491800829-0002	01-005	8/28/2018	10:00 AM
491800829-0003	03-002	8/30/2018	8:50 AM
491800829-0004	03-003	8/30/2018	8:55 AM
491800829-0005	03-005	8/30/2018	9:05 AM
491800829-0006	03-004	8/30/2018	9:00 AM
491800829-0007	02-003	8/29/2018	8:25 AM
491800829-0008	02-005	8/29/2018	8:44 AM
491800829-0009	03-001	8/30/2018	8:45 AM
491800829-0010	02-001	8/29/2018	8:15 AM
491800829-0011	01-003	8/28/2018	9:45 AM
491800829-0012	03-007 (P)	8/30/2018	9:45 AM
491800829-0013	02-007 (P)	8/29/2018	9:15 AM
491800829-0014	02-004	8/29/2018	8:37 AM
491800829-0015	02-006 (P)	8/29/2018	8:55 AM
491800829-0016	01-002	8/28/2018	9:30 AM
491800829-0017	02-002	8/29/2018	8:20 AM
491800829-0018	01-001	8/28/2018	9:15 AM
491800829-0019	01-004	8/28/2018	10:00 AM

If "Preliminary Report" is displayed in the signature box; this indicates that there are samples that have not yet been analyzed, that are in a preliminary state, or that analysis is in progress but not completed at the time of report issue.

Report Date 9/12/2018 Report Revision R0 Revision Comments Initial Report

Majone Howbey

Marjorie Howley, Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified. NJDEP Certification #: 03036

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The results are not blank corrected unless otherwise noted. Interpretation and use of test results are the responsibility of the client. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.



Attn:

5751 Miami Lakes Drive East Miami Lakes, FL 33014

Alex Mavrelis

Project: SXM Debris

EE & G



Attn:

#### **EMSL Analytical** 200 Route 130 North, Cinnaminson,

200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com

Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014 EMSL Order #: **491800829** Customer ID: **EEG50** Customer PO: **20184191DEBRIS** 

> Phone: **305-374-8300** Fax: **305-374-8301**

Date Collected: **8/30/2018** Date Received: **9/4/2018** 

# Case Narrative

#### Method Reference

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

#### <u>Column</u>

Restek RTX-502.2, 60m, 0.25mm ID, 1.4um

Project: SXM Debris

#### Concentrator Traps:

Entech Dual Cold Traps: (1) 1/8" No Packing, (2) 1/8" Tenax.

#### Gas Standards:

Certified Gas standards were used for all analyses.

#### Sample Volumes:

Sample volume aliquots for this procedure are 250cc for indoor/ ambient air and 25cc for soil gas. Other volumes for sample dilutions are reflected on each result page.

#### Holding Times:

Standard holding times of 30 days were met for all samples.

#### Sampling Pressures:

All samples were received at acceptable pressure/vacuum unless listed below.

#### Sample Dilutions:

Diluitions reported are designated by the sample # with a "DL" suffix resulting from initial analysis having compounds exceeding calibration as reported with an "E" qualifier. Ethanol and Isopropanol are not diluted for and may be reported with an "E" qualifier on the final result.

QA/QC criteria outside method specifications are listed below (if applicable).

#### Initial Calibration

All Initial Calibratiion criteria met method specification.

Initial Calibration Verification Standard (ICVS)- Second Source ICVS met method specification with 70-130% recovery for 100% of compounds.

#### Laboratory Control Sample (LCS)

LCS met method specification with 70-130% recovery for 100% of compounds.(If the LCS does not meet criteria but any compounds which have recoveries >130% are not found in the samples, samples may be reported)

Continuing Calibration Verification Standard (CCVS)

CCVS met method specification with all compounds within 30% deviation.

#### Ending Calibration Verification Standard (ECVS)

ECVS met method specification with all compounds within 30% deviation.

#### Method Blanks (MB)

Method Blank met method specification.

#### Reporting Limit Laboratory Control Samples (RLLCS)

RLLCS met method specification with 90% of compounds within the 60-140% recovery range. Individual compounds outside of the recovery range may be listed below.



Attn:

#### EMSL Analytical

200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com

Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014

Project: SXM Debris

# Case Narrative

<u>Manual Integration</u>: -Listed below if applicable. Before and after documentation provided in extended deliverable packages. 491800829-9 - acetonitrile, chloromethane, ethanol and propene were manually integrated as the software did not fully integrate the peak. 491800829-12 acetonitrile was manually integrated because the software chose the wrong peak. Ethanol was manually integrated because the software did not fully integrate the

#### The following data qualifiers that may have been reported with the data,

ND- Non Detect. This notation would be used in the results column in lieu of a "U" qualifier.

- U- Compound was analyzed for but not detected at a listed and appropriately adjusted reporting level.
- J- Estimated value reported below adjusted reporting limit for target compounds or estimating a concentration for TICs where a 1:1 response is assumed
- B- Compound found in associated method blank as well as in the sample.
- E- Estimated value exceeding upper calibration range of instrument. Ethanol and isopropyl alcohol are not specifically targeted to dilute within calibration range.
- D- Compound reported from additional diluted analysis.
- N- indicates presumptive evidence of a compound based on library search match.

EMSL Analytical, Inc. certifies that this data package is in compliance with the terms and conditions of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer –readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature.

**Report Date** 9/12/2018

Report Revision R0 Revision Comments Initial Report

Majone Howley

Marjorie Howley, Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified.

Phone: **305-374-8300** Fax: **305-374-8301** 

 Date Collected:
 8/30/2018

 Date Received:
 9/4/2018

Attn: Alt Attn: Alt Project: S) Analysis Initial	MSL Analytical 20 Route 130 North, C 20 Rou	innaminson, NJ 300 / (856)858-4 to15lab@EMSL e East <u>Analyst In</u> TP	08077 571 com	<u>Lab File ID</u> K17169.D	Caniste HD01	<u>ər ID</u> 83	EMSL Ord EMSL Sample Custom Custome Pl Date Colle Date Rece Samp Sample 32.2	der #: 49 e #: 49 er ID: EE r PO: 20 none: 30 Fax: 30 Fax: 30 ected: 8/3 eived: 9/4 le ID: 03- cc	1800829 1800829-1 1950 184191DEBRIS 5-374-8300 5-374-8301 80/2018 9/2018 9/2018 9/2018 10 <u>Dil. Factor</u> 10	
		Targe	et Comp	ound Result	s Summ	ary				
				Result	RL		Result	RL		
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments	
Propylene		115-07-1	42.08	21	10		37	17		
Freon 12(Dichlorodiflu	oromethane)	75-71-8	120.9	ND	5.0		ND	25		
Freon 114(1,2-Dichlor	otetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35		
Chloromethane		74-87-3	50.49	12	5.0		25	10		
n-Butane		106-97-8	58.12	24	5.0		56	12		
Vinyi chioride		75-01-4	62.50	ND	5.0		ND	13		
I,3-Buladiene		74 92 0	04.09	ND	5.0			10		
Chloroothono		74-83-9	94.94	ND	5.0			19		
Ethanol		75-00-5 64 17 5	46.07	200	5.0		ND	13		
Ethanol Promoothono()/invl.hr	omido)	503 60 2	40.07		5.0		570 ND	9.4		
Ereon 11/Trichlorofluo	romethane)	75 69 4	137.4		5.0			22		
Isopropyl alcohol(2-Pr	onanol)	67-63-0	60 10	88	5.0		22	12		
Ereon 113(1 1 2-Trich	lorotrifluoroethan	76-13-1	187.4		5.0			38		
Acetone	lorotinationoctinati	67-64-1	58.08	28	5.0		65	12		
1 1-Dichloroethene		75-35-4	96.94	ND	5.0			20		
Acetonitrile		75-05-8	41.00	ND	5.0		ND	84		
Tertiary butyl alcohol(	TBA)	75-65-0	74.12	ND	5.0		ND	15		
Bromoethane(Ethyl br	omide)	74-96-4	108.0	ND	5.0		ND	22		
3-Chloropropene(Allyl	chloride)	107-05-1	76.53	ND	5.0		ND	16		
Carbon disulfide	·	75-15-0	76.14	ND	5.0		ND	16		
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17		
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11		
Methyl-tert-butyl ether	(MTBE)	1634-04-4	88.15	ND	5.0		ND	18		
trans-1,2-Dichloroethe	ene	156-60-5	96.94	ND	5.0		ND	20		
n-Hexane		110-54-3	86.17	ND	5.0		ND	18		
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20		
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18		
2-Butanone(MEK)		78-93-3	72.10	ND	5.0		ND	15		
cis-1,2-Dichloroethene	;	156-59-2	96.94	ND	5.0		ND	20		
Ethyl acetate		141-78-6	88.10	ND	5.0		ND	18		
Chloroform		67-66-3	119.4	ND	5.0		ND	24		
Tetrahydrofuran		109-99-9	72.11	ND	5.0		ND	15		
		71-55-6	133.4	ND	5.0		ND	27		
	o(loopatona)	T 10-82-7	04.10	ND	5.0		ND	17		
2,2,4- mmetnyipentan	e(Isoociane)	540-84-1	114.2	ND	5.0			23		
		142-82 5	100.0		5.0			20		
1.2-Dichloroethana		107-06 2	08.06		5.0			20		
Renzene		71_43 2	70.90	2 <i>1</i>	5.0		76	16		
Trichloroethene		79-01-6	131 /		5.0			27		
1 2-Dichloronronane		78-87-5	113.0	ND	5.0			23		
Methyl Methacrylate		80-62-6	100.12	ND	5.0		ND	20		
Bromodichloromethan	e	75-27-4	163.8	ND	5.0		ND	33		
1 4-Dioxane	-	123-91-1	88 12	ND	5.0		ND	18		
4-Methyl-2-pentanone	(MIBK)	108-10-1	100.2	ND	5.0		ND	20		
, , , , , , , , , , , , , , , , , , , ,	、 /	+	· · · · · ·		· · ·			-	1	
EMSL	EMSL Analytical 200 Route 130 North, Ciu Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-1 EEG50 20184191DEBRIS						
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Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East	Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-006 (P)						
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor				
Initial	09/10/2018	TP	K17169.D	HD0183	32.2 cc	10				
Target Compound Results Summary										

			Result	RL	<u> </u>	Result	RL	
Target Compounds	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	16	5.0		60	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	8.9	5.0		39	22	
Xylene (p,m)	1330-20-7	106.2	ND	10		ND	43	
Xylene (Ortho)	95-47-6	106.2	ND	5.0		ND	22	
Styrene	100-42-5	104.1	ND	5.0		ND	21	
Isopropylbenzene (cumene)	98-82-8	120.19	ND	5.0		ND	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	ND	5.0		ND	26	
Total Target Compound Concentrations			440	ppbv		1000	ug/m3	

Surrogate	<u>Result</u>	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 015lab@EMSL.com		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-1 EEG50 20184191DEBRIS		
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018		
Project:	SXM Debris				Sample ID:	03-006 (P)	J
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	
Initial	09/10/2018	ТР	K17169.D	HD0183	32.2 cc	10	

#### **Tentatively Identified Compound Results Summary** Result Result Retention Tentatively Identified Compounds CAS# MW(1) ppbv Q ug/m3 Time 000075-28-5 58 4 5 .IN 34 6.01

Isobutane	000075-28-5	58	15	JN	34	6.01	
	Total TIC Conce	ntrations.	15	nnhy	34	ua/m3	

# Qualifier Definitions

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

Comments

	EMSL Analytical					1	EMSL Or	der #: 49	1800829				
EMGI	200 Route 130 North, C	innaminson, NJ	08077				EMSL Samp	le #: 49	1800829-2				
EMBL	Phone/Fax: (856)858-48	300 / (856)858-4	571				Custom	er ID: EE	G50				
SM	http://www.EMSL.com	to15lab@EMSL	.com				Custome	er PO: 20	184191DEBRIS				
Atta:	Alex Meyrelie							hana: 20	5 074 0000				
Attn:	FF & G						Phone: <b>305-374-8300</b>						
	5751 Miami Lakes Driv	e East					Fax. 303-374-6301						
	Miami Lakes, FL 33014						Date Received: 9/4/2018						
		2010 1 1001											
Project:	SXM Debris						Samp	le ID: 01-	.005				
· · · ·		• • • •	•.		• • •								
Analysis	Analysis Date	Analyst In	<u>it.</u>	Lab File ID	Canist	er ID	Sample	e Vol.	Dil. Factor				
Initial	09/10/2018	IP		K1/1/1.D	HD21	55	27.8	CC	10				
Target Compound Results Summary													
Result RL Result RL													
Target Compounds	S	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments				
Propylene		115-07-1	42.08	15	10		26	17					
Freon 12(Dichlorodi	ifluoromethane)	75-71-8	120.9	ND	5.0		ND	25					
Freon 114(1,2-Dich	lorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35					
Chloromethane		74-87-3	50.49	11	5.0		24	10					
n-Butane		106-97-8	58.12	ND	5.0		ND	12					
Vinyl chloride		75-01-4	62.50	ND	5.0		ND	13					
1,3-Butadiene		106-99-0	54.09	ND	5.0		ND	11					
Bromomethane		74-83-9	94.94	ND	5.0		ND	19					
Chloroethane		75-00-3	64.52	ND	5.0		ND	13					
Ethanol		64-17-5	46.07	1200	5.0	Е	2200	9.4					
Bromoethene(Vinyl	bromide)	593-60-2	106.9	ND	5.0		ND	22					
Freon 11(Trichlorofl	uoromethane)	75-69-4	137.4	ND	5.0		ND	28					
Isopropyl alcohol(2-	Propanol)	67-63-0	60.10	5.4	5.0		13	12					
Freon 113(1,1,2-Tri	chlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38					
Acetone		67-64-1	58.08	13	5.0		30	12					
1,1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20					
Acetonitrile		75-05-8	41.00	ND	5.0		ND	8.4					
Tertiary butyl alcond	DI(TBA)	75-65-0	74.12	ND	5.0		ND	15					
Bromoethane(Ethy)		107.05.1	76.52	ND	5.0			16					
S-Chioropropene(Al	ly chionde)	75 15 0	76.14		5.0			10					
Methylene chloride		75-13-0	84.04		5.0			10					
		107 13 1	53.00	ND	5.0			11					
Methyl_tert_butyl_eth	oer(MTRE)	1634-04-4	88.15	ND	5.0		ND	18					
trans-1 2-Dichloroet	thene	156-60-5	96.94	ND	5.0		ND	20					
n-Hevane		110-54-3	86 17	ND	5.0		ND	18					
1 1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20					
Vinvl acetate		108-05-4	86.00	ND	5.0		ND	18					
2-Butanone(MEK)		78-93-3	72.10	ND	5.0		ND	15					
cis-1.2-Dichloroethe	ene	156-59-2	96.94	ND	5.0		ND	20					
Ethyl acetate		141-78-6	88.10	ND	5.0		ND	18					
Chloroform		67-66-3	119.4	ND	5.0		ND	24					
Tetrahydrofuran		109-99-9	72.11	ND	5.0		ND	15					
1,1,1-Trichloroethar	ne	71-55-6	133.4	ND	5.0		ND	27					
Cyclohexane		110-82-7	84.16	ND	5.0		ND	17					
2,2,4-Trimethylpent	ane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23					
Carbon tetrachloride	e	56-23-5	153.8	ND	5.0		ND	31					
n-Heptane		142-82-5	100.2	ND	5.0		ND	20					
1,2-Dichloroethane		107-06-2	98.96	ND	5.0		ND	20					
Benzene		71-43-2	78.11	23	5.0		75	16					
Trichloroethene		79-01-6	131.4	ND	5.0		ND	27					
1,2-Dichloropropane	e	78-87-5	113.0	ND	5.0		ND	23					
Methyl Methacrylate	e	80-62-6	100.12	ND	5.0		ND	20					
Bromodichlorometh	ane	75-27-4	163.8	ND	5.0		ND	33					
1,4-Dioxane		123-91-1	88.12	ND	5.0		ND	18					
4-Methyl-2-pentano	ne(MIBK)	108-10-1	100.2	ND	5.0		ND	20					

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-2 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/28/2018 9/4/2018		
Project:	SXM Debris				Sample ID:	01-005
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/10/2018	27.8 cc	10			

	Target Compound Results Summary									
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments		
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23			
Toluene	108-88-3	92.14	8.7	5.0		33	19			
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23			
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27			
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20			
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34			
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43			
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38			
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23			
Ethylbenzene	100-41-4	106.2	8.1	5.0		35	22			
Xylene (p,m)	1330-20-7	106.2	ND	10		ND	43			
Xylene (Ortho)	95-47-6	106.2	ND	5.0		ND	22			
Styrene	100-42-5	104.1	5.3	5.0		23	21			
Isopropylbenzene (cumene)	98-82-8	120.19	ND	5.0		ND	25			
Bromoform	75-25-2	252.8	ND	5.0		ND	52			
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34			
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25			
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25			
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26			
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25			
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30			
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30			
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26			
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30			
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37			
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53			
Naphthalene	91-20-3	128.17	ND	5.0		ND	26			
Total Target Compound Concent	trations:		1300	ppbv		2500	ug/m3			

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

E	MISL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-2 EEG50 20184191DEBRIS	
	Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/28/2018 9/4/2018	
	Project:	SXM Debris				Sample ID:	01-005
	<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
	Initial	09/10/2018	TP	HD2155	27.8 сс	10	

# Tentatively Identified Compound Results Summary

			Result		Result	Retention	
Tentatively Identified Compounds	CAS#	MW(1)	ppbv	Q	ug/m3	Time	Comments
unknown		92	61	JN	230	25.19	
[	Total TIC Conce	entrations:	61	ppbv	230	ug/m3	

# Qualifier Definitions

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

E	MSL Analytical						EMSL Ord	der #: 49	1800829				
	00 Route 130 North, C	innaminson, NJ	08077				EMSL Sampl	e#: <b>49</b>	1800829-3				
Р	hone/Fax: (856)858-48	300 / (856)858-4	571				Custom	er ID: EE	G50				
sm <u>hi</u>	ttp://www.EMSL.com	to15lab@EMSL	com				Custome	r PO: 20	184191DEBRIS				
Attn: A E 57 M	lex Mavrelis E & G 751 Miami Lakes Drivo iami Lakes, FL 33014	e East					Phone: <b>305-374-8300</b> Fax: <b>305-374-8301</b> Date Collected: <b>8/30/2018</b> Date Received: <b>9/4/2018</b>						
Project: S	XM Debris						Samp	le ID: 03-	.002				
Analysis Initial	Analysis Date 09/10/2018	<u>Analyst Ir</u> TP	<u>iit.</u>	Lab File ID K17172.D	<u>Canist</u> HD22	<u>er ID</u> 275	<u>Sample</u> 26.8	e Vol. cc	Dil. Factor 10				
Target Compound Results Summary													
Result         Result         RL         Result         RL           Farget Compounds         CAS#         MW         nnhv         nnhv													
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments				
Propylene		115-07-1	42.08	290	10		500	17					
Freon 12(Dichlorodiflu	loromethane)	75-71-8	120.9	ND	5.0		ND	25					
Freon 114(1,2-Dichlor	otetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35					
Chloromethane		74-87-3	50.49	140	5.0		290	10					
n-Butane		106-97-8	58.12	ND	5.0		ND	12					
Vinyl chloride		75-01-4	62.50	ND	5.0		ND	13					
1,3-Butadiene		106-99-0	54.09	ND	5.0		ND	11					
Bromomethane		74-83-9	94.94	ND	5.0		ND	19					
Chloroethane		75-00-3	64.52	ND	5.0		ND	13					
Ethanol		64-17-5	46.07	470	5.0	E	890	9.4					
Bromoethene(Vinyl br	omide)	593-60-2	106.9	ND	5.0		ND	22					
Freon 11(Trichlorofluc	promethane)	75-69-4	137.4	ND	5.0		ND	28					
Isopropyl alcohol(2-Pi	ropanol)	67-63-0	60.10	9.1	5.0		22	12					
Freon 113(1,1,2-Trich	lorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38					
Acetone		67-64-1	58.08	260	5.0		610	12					
1,1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20					
Acetonitrile		75-05-8	41.00	66	5.0		110	8.4					
Tertiary butyl alcohol(	TBA)	75-65-0	74.12	ND	5.0		ND	15					
Bromoethane(Ethyl bi	romide)	74-96-4	108.0	ND	5.0		ND	22					
3-Chloropropene(Allyl	chloride)	107-05-1	76.53	ND	5.0		ND	16					
Carbon disulfide		75-15-0	76.14	ND	5.0		ND	16					
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17					
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11					
Methyl-tert-butyl ether	r(MTBE)	1634-04-4	88.15	ND	5.0		ND	18					
trans-1,2-Dichloroethe	ene	156-60-5	96.94	ND	5.0		ND	20					
n-Hexane		110-54-3	86.17	16	5.0		56	18					
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20					
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18					
2-Butanone(MEK)		78-93-3	72.10	46	5.0		140	15					
cis-1,2-Dichloroethen	6	156-59-2	96.94	ND	5.0		ND	20					
Ethyl acetate		141-78-6	88.10	ND	5.0		ND	18					
		67-66-3	719.4	ND	5.0			24					
		109-99-9	72.11	26	5.0			15					
1,1,1-I richloroethane		71-55-6	133.4	ND	5.0		ND	21					
	- ( )	110-82-7	84.16	ND	5.0		ND	17					
2,2,4- Inmetnyipentar	ie(isoociarie)	540-84-1	114.2		5.0			23					
		142 92 5	103.0		5.0			20					
1.2 Diobloracthers		142-02-0	08.06		5.0		- <del>39</del>	20					
		107-06-2	98.96		5.0			20					
		70.04.0	/8.11	320	5.0			10					
		19-01-0	131.4		5.0			21					
		10-01-0	113.0		5.0			23					
	20	75 27 4	100.12		5.0			20					
		10-21-4	103.8		5.0			33					
1,4-DIOXane		123-91-1	88.12		5.0			18					
+-mempi-z-pentanone		100-10-1	100.2	שא	5.0		שא	20					

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-3 EEG50 20184191DEBRIS		
Attn: Project:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	East		Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/30/2018 9/4/2018 03-002	
Analysis Initial	<u>Analysis Date</u> 09/10/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> K17172.D	Canister ID HD2275	<u>Sample Vol.</u> 26.8 cc	<u>Dil. Factor</u> 10
		Target Co	mpound Posul	te Summary		

	- Tang		Decult			Descult	ы	
Target Compounds	CAS#	MW	nnby	RL ppby	0	Kesuit	KL ug/m3	Comments
	10061-01-5	111.0		5.0	~	ND	23	Commonto
	108 88 3	02.14	02	5.0		350	10	
trans 1.2 Dichloropropopo	10061 02 6	111.0	92 ND	5.0			13	
	70.00.5	122.4		5.0		ND	23	
2 Hovenono(MPK)	79-00-5 501 79 6	100.1		5.0			20	
	107 10 4	100.1		5.0		ND	20	
Dibramashlaramathana	127-18-4	000.0	ND	5.0		ND	34	
	124-48-1	208.3	ND	5.0		ND	43	
	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	5.4	5.0		25	23	
Ethylbenzene	100-41-4	106.2	68	5.0		290	22	
Xylene (p,m)	1330-20-7	106.2	14	10		61	43	
Xylene (Ortho)	95-47-6	106.2	8.0	5.0		35	22	
Styrene	100-42-5	104.1	13	5.0		55	21	
Isopropylbenzene (cumene)	98-82-8	120.19	19	5.0		94	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	ND	5.0		ND	26	
Total Target Compound Concentration	ns:	•	1900	ppbv		4700	ug/m3	

Surrogate	<u>Result</u>	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-3 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018		
Project:	SXM Debris				Sample ID:	03-002
<u>Analysis</u>	Analysis Date	Analyst Init.	Canister ID	Sample Vol.	Dil. Factor	
Initial	09/10/2018	TP	HD2275	26.8 cc	10	

	<b>Tentatively Id</b>	entified	Compound	d Resul	ts Summar	У	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments
Isobutane	000075-28-5	58	13	JN	31	6.01	
unknown hydrocarbon		92	80	JN	300	6.46	
unknown hydrocarbon		92	11	JN	40	6.79	
Acetaldehyde	000075-07-0	44	21	JN	39	6.96	
unknown hydrocarbon		92	11	JN	43	7.13	
Pentane	000109-66-0	72	50	JN	150	9.02	
Furan	000110-00-9	68	44	JN	120	10.47	
Pentane, 2-methyl-	000107-83-5	86	10	JN	35	12.55	
Acetic acid, methyl ester	000079-20-9	74	41	JN	120	12.71	
unknown hydrocarbon		92	14	JN	51	14.24	
unknown		92	45	JN	170	16.19	
unknown hydrocarbon		92	19	JN	70	22.37	
unknown hydrocarbon		92	12	JN	45	23.77	
Nonane	000111-84-2	128	14	JN	74	25.09	
1-Hexanol	000111-27-3	102	15	JN	64	25.19	
Decane	000124-18-5	142	11	JN	64	27.39	
.alphaMethylstyrene	000098-83-9	118	12	JN	56	28.54	
unknown hydrocarbon		92	14	JN	52	29.43	
	Total TIC Conce	entrations:	440	ppbv	1500	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

	EMSL Analytical						EMSL Or	der #: 49	1800829			
	200 Route 130 North, Ci	innaminson, NJ	08077				EMSL Sampl	e#: <b>49</b>	1800829-4			
FINISIC	Phone/Fax: (856)858-48	800 / (856)858-4	571				Custom	er ID: EE	G50			
5M L	http://www.EMSL.com	to15lab@EMSL	.com				Custome	r PO: 20	184191DEBRIS			
Attn: A	Alex Mavrelis						PI	10ne: 30	5-374-8300			
5	751 Miami Lakes Drive	e East					Data Colla	rax. 30	0/2019			
N	liami Lakes, FL 33014						Date Received: 9/4/2018					
							Date Need					
Project S	SXM Debris						Samp	le ID·03·	.003			
<u>Analysis</u>	Analysis Date	Analyst In	<u>it.</u>	Lab File ID	Canist	er ID	Sample	e Vol.	Dil. Factor			
Initial	09/11/2018	TP		K17174.D	HD22	82	28 0	C 00	10			
Target Compound Results Summary												
I arget Compound Results Summary												
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments			
Propylene		115-07-1	42.08	67	10		120	17				
Freon 12(Dichlorodif	luoromethane)	75-71-8	120.9	ND	5.0		ND	25				
Freon 114(1.2-Dichlo	protetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35				
Chloromethane		74-87-3	50.49	53	5.0		110	10				
n-Butane		106-97-8	58.12	ND	5.0		ND	12				
Vinvl chloride		75-01-4	62.50	ND	5.0		ND	13				
1.3-Butadiene		106-99-0	54.09	ND	5.0		ND	11				
Bromomethane		74-83-9	94.94	ND	5.0		ND	19				
Chloroethane		75-00-3	64.52	ND	5.0		ND	13				
Ethanol		64-17-5	46.07	2200	5.0	Е	4100	9.4				
Bromoethene(Vinvl b	promide)	593-60-2	106.9	ND	5.0		ND	22				
Freon 11(Trichloroflu	ioromethane)	75-69-4	137.4	ND	5.0		ND	28				
Isopropyl alcohol(2-F	Propanol)	67-63-0	60.10	6.0	5.0		15	12				
Freon 113(1,1,2-Tric	hlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38				
Acetone		67-64-1	58.08	110	5.0		260	12				
1,1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20				
Acetonitrile		75-05-8	41.00	32	5.0		54	8.4				
Tertiary butyl alcohol	I(TBA)	75-65-0	74.12	ND	5.0		ND	15				
Bromoethane(Ethyl b	promide)	74-96-4	108.0	ND	5.0		ND	22				
3-Chloropropene(Ally	yl chloride)	107-05-1	76.53	ND	5.0		ND	16				
Carbon disulfide		75-15-0	76.14	ND	5.0		ND	16				
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17				
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11				
Methyl-tert-butyl ethe	er(MTBE)	1634-04-4	88.15	ND	5.0		ND	18				
trans-1,2-Dichloroeth	nene	156-60-5	96.94	ND	5.0		ND	20				
n-Hexane		110-54-3	86.17	ND	5.0		ND	18				
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20				
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18				
2-Butanone(MEK)		78-93-3	72.10	22	5.0		65	15				
cis-1,2-Dichloroether	ne	156-59-2	96.94	ND	5.0		ND	20				
Ethyl acetate		141-78-6	88.10	ND	5.0		ND	18				
Chloroform		67-66-3	119.4	ND	5.0		ND	24				
Tetrahydrofuran		109-99-9	72.11	7.3	5.0		22	15				
1,1,1-Trichloroethane	e	71-55-6	133.4	ND	5.0		ND	27				
Cyclohexane		110-82-7	84.16	ND	5.0		ND	17				
2,2,4-Trimethylpenta	ne(Isooctane)	540-84-1	114.2	ND	5.0		ND	23				
Carbon tetrachloride		56-23-5	153.8	ND	5.0		ND	31				
n-Heptane		142-82-5	100.2	ND	5.0		ND	20				
1,2-Dichloroethane		107-06-2	98.96	ND	5.0		ND	20				
Benzene		/1-43-2	/8.11	66	5.0		210	16				
I richloroethene		79-01-6	131.4	ND	5.0		ND	27				
1,2-Dicnioropropane		/8-8/-5	113.0	ND	5.0		ND	23				
Dramadiat		00-02-0	100.12	ND	5.0		ND	20				
		10-21-4	103.8		5.0			<u> </u>				
1,4-Dioxane		123-91-1	88.12	ND	5.0		ND	18				
4-weinyi-2-pentanon		108-10-1	100.2	ND	0.C		ND	20				

E	MSL	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com	EMSL Ord EMSL Sampl Custome Custome	der#: 49 e#: 49 erID: EI erID: EI	01800829 01800829-4 EG50 0184191DEBRIS					
	Attn:       Alex Mavrelis       Phone:       30:         EE & G       Fax:       30:         5751 Miami Lakes Drive East       Date Collected:       8/3         Miami Lakes, FL 33014       Date Received:       9/4         Project:       SXM Debris       Sample ID:       03-									
	Project:	SXM Debris						Sample ID: 03-003		
	<u>Analysis</u>	Analysis Date	Analyst In	<u>it.</u>	Lab File ID	Canist	er ID	Sample	e Vol.	Dil. Factor
	Initial	09/11/2018	TP		K17174.D	HD22	282	28 0	c	10
			Targe	et Comp	ound Result	ts Summ	nary			
Targe	t Compound	ls	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3	B-Dichloropro	pene	10061-01-5	111.0	ND	5.0		ND	23	
Toluer	ne		108-88-3	92.14	31	5.0		110	19	
1				1	1					

Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	31	5.0		110	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	18	5.0		77	22	
Xylene (p,m)	1330-20-7	106.2	ND	10		ND	43	
Xylene (Ortho)	95-47-6	106.2	ND	5.0		ND	22	
Styrene	100-42-5	104.1	5.5	5.0		23	21	
Isopropylbenzene (cumene)	98-82-8	120.19	ND	5.0		ND	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	ND	5.0		ND	26	
Total Target Compound Concentra	tions:		2600	ppbv		5200	ug/m3	

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

# Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 015lab@EMSL.com		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-4 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	03-003
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	HD2282	28 cc	10	

	Tentatively Id	entified	Compound	d Resul	ts Summar	У	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments
unknown hydrocarbon		92	24	JN	89	6.47	
Pentane	000109-66-0	72	13	JN	39	9.03	
Acetic acid, methyl ester	000079-20-9	74	18	JN	54	12.71	
unknown		92	16	JN	62	16.18	
1-Hexanol	000111-27-3	102	110	JN	460	25.19	
	Total TIC Conce	entrations:	180	ppbv	700	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

Attn: A Project: S	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 ttp://www.EMSL.com lex Mavrelis E & G 751 Miami Lakes Driv liami Lakes, FL 33014 EXM Debris	EMSL Order #: 491800829 EMSL Sample #: 491800829-5 Customer ID: EEG50 Customer PO: 20184191DEBRIS Phone: 305-374-8300 Fax: 305-374-8301 Date Collected: 8/30/2018 Date Received: 9/4/2018 Sample ID: 03-005							
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst Ir</u> TP	<u>nit.</u>	<u>Lab File ID</u> K17175.D	<u>Canist</u> HD22	<u>er ID</u> 291	<u>Sampl</u> 26.5	<u>e Vol.</u> cc	<u>Dil. Factor</u> 10
		Tarq	et Com	ound Resul	ts Summ	nary			
			T	Result	RL		Result	RL	_
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments
Propylene		115-07-1	42.08	ND	10		ND	17	
Freen 12(Dichlorodifi	uoromethane)	75-71-8	120.9	ND	5.0		ND	25	
Chloromethane	rotetranuoroethan	70-14-2	50.49		5.0			35	
n-Butane		106-97-8	58 12	ND	5.0		ND	10	
Vinvl chloride		75-01-4	62.50	ND	5.0		ND	13	
1,3-Butadiene		106-99-0	54.09	ND	5.0		ND	11	
Bromomethane		74-83-9	94.94	ND	5.0		ND	19	
Chloroethane		75-00-3	64.52	ND	5.0		ND	13	
Ethanol		64-17-5	46.07	180	5.0		350	9.4	
Bromoethene(Vinyl b	romide)	593-60-2	106.9	ND	5.0		ND	22	
Freon 11(Trichloroflu	oromethane)	75-69-4	137.4	ND	5.0		ND	28	
Isopropyl alcohol(2-P	ropanol)	67-63-0	60.10	ND	5.0		ND	12	
Freon 113(1,1,2-Trich	nlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38	
Acetone		67-64-1	58.08	ND	5.0		ND	12	
1,1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20	
Acetonitrile		75-05-8	41.00	ND	5.0		ND	8.4	
Promoothono/Ethyl b	(TBA)	75-65-0	109.0	ND	5.0		ND	15	
3 Chloropropene(Ally		107.05.1	76.53		5.0			16	
Carbon disulfide	(chionde)	75-15-0	76.14	ND	5.0		ND	16	
Methylene chloride		75-09-2	84 94	ND	5.0		ND	10	
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11	
Methyl-tert-butyl ethe	r(MTBE)	1634-04-4	88.15	ND	5.0		ND	18	
trans-1,2-Dichloroeth	ene	156-60-5	96.94	ND	5.0		ND	20	
n-Hexane		110-54-3	86.17	ND	5.0		ND	18	
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20	
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18	
2-Butanone(MEK)		78-93-3	72.10	ND	5.0		ND	15	
cis-1,2-Dichloroethen	e	156-59-2	96.94	ND	5.0		ND	20	
Ethyl acetate		141-78-6	88.10	5.0	5.0		18	18	
Chioroform		07-00-3	70.11	ND	5.0		ND	24	
1 1 1-Trichloroethane	<u>,</u>	71-55-6	133.4	ND	5.0		ND	27	
	,	110-82-7	84 16	ND	5.0		ND	17	
2.2.4-Trimethylpentar	ne(Isooctane)	540-84-1	114.2	ND	5.0		ND	23	
Carbon tetrachloride	( / <del> /</del> /	56-23-5	153.8	ND	5.0	1	ND	31	
n-Heptane		142-82-5	100.2	ND	5.0	l	ND	20	
1,2-Dichloroethane		107-06-2	98.96	ND	5.0		ND	20	
Benzene		71-43-2	78.11	ND	5.0		ND	16	
Trichloroethene		79-01-6	131.4	ND	5.0		ND	27	
1,2-Dichloropropane		78-87-5	113.0	ND	5.0		ND	23	
Methyl Methacrylate		80-62-6	100.12	ND	5.0	L	ND	20	
Bromodichlorometha	ne	75-27-4	163.8	ND	5.0	<u> </u>	ND	33	
1,4-Dioxane		123-91-1	88.12	ND	5.0		ND	18	
4-Methyl-2-pentanon	e(MIBK)	108-10-1	100.2	ND	5.0	1	ND	20	1

Attn:	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com Alex Mavrelis EE & G 5751 Miami Lakes Driv Miami Lakes, FL 33014	EMSL Ord EMSL Sampl Custom Custome Pl Date Colle Date Rece	91800829 91800829-5 EG50 0184191DEBRIS 05-374-8300 05-374-8301 /30/2018 /4/2018						
Project:	SXM Debris						Samp	le ID: 0	3-005
<u>Analysis</u> Initial	VysisAnalysis DateAnalyst Init.Lab File IDCanister IDial09/11/2018TPK17175.DHD2291		er ID 91	<u>Sample</u> 26.5	<u>e Vol.</u> cc	Dil. Factor 10			
		Targe	et Comp	ound Result	s Summ	nary			
				Result	RL		Result	RL	
Target Compound	S	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments
cis-1,3-Dichloropro	pene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene		108-88-3	92.14	ND	5.0		ND	19	
trans-1,3-Dichlorop	ropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroetha	ne	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)		591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene		127-18-4	165.8	ND	5.0		ND	34	
Dibromochlorometh	ane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane		106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene		108-90-7	112.6	ND	5.0		ND	23	
		100-41-4	106.2	ND	5.0		ND	22	
Xylene (p,m)		1330-20-7	106.2	ND	10		ND	43	
		95-47-0	100.2		5.0			22	
Stylene	cumene)	08.82.8	104.1		5.0			21	
Bromoform	cumene)	75-25-2	252.8	ND	5.0			52	
1 1 2 2-Tetrachloro	ethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethvltoluene	othano	622-96-8	120.2	ND	5.0		ND	25	
1.3.5-Trimethylben	zene	108-67-8	120.2	ND	5.0		ND	25	
2-Chlorotoluene		95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenz	zene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzen	e	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzen	e	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride		100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzen	e	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenz	ene	120-82-1	181.5	ND	5.0		ND	37	
Hovachloro 1.2 but	adiana	07 60 2	260.9	ND	5.0		ND	52	

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	11	10	110%

128.17

ND

190

5.0

ppbv

ND

370

26

ug/m3

91-20-3

#### Qualifier Definitions

ND = Non Detect

Naphthalene

B = Compound also found in method blank.

**Total Target Compound Concentrations:** 

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

E	MSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 : <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-5 EEG50 20184191DEBRIS		
	Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018			
	Project:	SXM Debris				Sample ID:	03-005
	Analysis Initial	Analysis Date 09/11/2018	Analyst Init. TP	Lab File ID K17175.D	Canister ID HD2291	Sample Vol. 26.5 cc	Dil. Factor
						_000 00	

# Tentatively Identified Compound Results Summary

Tentatively Identified Compounds	CAS#	MW(1)	Result	0	Result	Retention	Comments
No TICs to Report	07.0#		ppsv	~	ug/iiio	Time	Comments
	Total TIC Conce	entrations:	0.0	ppbv	0.0	ug/m3	

# Qualifier Definitions

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 : <u>o15lab@EMSL.com</u>	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-6 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	03-004
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	K17176.D	HD2298	73.5 cc	10
Dilution1	09/11/2018	TP	K17186.D	HD2298	33.2 cc	25

Target Compound Results Summary										
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments		
Propylene	115-07-1	42.08	380	10		650	17			
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25			
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35			
Chloromethane	74-87-3	50.49	260	5.0		530	10			
n-Butane	106-97-8	58.12	ND	5.0		ND	12			
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13			
1,3-Butadiene	106-99-0	54.09	7.6	5.0		17	11			
Bromomethane	74-83-9	94.94	ND	5.0		ND	19			
Chloroethane	75-00-3	64.52	ND	5.0		ND	13			
Ethanol	64-17-5	46.07	6300	13	DE	12000	24	Reported Dilution #1		
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22			
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28			
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	29	5.0		72	12			
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38			
Acetone	67-64-1	58.08	330	5.0		780	12			
1,1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20			
Acetonitrile	75-05-8	41.00	150	5.0		240	8.4			
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15			
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22			
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16			
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16			
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17			
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11			
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18			
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20			
n-Hexane	110-54-3	86.17	18	5.0		63	18			
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20			
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18			
2-Butanone(MEK)	78-93-3	72.10	65	5.0		190	15			
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20			
Ethyl acetate	141-78-6	88.10	9.4	5.0		34	18			
Chloroform	67-66-3	119.4	ND	5.0		ND	24			
Tetrahydrofuran	109-99-9	72.11	24	5.0		72	15			
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27			
Cyclohexane	110-82-7	84.16	ND	5.0		ND	17			
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23			
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31			
n-Heptane	142-82-5	100.2	15	5.0		62	20			
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20			
Benzene	71-43-2	78.11	490	13	D	1600	40	Reported Dilution #1		
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27			
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23			
Methyl Methacrylate	80-62-6	100.12	20	5.0		83	20			
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33			
1,4-Dioxane	123-91-1	88.12	5.8	5.0		21	18			
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	5.0		ND	20			

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>515lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-6 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	03-004
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	K17176.D	HD2298	73.5 cc	10
Dilution1	09/11/2018	TP	K17186.D	HD2298	33.2 cc	25

	Targ	et Comp	ound Result	ts Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	190	5.0		720	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	100	5.0		440	22	
Xylene (p,m)	1330-20-7	106.2	31	10		130	43	
Xylene (Ortho)	95-47-6	106.2	16	5.0		68	22	
Styrene	100-42-5	104.1	37	5.0		160	21	
Isopropylbenzene (cumene)	98-82-8	120.19	24	5.0		120	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	7.6	5.0		37	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	8.1	5.0		40	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	6.1	5.0		30	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	10	5.0		54	26	
Total Target Compound Concent	rations:		8500	ppbv		18000	ug/m3	

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-6 EEG50 20184191DEBRIS			
Attn:	Attn:Alex MavrelisPhone:EE & GFax:5751 Miami Lakes Drive EastDate Collected:Miami Lakes, FL 33014Date Received:						
Project:	SXM Debris				Sample ID:	03-004	
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	
Initial	09/11/2018	TP	K17176.D	HD2298	73.5 cc	10	
Dilution1	09/11/2018	TP	K17186.D	HD2298	33.2 cc	25	

	<b>Tentatively Id</b>	entified	Compound	d Resul	ts Summar	у	
			Result		Result	Retention	
Tentatively Identified Compounds	CAS#	MW(1)	ppbv	Q	ug/m3	Time	Comments
Isobutane	000075-28-5	58	21	JN	49	6.01	
unknown hydrocarbon		92	120	JN	450	6.47	
unknown hydrocarbon		92	17	JN	64	6.79	
Acetaldehyde	000075-07-0	44	20	JN	37	6.95	
unknown hydrocarbon		92	18	JN	67	7.13	
Pentane	000109-66-0	72	72	JN	210	9.03	
unknown hydrocarbon		92	16	JN	58	9.76	
Acetic acid, methyl ester	000079-20-9	74	56	JN	170	12.71	
Cyclopentene	000142-29-0	68	23	JN	65	13.15	
Silanol, trimethyl-	001066-40-6	90	43	JN	160	13.55	
unknown hydrocarbon		92	21	JN	79	14.24	
unknown hydrocarbon		92	16	JN	61	15.21	
unknown		92	67	JN	250	16.19	
Octane	000111-65-9	114	20	JN	92	22.37	
unknown hydrocarbon		92	23	JN	86	23.77	
Nonane	000111-84-2	128	20	JN	100	25.08	
1-Hexanol	000111-27-3	102	420	JN	1700	25.20	
.alphaMethylstyrene	000098-83-9	118	21	JN	100	28.54	
unknown hydrocarbon		92	19	JN	70	29.43	
	Total TIC Conce	entrations:	1000	ppbv	3900	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

E	MSL Analytical	innomineon NL	09077				EMSL Ord	der #: 49*	1800829			
	one/Fax: (856)858-48	800 / (856)858-4	571				Customer ID: EEG50					
•••• <u>ht</u> t	tp://www.EMSL.com	to15lab@EMSL	.com				Custome	r PO: 20	184191DEBRIS			
Attn: Ald EE 57 Mi	ex Mavrelis 5 & G 51 Miami Lakes Drive ami Lakes, FL 33014		Phone: <b>305-374-8300</b> Fax: <b>305-374-8301</b> Date Collected: <b>8/29/2018</b> Date Received: <b>9/4/2018</b>									
Project: S)	(M Debris						Samp	le ID: 02-	003			
Analysis Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst In</u> TP	it.	<u>Lab File ID</u> K17177.D	<u>Canist</u> HD23	<u>er ID</u> 600	<u>Sample</u> 30.8	<u>e Vol.</u> cc	Dil. Factor 10			
Target Compound Results Summarv												
I arget Compound Results Summary Result RL Result RL												
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments			
Propylene		115-07-1	42.08	260	10		450	17				
Freon 12(Dichlorodiflu	oromethane)	75-71-8	120.9	ND	5.0		ND	25				
Freon 114(1,2-Dichlore	otetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35				
Chloromethane		74-87-3	50.49	99	5.0		200	10				
n-Butane		106-97-8	58.12	ND	5.0		ND	12				
Vinyi chioride		106.00.0	62.50	ND	5.0			13				
Rromomethane		74-83-9	94.09	ND	5.0		ND	19				
Chloroethane		75-00-3	64.52	ND	5.0		ND	13				
Ethanol		64-17-5	46.07	390	5.0		730	9.4				
Bromoethene(Vinyl bro	omide)	593-60-2	106.9	ND	5.0		ND	22				
Freon 11(Trichlorofluo	romethane)	75-69-4	137.4	ND	5.0		ND	28				
Isopropyl alcohol(2-Pro	opanol)	67-63-0	60.10	7.6	5.0		19	12				
Freon 113(1,1,2-Trichl	orotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38				
Acetone		67-64-1	58.08	120	5.0		300	12				
1,1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20				
Acetonitrile		75-05-8	41.00	31	5.0		52	8.4				
Tertiary butyl alcohol	IBA)	75-65-0	/4.12	ND	5.0		ND	15				
3 Chloropropopo(Ally)	omide)	107.05.1	76.53	ND	5.0			16				
Carbon disulfide	chionde)	75-15-0	76.55	ND	5.0			16				
Methylene chloride		75-09-2	84.94	ND	5.0		ND	10				
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11				
Methyl-tert-butyl ether	(MTBE)	1634-04-4	88.15	ND	5.0		ND	18				
trans-1,2-Dichloroethe	ne	156-60-5	96.94	ND	5.0		ND	20				
n-Hexane		110-54-3	86.17	15	5.0		52	18				
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20				
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18				
2-Butanone(MEK)		78-93-3	72.10	28	5.0		83	15				
cis-1,2-Dichloroethene	2	156-59-2	96.94	ND	5.0		ND	20				
Ethyl acetate		141-78-0	88.10 110.4	ND	5.0			18				
Tetrahydrofuran		109-99-9	72 11	15	5.0		ND 43	15				
1.1.1-Trichloroethane		71-55-6	133.4	ND	5.0		ND	27				
Cyclohexane		110-82-7	84.16	ND	5.0		ND	17				
2,2,4-Trimethylpentan	e(Isooctane)	540-84-1	114.2	ND	5.0		ND	23				
Carbon tetrachloride		56-23-5	153.8	ND	5.0		ND	31				
n-Heptane		142-82-5	100.2	13	5.0		54	20				
1,2-Dichloroethane		107-06-2	98.96	ND	5.0		ND	20				
Benzene		71-43-2	78.11	330	5.0		1100	16				
Trichloroethene		79-01-6	131.4	ND	5.0		ND	27				
1,2-Dichloropropane		/8-87-5	113.0	ND	5.0		ND	23				
Remodiabless and	•	80-62-6	100.12	ND	5.0		ND	20				
	e	10-21-4	103.8		5.0			33				
1,4-DIOXARE	(MIRK)	108-10-1	00.12 100.2		5.0			18 20				
		100 10-1	100.2		0.0			20				

EN	1SL	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com	innaminson, NJ 300 / (856)858-4 t <u>o15lab@EMSL</u>	08077 571 . <u>com</u>				EMSL Ord EMSL Sampl Custom Custome	der#: <b>49</b> le#: <b>49</b> erID: <b>EE</b> erPO: <b>20</b>	1800829 1800829-7 3650 184191DEBRIS	
	Attn:       Alex Mavrelis       Phone:       30         EE & G       Fax:       30         5751 Miami Lakes Drive East       Date Collected:       8/         Miami Lakes, FL 33014       Date Received:       9/										
	Project:	SXM Debris						Samp	le ID: 02-	-003	
<u>/</u>	Analysis Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst In</u> TP	Analyst Init. Lab File ID Canister II TP K17177.D HD2300			er ID 800	<u>Sample</u> 30.8	<u>e Vol.</u> cc	Dil. Factor 10	
_			Targe	et Com	pound Resul	its Summ	nary				
Target (	Compound	s	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments	
cis-1,3-[	Dichloropro	pene	10061-01-5	111.0	ND	5.0		ND	23		

Target Compounds	CAS#	мw	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	140	5.0		530	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	130	5.0		540	22	
Xylene (p,m)	1330-20-7	106.2	15	10		64	43	
Xylene (Ortho)	95-47-6	106.2	9.5	5.0		41	22	
Styrene	100-42-5	104.1	46	5.0		190	21	
Isopropylbenzene (cumene)	98-82-8	120.19	24	5.0		120	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	ND	5.0		ND	26	
Total Target Compound Concentrations	:	•	1700	ppbv		4600	ug/m3	
· ····· ······························	-			6964	1			1

Surrogate	<u>Result</u>	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

# Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-7 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018			
Project:	SXM Debris				Sample ID:	02-003
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> K17177.D	<u>Canister ID</u> HD2300	<u>Sample Vol.</u> 30.8 cc	<u>Dil. Factor</u> 10

Tentatively Identified Compound Results Summary											
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments				
unknown hydrocarbon		92	78	JN	300	6.47					
Acetaldehyde	000075-07-0	44	11	JN	19	6.96					
unknown hydrocarbon		92	12	JN	44	7.13					
Pentane	000109-66-0	72	60	JN	180	9.03					
unknown hydrocarbon		92	11	JN	42	9.77					
Furan	000110-00-9	68	22	JN	62	10.46					
Acetic acid, methyl ester	000079-20-9	74	17	JN	51	12.71					
unknown hydrocarbon		92	28	JN	110	14.25					
unknown hydrocarbon		92	12	JN	46	15.21					
unknown		92	40	JN	150	16.19					
Octane	000111-65-9	114	23	JN	110	22.36					
unknown		92	11	JN	40	23.49					
unknown		92	22	JN	82	23.77					
Nonane	000111-84-2	128	21	JN	110	25.08					
1-Hexanol	000111-27-3	102	24	JN	100	25.20					
unknown hydrocarbon		92	16	JN	58	27.38					
.alphaMethylstyrene	000098-83-9	118	20	JN	98	28.54					
unknown hydrocarbon		92	20	JN	75	29.43					
unknown hydrocarbon		92	11	JN	41	31.34					
	Total TIC Conce	entrations:	460	ppbv	1700	ug/m3					

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

	MSL Analytical D0 Route 130 North, C hone/Fax: (856)858-48 tp://www.EMSL.com	EMSL Order #: 491800829 EMSL Sample #: 491800829-8 Customer ID: EEG50 Customer PO: 20184191DEBRIS							
Attn: Al El 57 M	ex Mavrelis E & G /51 Miami Lakes Driv iami Lakes, FL 33014	e East					Date Colle Date Rece	Fax: 30: Fax: 30: ected: 8/2 eived: 9/4	5-374-8300 5-374-8301 !9/2018 !/2018
Analysis Initial	Analysis Date 09/11/2018	<u>Analyst In</u> TP	iit.	<u>Lab File ID</u> K17179.D	<u>Canist</u> HD23	<u>er ID</u> 303	Sample 30.8	e ID: 02- e Vol. cc	Dil. Factor 10
		Targe	et Comp	ound Resul	ts Summ	nary			
<b>T</b> (0 )				Result	RL		Result	RL	
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments
Propylene Froop 12(Dichlorodifly	(oromothano)	715-07-1	42.08	ND	5.0			17	
Freen 12(Dichlorodilit	otetrafluoroethan	75-71-8	120.9	ND	5.0			25	
Chloromethane	olelianuoioelinan	74-87-3	50 49	ND	5.0		ND	10	
n-Butane		106-97-8	58.12	ND	5.0		ND	12	
Vinyl chloride		75-01-4	62.50	ND	5.0		ND	13	
1,3-Butadiene		106-99-0	54.09	ND	5.0		ND	11	
Bromomethane		74-83-9	94.94	ND	5.0		ND	19	
Chloroethane		75-00-3	64.52	ND	5.0		ND	13	
Ethanol		64-17-5	46.07	320	5.0		610	9.4	
Bromoethene(Vinyl br	omide)	593-60-2	106.9	ND	5.0		ND	22	
Freon 11(Trichlorofluc	promethane)	75-69-4	137.4	ND	5.0		ND	28	
Isopropyl alcohol(2-Pr	opanol)	67-63-0	60.10	ND	5.0		ND	12	
Freon 113(1,1,2-Trich	lorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38	
Acetone		67-64-1	58.08	6.2	5.0		15 ND	12	
		75-35-4	96.94	ND	5.0		ND	20	
Aceloniline	TRA)	75-05-0	41.00		5.0			0.4	
Bromoethane(Ethyl br	romide)	73-05-0	108.0	ND	5.0		ND	22	
3-Chloropropene(Allyl	chloride)	107-05-1	76.53	ND	5.0		ND	16	
Carbon disulfide		75-15-0	76.14	ND	5.0		ND	16	
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17	
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11	
Methyl-tert-butyl ether	(MTBE)	1634-04-4	88.15	ND	5.0		ND	18	
trans-1,2-Dichloroethe	ene	156-60-5	96.94	ND	5.0		ND	20	
n-Hexane		110-54-3	86.17	ND	5.0		ND	18	
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20	
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18	
2-Butanone(MEK)		78-93-3	72.10	ND	5.0		ND	15	
CIS-1,2-DIChloroethene	9	156-59-2	96.94	ND	5.0		ND	20	
Ethyl acetate		141-78-0	88.10	ND	5.0		ND	18	
Tetrabydrofuran		100.00.0	72 11		5.0			24 15	
1 1 1-Trichloroethane		71-55-6	133.4	ND	5.0		ND	27	
Cvclohexane		110-82-7	84.16	ND	5.0		ND	17	
2,2,4-Trimethylpentan	e(Isooctane)	540-84-1	114.2	ND	5.0		ND	23	
Carbon tetrachloride	. ,	56-23-5	153.8	ND	5.0		ND	31	
n-Heptane		142-82-5	100.2	ND	5.0		ND	20	
1,2-Dichloroethane		107-06-2	98.96	ND	5.0		ND	20	
Benzene		71-43-2	78.11	7.8	5.0		25	16	
Trichloroethene		79-01-6	131.4	ND	5.0		ND	27	
1,2-Dichloropropane		78-87-5	113.0	ND	5.0		ND	23	
Methyl Methacrylate		80-62-6	100.12	ND	5.0		ND	20	
Bromodichloromethan	ie	75-27-4	163.8	ND	5.0		ND	33	
1,4-Dioxane	40510	123-91-1	88.12	ND	5.0		ND	18	
4-Methyl-2-pentanone	e(MIBK)	108-10-1	100.2	ND	5.0		ND	20	1

Attn:	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	innaminson, NJ 300 / (856)858-4 to15lab@EMSL e East	08077 571 .com				EMSL Ord EMSL Samp Custom Custome Pl Date Colle Date Rece Samp	der #: 49' er ID: EE er ID: 20 mone: 30: Fax: 30: ected: 8/2 sived: 9/4 le ID: 02-	1800829 1800829-8 G50 184191DEBRIS 5-374-8300 5-374-8301 29/2018 1/2018 005
Analysis	Analysis Date	Analyst In	<u>it.</u>	Lab File ID	Caniste		Sample	<u>e vol.</u>	DII. Factor
initial	09/11/2018	IP		K1/1/9.D	HD23	03	30.8	CC	10
		Targe	et Comn	ound Result	s Summ	arv			
		l		Result	RL		Result	RL	
Target Compounds	8	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments
cis-1,3-Dichloroprop	bene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene		108-88-3	92.14	ND	5.0		ND	19	
trans-1,3-Dichloropr	opene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethan	IE	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)		591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene		127-18-4	165.8	ND	5.0		ND	34	
1 2 Dibromoethane	ane	124-48-1	208.3	ND	5.0			43	
Chlorobenzene		108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene		100-41-4	106.2	ND	5.0		ND	22	
Xylene (p,m)		1330-20-7	106.2	ND	10		ND	43	
Xylene (Ortho)		95-47-6	106.2	ND	5.0		ND	22	
Styrene		100-42-5	104.1	ND	5.0		ND	21	
Isopropylbenzene (c	cumene)	98-82-8	120.19	ND	5.0		ND	25	
Bromoform		75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroe	ethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene		622-96-8	120.2	ND	5.0		ND	25	
2 Chlorotoluono	ene	108-67-8	120.2	ND	5.0			25	
2-Chiorototuene	ana	95-49-0	120.0	ND	5.0			20	
1.3-Dichlorobenzen	<u>a</u>	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	e	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride		100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	9	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenze	ene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-buta	adiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene		91-20-3	128.17	ND	5.0		ND	26	

**Total Target Compound Concentrations:** 

Surrogate	<b>Result</b>	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

#### Qualifier Definitions

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

330

ppbv

650

ug/m3

EMS	<b>3</b> ]	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-8 EEG50 20184191DEBRIS		
	Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018		
L P	Project:	SXM Debris				Sample ID:	02-005
Ana	alysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
In	itial	09/11/2018	ТР	K17179.D	HD2303	30.8 cc	10

# Tentatively Identified Compound Results Summary

			Result		Result	Retention	
Tentatively Identified Compounds	CAS#	MW(1)	ppbv	Q	ug/m3	Time	Comments
No TICs to Report							
	Total TIC Conce	entrations:	0.0	ppbv	0.0	ug/m3	

# Qualifier Definitions

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

MSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 : <u>o15lab@EMSL.com</u>	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-9 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	03-001
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	K17187.D	HD2702	58.8 cc	10
Dilution1	09/11/2018	TP	K17180.D	HD2702	20.1 cc	25

Target Compound Results Summary											
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments			
Propylene	115-07-1	42.08	440	25	D	770	43	Reported Dilution #1			
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25				
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35				
Chloromethane	74-87-3	50.49	120	5.0		240	10				
n-Butane	106-97-8	58.12	ND	5.0		ND	12				
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13				
1,3-Butadiene	106-99-0	54.09	15	5.0		33	11				
Bromomethane	74-83-9	94.94	ND	5.0		ND	19				
Chloroethane	75-00-3	64.52	ND	5.0		ND	13				
Ethanol	64-17-5	46.07	1600	13	DE	2900	24	Reported Dilution #1			
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22				
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28				
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	12	5.0		29	12				
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38				
Acetone	67-64-1	58.08	250	5.0		590	12				
1,1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20				
Acetonitrile	75-05-8	41.00	110	5.0		190	8.4				
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15				
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22				
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16				
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16				
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17				
Acrylonitrile	107-13-1	53.00	8.4	5.0		18	11				
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18				
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20				
n-Hexane	110-54-3	86.17	22	5.0		77	18				
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20				
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18				
2-Butanone(MEK)	78-93-3	72.10	40	5.0		120	15				
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20				
Ethyl acetate	141-78-6	88.10	5.4	5.0		19	18				
Chloroform	67-66-3	119.4	ND	5.0		ND	24				
Tetrahydrofuran	109-99-9	72.11	32	5.0		100	15				
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27				
Cyclohexane	110-82-7	84.16	ND	5.0		ND	17				
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23				
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31				
n-Heptane	142-82-5	100.2	18	5.0		73	20				
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20				
Benzene	71-43-2	78.11	590	13	D	1900	40	Reported Dilution #1			
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27				
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23				
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20				
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33				
1,4-Dioxane	123-91-1	88.12	ND	5.0		ND	18				
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	5.0		ND	20				

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com te	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-9 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	03-001
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	K17187.D	HD2702	58.8 cc	10
Dilution1	09/11/2018	TP	K17180.D	HD2702	20.1 cc	25

	Targ	et Comp	ound Result	s Summ	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	130	5.0		500	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	10	5.0		48	23	
Ethylbenzene	100-41-4	106.2	86	5.0		380	22	
Xylene (p,m)	1330-20-7	106.2	18	10		77	43	
Xylene (Ortho)	95-47-6	106.2	10	5.0		45	22	
Styrene	100-42-5	104.1	30	5.0		130	21	
Isopropylbenzene (cumene)	98-82-8	120.19	25	5.0		120	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	6.0	5.0		30	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	6.4	5.0		34	26	
Total Target Compound Concent	rations:		3600	ppbv		8400	ug/m3	

Surrogate	Result	<u>Spike</u>	Recovery	
4-Bromofluorobenzene	11	10	110%	

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-9 EEG50 20184191DEBRIS				
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East		Phone: Fax: Date Collected: Date Received:				
Project:	SXM Debris				Sample ID:	03-001		
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	-	
initiai	09/11/2018	IP	K1/18/.D	HD2/02	58.8 CC	10		
Dilution1	09/11/2018	TP	K17180.D	HD2702	20.1 cc	25		

	<b>Tentatively Id</b>	entified	Compound	d Resul	ts Summar	у	
Tentatively Identified Compounds	CAS#	MW(1)	Result	Q	Result ua/m3	Retention Time	Comments
Isobutane	000075-28-5	58	15	JN	36	6.01	
unknown hydrocarbon		92	99	JN	370	6.47	
Acetaldehvde	000075-07-0	44	30	JN	55	6.94	
unknown hydrocarbon		92	15	JN	57	7.12	
Pentane	000109-66-0	72	72	JN	210	9.03	
unknown hydrocarbon		92	14	JN	51	9.76	
Furan	000110-00-9	68	53	JN	150	10.47	
Acetic acid, methyl ester	000079-20-9	74	21	JN	62	12.71	
Cyclopentene	000142-29-0	68	11	JN	30	13.16	
unknown hydrocarbon		92	20	JN	75	14.25	
unknown hydrocarbon		92	12	JN	47	15.22	
unknown		92	60	JN	220	16.19	
Octane	000111-65-9	114	23	JN	110	22.37	
unknown hydrocarbon		92	17	JN	62	23.77	
unknown hydrocarbon		92	20	JN	75	25.09	
1-Hexanol	000111-27-3	102	53	JN	220	25.20	
Decane	000124-18-5	142	15	JN	87	27.39	
.alphaMethylstyrene	000098-83-9	118	16	JN	76	28.54	
unknown hydrocarbon		92	24	JN	91	29.43	
	Total TIC Conce	entrations:	590	ppbv	2100	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

MSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	EMSL Order #: MSL Sample #: Customer ID: Customer PO:	491800829 491800829-10 EEG50 20184191DEBRIS			
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East		Phone: <b>305-374-8</b> ; Fax: <b>305-374-8</b> ; Date Collected: <b>8/29/2018</b> Date Received: <b>9/4/2018</b>		
Project:	SXM Debris				Sample ID:	02-001
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	K17183.D	HD2705	26.8 cc	10
Dilution2	09/12/2018	TP	K17212.D	HD2705	29.5 cc	90

	Targ	et Comp	ound Result	s Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
Propylene	115-07-1	42.08	2600	90	D	4400	150	Reported Dilution #1
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35	
Chloromethane	74-87-3	50.49	830	45	D	1700	93	Reported Dilution #1
n-Butane	106-97-8	58.12	ND	5.0		ND	12	
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13	
1,3-Butadiene	106-99-0	54.09	67	5.0		150	11	
Bromomethane	74-83-9	94.94	ND	5.0		ND	19	
Chloroethane	75-00-3	64.52	22	5.0		58	13	
Ethanol	64-17-5	46.07	490	45	D	920	85	Reported Dilution #1
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22	
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	12	5.0		30	12	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38	
Acetone	67-64-1	58.08	1800	45	D	4300	110	Reported Dilution #1
1,1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20	
Acetonitrile	75-05-8	41.00	250	5.0		410	8.4	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15	
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16	
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16	
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17	
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18	
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20	
n-Hexane	110-54-3	86.17	200	5.0		720	18	
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20	
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18	
2-Butanone(MEK)	78-93-3	72.10	480	45	D	1400	130	Reported Dilution #1
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20	
Ethyl acetate	141-78-6	88.10	ND	5.0		ND	18	
Chloroform	67-66-3	119.4	ND	5.0		ND	24	
Tetrahydrofuran	109-99-9	72.11	240	5.0		720	15	
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27	
Cyclohexane	110-82-7	84.16	7.2	5.0		25	17	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23	
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31	
n-Heptane	142-82-5	100.2	180	5.0		750	20	
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20	
Benzene	71-43-2	78.11	2900	45	D	9200	140	Reported Dilution #1
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27	
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23	
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20	
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33	
1,4-Dioxane	123-91-1	88.12	170	5.0		600	18	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	10	5.0		41	20	

E	MSL	EMSL Analytical 200 Route 130 North, Cii Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 : <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-10 EEG50 20184191DEBRIS	
	Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018	
	Project:	SXM Debris				Sample ID:	02-001
	Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
	Initial	09/11/2018	TP	K17183.D	HD2705	26.8 cc	10
	Dilution2	09/12/2018	TP	K17212.D	HD2705	29.5 cc	90

	Target Compound Results Summary										
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments			
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23				
Toluene	108-88-3	92.14	1700	45	D	6300	170	Reported Dilution #1			
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23				
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27				
2-Hexanone(MBK)	591-78-6	100.1	42	5.0		170	20				
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34				
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43				
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38				
Chlorobenzene	108-90-7	112.6	5.4	5.0		25	23				
Ethylbenzene	100-41-4	106.2	1700	45	D	7200	200	Reported Dilution #1			
Xylene (p,m)	1330-20-7	106.2	230	10		1000	43				
Xylene (Ortho)	95-47-6	106.2	170	5.0		720	22				
Styrene	100-42-5	104.1	370	5.0		1600	21				
Isopropylbenzene (cumene)	98-82-8	120.19	420	45	D	2100	220	Reported Dilution #1			
Bromoform	75-25-2	252.8	ND	5.0		ND	52				
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34				
4-Ethyltoluene	622-96-8	120.2	79	5.0		390	25				
1,3,5-Trimethylbenzene	108-67-8	120.2	78	5.0		380	25				
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26				
1,2,4-Trimethylbenzene	95-63-6	120.2	55	5.0		270	25				
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30				
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30				
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26				
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30				
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37				
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53				
Naphthalene	91-20-3	128.17	120	5.0		620	26				
Total Target Compound Concent	rations:		15000	ppbv		46000	ug/m3	]			

Surrogate	Result	<u>Spike</u>	Recovery	
4-Bromofluorobenzene	12	10	120%	

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-10 EEG50 20184191DEBRIS			
Attn:	Attn:Alex MavrelisPhone:EE & GFax:5751 Miami Lakes Drive EastDate Collected:Miami Lakes, FL 33014Date Received:						
Project:	SXM Debris				Sample ID:	02-001	J
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	-
Initial	09/11/2018	TP	K17183.D	HD2705	26.8 cc	10	
Dilution2	09/12/2018	TP	K17212.D	HD2705	29.5 cc	90	

-	Tentatively Id	entified	Compound	d Resul	ts Summar	у	
			Result		Result	Retention	
Tentatively Identified Compounds	CAS#	MW(1)	ppbv	Q	ug/m3	Time	Comments
unknown hydrocarbon		92	650	JN	2400	6.46	
unknown hydrocarbon		92	130	JN	480	6.79	
Pentane	000109-66-0	72	470	JN	1400	9.02	
Furan	000110-00-9	68	220	JN	620	10.45	
Pentane, 2-methyl-	000107-83-5	86	120	JN	420	12.55	
Acetic acid, methyl ester	000079-20-9	74	170	JN	500	12.70	
unknown hydrocarbon		92	190	JN	730	14.25	
unknown hydrocarbon		92	130	JN	500	15.21	
unknown		92	470	JN	1800	16.19	
Furan, 2,5-dimethyl-	000625-86-5	96	110	JN	430	20.48	
Octane	000111-65-9	114	210	JN	960	22.37	
unknown hydrocarbon		92	140	JN	520	23.50	
unknown hydrocarbon		92	170	JN	650	23.78	
Nonane	000111-84-2	128	200	JN	1100	25.09	
Decane	000124-18-5	142	160	JN	930	27.39	
.alphaMethylstyrene	000098-83-9	118	220	JN	1100	28.54	
Undecane	001120-21-4	156	200	JN	1300	29.44	
Acetophenone	000098-86-2	120	140	JN	690	31.04	
unknown hydrocarbon		92	140	JN	540	31.33	
unknown hydrocarbon		92	110	JN	430	33.42	
	Total TIC Conce	entrations:	4400	ppbv	18000	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

E	MSL Analytical						EMSL Or	der #: 49	1800829				
	0 Route 130 North, C	nnaminson, NJ	08077				EMSL Sampl	e#: <b>49</b>	1800829-11				
Pr	one/Fax: (856)858-48	800 / (856)858-4	571				Custom	er ID: EE	G50				
sm <u>htt</u>	p://www.EMSL.com	to15lab@EMSL	com				Custome	r PO: 20	184191DEBRIS				
Attn: Ale EE 57 Mi	ex Mavrelis : & G 51 Miami Lakes Driv ami Lakes, FL 33014		Pl Date Colle Date Rece	none: 30 Fax: 30 ected: 8/2 eived: 9/4	5-374-8300 5-374-8301 28/2018 3/2018								
Project: SX	(M Debris						Samp	le ID: 01-	.003				
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst In</u> TP	<u>iit.</u>	<u>Lab File ID</u> K17184.D	<u>Caniste</u> HD27	<u>er ID</u> 27	<u>Sample</u> 30.8	<u>e Vol.</u> cc	Dil. Factor 10				
Target Compound Results Summary													
Target Compound Results Summary Result RL Result RL													
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments				
Propylene		115-07-1	42.08	130	10		230	17					
Freon 12(Dichlorodiflu	oromethane)	75-71-8	120.9	ND	5.0		ND	25					
Freon 114(1,2-Dichloro	otetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35					
Chloromethane		74-87-3	50.49	71	5.0		150	10					
n-Butane		106-97-8	58.12	ND	5.0		ND	12					
Vinyl chloride		75-01-4	62.50	ND	5.0		ND	13					
1,3-Butadiene		106-99-0	54.09	ND	5.0		ND	11					
Bromomethane		74-83-9	94.94	ND	5.0		ND	19					
Chloroethane		75-00-3	64.52	ND	5.0		ND	13					
Ethanol		64-17-5	46.07	110	5.0		210	9.4					
Bromoethene(Vinyl bro	omide)	593-60-2	106.9	ND	5.0		ND	22					
Freon 11(Trichlorofluo	romethane)	75-69-4	137.4	ND	5.0		ND	28					
Isopropyl alcohol(2-Pro	opanol)	67-63-0	60.10	ND	5.0		ND	12					
Freon 113(1.1.2-Trichl	orotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38					
Acetone		67-64-1	58.08	130	5.0		310	12					
1 1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20					
Acetonitrile		75-05-8	41.00	23	5.0		38	84					
Tertiary butyl alcohol(]	BA)	75-65-0	74 12	ND	5.0		ND	15					
Bromoethane(Ethyl bro	omide)	74-96-4	108.0	ND	5.0		ND	22					
3-Chloropropene(Allyl	chloride)	107-05-1	76 53	ND	5.0		ND	16					
Carbon disulfide		75-15-0	76 14	ND	5.0		ND	16					
Methylene chloride		75-09-2	84 94	ND	5.0		ND	17					
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11					
Methyl-tert-butyl ether	(MTBE)	1634-04-4	88 15	ND	5.0		ND	18					
trans-1.2-Dichloroethe	ne	156-60-5	96.94	ND	5.0		ND	20					
n-Hexane		110-54-3	86.17	13	5.0		44	18					
1.1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20					
Vinvl acetate		108-05-4	86.00	ND	5.0		ND	18					
2-Butanone(MEK)		78-93-3	72.10	33	5.0		100	15					
cis-1.2-Dichloroethene	1	156-59-2	96.94	ND	5.0		ND	20					
Ethyl acetate		141-78-6	88.10	6.4	5.0		23	18					
Chloroform		67-66-3	119.4	ND	5.0		ND	24					
Tetrahydrofuran		109-99-9	72.11	14	5.0		42	15					
1.1.1-Trichloroethane		71-55-6	133.4	ND	5.0		ND	27					
Cvclohexane		110-82-7	84.16	ND	5.0		ND	17					
2.2.4-Trimethylpentane	e(Isooctane)	540-84-1	114.2	ND	5.0		ND	23					
Carbon tetrachloride	<u>,</u> ,	56-23-5	153.8	ND	5.0		ND	31					
n-Heptane		142-82-5	100.2	12	5.0		50	20					
1.2-Dichloroethane		107-06-2	98.96	ND	5.0		ND	20					
Benzene		71-43-2	78 11	310	5.0		1000	16					
Trichloroethene		79-01-6	131.4	ND	5.0		ND	27					
1.2-Dichloropropane		78-87-5	113.0	ND	5.0		ND	23					
Methyl Methacrylate		80-62-6	100 12	ND	5.0		ND	20					
Bromodichloromethan	6	75-27-4	163.8	ND	5.0		ND	33					
1 4-Dioxane	-	123-91-1	88 12	6.3	5.0		23	18					
4-Methyl-2-pentanone	(MIBK)	108-10-1	100.2	ND	5.0		ND	20					
, , , , , , , , , , , , , , , , , , , ,	. ,	-			· · ·								

E	MSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>			EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-11 EEG50 20184191DEBRIS
	Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris	e East			Phone: Fax: Date Collected: Date Received: Sample ID:	305-374-8300 305-374-8301 8/28/2018 9/4/2018 01-003
	<u>Analysis</u> Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst Init.</u> TP	<u>Lab File ID</u> K17184.D	Canister ID HD2727	<u>Sample Vol.</u> 30.8 cc	<u>Dil. Factor</u> 10
2	_		Target Co	ompound Resul	ts Summary	Result R	

Target Compounds	CAS#	мw	ppbv	ppbv	Q	ug/m3	ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	88	5.0		330	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	78	5.0		340	22	
Xylene (p,m)	1330-20-7	106.2	13	10		58	43	
Xylene (Ortho)	95-47-6	106.2	9.5	5.0		41	22	
Styrene	100-42-5	104.1	21	5.0		90	21	
Isopropylbenzene (cumene)	98-82-8	120.19	26	5.0		130	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0		ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0		ND	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	5.0	5.0		26	26	
Total Target Compound Concentrations	5:		1100	ppbv		3200	ug/m3	

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cin Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	E	EMSL Order #: MSL Sample #: Customer ID: Customer PO:	491800829 491800829-11 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/28/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	01-003
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	TP	K17184.D	HD2727	30.8 cc	10

	Tentatively Identified Compound Results Summary											
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments					
Isobutane	000075-28-5	58	11	JN	25	6.01						
1-Propene, 2-methyl-	000115-11-7	56	54	JN	120	6.46						
Pentane	000109-66-0	72	42	JN	120	9.02						
Acetic acid, methyl ester	000079-20-9	74	16	JN	50	12.71						
1-Pentene, 2-methyl-	000763-29-1	84	14	JN	49	14.24						
unknown		92	34	JN	130	16.18						
unknown hydrocarbon		92	19	JN	71	22.37						
unknown hydrocarbon		92	71	JN	270	23.50						
unknown hydrocarbon		92	14	JN	51	23.78						
Nonane	000111-84-2	128	20	JN	100	25.08						
Decane	000124-18-5	142	16	JN	93	27.38						
Unknown Substituted Naphthalene		92	40	JN	150	28.15						
.alphaMethylstyrene	000098-83-9	118	22	JN	110	28.54						
Undecane	001120-21-4	156	21	JN	130	29.43						
Acetophenone	000098-86-2	120	19	JN	95	31.03						
unknown hydrocarbon		92	20	JN	75	31.33						
unknown hydrocarbon		92	24	JN	90	33.43						
unknown hydrocarbon		92	11	JN	40	33.74						
	Total TIC Conce	entrations:	470	ppbv	1800	ug/m3						

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

🔶 E	MSL Analytical						EMSL Ord	der #: <b>49</b> ′	1800829			
20	0 Route 130 North, Ci	innaminson, NJ	08077				EMSL Sample #: 491800829-12					
PI	none/Fax: (856)858-48		Custom	er ID: EE	G50							
•••• <u>ht</u>	tp://www.EMSL.com	to15lab@EMSL	.com				Custome	rPO: 20	184191DEBRIS			
Attn: Al	ex Mavrelis						Pl	none: 30	5-374-8300			
EE	E & G			Fax: 30	5-374-8301							
57	51 Miami Lakes Drive	e East					Date Colle	cted: 8/3	0/2018			
MI	iami Lakes, FL 33014						Date Rece	eived: 9/4	/2018			
Project: SX	KM Debris						Samp	le ID: 03-	007 (P)			
Analysia	Analysia Data	Analyst In	:4		Coniet		Comple	Vel	Dil Fastar			
Analysis	Analysis Date	Analyst In	<u>IT.</u>			<u>er ID</u>	Sample	<u>e voi.</u>	DII. Factor			
Initial	09/10/2018	r vv		J4324.D	HU21	აა	34 (	C	10			
Target Compound Results Summary Result RL Result RL												
Target Compounds		CAS#	MW	Result	RL ppby	0	Result	RL	Comments			
Propylopo		115 07 1	42.09	17	10	8	20	17	Commenta			
Freen 12/Dichlorodiflu	oromethane)	75 71 8	120.0		50		Z3	25				
Freen 11/(1 2 Dichlor		75-71-0	120.9		5.0			25				
Chloromothano	olelianuoi oelinan	70-14-2	50.40	ND 8.0	5.0		17	10				
		106.07.9	59.12	0.0	5.0		26	10				
Vipyl chlorido		75 01 4	62.50		5.0			12				
1 3 Butadiene		106.00.0	54.00		5.0			13				
Bromomethane		74_83_9	04.03	ND	5.0		ND	10				
Chloroethane		74-03-9	64 52	ND	5.0		ND	13				
Ethanol		64-17-5	46.07	5200	5.0	F	10000	94				
Bromoethene(Vinvl br	omide)	593-60-2	106.9	ND	5.0	-		22				
Ereon 11(Trichlorofluo	romethane)	75-69-4	137.4	ND	5.0		ND	28				
Isopropyl alcohol(2-Pr	opanol)	67-63-0	60 10	ND	5.0		ND	12				
Freon 113(1 1 2-Trich	lorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38				
Acetone		67-64-1	58.08	21	5.0		49	12				
1.1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20				
Acetonitrile		75-05-8	41.00	ND	5.0		ND	8.4				
Tertiary butyl alcohol	TBA)	75-65-0	74.12	ND	5.0		ND	15				
Bromoethane(Ethyl br	omide)	74-96-4	108.0	ND	5.0		ND	22				
3-Chloropropene(Allyl	chloride)	107-05-1	76.53	ND	5.0		ND	16				
Carbon disulfide		75-15-0	76.14	ND	5.0		ND	16				
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17				
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11				
Methyl-tert-butyl ether	(MTBE)	1634-04-4	88.15	ND	5.0		ND	18				
trans-1,2-Dichloroethe	ene	156-60-5	96.94	ND	5.0		ND	20				
n-Hexane		110-54-3	86.17	ND	5.0		ND	18				
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20				
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18				
2-Butanone(MEK)		78-93-3	72.10	ND	5.0		ND	15				
cis-1,2-Dichloroethene	9	156-59-2	96.94	ND	5.0		ND	20				
Ethyl acetate		141-78-6	88.10	6.2	5.0		22	18				
Chloroform		67-66-3	119.4	ND	5.0		ND	24				
Tetrahydrofuran		109-99-9	72.11	ND	5.0		ND	15				
1,1,1-Trichloroethane		71-55-6	133.4	ND	5.0		ND	27				
	(1 )	110-82-7	84.16	ND	5.0		ND	17				
2,2,4- I rimethylpentan	e(Isooctane)	540-84-1	114.2	ND	5.0		ND	23				
		00-23-0 140.90.5	153.8		5.0			31 20				
		142-82-5	100.2		5.0			20				
		107-06-2	98.96	ND	5.0			20				
Benzene		71-43-2	/8.11	16	5.0		52	16				
		19-01-0	131.4		5.0			21				
		10-01-0	100.10		0.C			20				
Bromodichloromothan	٩	75-27 /	163.0		5.0			20				
		123 01 1	99.10		5.0			10				
4-Methyl-2-pentanone	(MIBK)	108-10-1	100.12	ND	5.0			20				
	· · -· · · /				0.0							

	Attn:	EMSL Analytical       EMSL Order #: 4         200 Route 130 North, Cinnaminson, NJ 08077       EMSL Sample #: 4         Phone/Fax: (856)858-4800 / (856)858-4571       Customer ID: 1         http://www.EMSL.com       to15lab@EMSL.com         Attn:       Alex Mavrelis       Phone: 5         EE & G       Fax: 5         5751 Miami Lakes Drive East       Date Collected:									
	Miami Lakes, FL 33014 Date R								eived: 9/	/4/2018	
	Project: SXM Debris Sample ID:									3-007 (P)	
	<u>Analysis</u> Initial	<u>Analysis Date</u> 09/10/2018	<u>Analyst Ir</u> KW	<u>iit.</u>	<u>Lab File ID</u> J4324.D	Canist HD2	<u>er ID</u> 733	<u>Sampl</u> 34	<u>e Vol.</u> cc	<u>Dil. Factor</u> 10	
			Targ	et Com	pound Resu	its Sumn	nary				
Target	t Compound	ds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments	
cis-1,3	B-Dichloropro	ppene	10061-01-5	111.0	ND	5.0		ND	23		
Toluen	ne		108-88-3	92.14	7.4	5.0		28	19		
trans-1	1,3-Dichlorop	propene	10061-02-6	111.0	ND	5.0		ND	23		
1,1,2-1	Trichloroetha	ine	79-00-5	133.4	ND	5.0		ND	27		
2-Hexa	anone(MBK)		591-78-6	100.1	ND	5.0		ND	20		

trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0	ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0	ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0	ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0	ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0	ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0	ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0	ND	23	
Ethylbenzene	100-41-4	106.2	5.4	5.0	23	22	
Xylene (p,m)	1330-20-7	106.2	ND	10	ND	43	
Xylene (Ortho)	95-47-6	106.2	ND	5.0	ND	22	
Styrene	100-42-5	104.1	ND	5.0	ND	21	
Isopropylbenzene (cumene)	98-82-8	120.19	ND	5.0	ND	25	
Bromoform	75-25-2	252.8	ND	5.0	ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0	ND	34	
4-Ethyltoluene	622-96-8	120.2	ND	5.0	ND	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	5.0	ND	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0	ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0	ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0	ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0	ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0	ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0	ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0	ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0	ND	53	
Naphthalene	91-20-3	128.17	ND	5.0	ND	26	
Total Target Compound Concentrations	5:		5300	ppbv	10000	ug/m3	

Surrogate	<u>Result</u>	<u>Spike</u>	Recovery
4-Bromofluorobenzene	9.0	10	90%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-12 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/30/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	03-007 (P)
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/10/2018	KW	J4324.D	HD2733	34 cc	10

#### **Tentatively Identified Compound Results Summary** Result Result Retention **Tentatively Identified Compounds** CAS# MW(1) ppbv Q ug/m3 Time Comments 1-Hexanol 000111-27-3 102 100 JN **420** 23.83

100

ppbv

420

ug/m3

Qualifier Definitions

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

**Total TIC Concentrations:** 

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

#### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856)858-4800 / (856)858-4571 http://www.EMSL.com to15lab@EMSL.com							rder #: 49° ble #: 49° ner ID: EE er PO: 20	491800829 491800829-13 EEG50 20184191DEBRIS		
Attn: Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014							Phone: <b>305-374-8300</b> Fax: <b>305-374-8301</b> Date Collected: <b>8/29/2018</b> Date Received: <b>9/4/2018</b>				
Project:	SXM Debris						Sam	ple ID: 02-	007 (P)		
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/10/2018	<u>Analysis Date Analyst Init.</u> 09/10/2018 KW		<u>Lab File ID</u> J4325.D	<u>Canister ID</u> HD2743		<u>Sample Vol.</u> 28 cc		<u>Dil. Factor</u> 10		
		Targ	et Com	ound Resul	its Summ	narv					
				Result	RL		Result	RL			
Target Compounds	3	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments		
Propylene	Propylene		42.08	ND	10		ND	17			
reon 12(Dichlorodifluoromethane)		75-71-8	120.9	ND	5.0		ND	25			
-reon 114(1,2-Dichlorotetrafluoroethan		76-14-2	170.9	ND	5.0		ND	35			
Jhloromethane		/4-8/-3	50.49	ND	5.0		ND	10			
i-butarie		75 01 4	58.12 62.50	ND	5.0			12			
1.3-Butadiene		106-99-0	54.09	ND	5.0			11			
3romomethane		74-83-9	94.03	ND	5.0			19			
Chloroethane		75-00-3	64 52	ND	5.0		ND	13			
Ethanol		64-17-5	46.07	650	5.0	Е	1200	9.4			
Bromoethene(Vinyl bromide)		593-60-2	106.9	ND	5.0		ND	22			
Freon 11(Trichlorofluoromethane)		75-69-4	137.4	ND	5.0		ND	28			
sopropyl alcohol(2-Propanol)		67-63-0	60.10	8.5	5.0		21	12			
-reon 113(1,1,2-Trichlorotrifluoroethan		76-13-1	187.4	ND	5.0		ND	38			
cetone		67-64-1	58.08	9.0	5.0		21	12			
1,1-Dichloroethene	,1-Dichloroethene		96.94	ND	5.0		ND	20			
cetonitrile		75-05-8	41.00	ND	5.0		ND	8.4			
ertiary butyl alcohol(TBA)		75-65-0	74.12	ND	5.0		ND	15			
3romoethane(Ethyl bromide)		74-96-4	108.0	ND	5.0		ND	22			
3-Chloropropene(Allyl chloride)		107-05-1	76.53	ND	5.0		ND	16			
Jarbon disulfide		75-15-0	76.14	ND	5.0		ND	16			
		75-09-2	52.00	ND	5.0		ND	17			
Methyl-tert-butyl ether(MTRE)		1634 04 4	53.00 88 15		5.0			10			
		156-60-5	06.15 06.04		5.0			20			
1-Hexane		110-54-3	86 17		5.0		ND	18			
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20			
/inyl acetate		108-05-4	86.00	ND	5.0		ND	18			
2-Butanone(MEK)		78-93-3	72.10	ND	5.0		ND	15			
cis-1,2-Dichloroethene		156-59-2	96.94	ND	5.0		ND	20			
Ethyl acetate		141-78-6	88.10	ND	5.0		ND	18			
Chloroform		67-66-3	119.4	ND	5.0		ND	24			
Tetrahydrofuran		109-99-9	72.11	ND	5.0		ND	15			
1,1,1-Trichloroethane		71-55-6	133.4	ND	5.0		ND	27			
Cyclohexane		110-82-7	84.16	ND	5.0		ND	17			
2,2,4-Trimethylpentane(Isooctane)		540-84-1	114.2	ND	5.0		ND	23			
Jarbon tetrachloride		50-23-5	153.8	ND	5.0		ND	31			
1 2-Dichloroethane		142-02-0	00.2		5.0			20			
		71_43.2	90.90 70 11		5.0			20			
		79_01_6	131 /		5.0			27			
1 2-Dichloropropane		78-87-5	113.4		5.0			21			
Methyl Methacrylate		80-62-6	100 12	ND	5.0		ND	20			
Bromodichloromethane		75-27-4	163.8	ND	5.0		ND	33			
1.4-Dioxane		123-91-1	88 12	ND	5.0		ND	18			
4-Methyl-2-pentanone(MIBK)		108-10-1	100.2	ND	5.0		ND	20			
EMSL Analytical         200 Route 130 North, Cinnaminson, NJ 08077         Phone/Fax: (856)858-4800 / (856)858-4571         http://www.EMSL.com         Attn:         Alex Mavrelis         EE & G         5751 Miami Lakes Drive East         Miami Lakes, FL 33014								EMSL Order #:       491800829         EMSL Sample #:       491800829-13         Customer ID:       EEG50         Customer PO:       20184191DEBRIS         Phone:       305-374-8300         Fax:       305-374-8301         Date Collected:       8/29/2018         Date Received:       9/4/2018			
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Project: S	SXM Debris						Samp	le ID: 02-	007 (P)		
Analysis	Analysis Date	Analyst Ini	it.	Lab File ID	Canist	er ID	Sample	e Vol.	Dil. Factor		
Initial	09/10/2018	KW		J4325.D	HD27	'43	28 (	CC	10		
		Targe	t Comp	ound Result	s Summ	nary					
		J		Result	RL	, <b>,</b>	Result	RL			
Target Compounds	<b>i</b>	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments		
cis-1,3-Dichloroprop	ene	10061-01-5	111.0	ND	5.0		ND	23			
Toluene		108-88-3	92.14	ND	5.0		ND	19			
trans-1,3-Dichloropro	opene	10061-02-6	111.0	ND	5.0		ND	23			
1,1,2-Trichloroethan	e	79-00-5	133.4	ND	5.0		ND	27			
2-Hexanone(MBK)		591-78-6	100.1	ND	5.0		ND	20			
Tetrachloroethene		127-18-4	165.8	ND	5.0		ND	34			
Dibromochlorometha	ane	124-48-1	208.3	ND	5.0		ND	43			
1,2-Dibromoethane		106-93-4	187.8	ND	5.0		ND	38			
Chlorobenzene		108-90-7	112.6	ND	5.0		ND	23			
Ethylbenzene		100-41-4	106.2	ND	5.0		ND	22			
Xylene (p,m)		1330-20-7	106.2	ND	10		ND	43			
Xylene (Ortho)		95-47-6	106.2	ND	5.0		ND	22			
Styrene		100-42-5	104.1	ND	5.0		ND	21			
Isopropylbenzene (c	umene)	98-82-8	120.19	ND	5.0		ND	25			
Bromoform		75-25-2	252.8	ND	5.0		ND	52			
1,1,2,2-Tetrachloroe	thane	79-34-5	167.9	ND	5.0		ND	34			
4-Ethyltoluene		622-96-8	120.2	ND	5.0		ND	25			
1,3,5-Trimethylbenze	ene	108-67-8	120.2	ND	5.0		ND	25			
2-Chlorotoluene		95-49-8	126.6	ND	5.0		ND	26			
1,2,4-Trimethylbenze	ene	95-63-6	120.2	ND	5.0		ND	25			
1,3-Dichlorobenzene	9	541-73-1	147.0	ND	5.0		ND	30			
1,4-Dichlorobenzene	9	106-46-7	147.0	ND	5.0		ND	30			
Benzyl chloride		100-44-7	126.0	ND	5.0		ND	26			
1,2-Dichlorobenzene	9	95-50-1	147.0	ND	5.0		ND	30			
1,2,4-Trichlorobenze	ene	120-82-1	181.5	ND	5.0		ND	37			
Hexachloro-1,3-buta	diene	87-68-3	260.8	ND	5.0		ND	53			
Naphthalene		91-20-3	128.17	ND	5.0		ND	26			
Total Target Com	pound Concentrations:			670	ppbv		1200	ug/m3			

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	9.5	10	95%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-13 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018		
Project:	SXM Debris				Sample ID:	02-007 (P)
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	<u>Sample Vol.</u>	Dil. Factor
Initial	09/10/2018	ĸW	J4325.D	HD2743	28 cc	10

# Tentatively Identified Compound Results Summary

Tentatively Identified Compounds	CAS#	MW/(1)	Result	0	Result	Retention	Commonts
No TICs to Report	0.04		phpa	4	ug/iii3	TIME	Comments
I	Total TIC Conce	entrations:	0.0	ppbv	0.0	ug/m3	

# Qualifier Definitions

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-14 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	02-004
Analysis Initial Dilution1	Analysis Date 09/10/2018 09/12/2018	<u>Analyst Init.</u> KW KW	<u>Lab File ID</u> J4326.D .I4366 D	Canister ID HD2752 HD2752	Sample Vol. 30 cc 30 cc	Dil. Factor 10 90

	Targ	et Comp	ound Result	s Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
Propylene	115-07-1	42.08	1500	90	D	2700	150	Reported Dilution #1
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35	
Chloromethane	74-87-3	50.49	130	5.0		270	10	
n-Butane	106-97-8	58.12	ND	5.0		ND	12	
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13	
1,3-Butadiene	106-99-0	54.09	140	5.0		310	11	
Bromomethane	74-83-9	94.94	ND	5.0		ND	19	
Chloroethane	75-00-3	64.52	8.4	5.0		22	13	
Ethanol	64-17-5	46.07	750	45	D	1400	85	Reported Dilution #1
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22	
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	ND	5.0		ND	12	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38	
Acetone	67-64-1	58.08	530	45	D	1300	110	Reported Dilution #1
1,1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20	
Acetonitrile	75-05-8	41.00	240	5.0		400	8.4	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15	
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16	
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16	
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17	
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18	
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20	
n-Hexane	110-54-3	86.17	83	5.0		290	18	
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20	
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18	
2-Butanone(MEK)	78-93-3	72.10	140	5.0		420	15	
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20	
Ethyl acetate	141-78-6	88.10	ND	5.0		ND	18	
Chloroform	67-66-3	119.4	ND	5.0		ND	24	
Tetrahydrofuran	109-99-9	72.11	55	5.0		160	15	
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27	
Cyclohexane	110-82-7	84.16	ND	5.0		ND	17	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23	
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31	
n-Heptane	142-82-5	100.2	84	5.0		340	20	
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20	
Benzene	71-43-2	78.11	1800	45	D	5700	140	Reported Dilution #1
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27	
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23	
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20	
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33	
1,4-Dioxane	123-91-1	88.12	12	5.0		42	18	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	5.0		ND	20	

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-14 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	02-004
<u>Analysis</u> Initial Dilution1	Analysis Date 09/10/2018 09/12/2018	<u>Analyst Init.</u> KW KW	<u>Lab File ID</u> J4326.D J4366.D	Canister ID HD2752 HD2752	Sample Vol. 30 cc 30 cc	Dil. Factor 10 90

	Targ	et Comp	ound Resul	ts Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	710	45	D	2700	170	Reported Dilution #1
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	12	5.0		49	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	640	45	D	2800	200	Reported Dilution #1
Xylene (p,m)	1330-20-7	106.2	95	10		410	43	
Xylene (Ortho)	95-47-6	106.2	62	5.0		270	22	
Styrene	100-42-5	104.1	340	45	D	1500	190	Reported Dilution #1
Isopropylbenzene (cumene)	98-82-8	120.19	120	5.0		590	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	25	5.0		120	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	24	5.0		120	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	17	5.0		84	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	59	5.0		310	26	
Total Target Compound Concent	rations:		7600	ppbv		22000	ug/m3	

Surrogate	Result.	<u>Spike</u>	Recovery	
4-Bromofluorobenzene	12	10	120%	

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-14 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018		
Project:	SXM Debris				Sample ID:	02-004
<u>Analysis</u> Initial	<u>Analysis Date</u> 09/10/2018	<u>Analyst Init.</u> KW	Lab File ID J4326.D	Canister ID HD2752	<u>Sample Vol.</u> 30 cc	Dil. Factor 10
Dilution1	09/12/2018	ĸW	J4366.D	HD2752	30 cc	90

	Tentatively Id	entified	Compound	d Result	ts Summar	У	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments
1-Propene, 2-methyl-	000115-11-7	56	330	JN	750	6.66	
Unknown hydrocarbon		92	44	JN	170	7.03	
Acetaldehyde	000075-07-0	44	52	JN	93	7.24	
Pentane	000109-66-0	72	190	JN	550	9.21	
2-Pentene	000109-68-2	70	35	JN	100	9.80	
Unknown hydrocarbon		92	39	JN	150	10.15	
Furan	000110-00-9	68	67	JN	190	10.36	
1-Pentene, 2-methyl-	000763-29-1	84	160	JN	560	13.04	
Unknown		92	120	JN	440	14.64	
Unknown hydrocarbon		92	89	JN	330	20.52	
Unknown		92	94	JN	350	22.07	
Nonane	000111-84-2	128	81	JN	420	23.51	
Unknown		92	65	JN	250	26.14	
.alphaMethylstyrene	000098-83-9	118	140	JN	680	27.52	
Benzaldehyde	000100-52-7	106	69	JN	300	27.85	
Unknown		92	81	JN	300	28.55	
Unknown Substituted Benzene		92	63	JN	240	28.62	
Acetophenone	000098-86-2	120	71	JN	350	30.47	
Unknown		92	71	JN	270	30.74	
Unknown		92	65	JN	250	32.82	
	Total TIC Conce	entrations:	1900	ppbv	6700	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

Attn:	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com Alex Mavrelis EE & G 5751 Miami Lakes Driv	EMSL Order #: 491800829 EMSL Sample #: 491800829-15 Customer ID: EEG50 Customer PO: 20184191DEBRIS Phone: 305-374-8300 Fax: 305-374-8301 Date Collected: 8/29/2018									
	Miami Lakes, FL 33014						Date Received: 9/4/2018				
Project:	SXM Debris						Samp	le ID: 02-	006 (P)		
Analysis Initial	<u>Analysis Date</u> 09/10/2018	<u>Analyst Ir</u> KW	<u>nit.</u>	<u>Lab File ID</u> J4328.D	<u>Canister ID</u> HD2768		<u>Sample Vol.</u> 33 cc		Dil. Factor 10		
_		Taro	et Comr	ound Result	ts Summ	harv					
				Result	RL		Result	RL			
Target Compounds	5	CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments		
Propylene		115-07-1	42.08	23	10		40	17			
Freon 12(Dichlorodi	fluoromethane)	75-71-8	120.9	ND	5.0		ND	25			
Freon 114(1,2-Dichl	lorotetrafluoroethan	76-14-2	1/0.9	ND	5.0		ND	35			
n Butane		106 97 8	58 12	9.1	5.0		76	10			
Vinyl chloride		75-01-4	62 50	ND	5.0		ND	12			
1.3-Butadiene		106-99-0	54.09	ND	5.0		ND	10			
Bromomethane		74-83-9	94.94	ND	5.0		ND	19			
Chloroethane		75-00-3	64.52	ND	5.0		ND	13			
Ethanol		64-17-5	46.07	770	5.0	Е	1400	9.4			
Bromoethene(Vinyl	bromide)	593-60-2	106.9	ND	5.0		ND	22			
Freon 11(Trichlorofl	uoromethane)	75-69-4	137.4	ND	5.0		ND	28			
Isopropyl alcohol(2-	Propanol)	67-63-0	60.10	11	5.0		26	12			
Freon 113(1,1,2-Tri	chlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38			
Acetone		67-64-1	58.08	34 ND	5.0		81	12			
		75-05-8	41.00		5.0			20			
Tertiary butyl alcoho	ol(TBA)	75-65-0	74 12	ND	5.0		ND	15			
Bromoethane(Ethyl	bromide)	74-96-4	108.0	ND	5.0		ND	22			
3-Chloropropene(Al	lyl chloride)	107-05-1	76.53	ND	5.0		ND	16			
Carbon disulfide		75-15-0	76.14	ND	5.0		ND	16			
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17			
Acrylonitrile		107-13-1	53.00	ND	5.0		ND	11			
Methyl-tert-butyl eth	ner(MTBE)	1634-04-4	88.15	ND	5.0		ND	18			
trans-1,2-Dichloroet	thene	156-60-5	96.94	ND	5.0		ND	20			
n-Hexane		75 24 2	86.17		5.0			18			
Vinvl acetate		108-05-4	86.00	ND	5.0			18			
2-Butanone(MEK)		78-93-3	72.10	6.8	5.0		20	15			
cis-1,2-Dichloroethe	ene	156-59-2	96.94	ND	5.0		ND	20			
Ethyl acetate		141-78-6	88.10	7.2	5.0		26	18			
Chloroform		67-66-3	119.4	ND	5.0		ND	24			
Tetrahydrofuran		109-99-9	72.11	ND	5.0		ND	15			
1,1,1-Trichloroethar	ne	71-55-6	133.4	ND	5.0		ND	27			
Cyclohexane		110-82-7	84.16	ND	5.0		ND	17			
2,2,4-Trimethylpent	ane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23			
Carbon tetrachloride	3	20-23-5	153.8		5.0	$\left  - \right $		31			
1 2-Dichloroethano		142-02-0	08.06		5.0	$\left  - \right $		20			
Renzene		71-43-2	78 11	21	5.0		67	16			
Trichloroethene		79-01-6	131.4	ND	5.0		ND	27			
1,2-Dichloropropane	9	78-87-5	113.0	ND	5.0		ND	23			
Methyl Methacrylate	9	80-62-6	100.12	ND	5.0		ND	20			
Bromodichlorometh	ane	75-27-4	163.8	ND	5.0		ND	33			
1,4-Dioxane		123-91-1	88.12	ND	5.0		ND	18			
4-Methyl-2-pentano	ne(MIBK)	108-10-1	100.2	ND	5.0		ND	20			

EMSL	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com		EMSL Ord EMSL Sampl Custom Custome	der #: 49 le #: 49 er ID: EE er PO: 20	1800829 1800829-15 EG50 184191DEBRIS				
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Driv Miami Lakes, FL 33014	Pl Date Colle Date Rece	hone: 30 Fax: 30 ected: 8/2 eived: 9/4	5-374-8300 5-374-8301 29/2018 4/2018					
Project:	SXM Debris						Samp	le ID: 02	-006 (P)
Analysis Initial	<u>Analysis Date</u> 09/10/2018	<u>Analyst In</u> KW	<u>it.</u>	Lab File ID J4328.D	<u>Canist</u> HD27	er ID '68	<u>Sample</u> 33 c	e Vol. cc	Dil. Factor 10
		Targe	et Comp	ound Result	s Summ	nary			
Target Compoun	ds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropro	opene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	·	108-88-3	92.14	23	5.0		85	19	
trans-1,3-Dichloro	propene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroetha	ane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK	)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	•	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromet	thane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethan	e	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene		108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene		100-41-4	106.2	10	5.0		45	22	
Xylene (p,m)		1330-20-7	106.2	15	10		64	43	
Xylene (Ortho)		95-47-6	106.2	5.7	5.0		25	22	
Styrene		100-42-5	104.1	ND	5.0		ND	21	
Isopropylbenzene	(cumene)	98-82-8	120.19	ND	5.0		ND	25	
Bromoform		75-25-2	252.8	ND	50		ND	52	

ND

ND

ND

ND

ND

ND

ND

ND

34

25

25

26

25

30

30

26

1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0	ND	30
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0	ND	37
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0	ND	53
Naphthalene	91-20-3	128.17	ND	5.0	ND	26
Total Target Compound Concer	trations:		1000	ppbv	2000	ug/m3
					-	
<u>Surrogate</u>			Result	<u>Spike</u>	Recovery	
4-Bromofluorobenzene			9.9	10	98%	

167.9

120.2

120.2

126.6

120.2

147.0

147.0

126.0

ND

ND

ND

ND

ND

ND

ND

ND

5.0

5.0

5.0

5.0

5.0

5.0

5.0

5.0

79-34-5

622-96-8

108-67-8

95-49-8

95-63-6

541-73-1

106-46-7

100-44-7

### Qualifier Definitions

1,1,2,2-Tetrachloroethane

1,3,5-Trimethylbenzene

1,2,4-Trimethylbenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

4-Ethyltoluene

2-Chlorotoluene

Benzyl chloride

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

# Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-15 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018			
Project:	SXM Debris				Sample ID:	02-006 (P)
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	<u>Sample Vol.</u>	Dil. Factor
Initial	09/10/2018	KW	J4328.D	HD2768	33 cc	10

T	entatively ld	entified	Compound	d Result	ts Summar	y	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments
Isobutane	000075-28-5	58	13	JN	31	6.16	
	Total TIC Conce	entrations:	13	ppbv	31	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-16 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	01-002
<u>Analysis</u> Initial	Analysis Date 09/10/2018	<u>Analyst Init.</u> KW	<u>Lab File ID</u> J4329.D	Canister ID HD2786	Sample Vol. 25 cc	Dil. Factor 10
Dilution1	09/12/2018	ĸw	J4367.D	HD2786	25 CC	20

	Targ	et Comp	ound Result	s Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
Propylene	115-07-1	42.08	180	10		310	17	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35	
Chloromethane	74-87-3	50.49	78	5.0		160	10	
n-Butane	106-97-8	58.12	ND	5.0		ND	12	
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13	
1.3-Butadiene	106-99-0	54.09	5.3	5.0		12	11	
Bromomethane	74-83-9	94.94	ND	5.0		ND	19	
Chloroethane	75-00-3	64.52	ND	5.0		ND	13	
Ethanol	64-17-5	46.07	98	5.0		180	9.4	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22	
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	7.5	5.0		19	12	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38	
Acetone	67-64-1	58.08	360	5.0		850	12	
1,1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20	
Acetonitrile	75-05-8	41.00	74	5.0		120	8.4	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15	
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16	
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16	
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17	
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18	
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20	
n-Hexane	110-54-3	86.17	19	5.0		66	18	
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20	
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18	
2-Butanone(MEK)	78-93-3	72.10	67	5.0		200	15	
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20	
Ethyl acetate	141-78-6	88.10	8.8	5.0		32	18	
Chloroform	67-66-3	119.4	ND	5.0		ND	24	
Tetrahydrofuran	109-99-9	72.11	24	5.0		70	15	
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27	
Cyclohexane	110-82-7	84.16	ND	5.0		ND	17	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23	
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31	
n-Heptane	142-82-5	100.2	17	5.0		71	20	
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20	
Benzene	71-43-2	78.11	310	10	D	1000	32	Reported Dilution #1
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27	
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23	
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20	
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33	
1,4-Dioxane	123-91-1	88.12	ND	5.0		ND	18	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	5.0		ND	20	

MSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-16 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	01-002
<u>Analysis</u> Initial Dilution1	<u>Analysis Date</u> 09/10/2018 09/12/2018	<u>Analyst Init.</u> KW KW	<u>Lab File ID</u> J4329.D J4367.D	<u>Canister ID</u> HD2786 HD2786	<u>Sample Vol.</u> 25 cc 25 cc	Dil. Factor 10 20

	Targ	et Comp	ound Result	s Summ	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	130	5.0		500	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	160	5.0		680	22	
Xylene (p,m)	1330-20-7	106.2	17	10		73	43	
Xylene (Ortho)	95-47-6	106.2	13	5.0		54	22	
Styrene	100-42-5	104.1	32	5.0		140	21	
Isopropylbenzene (cumene)	98-82-8	120.19	47	5.0		230	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	5.9	5.0		29	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	7.9	5.0		39	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	5.0		ND	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	5.5	5.0		29	26	
Total Target Compound Concentr	rations:		1700	ppbv		4900	ug/m3	

Surrogate	Result	<u>Spike</u>	Recovery
4-Bromofluorobenzene	10	10	100%

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-16 EEG50 20184191DEBRIS				
Attn:	Attn:Alex MavrelisPhone:EE & GFax:5751 Miami Lakes Drive EastDate Collected:Miami Lakes, FL 33014Date Received:							
Project:	SXM Debris				Sample ID:	01-002		
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor		
iniuai	09/10/2018	r.vv	J4329.D	HD2700	25 00	10		
Dilution1	09/12/2018	KW	J4367.D	HD2786	25 cc	20		

	<b>Tentatively Id</b>	entified	Compound	d Result	ts Summar	У	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments
1-Propene, 2-methyl-	000115-11-7	56	60	JN	140	6.66	
Pentane	000109-66-0	72	36	JN	110	9.21	
Furan	000110-00-9	68	15	JN	42	10.34	
Pentane, 2-methyl-	000107-83-5	86	11	JN	40	11.77	
Acetic acid, methyl ester	000079-20-9	74	34	JN	100	11.89	
1-Pentene, 2-methyl-	000763-29-1	84	16	JN	54	13.02	
Unknown		92	30	JN	110	14.63	
Unknown hydrocarbon		92	22	JN	82	20.52	
Cyclohexane, propyl-	001678-92-8	126	17	JN	88	21.76	
Unknown		92	16	JN	60	22.07	
Nonane	000111-84-2	128	22	JN	120	23.52	
Decane	000124-18-5	142	17	JN	100	26.15	
.alphaMethylstyrene	000098-83-9	118	26	JN	130	27.52	
Undecane	001120-21-4	156	18	JN	120	28.53	
Acetophenone	000098-86-2	120	16	JN	76	30.49	
Dodecane	000112-40-3	170	20	JN	140	30.75	
Tridecane	000629-50-5	184	27	JN	200	32.82	
Tetradecane	000629-59-4	198	16	JN	130	35.09	
	Total TIC Conce	entrations:	420	ppbv	1800	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

EMSL Analytical 200 Route 130 North, Ciu Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-17 EEG50 20184191DEBRIS		
Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East	Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018		
SXM Debris	02-002				
Analysis Date 09/11/2018	<u>Analyst Init.</u> KW KW	<u>Lab File ID</u> J4350.D I4351 D	Canister ID HD2787 HD2787	Sample Vol. 279 cc 31 cc	Dil. Factor 10
	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com t Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014 SXM Debris Analysis Date 09/11/2018 09/12/2018	EMSL Analytical         200 Route 130 North, Cinnaminson, NJ 08077         Phone/Fax: (856)858-4800 / (856)858-4571         http://www.EMSL.com         http://www.EMSL.com         Alex Mavrelis         EE & G         5751 Miami Lakes Drive East         Miami Lakes, FL 33014         SXM Debris         Analysis Date         09/11/2018       KW         09/12/2018       KW	EMSL Analytical         200 Route 130 North, Cinnaminson, NJ 08077         Phone/Fax: (856)858-4800 / (856)858-4571         http://www.EMSL.com to15lab@EMSL.com         Alex Mavrelis         EE & G         5751 Miami Lakes Drive East         Miami Lakes, FL 33014         SXM Debris         Analysis Date       Analyst Init.       Lab File ID         09/11/2018       KW       J4350.D         09/12/2018       KW	EMSL Analytical         200 Route 130 North, Cinnaminson, NJ 08077         Phone/Fax: (856)858-4800 / (856)858-4571         http://www.EMSL.com to15lab@EMSL.com         Alex Mavrelis         EE & G         5751 Miami Lakes Drive East         Miami Lakes, FL 33014         SXM Debris         Analysis Date         Analysis Date       Analyst Init.       Lab File ID       Canister ID         09/11/2018       KW       J4350.D       HD2787         09/12/2018       KW       J4351.D       HD2787	EMSL Analytical       EMSL Order #:         200 Route 130 North, Cinnaminson, NJ 08077       Phone/Fax: (856)858-4800 / (856)858-4571         http://www.EMSL.com to15lab@EMSL.com       Customer ID:         Alex Mavrelis       Phone:         EE & G       Fax:         5751 Miami Lakes Drive East       Date Collected:         Miami Lakes, FL 33014       Sample ID:         SXM Debris       Sample ID:         Analysis Date       Analyst Init.       Lab File ID       Canister ID         09/11/2018       KW       J4350.D       HD2787       279 cc

Target Compound Results Summary									
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result uq/m3	RL uq/m3	Comments	
Propylene	115-07-1	42.08	1100	90	D	1900	150	Reported Dilution #1	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	5.0		ND	25		
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35		
Chloromethane	74-87-3	50.49	180	5.0		380	10		
n-Butane	106-97-8	58.12	ND	5.0		ND	12		
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13		
1,3-Butadiene	106-99-0	54.09	69	5.0		150	11		
Bromomethane	74-83-9	94.94	ND	5.0		ND	19		
Chloroethane	75-00-3	64.52	12	5.0		30	13		
Ethanol	64-17-5	46.07	46	5.0		87	9.4		
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	5.0		ND	22		
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28		
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	ND	5.0		ND	12		
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38		
Acetone	67-64-1	58.08	1500	45	D	3600	110	Reported Dilution #1	
1,1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20		
Acetonitrile	75-05-8	41.00	650	45	D	1100	75	Reported Dilution #1	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15		
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22		
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16		
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16		
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17		
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11		
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18		
trans-1,2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20		
n-Hexane	110-54-3	86.17	170	5.0		610	18		
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20		
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18		
2-Butanone(MEK)	78-93-3	72.10	310	5.0		900	15		
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20		
Ethyl acetate	141-78-6	88.10	15	5.0		54	18		
Chloroform	67-66-3	119.4	ND	5.0		ND	24		
Tetrahydrofuran	109-99-9	72.11	72	5.0		210	15		
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27		
Cyclohexane	110-82-7	84.16	5.5	5.0		19	17		
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23		
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31		
n-Heptane	142-82-5	100.2	160	5.0		660	20		
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20		
Benzene	71-43-2	78.11	4100	45	DE	13000	140	Reported Dilution #1	
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27		
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23		
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20		
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33		
1,4-Dioxane	123-91-1	88.12	19	5.0		68	18		
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	5.9	5.0		24	20		

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-480 http://www.EMSL.com ta	naminson, NJ 08077 00 / (856)858-4571 015lab@EMSL.com		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-17 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	02-002
<u>Analysis</u> Initial Dilution1	Analysis Date 09/11/2018 09/12/2018	<u>Analyst Init.</u> KW KW	<u>Lab File ID</u> J4350.D J4351.D	<u>Canister ID</u> HD2787 HD2787	<u>Sample Vol.</u> 279 cc 31 cc	Dil. Factor 10 90

	Targ	et Comp	ound Result	ts Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	1900	45	D	7100	170	Reported Dilution #1
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	26	5.0		110	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	1700	45	D	7200	200	Reported Dilution #1
Xylene (p,m)	1330-20-7	106.2	200	10		890	43	
Xylene (Ortho)	95-47-6	106.2	170	5.0		740	22	
Styrene	100-42-5	104.1	240	5.0		1000	21	
Isopropylbenzene (cumene)	98-82-8	120.19	290	5.0		1400	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	67	5.0		330	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	68	5.0		340	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	47	5.0		230	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	110	5.0		590	26	
Total Target Compound Concent	rations:		13000	ppbv		43000	ug/m3	]

Surrogate	Result	<u>Spike</u>	Recovery	
4-Bromofluorobenzene	12	10	120%	

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-17 EEG50 20184191DEBRIS		
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/29/2018 9/4/2018		
Project:	SXM Debris				Sample ID:	02-002
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	KW	J4350.D	HD2787	279 сс	10
Dilution1	09/12/2018	KW	J4351.D	HD2787	31 cc	90

	Tentatively Id	entified	Compound	d Result	ts Summar	у	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time	Comments
1-Propene, 2-methyl-	000115-11-7	56	440	JN	1000	6.66	
Unknown hydrocarbon		92	77	JN	290	7.01	
Pentane	000109-66-0	72	240	JN	710	9.20	
Unknown hydrocarbon		92	79	JN	300	10.30	
1-Pentene, 2-methyl-	000763-29-1	84	110	JN	390	13.02	
Unknown		92	120	JN	440	14.62	
Unknown hydrocarbon		92	120	JN	460	20.51	
Unknown hydrocarbon		92	120	JN	470	22.06	
Nonane	000111-84-2	128	170	JN	860	23.51	
Decane	000124-18-5	142	140	JN	800	26.14	
Benzene, propyl-	000103-65-1	120	74	JN	360	26.58	
Unknown Substituted Benzene		92	80	JN	300	27.43	
.alphaMethylstyrene	000098-83-9	118	130	JN	640	27.52	
Unknown hydrocarbon		92	150	JN	570	28.53	
Unknown		92	150	JN	560	28.62	
Unknown Substituted Benzene		92	61	JN	230	29.10	
Acetophenone	000098-86-2	120	250	JN	1200	30.46	
Dodecane	000112-40-3	170	190	JN	1300	30.73	
Tridecane	000629-50-5	184	92	JN	690	32.82	
	Total TIC Conce	entrations:	2800	ppbv	12000	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com		EMSL Order #: 491800829 EMSL Sample #: 491800829-18 Customer ID: EEG50 Customer PO: 20184191DEBRIS							
Attn: A E 5 N Project: S	Jex Mavrelis E & G 751 Miami Lakes Driv Iiami Lakes, FL 33014 SXM Debris	e East					Phone: <b>305-374-8300</b> Fax: <b>305-374-8301</b> Date Collected: <b>8/28/2018</b> Date Received: <b>9/4/2018</b> Sample ID: 01-001			
Analysis Initial	Analysis Date 09/11/2018	<u>Analyst Ir</u> KW	<u>nit.</u>	Lab File ID J4333.D	Canist HD28	<u>er ID</u> 302	<u>Sample</u> 33 (	e Vol. cc	Dil. Factor 10	
		Tarq	et Comr	ound Result	s Sumn	harv				
				Result	RL		Result	RL		
Target Compounds		CAS#	MW	ppbv	ppbv	Q	ug/m3	ug/m3	Comments	
Propylene		115-07-1	42.08	1100	10	Е	1800	17		
Freon 12(Dichlorodifl	uoromethane)	75-71-8	120.9	ND	5.0		ND	25		
Freon 114(1,2-Dichlo	protetrafluoroethan	76-14-2	170.9	ND	5.0		ND	35		
Chloromethane		106.07.9	50.49	350	5.0		730 ND	10		
Nipyl chloride		75 01 4	62.50		5.0			12		
1.3-Butadiene		106-99-0	54 09	26	5.0		57	11		
Bromomethane		74-83-9	94.94	ND	5.0		ND	19		
Chloroethane		75-00-3	64.52	29	5.0		77	13		
Ethanol		64-17-5	46.07	860	5.0	Е	1600	9.4		
Bromoethene(Vinyl b	romide)	593-60-2	106.9	ND	5.0		ND	22		
Freon 11(Trichloroflu	oromethane)	75-69-4	137.4	ND	5.0		ND	28		
Isopropyl alcohol(2-P	Propanol)	67-63-0	60.10	ND	5.0		ND	12		
Freon 113(1,1,2-Tricl	hlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38		
Acetone		67-64-1	58.08	680	5.0	E	1600	12		
1,1-Dichloroethene		75-35-4	96.94	ND	5.0		ND	20		
Acetonitrile		75-05-8	41.00	160 ND	5.0		270	8.4		
Bromoethane/Ethyl h	(IDA) promide)	75-65-0	108.0	ND	5.0			22		
3-Chloropropene(Ally	(l chloride)	107-05-1	76.53	ND	5.0		ND	16		
Carbon disulfide		75-15-0	76.14	ND	5.0		ND	16		
Methylene chloride		75-09-2	84.94	ND	5.0		ND	17		
Acrylonitrile		107-13-1	53.00	5.9	5.0		13	11		
Methyl-tert-butyl ethe	er(MTBE)	1634-04-4	88.15	ND	5.0		ND	18		
trans-1,2-Dichloroeth	iene	156-60-5	96.94	ND	5.0		ND	20		
n-Hexane		110-54-3	86.17	120	5.0		420	18		
1,1-Dichloroethane		75-34-3	98.96	ND	5.0		ND	20		
Vinyl acetate		108-05-4	86.00	ND	5.0		ND	18		
2-Butanone(MEK)	20	156 50 2	72.10		5.0		490 ND	15		
Ethyl acetate		141-78-6	88 10	19	5.0		68	18		
Chloroform		67-66-3	119.4	ND	5.0		ND	24		
Tetrahydrofuran		109-99-9	72.11	75	5.0		220	15		
1,1,1-Trichloroethane	9	71-55-6	133.4	ND	5.0		ND	27		
Cyclohexane		110-82-7	84.16	ND	5.0		ND	17		
2,2,4-Trimethylpenta	ne(Isooctane)	540-84-1	114.2	ND	5.0		ND	23		
Carbon tetrachloride		56-23-5	153.8	ND	5.0		ND	31		
n-Heptane		142-82-5	100.2	120	5.0		510	20		
1,2-Dichloroethane		107-06-2	98.96	ND	5.0	-	ND	20		
Denzene		79.01.6	/8.11 121 4	1900 ND	5.0	E		10 07		
1 2-Dichloropropage		78-87-5	131.4		5.0			21		
		80-62-6	100 12		5.0			20		
Bromodichlorometha	ne	75-27-4	163.8	ND	5.0		ND	33		
1.4-Dioxane	-	123-91-1	88.12	19	5.0		67	18		
4-Methyl-2-pentanon	e(MIBK)	108-10-1	100.2	5.8	5.0		24	20		

EMSL	EMSL Analytical 200 Route 130 North, C Phone/Fax: (856)858-48 http://www.EMSL.com	EMSL Ord EMSL Samp Custom Custome	der #: 49 le #: 49 er ID: EE er PO: 20	1800829 1800829-18 EG50 184191DEBRIS					
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drivo Miami Lakes, FL 33014	Pl Date Colle Date Rece	hone: 30 Fax: 30 ected: 8/2 eived: 9/2	5-374-8300 5-374-8301 28/2018 4/2018					
Project:	SXM Debris		Samp	le ID: 01	-001				
Analysis Initial	<u>Analysis Date</u> 09/11/2018	<u>Analyst In</u> KW	<u>it.</u>	Lab File ID J4333.D	<u>Canist</u> HD28	er ID 802	<u>Sample</u> 33 (	<u>e Vol.</u> cc	Dil. Factor 10
		Targe	et Com	ound Result	s Summ	narv			
Target Compound	S	CAS#	мw	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloroprop	pene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene		108-88-3	92.14	830	5.0	Е	3100	19	
trans-1,3-Dichlorop	ropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethar	ne	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)		591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene		127-18-4	165.8	ND	5.0		ND	34	
Dibromochlorometh	ane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane		106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene		108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene		100-41-4	106.2	980	5.0	E	4200	22	
Xylene (p,m)		1330-20-7	106.2	89	10		390	43	
xyiene (Ortho)		95-47-6	106.2	/9	5.0		340	22	
Styrene		100-42-5	104.1	330	5.0		1400	21	
Isopropyidenzene (	cumene)	90-02-0 75 05 0	120.19	250	5.0		1200	25 50	
BIOINOTORM	othana	70-25-2	252.8		5.0			52	
1, 1, 2, 2-1 etracilloro		622 06 8	107.9	11U 21	5.0		150	- 34 - 25	
+-Luiyiloidene		022-90-0	120.2	31	0.0	1	130	20	1

Benzyl chloride	100-44-7	126.0	ND	5.0	ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0	ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0	ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0	ND	53	
Naphthalene	91-20-3	128.17	39	5.0	210	26	
Total Target Compound Concentrat	ions:		8300	ppbv	25000	ug/m3	
<u>Surrogate</u>			<u>Result</u>	<u>Spike</u>	Recovery		
4-Bromofluorobenzene			12	10	120%		

40

ND

21

ND

ND

5.0

5.0

5.0

5.0

5.0

200

ND

100

ND

ND

25

26

25

30

30

108-67-8

95-49-8

95-63-6

541-73-1

106-46-7

120.2

126.6

120.2

147.0

147.0

### Qualifier Definitions

1,3,5-Trimethylbenzene

1,2,4-Trimethylbenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

2-Chlorotoluene

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

# Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Cir Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-18 EEG50 20184191DEBRIS	
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East		Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/28/2018 9/4/2018	
Project:	SXM Debris				Sample ID:	01-001
Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/11/2018	KW	J4333.D	HD2802	33 cc	10

	Tentatively Id	entified	Compound	d Resul	ts Summar	у	
Tentatively Identified Compounds	CAS#	MW(1)	Result ppby	Q	Result ua/m3	Retention Time	Comments
Acetaldehvde	000075-07-0	44	62	JN	110	7.22	
Pentane	000109-66-0	72	250	JN	740	9.21	
Furan	000110-00-9	68	72	JN	200	10.34	
Pentane. 2-methyl-	000107-83-5	86	55	JN	190	11.77	
1-Pentene, 2-methyl-	000763-29-1	84	130	JN	450	13.02	
Unknown hydrocarbon		92	65	JN	250	13.79	
Unknown		92	130	JN	480	14.64	
Unknown hydrocarbon		92	48	JN	180	19.45	
Unknown hydrocarbon		92	110	JN	400	20.53	
Unknown		92	87	JN	330	21.74	
Unknown		92	140	JN	530	22.07	
Nonane	000111-84-2	128	120	JN	610	23.51	
Decane	000124-18-5	142	81	JN	470	26.15	
.alphaMethylstyrene	000098-83-9	118	160	JN	790	27.52	
Benzaldehyde	000100-52-7	106	45	JN	190	27.85	
Undecane	001120-21-4	156	100	JN	650	28.53	
Unknown Substituted Benzene		92	93	JN	350	28.62	
Acetophenone	000098-86-2	120	87	JN	430	30.47	
Dodecane	000112-40-3	170	130	JN	900	30.75	
Tridecane	000629-50-5	184	99	JN	740	32.82	
	Total TIC Conce	entrations:	2100	ppbv	9000	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

EMSL	EMS 200 R Phone http://	491800829 491800829-19 EEG50 20184191DEBRIS							
Att	n: Alex M EE & 5751 I Miami	Alex MavrelisPhone:EE & GFax:5751 Miami Lakes Drive EastDate Collected:Miami Lakes, FL 33014Date Received:							
Projec	t: SXM I	Debris				Sample ID:	01-004		
<u>Analysis</u> Initial	<u>8</u>	Analysis Date 09/12/2018	Sample Vol. 112 cc	Dil. Factor 10					
Dilution	1	09/12/2018	KW	J4355.D	HD2831	37 cc	90		

	Targ	et Comp	ound Result	s Sumn	nary			
Target Compounds	CAS#	MW	Result	RL ppby	Q	Result ug/m3	RL ug/m3	Comments
Propylene	115-07-1	42.08	1300	90		2200	150	Reported Dilution #1
Freen 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	50		ND	25	
Freon 114(1 2-Dichlorotetrafluoroethan	76-14-2	120.0	ND	5.0		ND	35	
Chloromethane	74-87-3	50.49	56	5.0		120	10	
n-Butane	106-97-8	58.12		5.0		ND	10	
Vinyl chloride	75-01-4	62.50	ND	5.0		ND	13	
1 3-Butadiene	106-99-0	54 09	91	5.0		20	10	
Bromomethane	74-83-9	94 94		5.0		ND	19	
Chloroethane	75-00-3	64.52	ND	5.0		ND	13	
Ethanol	64-17-5	46.07	21000	45	DF	40000	85	Reported Dilution #1
Bromoethene(Vinyl bromide)	593-60-2	106.9		50	DL	ND	22	Reported Britton III
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	ND	5.0		ND	28	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	ND	5.0		ND	12	
Freon 113(1 1 2-Trichlorotrifluoroethan	76-13-1	187.4	ND	5.0		ND	38	
Acetone	67-64-1	58.08	340	5.0		800	12	
1 1-Dichloroethene	75-35-4	96.94	ND	5.0		ND	20	
Acetonitrile	75-05-8	41.00	56	5.0		94	84	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	5.0		ND	15	
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	5.0		ND	22	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	5.0		ND	16	
Carbon disulfide	75-15-0	76.14	ND	5.0		ND	16	
Methylene chloride	75-09-2	84.94	ND	5.0		ND	17	
Acrylonitrile	107-13-1	53.00	ND	5.0		ND	11	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	5.0		ND	18	
trans-1.2-Dichloroethene	156-60-5	96.94	ND	5.0		ND	20	
n-Hexane	110-54-3	86.17	34	5.0		120	18	
1,1-Dichloroethane	75-34-3	98.96	ND	5.0		ND	20	
Vinyl acetate	108-05-4	86.00	ND	5.0		ND	18	
2-Butanone(MEK)	78-93-3	72.10	62	5.0		180	15	
cis-1,2-Dichloroethene	156-59-2	96.94	ND	5.0		ND	20	
Ethyl acetate	141-78-6	88.10	8.1	5.0		29	18	
Chloroform	67-66-3	119.4	ND	5.0		ND	24	
Tetrahydrofuran	109-99-9	72.11	19	5.0		56	15	
1,1,1-Trichloroethane	71-55-6	133.4	ND	5.0		ND	27	
Cyclohexane	110-82-7	84.16	ND	5.0		ND	17	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	5.0		ND	23	
Carbon tetrachloride	56-23-5	153.8	ND	5.0		ND	31	
n-Heptane	142-82-5	100.2	30	5.0		120	20	
1,2-Dichloroethane	107-06-2	98.96	ND	5.0		ND	20	
Benzene	71-43-2	78.11	2700	45	D	8500	140	Reported Dilution #1
Trichloroethene	79-01-6	131.4	ND	5.0		ND	27	
1,2-Dichloropropane	78-87-5	113.0	ND	5.0		ND	23	
Methyl Methacrylate	80-62-6	100.12	ND	5.0		ND	20	
Bromodichloromethane	75-27-4	163.8	ND	5.0		ND	33	
1,4-Dioxane	123-91-1	88.12	6.0	5.0		22	18	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	5.0		ND	20	

EMSL	EMSL Analytical 200 Route 130 North, Ciu Phone/Fax: (856)858-48 http://www.EMSL.com t	nnaminson, NJ 08077 00 / (856)858-4571 <u>o15lab@EMSL.com</u>	7	E	EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-19 EEG50 20184191DEBRIS
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	East			Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/28/2018 9/4/2018
Project:	SXM Debris				Sample ID:	01-004
<u>Analysis</u> Initial	Analysis Date 09/12/2018	Analyst Init. KW	Lab File ID J4354.D	Canister ID HD2831	Sample Vol. 112 cc	Dil. Factor
Dilution1	09/12/2018	ĸw	J4355.D	HD2831	37 cc	90

	Targ	et Comp	ound Result	is Sumn	nary			
Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	5.0		ND	23	
Toluene	108-88-3	92.14	300	5.0		1100	19	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	5.0		ND	23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	5.0		ND	27	
2-Hexanone(MBK)	591-78-6	100.1	ND	5.0		ND	20	
Tetrachloroethene	127-18-4	165.8	ND	5.0		ND	34	
Dibromochloromethane	124-48-1	208.3	ND	5.0		ND	43	
1,2-Dibromoethane	106-93-4	187.8	ND	5.0		ND	38	
Chlorobenzene	108-90-7	112.6	ND	5.0		ND	23	
Ethylbenzene	100-41-4	106.2	280	5.0		1200	22	
Xylene (p,m)	1330-20-7	106.2	37	10		160	43	
Xylene (Ortho)	95-47-6	106.2	28	5.0		120	22	
Styrene	100-42-5	104.1	44	5.0		190	21	
Isopropylbenzene (cumene)	98-82-8	120.19	62	5.0		310	25	
Bromoform	75-25-2	252.8	ND	5.0		ND	52	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	5.0		ND	34	
4-Ethyltoluene	622-96-8	120.2	11	5.0		53	25	
1,3,5-Trimethylbenzene	108-67-8	120.2	13	5.0		66	25	
2-Chlorotoluene	95-49-8	126.6	ND	5.0		ND	26	
1,2,4-Trimethylbenzene	95-63-6	120.2	7.9	5.0		39	25	
1,3-Dichlorobenzene	541-73-1	147.0	ND	5.0		ND	30	
1,4-Dichlorobenzene	106-46-7	147.0	ND	5.0		ND	30	
Benzyl chloride	100-44-7	126.0	ND	5.0		ND	26	
1,2-Dichlorobenzene	95-50-1	147.0	ND	5.0		ND	30	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	5.0		ND	37	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	5.0		ND	53	
Naphthalene	91-20-3	128.17	17	5.0		89	26	
Total Target Compound Concent	rations:		26000	ppbv		56000	ug/m3	

Surrogate	<b>Result</b>	<u>Spike</u>	Recovery	
4-Bromofluorobenzene	11	10	110%	

ND = Non Detect

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

### Method Reference

EMSL	EMSL Analytical 200 Route 130 North, Ci Phone/Fax: (856)858-48 http://www.EMSL.com	nnaminson, NJ 08077 00 / (856)858-4571 to15lab@EMSL.com	7		EMSL Order #: EMSL Sample #: Customer ID: Customer PO:	491800829 491800829-19 EEG50 20184191DEBRIS
Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive Miami Lakes, FL 33014	e East			Phone: Fax: Date Collected: Date Received:	305-374-8300 305-374-8301 8/28/2018 9/4/2018
Project:	SXM Debris				Sample ID:	01-004
<u>Analysis</u>	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/12/2018	KW	J4354.D	HD2831	112 cc	10
Dilution1	09/12/2018	KW	J4355.D	HD2831	37 cc	90

	<b>Tentatively Id</b>	entified	Compound	d Resul	ts Summar	у	
			Result		Result	Retention	
Tentatively Identified Compounds	CAS#	MW(1)	ppbv	Q	ug/m3	Time	Comments
Isobutane	000075-28-5	58	17	JN	40	6.14	
1-Propene, 2-methyl-	000115-11-7	56	110	JN	260	6.64	
Unknown hydrocarbon		92	22	JN	82	6.99	
Unknown hydrocarbon		92	16	JN	60	7.36	
Pentane	000109-66-0	72	71	JN	210	9.19	
2-Butene, 2-methyl-	000513-35-9	70	16	JN	47	9.78	
Unknown hydrocarbon		92	29	JN	110	10.29	
1-Pentene, 2-methyl-	000763-29-1	84	26	JN	89	13.00	
Unknown hydrocarbon		92	17	JN	64	13.77	
Unknown		92	37	JN	140	14.62	
Unknown hydrocarbon		92	32	JN	120	20.51	
Nonane	000111-84-2	128	15	JN	80	23.49	
1-Hexanol	000111-27-3	102	210	JN	870	23.76	
.alphaMethylstyrene	000098-83-9	118	15	JN	71	27.50	
Acetophenone	000098-86-2	120	16	JN	79	30.45	
Dodecane	000112-40-3	170	16	JN	110	30.73	
Tridecane	000629-50-5	184	18	JN	140	32.80	
	Total TIC Conce	entrations:	680	ppbv	2600	ug/m3	

(1) = If unknown, MW is assigned as equivalent Toluene (92) for ug/m3 conversion purposes.

B = Compound also found in method blank.

J= Estimated value based on a 1:1 response to internal standard.

N= Presumptive evidence of compound based on library match.

### Method Reference

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# USEPA TO-15

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EMSL Analytical, Inc. 200 Route 130 North

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# ATTACHMENT E

# LABORATORY RESULTS, HYDROGEN SULFIDE (H<sub>2</sub>S)



Attn: Alex Mavrelis EE & G Environmental 5751 Miami Lakes Dr. Miami Lakes, FL 33014

 Fax:
 (305) 374-8301

 Phone:
 (305) 984-3218

 E-mail:
 amavrelis@eeandg.com

 Report Date:
 09/12/18

Customer ID:EEG50Customer PO:2018-4191Date Received:09/07/18LA Testing Order:331817900Project:SXM Land

SXM Landfill

Date Analyzed: 09/04/18

# HYDROGEN SULFIDE via NIOSH 6013M SKC 226-09

LA Testing Sample ID	Sample ID	Air Volume (L)	Test	µg/tube	ppm	Reporting Limit µg/tube
331817900-0001	01-001	39.5	Hydrogen Sulfide	170*	3.1	14
331817900-0002	01-002	36.75	Hydrogen Sulfide	<14	<0.28	14
331817900-0003	01-003	33.5	Hydrogen Sulfide	<14	<0.30	14
331817900-0004	01-004	31	Hydrogen Sulfide	<14	<0.33	14
331817900-0005	01-005	29.25	Hydrogen Sulfide	<14	< 0.35	14
331817900-0006	02-001	43	Hydrogen Sulfide	<14	<0.24	14
331817900-0007	02-002	42.75	Hydrogen Sulfide	<14	<0.24	14
331817900-0008	02-003	42.5	Hydrogen Sulfide	<14	<0.24	14
331817900-0009	02-004	41.5	Hydrogen Sulfide	<14	<0.25	14
331817900-0010	02-005	40.25	Hydrogen Sulfide	<14	<0.25	14

Sample received in acceptable condition unless otherwise noted. This report may not be reproduced except in full, without written approval by LA Testing. Unless otherwise noted, the results in this report have been blank corrected. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted. Tube front and tube back analyzed separately, tube backs are ND unless otherwise indicated. \*Note: tube back was detected and added to the result.

**CD** Analyst

michael Chapman

Michael Chapman, Laboratory Manager AIHA-LAP, LLC Accredited - Laboratory ID #101650



Attn: Alex Mavrelis EE & G Environmental 5751 Miami Lakes Dr. Miami Lakes, FL 33014

Fax: (305) 374-8301 Phone: (305) 984-3218 E-mail: amavrelis@eeandg.com 09/12/18 Report Date:

Customer ID: EEG50 Customer PO: 2018-4191 Date Received: 09/07/18 LA Testing Order:

331817900

Project:

Date Analyzed:

**SXM Landfill** 

09/04/18

# **HYDROGEN SULFIDE via NIOSH 6013M** SKC 226-09

Sample ID	Air Volume (L)	Test	µg/tube	ppm	Reporting Limit µg/tube
02-006	41.75	Hydrogen Sulfide	<14	< 0.24	14
02-007	40.75	Hydrogen Sulfide	<14	<0.25	14
03-001	38.5	Hydrogen Sulfide	<14	<0.26	14
03-002	38	Hydrogen Sulfide	<14	<0.27	14
03-003	37.25	Hydrogen Sulfide	<14	<0.27	14
03-004	36.75	Hydrogen Sulfide	<14	<0.28	14
03-005	38.75	Hydrogen Sulfide	<14	<0.26	14
03-006	35.75	Hydrogen Sulfide	<14	<0.28	14
03-007	33.75	Hydrogen Sulfide	38	0.81	14
FB001	-	Hydrogen Sulfide	<14	NA	14
	Sample ID 02-006 02-007 03-001 03-002 03-003 03-004 03-004 03-005 03-006 03-007 FB001	Sample ID       Air Volume (L)         02-006       41.75         02-007       40.75         03-001       38.5         03-002       38         03-002       38         03-003       37.25         03-004       36.75         03-005       38.75         03-006       35.75         03-007       33.75         FB001       -	Sample ID         Air Volume (L)         Test           02-006         41.75         Hydrogen Sulfide           02-007         40.75         Hydrogen Sulfide           02-007         40.75         Hydrogen Sulfide           03-001         38.5         Hydrogen Sulfide           03-002         38         Hydrogen Sulfide           03-002         38         Hydrogen Sulfide           03-003         37.25         Hydrogen Sulfide           03-004         36.75         Hydrogen Sulfide           03-005         38.75         Hydrogen Sulfide           03-006         35.75         Hydrogen Sulfide           03-007         33.75         Hydrogen Sulfide           FB001         -         Hydrogen Sulfide	Sample ID         Air Volume (L)         Test $\mu g/tube$ 02-006         41.75         Hydrogen Sulfide         <14	Sample ID         Air Volume (L)         Test $\mu g/tube$ ppm           02-006         41.75         Hydrogen Sulfide         <14

Sample received in acceptable condition unless otherwise noted. This report may not be reproduced except in full, without written approval by LA Testing. Unless otherwise noted, the results in this report have been blank corrected. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted. Tube front and tube back analyzed separately, tube backs are ND unless otherwise indicated. \*Note: tube back was detected and added to the result.

CD Analyst

michael Chapman

Michael Chapman, Laboratory Manager AIHA-LAP, LLC Accredited - Laboratory ID #101650

# ATTACHMENT F

# LABORATORY RESULTS, PAHS



Attn:	Alex Mavrelis	Customer ID:
	EE & G	Customer PO:
	5751 Miami Lakes Drive East	Date Received:
	Miami Lakes, FL 33014	
		EMSL Order:
Project:	SXM Landfill	
Report Date:	09/11/18	Date Analyzed:

# Test Report – Polynuclear Aromatic Hydrocarbon Analysis by HPLC/FLD/UV of Air Samples via mod. NIOSH 5506, Issue 3, 1/15/98

EMSL ID	281803937-0001	281803937-0002	281803937-0003
Sample ID	01-001	01-002	01-003
Sample Volume (L)	970	958	936
Sample Media	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713
Compound	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)
Naphthalene	29	<0.65	9.0
Acenaphthylene	83	25	27
Acenaphthene	20	< 0.65	< 0.67
Fluorene	13	13	3.0
Phenanthrene	4.8	17	< 0.33
Anthracene	2.8	< 0.65	< 0.67
Fluoranthene	2.1	3.5	0.54
Pyrene	3.3	4.5	0.37
Benzo(a)anthracene	< 0.32	< 0.33	< 0.33
Chrysene	< 0.32	< 0.33	< 0.33
Benzo(e)pyrene	< 0.32	< 0.33	< 0.33
Benzo(b)fluoranthene	< 0.32	< 0.33	< 0.33
Benzo(k)fluoranthene	< 0.32	< 0.33	< 0.33
Benzo(a)pyrene	0.56	0.44	0.39
Dibenzo(a,h)anthracene	< 0.32	<0.33	< 0.33
Benzo(g,h,i)perylene	< 0.32	< 0.33	< 0.33
Indeno(1,2,3-c,d)pyrene	< 0.32	< 0.33	< 0.33

Notes:

- 1. Samples were received in acceptable condition unless otherwise noted.
- 2. These results relate only to the samples tested.
- 3. Sample results are media blank corrected.
- 4. Discernible blank submitted with samples if listed.

**KFoster** 

Analyst

Ular

EEG50

281803937

09/10/18

2018-4191 (Tio) 08/30/18

Scott VanEtten, CIH- Lab Manager Or other approved signatory

AIHA-LAP, LLC – IHLAP Lab#100194 Page 1 of 2



Attn:	Alex Mavrelis	Customer ID:
	EE & G	Customer PO:
	5751 Miami Lakes Drive East	Date Received:
	Miami Lakes, FL 33014	
		EMSL Order:
Project:	SXM Landfill	
Report Date:	09/11/18	Date Analyzed:
-		

# Test Report – Polynuclear Aromatic Hydrocarbon Analysis by HPLC/FLD/UV of Air Samples via mod. NIOSH 5506, Issue 3, 1/15/98

EMSL ID	281803937-0004	281803937-0005			
Sample ID	01-004	01-005	Media Blank		
Sample Volume (L)	920	904		Analytical	
Sample Media	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Sensitivity	
Compound	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg)	Conc. (µg)	
Naphthalene	12	< 0.69	< 0.62	0.62	
Acenaphthylene	28	4.8	< 0.62	0.62	
Acenaphthene	2.6	< 0.69	< 0.62	0.62	
Fluorene	<0.68	< 0.69	< 0.62	0.62	
Phenanthrene	< 0.34	< 0.35	< 0.31	0.31	
Anthracene	<0.68	< 0.69	< 0.62	0.62	
Fluoranthene	< 0.34	< 0.35	< 0.31	0.31	
Pyrene	< 0.34	< 0.35	< 0.31	0.31	
Benzo(a)anthracene	< 0.34	< 0.35	< 0.31	0.31	
Chrysene	13	< 0.35	< 0.31	0.31	
Benzo(e)pyrene	6.8	< 0.35	< 0.31	0.31	
Benzo(b)fluoranthene	0.73	< 0.35	< 0.31	0.31	
Benzo(k)fluoranthene	0.63	< 0.35	< 0.31	0.31	
Benzo(a)pyrene	< 0.34	< 0.35	< 0.31	0.31	
Dibenzo(a,h)anthracene	< 0.34	< 0.35	<0.31	0.31	
Benzo(g,h,i)perylene	< 0.34	< 0.35	< 0.31	0.31	
Indeno(1,2,3-c,d)pyrene	< 0.34	< 0.35	<0.31	0.31	

Notes:

- 1. Samples were received in acceptable condition unless otherwise noted.
- 2. These results relate only to the samples tested.
- 3. Sample results are media blank corrected.
- 4. Discernible blank submitted with samples if listed.

Analyst

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EEG50

08/30/18

281803937

09/10/18

2018-4191 (Tio)

Scott VanEtten, CIH- Lab Manager Or other approved signatory

AIHA-LAP, LLC – IHLAP Lab#100194 Page 2 of 2



Attn:	Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014	
Project: Report Date:	<b>SXM Landfill</b> 09/11/18	

Customer ID:EEG50Customer PO:2018-4191 (Tio)Date Received:09/04/18EMSL Order:281803982Date Analyzed:09/10/18

# Test Report – Polynuclear Aromatic Hydrocarbon Analysis by HPLC/FLD/UV of Air Samples via mod. NIOSH 5506, Issue 3, 1/15/98

EMSL ID	281803982-0001	281803982-0002	281803982-0003	281803982-0004
Sample ID	02-001	02-002	02-003	02-004
Sample Volume (L)	105	980	982	103
Sample Media	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713
Compound	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)
Naphthalene	<6.0	<0.64	<0.64	<6.1
Acenaphthylene	50	210	25	550
Acenaphthene	<6.0	<0.64	<0.64	<6.1
Fluorene	<6.0	< 0.64	< 0.64	<6.1
Phenanthrene	<3.0	< 0.32	< 0.32	<3.0
Anthracene	<6.0	<0.64	< 0.64	<6.1
Fluoranthene	<6.0	< 0.32	< 0.32	<3.0
Pyrene	<3.0	< 0.32	< 0.32	<3.0
Benzo(a)anthracene	<3.0	< 0.32	< 0.32	<3.0
Chrysene	<3.0	< 0.32	< 0.32	<3.0
Benzo(e)pyrene	<3.0	< 0.32	< 0.32	<3.0
Benzo(b)fluoranthene	<3.0	< 0.32	< 0.32	<3.0
Benzo(k)fluoranthene	<3.0	0.53	< 0.32	<3.0
Benzo(a)pyrene	<3.0	1.5	< 0.32	4.4
Dibenzo(a,h)anthracene	<3.0	< 0.32	< 0.32	<3.0
Benzo(g,h,i)perylene	<3.0	< 0.32	< 0.32	<3.0
Indeno(1,2,3-c,d)pyrene	<3.0	< 0.32	< 0.32	<3.0

Notes:

- 1. Samples were received in acceptable condition unless otherwise noted.
- 2. These results relate only to the samples tested.
- 3. Sample results are media blank corrected.
- 4. Discernible blank submitted with samples if listed.

Analyst

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Scott VanEtten, CIH- Lab Manager Or other approved signatory

AIHA-LAP, LLC – IHLAP Lab#100194 Page 1 of 2



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	Order ID:	281803982	
Attn:	Alex Mavrelis	Customer ID:	EEG50
	EE & G	Customer PO:	2018-4191 (Tio)
	5751 Miami Lakes Drive East	Date Received:	09/04/18
	Miami Lakes, FL 33014	EMSL Order:	281803982
Project:	SXM Landfill		00/10/10
Report Date:	09/11/18	Date Analyzed:	09/10/18

# Test Report – Polynuclear Aromatic Hydrocarbon Analysis by

# HPLC/FLD/UV of Air Samples via mod. NIOSH 5506, Issue 3, 1/15/98

EMSL ID	281803982-0005	281803982-0006	281803982-0007		
Sample ID	02-005	02-006	02-007	Media Blank	
Sample Volume (L)	1004	890	974		Analytical
Sample Media	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Sensitivity
Compound	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg)	Conc. (µg)
Naphthalene	< 0.62	2.0	< 0.64	< 0.62	0.62
Acenaphthylene	0.93	4.4	1.0	< 0.62	0.62
Acenaphthene	< 0.62	< 0.70	< 0.64	< 0.62	0.62
Fluorene	< 0.62	< 0.70	< 0.64	< 0.62	0.62
Phenanthrene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Anthracene	< 0.62	< 0.70	< 0.64	< 0.62	0.62
Fluoranthene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Pyrene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Benzo(a)anthracene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Chrysene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Benzo(e)pyrene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Benzo(b)fluoranthene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Benzo(k)fluoranthene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Benzo(a)pyrene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Dibenzo(a,h)anthracene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Benzo(g,h,i)perylene	< 0.31	< 0.35	< 0.32	< 0.31	0.31
Indeno(1,2,3-c,d)pyrene	< 0.31	< 0.35	< 0.32	< 0.31	0.31

Notes:

- Samples were received in acceptable condition unless otherwise noted. 1.
- 2. These results relate only to the samples tested.
- 3. Sample results are media blank corrected.
- 4. Discernible blank submitted with samples if listed.

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Analyst

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Scott VanEtten, CIH- Lab Manager Or other approved signatory

AIHA-LAP, LLC - IHLAP Lab#100194 Page 2 of 2



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	Ofuel ID.	201004001	
Attn:	Alex Mavrelis	Customer ID:	EEG50
	EE & G	Customer PO:	2018-4191 (Tio)
	5751 Miami Lakes Drive East	Date Received:	09/04/18
	Miami Lakes, FL 33014		
		EMSL Order:	281804001
Project:	SXM Landfill		
Report Date:	09/06/18	Date Analyzed:	09/05/18

# Order ID: 281804001

# Test Report – Polynuclear Aromatic Hydrocarbon Analysis by HPLC/FLD/UV of Air Samples via mod. NIOSH 5506, Issue 3, 1/15/98

EMSL ID	281804001-0001	281804001-0002	281804001-0003	281804001-0004
Sample ID	03-001	03-002	03-003	03-004
Sample Volume (L)	270	960	960	257
Sample Media	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713
Compound	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)
Naphthalene	<2.3	< 0.65	<0.65	<2.4
Acenaphthylene	169	< 0.65	<0.65	<2.4
Acenaphthene	<2.3	<0.65	< 0.65	<2.4
Fluorene	<2.3	<0.65	<0.65	<2.4
Phenanthrene	<1.2	< 0.33	< 0.33	<1.2
Anthracene	<2.3	< 0.65	< 0.65	<2.4
Fluoranthene	10	< 0.33	< 0.33	<1.2
Pyrene	<1.2	< 0.33	< 0.33	<1.2
Benzo(a)anthracene	<1.2	< 0.33	< 0.33	<1.2
Chrysene	<1.2	< 0.33	< 0.33	<1.2
Benzo(e)pyrene	<1.2	< 0.33	< 0.33	<1.2
Benzo(b)fluoranthene	<1.2	< 0.33	< 0.33	<1.2
Benzo(k)fluoranthene	<1.2	< 0.33	< 0.33	<1.2
Benzo(a)pyrene	<1.2	< 0.33	< 0.33	<1.2
Dibenzo(a,h)anthracene	<1.2	< 0.33	< 0.33	<1.2
Benzo(g,h,i)perylene	<1.2	< 0.33	< 0.33	<1.2
Indeno(1,2,3-c,d)pyrene	<1.2	< 0.33	< 0.33	<1.2

Note:

<u>KF</u> Analyst

- 1. Samples were received in acceptable condition unless otherwise noted.
- 2. These results relate only to the samples tested.
- 3. Sample results are media blank corrected.
- 4. Discernable field blank(s) submitted with sample if listed above.

Scott VanEtten, CIH- Lab Manager Or other approved signatory

AIHA-LAP, LLC – IHLAP Lab#100194 Page 1 of 2



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	Oluel ID.	201004001	
Attn:	Alex Mavrelis	Customer ID:	EEG50
	EE & G	Customer PO:	2018-4191 (Tio)
	5751 Miami Lakes Drive East	Date Received:	09/04/18
	Miami Lakes, FL 33014		
		EMSL Order:	281804001
Project:	SXM Landfill		
Report Date:	09/06/18	Date Analyzed:	09/05/18

# Order ID: 281804001

# Test Report – Polynuclear Aromatic Hydrocarbon Analysis by HPLC/FLD/UV of Air Samples via mod. NIOSH 5506, Issue 3, 1/15/98

EMSL ID	281804001-0005	281804001-0006	281804001-0007		
Sample ID	03-005	03-006	03-007	Media Blank	
Sample Volume (L)	960	910	940		Analytical
Sample Media	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Tube 226-30-04 Filter 225-1713	Sensitivity
Compound	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg/m3)	Conc. (µg)	Conc. (µg)
Naphthalene	< 0.65	< 0.69	< 0.66	< 0.62	0.62
Acenaphthylene	< 0.65	< 0.69	3	< 0.62	0.62
Acenaphthene	< 0.65	< 0.69	< 0.66	< 0.62	0.62
Fluorene	< 0.65	< 0.69	< 0.66	< 0.62	0.62
Phenanthrene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Anthracene	< 0.65	< 0.69	< 0.66	< 0.62	0.62
Fluoranthene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Pyrene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Benzo(a)anthracene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Chrysene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Benzo(e)pyrene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Benzo(b)fluoranthene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Benzo(k)fluoranthene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Benzo(a)pyrene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Dibenzo(a,h)anthracene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Benzo(g,h,i)perylene	< 0.33	< 0.34	< 0.33	< 0.31	0.31
Indeno(1,2,3-c,d)pyrene	< 0.33	< 0.34	< 0.33	< 0.31	0.31

Note:

- 1. Samples were received in acceptable condition unless otherwise noted.
- 2. These results relate only to the samples tested.
- 3. Sample results are media blank corrected.
- 4. Discernable field blank(s) submitted with sample if listed above.

Scott VanEtten, CIH- Lab Manager Or other approved signatory

<u>KF</u> Analyst

AIHA-LAP, LLC – IHLAP Lab#100194 Page 2 of 2

# ATTACHMENT G

# LABORATORY RESULTS, OZONE (O<sub>3</sub>)



# Attn: Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014

Phone: (305) 374-8300 Fax: (305) 374-8301

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 9/6/2018. The results are tabulated on the attached data pages for the following client designated project:

# SXM Landfill

The reference number for these samples is EMSL Order #011807128. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry Laboratory Director



AIHA-LAP, LLC-IHLAP Lab # 100194 NELAP Certification: NJ 03036; NY 10872

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements unless specifically indicated. The final results are not blank corrected unless specifically indicated. The laboratory is not responsible for final results calculated using air volumes that have been provided by non-laboratory personnel. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

9/17/2018

	EMSL Analytical, Ir 00 Route 130 North, Cinnamins hone/Fax: (856) 303-2500 / (8 ttp://www.EMSL.com	<b>IC.</b> on, NJ 08077 56) 858-4571 <u>EnvChemistry2@emsl.com</u>	1		EMSL Order: CustomerID: CustomerPO: ProjectID:	011807128 EEG50 20185-4191(T10)
Attn: Alex Mavrel EE & G 5751 Miami Miami Lakes Project: SXM Landfill	is Lakes Drive East s, FL 33014		Phone: Fax: Received:	(305) 374-8300 (305) 374-8301 09/06/18 11:55	АМ	
		Analytical	Results			
Client Sample Descript	<i>ion</i> 01-001 D1-Site 001		Collected:	8/28/2018	Lab ID:	011807128-0001
Method	Parameter	Result	RL Units	P D	rep ate Analyst	Analysis Date Analyst
WET						
ID-214	Ozone	0.91	0.21 mg	g/m³ 9,	/11/2018 MM	9/12/2018 MM
Client Sample Descript	ion 01-002 D1-Site 002		Collected:	8/28/2018	Lab ID:	011807128-0002
Method	Parameter	Result	RL Units	P D	rep Date Analyst	Analysis Date Analyst
WET						
ID-214	Ozone	ND	0.21 mg	g/m <sup>3</sup> 9/	/11/2018 MM	9/12/2018 MM
Client Sample Descript	ion 01-003 D1-Site 003		Collected:	8/28/2018	Lab ID:	011807128-0003
Method	Parameter	Result	RL Units	P D	rep late Analyst	Analysis Date Analyst
WET						
ID-214	Ozone	ND	0.20 mg	g/m³ 9,	/11/2018 MM	9/12/2018 MM
Client Sample Descript	ion 01-004 D1-Site 004		Collected:	8/28/2018	Lab ID:	011807128-0004
Method	Parameter	Result	RL Units	P D	rep Jate Analyst	Analysis Date Analyst
WET						
ID-214	Ozone	ND	0.20 mg	g/m³ 9,	/11/2018 MM	9/12/2018 MM
Client Sample Descript	<i>ion</i> 01-005 D1-Site 005		Collected:	8/28/2018	Lab ID:	011807128-0005
Method	Parameter	Result	RL Units	P D	rep ate Analyst	Analysis Date Analyst
WET						
ID-214	Ozone	ND	0.20 mg	g/m³ 9,	/11/2018 MM	9/12/2018 MM
Client Sample Descript	<i>ion</i> 02-001 D2-Site 001		Collected:	8/29/2018	Lab ID:	011807128-0006
Method	Parameter	Result	RL Units	P D	rep Pate Analyst	Analysis Date Analyst

Attn: Alex Mavre EE & G 5751 Miam Miami Lake Project: SXM Landfi	EMSL Analytical 200 Route 130 North, Cinnar Phone/Fax: (856) 303-2500 http://www.EMSL.com elis ii Lakes Drive East es, FL 33014	, Inc. ninson, NJ 08077 0 / (856) 858-4571 <u>EnvChemistry2@emsl.c</u>	Phone: Fax: Received:	(305) 374-8300 (305) 374-8301 09/06/18 11:55	EMSL Order: CustomerID: CustomerPO: ProjectID:	01180712 EEG50 20185-41	28 91(T10)
Analytical Results							
Client Sample Descrij	D2-001 D2-Site 001		Collected:	8/29/2018	Lab ID:	011807128	-0006
Method	Parameter	Result	RL Units	P D	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.23 mg/	/m³ 9,	/11/2018 MM	9/12/2018	MM
Client Sample Descri	btion 02-002 D2-Site 002		Collected:	8/29/2018	Lab ID:	011807128	-0007
Method	Parameter	Result	RL Units	P D	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	0.26	0.24 mg/	/m³ 9,	/11/2018 MM	9/12/2018	MM
Client Sample Descrij	D2-003 D2-Site 003		Collected:	8/29/2018	Lab ID:	011807128	-0008
Method	Parameter	Result	RL Units	P D	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.22 mg/	/m³ 9,	/11/2018 MM	9/12/2018	MM
Client Sample Descrij	otion 02-004 D2-Site 004		Collected:	8/29/2018	Lab ID:	011807128	-0009
Method	Parameter	Result	RL Units	P D	Prep Date Analyst	Analysis Date	Analyst
WET	0	0.00	0.00	(m <sup>3</sup>		0/10/0010	N 4N 4
ID-214	Uzone	0.20	0.20 mg/	9,	/11/2018 MM	9/12/2018	
Client Sample Descri	D2-005 D2-Site 005		Collected:	8/29/2018	Lab ID:	011807128	-0010
Method	Parameter	Result	RL Units	P D	rep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.21 mg/	/m³ 9,	/11/2018 MM	9/12/2018	MM
Client Sample Descrij	D2-006 D2-Site 006		Collected:	8/29/2018	Lab ID:	011807128	-0011
Method	Parameter	Result	RL Units	P D	Prep Date Analyst	Analysis Date	Analyst
WET							
EMSL	EMSL Analytical 200 Route 130 North, Cinnan Phone/Fax: (856) 303-2500 http://www.EMSL.com	, Inc. ninson, NJ 08077 ) / (856) 858-4571 <u>EnvChemistry2@emsl.c</u>	<u>:om</u>		EMSL Order: CustomerID: CustomerPO: ProjectID:	01180712 EEG50 20185-419	8 91(T10)
--	--	---	-----------------------------	--	---	--------------------------------	--------------
Attn: Alex Mavre EE & G 5751 Miami Miami Lake Project: SXM Landfil	lis i Lakes Drive East es, FL 33014 i		Phone: Fax: Received:	(305) 374-8300 (305) 374-8301 09/06/18 11:55	AM		
		Analytica	al Results				
Client Sample Descrip	<i>tion</i> 02-006 D2-Site 006		Collected:	8/29/2018	Lab ID:	011807128	-0011
Method	Parameter	Result	RL Units	F L	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.31 mg	g/m³ 9	/11/2018 MM	9/12/2018	MM
Client Sample Descrip	<i>tion</i> 02-007 D2-Site 007		Collected:	8/29/2018	Lab ID:	011807128	-0012
Method	Parameter	Result	RL Units	F L	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.21 mg	g/m³ 9	/11/2018 MM	9/12/2018	MM
Client Sample Descrip	<i>tion</i> 03-002 D3-Site 002		Collected:	8/30/2018	Lab ID:	011807128	-0013
Method	Parameter	Result	RL Units	F L	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.23 mg	g/m³ 9	/11/2018 MM	9/12/2018	MM
Client Sample Descrip	tion 03-003 D3-Site 003		Collected:	8/30/2018	Lab ID:	011807128	-0014
Method	Parameter	Result	RL Units	F L	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.23 mg	g/m³ g	/11/2018 MM	9/12/2018	MM
Client Sample Descrip	tion 03-005 D3-Site 005		Collected:	8/30/2018	Lab ID:	011807128	-0015
Method	Parameter	Result	RL Units	F L	Prep Date Analyst	Analysis Date	Analyst
WET							
ID-214	Ozone	ND	0.24 mg	g/m³ 9	/11/2018 MM	9/13/2018	MM
Client Sample Descrip	<i>tion</i> 03-006 D3-Site 006		Collected:	8/30/2018	Lab ID:	011807128	-0016
Method	Parameter	Result	RL Units	F L	Prep Date Analyst	Analysis Date	Analyst
WET							

	MSL Analyt D0 Route 130 North, ( hone/Fax: (856) 30 tp://www.EMSL.com	ical, Inc. Cinnaminson, NJ 08077 )3-2500 / (856) 858-4571 <u>EnvChemistry2@emsl.co</u>	<u>m</u>		EMSL Custon Custon Project	Order: nerID: nerPO: ID:	01180712 EEG50 20185-41	28 91(T10)
Attn: Alex Mavreli EE & G 5751 Miami Miami Lakes Project: SXM Landfill	is Lakes Drive I s, FL 33014	East	Phone: Fax: Received:	(305) 374-830 (305) 374-830 09/06/18 11:55	0 1 5 AM			
		Analytical	Results					
Client Sample Descripti	on 03-006 D3-Site 006		Collected:	8/30/2018	La	ıb ID:	011807128	-0016
Method	Parameter	Result	RL Units	;	Prep Date	Analyst	Analysis Date	Analyst
WET								
ID-214	Ozone	ND	0.20 mg	g/m³	9/11/2018	MM	9/13/2018	MM
Client Sample Descripti	on 03-007 D3-Site 007		Collected:	8/30/2018	La	b ID:	011807128	-0017
Method	Parameter	Result	RL Units	;	Prep Date	Analyst	Analysis Date	Analyst
WET								
ID-214	Ozone	ND	0.22 mg	g/m³	9/11/2018	MM	9/13/2018	MM
Client Sample Descripti	<b>on</b> FB001 Field Blank		Collected:		La	b ID:	011807128	-0018
Method	Parameter	Result	RL Units	;	Prep Date	Analyst	Analysis Date	Analyst
WET								
ID-214	Ozone	ND	0.0086 mg	g/filter	9/11/2018	MM	9/13/2018	MM

#### **Definitions:**

ND - indicates that the analyte was not detected at the reporting limit RL - Reporting Limit (Analytical) D - Dilution

#### ATTACHMENT H

### LABORATORY RESULTS, DIOXINS AND FURANS



www.pacelabs.com

## **Report Prepared for:**

Alex Mavrelis EE&G Environmental 5751 Miami Lakes Dr. Miami Lakes FL 33014

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

# **Report Prepared Date:**

September 14, 2018

Pace Analytical Services, LLC. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

#### **Report Information:**

Pace Project #: 10445726 Sample Receipt Date: 08/30/2018 Client Project #: 2018-4191 Client Sub PO #: 2018-4191.Debris.T10 State Cert #: E87605

#### **Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

#### This report has been reviewed by:

September 14, 2018 Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



## **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



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# **DISCUSSION**

This report presents the results from the analyses performed on five samples submitted by a representative of EE&G Environmental. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method TO9A. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The samples were received above the laboratory-recommended temperature range of 0-6 degrees Celsius.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically labeled PCDD/PCDF internal standards in the sample extracts ranged from 32-108%. Except for two low values, which were flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the target ranges for the method. Also, since the internal standards were added to the sample prior to the extraction step, the data were automatically corrected for recovery and accurate values were obtained. Since the field samples did not include PUF cartridge components, surrogates were not present in the field sample extracts.

Values were flagged "I" where incorrect isotope ratios were obtained or "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain a trace level of OCDD. This level was below the calibration range of the method. Sample levels similar to the corresponding blank level were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory quality control PCDD/PCDF spike samples were also prepared with the sample batch using clean PUF cartridges that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 93-130% with relative percent differences of 0.0-7.7%. These results were within the target ranges for the method. Matrix spikes were not prepared with the sample batch.

# **REPORT OF LABORATORY ANALYSIS**

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# Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota - Pet	1240
Alabama	40770	Mississippi	MN00064
Alaska - DW	MN00064	Missouri - DW	10100
Alaska - UST	17-009	Montana	CERT0092
Arizona	AZ0014	Nebraska	NE-OS-18-06
Arkansas - DW	MN00064	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
CNMI Saipan	MP0003	New Jersey (NE	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Carolina -	27700
EPA Region 8+	via MN 027-053	North Carolina -	530
Florida (NELAP	E87605	North Dakota	R-036
Georgia	959	Ohio - DW	41244
Guam	17-001r	Ohio - VAP	CL101
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon - Primar	MN300001
Illinois	200011	Oregon - Secon	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
lowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky - DW	90062	South Dakota	NA
Kentucky - WW	90062	Tennessee	TN02818
Louisiana - DE	03086	Texas	T104704192
Louisiana - DW	MN00064	Utah (NELAP)	MN00064
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Massachusetts	M-MN064	West Virginia -	382
Michigan	9909	West Virginia -	9952C
Minnesota	027-053-137	Wisconsin	999407970
Minnesota - De	via MN 027-053	Wyoming - UST	2926.01

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management



# 10445726 CHAIN-OF-CUSTODY / Analytical Request Docum

WO#:10445726

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The Chain-of-Custody is a LEGAL DOCUMENT, All relevant fields must be completed accurately.

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Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).



> Tel: 612-607-1700 Fax: 612-607-6444

# **Reporting Flags**

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interferencepresent | =
- Estimated value J =
- Suppressive interference, analyte may be biased low L =
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X =%DExceeds limits
- Y = Calculated using average of daily RFs
- \* SeeDiscussion =

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix B

Sample Analysis Summary



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### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	01-0 1044 ZMS 2.42 U180 U180 BLA	01 45726001 0907A_05 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/28/20 08/30/20 08/31/20 09/07/20	018 17:20 018 09:50 018 18:00 018 12:01	
Native Isomers	Conc pg/m3	EMPC pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	11000	170 	2.2 P 2.2 E	2,3,7,8-TCDF-130 2,3,7,8-TCDD-130		2.00 2.00	87 72
2,3,7,8-TCDD Total TCDD	16 3900		3.8 3.8 E	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCD	13C 13C F-13C	2.00 2.00 2.00	93 82 62
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	110 130 2000	 	1.9 1.7 1.8	1,2,3,4,6,7,8-HxCD 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	70 70 34 R 80
1,2,3,7,8-PeCDD Total PeCDD	33 2000		2.5 2.5	Recovery Standards		2.00	ΝΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	30 62 75 13 720	  	4.0 2.8 1.6 3.0 J 2.9	1,2,3,7,8,9-HxCD Surrogates 2,3,7,8-TCDD-37( 2,3,4,7,8-PeCDF-	D-13C D-13C D-13C 13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	23 39 27 1500	  	2.8 2.3 2.3 2.5	1,2,3,4,7,8-HxCD 1,2,3,4,7,8-HxCD 1,2,3,4,7,8,9-HpC	DF-13C DF-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	94 ND 94	 	3.5 6.3 4.9	Total 2,3,7,8-TCE Equivalence: 150 (Lower-bound - U	DD pg/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	120 500		5.9 5.9				
OCDF OCDD	 53	6.8	5.5 JJ 1.8				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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Report No.....10445726\_TO9\_DFR

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	01-0 1044 U180 ZMS 2.40 U180 U180 BLA	02 5726002 0907A_06 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/28/20 08/30/20 08/31/20 09/07/20	018 17:29 018 09:50 018 18:00 018 12:48	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	<b>LRL</b> pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 200		2.5 2.5	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	) 12C	2.00 2.00	93 82
2,3,7,8-TCDD Total TCDD	ND 150		2.4 2.4	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDI	13C 13C -13C	2.00 2.00 2.00	96 63
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.5 3.8 36	 	1.0 J 0.96 J 0.99	1,2,3,0,7,8-HpC 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	64 32 R 72
1,2,3,7,8-PeCDD Total PeCDD	2.0 47		1.3 J 1.3	Recovery Standards		2.00	NΛ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	1.6  1.2 16	2.0 1.7	1.3 k 0.97 J 1.1 k 0.71 J 1.0 J	J 1,2,3,7,8,9-HxCDI J Surrogates 2,3,7,8-TCDD-370 2,3,4,7,8-PeCDF-	, D-13C 04 13C 13C	2.00 2.00 2.00 2.00	NA NA NC NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 1.1  45	0.53	1.2 0.82 0.45 0.82	1,2,3,4,7,8-HxCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpC J	D-13C DF-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	3.4 ND 3.4	 	0.66 J 0.79 0.73 J	Total 2,3,7,8-TCE Equivalence: 3.9 p (Lower-bound - U	D bg/m3 sing ITE Fa	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	6.6 22		2.9 J 2.9				
OCDF OCDD	ND 13		1.3 1.9 E	3J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal

ND = Not Detected

NA = Not Applicable NC = Not Calculated

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### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	01-00 1044 U180 ZMS 2.34 U180 U180 BLAN	03 5726003 0907A_07 m3 0508 0907A_01 NK-64437			Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/28/20 08/30/20 08/31/20 09/07/20	018 17:33 018 09:50 018 18:00 018 13:36	
Native Isomers	Conc pg/m3	<b>EMPC</b> pg/m3	<b>LRL</b> pg/m3		Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	1.6 120		1.1 1.1	J	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	106 90
2,3,7,8-TCDD Total TCDD	ND 83		0.62 0.62		1,2,3,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C 3C -13C	2.00 2.00 2.00	103 89 79
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.99 1.5 19	 	0.39 0.46 0.42	J J	1,2,3,4,6,7,8-HXCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	83 80 43 105
1,2,3,7,8-PeCDD Total PeCDD	ND 17		0.94 0.94	J	Recovery Standards		2.00	NΙΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND 4.1	  	0.98 0.73 0.91 0.83 0.86	J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD Surrogates 2,3,7,8-TCDD-37Cl 2,3,4,7,8-PeCDF-1	-13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 20	 	1.1 0.86 0.99 0.98	J	1,2,3,4,7,8-HxCDF 1,2,3,4,7,8-HxCDD 1,2,3,4,7,8,9-HpCD	-13C -13C )F-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND	1.2 	0.61 1.1 0.84	IJ	Total 2,3,7,8-TCDI Equivalence: 1.00 (Lower-bound - Us	D pg/m3 ing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		2.7 2.7					
OCDF OCDD	ND 3.4		1.8 1.2	BJ				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	01-0 1044 U180 ZMS 2.30 U180 U180 BLA	04 5726004 0907A_08 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/28/201 08/30/201 08/31/201 09/07/201	8 17:40 8 09:50 8 18:00 8 14:23	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	79 5600		1.8 1.8 E	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	120	2.00 2.00	97 74
2,3,7,8-TCDD Total TCDD	35 11000		1.9 1.9 E	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF	13C 13C -13C	2.00 2.00 2.00	94 82 65
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	8.4 1500	70 	0.56 F 0.68 J 0.62	1,2,3,0,7,0-HXCDL 1,2,3,4,6,7,8-HpCI 1,2,3,4,6,7,8-HpCI OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	62 64 69 97
1,2,3,7,8-PeCDD Total PeCDD	96 6100		0.97 0.97	Recovery Standards		2.00	NΙΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	39 47  ND 410	 70 	0.86 1.2 1.1 F 1.3 1.1	<ul> <li>1,2,3,7,8,9-HxCDE</li> <li>Surrogates</li> <li>2,3,7,8-TCDD-37C</li> <li>2,3,4,7,8-PeCDF-1</li> <li>1,2,3,4,7,8-HxCDE</li> </ul>	)-13C  4  3C	2.00 2.00 2.00 2.00	NA NA NC NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	58 100 96 3200	  	3.0 2.8 2.6 2.8	1,2,3,4,7,8-HxCDE 1,2,3,4,7,8,9-HpCI	D-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	43 ND 43	 	1.0 1.0 1.0	Total 2,3,7,8-TCD Equivalence: 140 (Lower-bound - Us	D pg/m3 sing ITE Fac	ctors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	280 830		1.7 1.7				
OCDF OCDD	36 230		2.4 J 1.5	ļ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	01-0 1044 U180 ZMS 2.26 U180 U180 BLA	05 5726005 0907A_09 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/28/20 08/30/20 08/31/20 09/07/20	018 17:42 018 09:50 018 18:00 018 15:10	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 160		2.2 2.2	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00	94 79
2,3,7,8-TCDD Total TCDD	ND 310		2.0 2.0	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF	13C 13C -13C	2.00 2.00 2.00	87 72 76
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.4  40	2.6	0.77 J 1.1 JJ 0.92	1,2,3,6,7,8-HXCDL 1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	72 69 72 92
1,2,3,7,8-PeCDD Total PeCDD	4.2 120		1.6 J 1.6	Recovery Standards		2.00	ΝΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND 2.4	1.9  	1.6 U 0.80 1.4 2.0 1.4 J	1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-	, D-13C ; 4 13C	2.00 2.00 2.00 2.00	NA NA NC NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 3.7 2.8 63	  	1.4 1.0 J 1.9 J 1.4	1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpCl	D-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	1.3 1.7 1.5	Total 2,3,7,8-TCD Equivalence: 4.4 p (Lower-bound - Us	D bg/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	 9.3	6.5	1.0 J 1.0 J				
OCDF OCDD	ND	 8.6	2.8 2.4 JJ				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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## Method TO9 Blank Analysis Results

2.26 U180 U180	m3 0508 0907A_01			Extracted Analyzed Injected By	08/31/201 09/07/201 ZMS	8 18:00 8 11:13	
Conc pg/m3	<b>EMPC</b> pg/m3	LRL pg/m3		Internal Standards		ng's Added	Percent Recovery
ND ND		1.3 1.3		2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDF-1	130	2.00 2.00 2.00	91 77 106
ND ND		1.8 1.8		1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF 1,2,3,6,7,8-HxCDF	13C -13C	2.00 2.00 2.00	100 100 101 89
ND ND ND	 	0.46 0.46 0.46		1,2,3,4,6,7,8-HpCI 1,2,3,4,6,7,8-HpCI 0CDD-13C	DF-13C DD-13C	2.00 2.00 4.00	71 70 65
ND ND		0.57 0.57		Recovery Standards		2.00	NΛ
ND ND  ND	0.64 0.71	0.41 0.39 0.42 I 0.51 I 0.43	IJ	1,2,3,7,8,9-HxCDE Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-1	)-13C (4) 13C	2.00 2.00 2.00 2.00	104 105
ND ND ND ND	  	0.63 0.61 0.51 0.58		1,2,3,4,7,8-HxCDF 1,2,3,4,7,8-HxCDE 1,2,3,4,7,8,9-HpCI	13C DF-13C DF-13C	2.00 2.00 2.00	95 93
ND ND ND	 	0.45 0.71 0.58		Total 2,3,7,8-TCD Equivalence: 0.14 (Lower-bound - Us	D pg/m3 sing ITE Fa	ctors)	
ND ND		0.94 0.94					
ND 1.4		1.3 1.4 、	J				
	2.26 U180 U180 Pg/m3 ND ND ND ND ND ND ND ND ND ND ND ND ND	2.26 m3       U180508         U180907A_01         Conc       EMPC         pg/m3       Pg/m3         ND          ND	2.26 m3 U180508 U180907A_01           Conc pg/m3         EMPC pg/m3         LRL pg/m3           ND          1.3           ND          1.3           ND          1.3           ND          1.3           ND          1.8           ND          1.8           ND          0.46           ND          0.46           ND          0.57           ND          0.51           ND          0.63           ND          0.58           ND          0.58           ND	2.26 m3 U180508 U180907A_01           Conc         EMPC         LRL pg/m3           ND          1.3           ND          1.3           ND          1.3           ND          1.3           ND          1.8           ND          1.8           ND          0.46           ND          0.46           ND          0.57           ND          0.57           ND          0.57           ND          0.41           ND          0.57           ND          0.51           ND          0.43           ND          0.63           ND          0.58           ND          0.58           ND          0.58           ND          0.58           ND          0.58           ND          0.58           ND          0.	2.26 m3 U180508 U180907A_01         Extracted Analyzed Injected By           Conc         EMPC pg/m3         LRL pg/m3         Internal Standards           ND          1.3         2,3,7,8-TCDF-13C 1,2,3,7,8-TCDD-13C           ND          1.3         2,3,7,8-TCDF-13C 1,2,3,7,8-PeCDF-13C           ND          1.8         1,2,3,7,8-PeCDF-13C           ND          1.8         1,2,3,6,7,8-HxCDF           ND          1.8         1,2,3,6,7,8-HxCDF           ND          0.46         1,2,3,4,6,7,8-HpCI           ND          0.46         0CDD-13C           ND          0.57         Recovery           ND          0.57         Standards 1,2,3,4,7,8-HxCDD           ND          0.57         Standards 1,2,3,4,7,8-HxCDD           ND          0.57         Standards 1,2,3,4,7,8-HxCDD           ND          0.63         1,2,3,4,7,8-HxCDF           ND          0.63         1,2,3,4,7,8-HxCDF           ND          0.58         ND           ND          0.58         CDD-3C	2.26 m3       Extracted       08/31/201         U180508       Analyzed       09/07/201         U180907A_01       Internal       Standards         D        1.3       2,3,7,8-TCDF-13C         ND        1.3       2,3,7,8-TCDF-13C         ND        1.3       2,3,7,8-TCDF-13C         ND        1.8       1,2,3,7,8-PeCDF-13C         ND        1.8       1,2,3,6,7,8-HxCDF-13C         ND        1.8       1,2,3,6,7,8-HxCDF-13C         ND        1.8       1,2,3,4,6,7,8-HxCDF-13C         ND        0.46       1,2,3,4,6,7,8-HxCDF-13C         ND        0.46       0CDD-13C         ND        0.46       0CDD-13C         ND        0.57       Recovery         ND        0.57       Standards         1,2,3,4,7,8-HxCDD-13C	2.26 m3       Extracted       08/31/2018       18:00         U180508       Analyzed       09/07/2018       11:13         Injected By       ZMS       ZMS         Conc       EMPC       LRL       Internal       ng's         pg/m3       pg/m3       pg/m3       Standards       Added         ND        1.3       2,3,7,8-TCDF-13C       2.00         ND        1.3       2,3,7,8-PeCDF-13C       2.00         ND        1.8       1,2,3,7,8-PeCDF-13C       2.00         ND        1.8       1,2,3,6,7,8-HxCDD-13C       2.00         ND        1.8       1,2,3,6,7,8-HxCDD-13C       2.00         ND        0.46       1,2,3,4,6,7,8-HpCDF-13C       2.00         ND        0.46       1,2,3,4,6,7,8-HpCDF-13C       2.00         ND        0.46       1,2,3,4,7,8-HpCDF-13C       2.00         ND        0.46       1,2,3,4,7,8-HpCDF-13C       2.00         ND        0.57       Recovery       4.00         ND        0.57       Standards       1,2,3,4,7,8-HxCDD-13C       2.00

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

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R = Recovery outside of target range

I = Interference P = PCDE Interference ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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## Method TO9 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LC: U18 1.0 U18 U18 BL/	S-64438 30914A_02 0 Sample 30508 30914A_01 ANK-64437		Matrix Dilution Extracted Analyzed Injected By	XAD/PU NA 08/31/20 09/13/20 SMT	IF 018 18:00 018 23:55	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-2	130	2.0 2.0 2.0	88 97 87
2,3,7,8-TCDD Total TCDD	0.20	0.23	115	1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF 1,2,3,6,7,8-HxCDF	13C -13C	2.0 2.0 2.0	102 69
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	0.94 1.1	94 109	1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl OCDD-13C	DF-13C DD-13C	2.0 2.0 4.0	98 114 99
1,2,3,7,8-PeCDD Total PeCDD	1.0	1.1	105	Recovery Standards		2.0	NΛ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF	1.0 1.0 1.0 1.0	1.1 1.0 1.0 1.1	106 104 105 105	1,2,3,7,8,9-HxCDD Surrogates 2,3,7,8-TCDD-37C	D-13C	2.0 2.0 2.0	97
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.1 1.2 1.00	108 116 100	2,3,4,7,6-PeCDF- 1,2,3,4,7,8-HxCDF 1,2,3,4,7,8-HxCDE 1,2,3,4,7,8,9-HpCI	F-13C D-13C DF-13C	2.0 2.0 2.0 2.0	100 100 106 108
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.3 1.3	129 130				
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.2	120				
OCDF OCDD	2.0 2.0	1.9 2.5	93 123				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

R = Outside the method specified target recovery range

NA = Not Applicable

Nn = Value obtained from additional analysis

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### Method TO9 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS U18 1.0 U18 U18 BL/	SD-64439 80914A_03 0 Sample 80508 80914A_01 ANK-64437		Matrix Dilution Extracted Analyzed Injected By	XAD/PU NA 08/31/20 09/14/20 SMT	F 018 18:00 018 00:43	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.21	104	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-1	130	2.0 2.0 2.0	71 79 72
2,3,7,8-TCDD Total TCDD	0.20	0.23	113	1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF 1,2,3,6,7,8-HxCDF	13C -13C	2.0 2.0 2.0	85 59 77
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	0.99 1.1	99 112	1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl OCDD-13C	DF-13C DD-13C	2.0 2.0 4.0	77 89 79
1,2,3,7,8-PeCDD Total PeCDD	1.0	1.0	105	Recovery Standards		2.0	NΛ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	1.0 1.0 1.0 1.0	1.1 1.0 1.1 1.00	105 101 106 100	1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C 2,3,4 7 8-PeCDE-	) D-13C 14	2.0 2.0 2.0	94 102
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.1 1.2 1.1	115 120 108	1,2,3,4,7,8-HxCDF 1,2,3,4,7,8-HxCDF 1,2,3,4,7,8,9-HpCl	-13C D-13C DF-13C	2.0 2.0 2.0	99 110 108
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.3 1.2	130 124				
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.2	122				
OCDF OCDD	2.0 2.0	1.9 2.4	94 122				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

R = Outside the method specified target recovery range

NA = Not Applicable

Nn = Value obtained from additional analysis

# **REPORT OF LABORATORY ANALYSIS**

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#### **Method TO9**

#### Spike Recovery Relative Percent Difference (RPD) Results

Client		EE&G Environmenta	al			
Spike 1 IE Spike 1 F	) ilename	LCS-64438 U180914A_02		Spike 2 ID Spike 2 Filename	LCSD-64439 U180914A_03	
Co	mpound		Spike 1 %REC	Spike 2 %REC	%RPD	
2,3	,7,8-TCDF		100	104	3.9	
2,3	,7,8-TCDD		115	113	1.8	
1,2 2,3	,3,7,8-PeCDF ,4,7,8-PeCDF	-	94 109	99 112	5.2 2.7	
1,2	,3,7,8-PeCDD	)	105	105	0.0	
1,2 1,2 2,3 1,2	,3,4,7,8-HxCE ,3,6,7,8-HxCE ,4,6,7,8-HxCE ,3,7,8,9-HxCE	)F )F )F )F	106 104 105 105	105 101 106 100	0.9 2.9 0.9 4.9	
1,2 1,2 1,2	,3,4,7,8-HxCE ,3,6,7,8-HxCE ,3,7,8,9-HxCE		108 116 100	115 120 108	6.3 3.4 7.7	
1,2 1,2	,3,4,6,7,8-Hp0 ,3,4,7,8,9-Hp0	CDF CDF	129 130	130 124	0.8 4.7	
1,2	,3,4,6,7,8-HpC	CDD	120	122	1.7	
OC OC	DF DD		93 123	94 122	1.1 0.8	

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

# **REPORT OF LABORATORY ANALYSIS**

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www.pacelabs.com

## **Report Prepared for:**

Alex Mavrelis EE&G Environmental 5751 Miami Lakes Dr. Miami Lakes FL 33014

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

September 17, 2018

Pace Analytical Services, LLC. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

#### **Report Information:**

Pace Project #: 10445797 Sample Receipt Date: 08/31/2018 Client Project #: 2018-4191 Client Sub PO #: 2018-4191.Debris.T10 State Cert #: E87605

#### **Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

#### This report has been reviewed by:

September 17, 2018 Nathan Boberg, Project Manager 612-360-0728 (612) 607-6444 (fax) nathan.boberg@pacelabs.com



## **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



Pace Analytical Services, LLC. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

# **DISCUSSION**

This report presents the results from the analyses performed on seven samples submitted by a representative of EE&G Environmental. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method TO9A. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The samples were received above the laboratory-recommended temperature range of 0-6 degrees Celsius.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically labeled PCDD/PCDF internal standards in the sample extracts ranged from 50-141%. Except for six elevated values, which were flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the target ranges for the method. Also, since the internal standards were added to the sample prior to the extraction step, the data were automatically corrected for recovery and accurate values were obtained. Since the field samples did not include PUF cartridge components, surrogates were not present in the field sample extracts.

Values were flagged "I" where incorrect isotope ratios were obtained or "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates. Values obtained from the analysis of a diluted extract were flagged "D".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain a trace level of OCDD. This level was below the calibration range of the method. Sample levels similar to the corresponding blank level were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory quality control PCDD/PCDF spike samples were also prepared with the sample batch using clean PUF cartridges that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 93-130% with relative percent differences of 0.0-7.7%. These results were within the target ranges for the method. Matrix spikes were not prepared with the sample batch.

# **REPORT OF LABORATORY ANALYSIS**

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Pace Analytical Services, LLC 1700 Elm Street - Suite 200 Minneapolis, MN 55414

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# Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #		
A2LA	2926.01	Minnesota - Pet	1240		
Alabama	40770	Mississippi	MN00064		
Alaska - DW	MN00064	Missouri - DW	10100		
Alaska - UST	17-009	Montana	CERT0092		
Arizona	AZ0014	Nebraska	NE-OS-18-06		
Arkansas - DW	MN00064	Nevada	MN00064		
Arkansas - WW	88-0680	New Hampshire	2081		
CNMI Saipan	MP0003	New Jersey (NE	MN002		
California	2929	New York	11647		
Colorado	MN00064	North Carolina	27700		
Connecticut	PH-0256	North Carolina -	27700		
EPA Region 8+	via MN 027-053	North Carolina -	530		
Florida (NELAP	E87605	North Dakota	R-036		
Georgia	959	Ohio - DW	41244		
Guam	17-001r	Ohio - VAP	CL101		
Hawaii	MN00064	Oklahoma	9507		
Idaho	MN00064	Oregon - Primar	MN300001		
Illinois	200011	Oregon - Secon	MN200001		
Indiana	C-MN-01	Pennsylvania	68-00563		
lowa	368	Puerto Rico	MN00064		
Kansas	E-10167	South Carolina	74003		
Kentucky - DW	90062	South Dakota	NA		
Kentucky - WW	90062	Tennessee	TN02818		
Louisiana - DE	03086	Texas	T104704192		
Louisiana - DW	MN00064	Utah (NELAP)	MN00064		
Maine	MN00064	Virginia	460163		
Maryland	322	Washington	C486		
Massachusetts	M-MN064	West Virginia -	382		
Michigan	9909	West Virginia -	9952C		
Minnesota	027-053-137	Wisconsin	999407970		
Minnesota - De	via MN 027-053	Wyoming - UST	2926.01		

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

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Consoly Relinquished?     More Than and/or Signature on COC?     More Than and/or Signature on COC?     More Than and/or Signature on COC?       5 Armed within Hold Time?     More Than and/or Signature on COC?     More Than and/or Signature on COC?     Sec. Than and/or Signature on COC?       6 Armed within Hold Time?     More Than and/or Signature on COC?     More Than and/or Signature on COC?     Sec. Than and/or Signature on COC?       1 Armed within Hold Time?     More Than a the expension of the Count of the Expension of the Expension of the Count of the Expension of the Count of the Count of the Expension of the Count of the Expension of the Count of the Expension of the Expension of the Count of the Expension of the Expension of the Count of the Expension of the Count of the Expension of the Count of the Expension of the Expension of the Expension of the Count of the Expension of the Count of the Expension of the Expension of the Count of the Expension of the Count of the Count of the Count of the Expension of the Count of the Count of the Expension of the Count of the Expension of the Count of the Expension of the Count of the Expension of the Count of the Count of the Count of th	Af Custody Relimquished?     Affore     Non-     3       F Custody Relimquished?     Proves     Theor     3       F Almere and/or Signature on COC?     Dres     Theor     1     4     4     4     4     4     4       Se Arrived within Hold Time?     Dres     Theor     Dres     Theor     5     5     4     <	of Custody Relimquished?       Bytes       INO       3.         of Custody Relimquished?       Ives       Byto       5.       Byto       5.         se Arrived within Hold Time?       Bytos       Byto       5.       Byto       5.         old Time Analysis (<72 hr)?
r Name and/or Signature on COC? Dec 2010 Dec 2010 <u>5</u> . <i>s Arrived within</i> Hold Time? <u>Proceedings of the second o</u>	r Name and/or Signature on COC? Dres Walo Divid 4	Image and/or Signature on COC?       Uves       Wunder       Image
s krived within hold Time? Skrived vithin hold Time? Skrived within hold Time Analysis (r21 th)? The Requested? The Request the sumplex to the the test? The The Request the Request the sumplex to the test? The test information available to reconcile the samplex to the test information available to reconcile the samplex to the Received for Discolved Test? The Physical Test? The Reconcendent and the test information? The Received for Discolved Tests? The Received test in the Required? The Received Test is the Received Test in t	s Arrived within Hold Time?  Scrived within Hold Time?  Scrived within Hold Time?  Scrived within Hold Time Requested?  Thes Scrives Into  The Requested?  Thes Scrives Into  Scrives In	S Arrived within Hold Time?       S Arrived within Hold Time?       S.         clotd Time Analysis (<72 hr)?
Ind Time Analysis (<21 kr)?	Induction time Analysis (<21 km);     Tyres     Quies     Quies     Quies     Containers       int Around Time Requested?     Tyres     Tyres     Tyres     Quies     Piles       int Around Time Requested?     Elses     Dives     Quies     Piles     Piles       containers Used?     Elses     Dives     Dives     Dives     Dives     Dives       e containers Used?     Dives     Dives     Dives     Dives     Dives     Dives       Uolume Received for Discolved Tests?     Dives     Dives     Dives     Dives     Dives       Understeading actid/base preservation have been     Dives     Dives     Dives     Dives     Dives       Cit     Matrix:     Dives     Dives     Dives     Dives     Dives     Dives       Using preservation are found to be in     Dives     Dives     Dives     Dives     Dives     Dives       Cit     Matrix:     Dives     Dives     Dives     Dives     Dives     Dives     Dives       Cit     Matrix:     Dives     Dives     Dives     Dives     Dives     Dives       Cit     Matrix:     Dives     Dives     Dives     Dives     Dives     Dives       Cit     Dives     Dives	Ind Time Analysis (<72 hr)?       Tyes       Wuo       6         urn Around Time Requested?       Tyes       No       7       7         urn Around Time Requested?       Tyes       No       9       7         rt Volume?       The Requested?       Tyes       No       9       7         containers Used?       Tyes       No       9       9       10       10         containers Used?       Tyes       Tyes       No       11       Note if sediment is visible in the dissolved container         e Containers Used?       Matrix:       Mase       10       11       Note if sediment is visible in the dissolved container         rent Information available to reconcile the samples to       Mase       No       Mase       12       13       14       14         riners needing acid/base preservation have been       Tyes       Too       Mase       13       14       10       10       13       14       10       14       10         riners needing acid/base preservation are found to be in       Mase       13       13       14       13       10       13       14       10       14       10         riners needing acid/base preservation are found to be in       Mase       13       13<
Im Around Time Requested?       Type       Containers       Type       Containers         nt Volume?       Excession       Excession       Excession       Excession       Excession         Containers Used?       Excession       Excession       Excession       Excession       Excession         Excontainers Used?       Excession       Excession       Excession       Excession       Excession       Excession         Excession	Im Around Time Requested?       Yes       Containers       7         It Volume?       Even       No       9.         Containers Used?       Even       No       9.         Containers Used?       E Containers Used?       Person       9.         E Containers Used?       E Containers Used?       Person       9.         E Containers Used?       E Containers Used?       Person       9.         Volume Received for Dissolved Tests?       Preson       10.       10.         Volume Received for Dissolved Tests?       Preson       11.       Note if sediment is visible in the dissolved container wattrix.         Volume Received for Dissolved Tests?       Preson       Preson       12.       Preson       Preson         Volume Received for Dissolved Tests?       Preson       Preson       12.       Preson       Preson       Preson         Volume Received for Dissolved Tests?       Preson       Preson       Preson       12.       Preson       Preson       Preson         Volume Received for Dissolved Tests?       Preson       Preson       Preson       Preson       Proson       Proson       Protoin       Protoin       Protoin       Protoin       Protoin       Protoin       Protoin       Protoin       Protoin	Int Around Time Requested?       Uves       Oves       Oves       No       3.         It Volume?       Eves       Uves       Uves       No       9.       9.         Containers Used?       Eves       Uves       No       9.       9.         Containers Used?       Eves       Uves       No       9.         e Containers Used?       Eves       No       9.       9.         eres Intact?       Eves       No       Eves       10.       10.         eres Intact?       Eves       No       Eves       10.       10.         rents Intact?       Eves       No       Eves       11.       Note if sediment is visible in the dissolved container         rent information available to reconcile the samples to       Eves       No       Eves       12.         and       Inters needing acid/base preservation have been       Ives       Ives       Ives       13.         allers needing preservation are found to be in       Ives       Ives       Ives       Ives       Ives         H>SO4, coliform, ToC/DOC Oil and Grease,       Ives       Ives       Eventile #       Ives       Ives         H>SO4, coliform of Soffor       Ives       Event       Ives       Ives
nt Volume?     Bit       Containers Used?     Kes     No     8       Containers Used?     Kes     No     9       est Intert?     Kes     No     10       Volume Received for Dissolved Test?     Volume Received for Dissolved Test?     No       Volume Received for Dissolved Test?     Volume Received for Dissolved Test?     No       Volume Received for No     Wo     11. Note if sediment is visible in the dissolved container       Volume Received for No     Matrix:     Mo     13.       Volume Received for No     Matrix:     Mo     13.       No     Matrix:     Mo     20     13.       HSO4, 2pH, NaOH 95 Suffide, NaOH 95 Suffide, NaOH 92 Suff	Int Volume?     Mrs.     No.     8.       Containers Used?     Kes.     No.     8.       Containers Used?     Kes.     No.     9.       e Containers Used?     Vise.     No.     9.       e Containers Used?     Vise.     No.     8.       e Containers Used?     Vise.     No.     8.       e Containers Used?     Vise.     No.     8.       ers intact?     Vise.     No.     8.       ient information available to reconcile the samples to markix.     Vise.     No.     20.       Alow     Markix.     No.     20.     13.     14.       and rises needing acid/base preservation have been and rises needing preservation have been and rises.     No.     20.     13.     14.       and with EAP recommendation?     No.     Markix.     No.     20.     13.       and with EAP recommendation?     No.     Markix.     No.     14.       and with EAP recommendation?     No.     Markix.     No.     Conditionance       and with EAP recommendation?     No.     Markix.     No.     Conditionance       and with EAP recommendation?     No.     Markix.     No.     Conditionance       and with EAP recommendation?     No.     Markix.     No.     Cond	Int Volume?       Evel       Into       8.         Containers Used?       Evel       No       9.         E containers Used?       Evel       No       9.         e containers Used?       Evel       No       9.         e containers Used?       Evel       No       9.         ers Intact?       Evel       No       Evel       10.         Volume Received for Dissolved Tests?       Evel       No       Evel       11.         Volume Received for Dissolved Tests?       Evel       No       Evel       12.         Volume Received for Dissolved Tests?       Evel       Invo       13.       HNO.3       H3.50.4       Evel         cient Information available to reconcile the samples to matrix:       Matrix:       Matrix:       Evel       13.       HNO.3       Evel       Evel         cients needing acid/base preservation have been       Invo       Evel       13.       Invo.3       Evel
Containers Used?       Exes       Into       9.         econtainers Used?       Ives	Containers Used?       Containers Used?       9.         e Containers Used?       1vs.       1vs.       10.         ensi Intact?       10.       10.       10.         ensi Intact?       Matrix.       11. Note if sediment is visible in the dissolved container intervation available to reconcile the samples to watrix.       10.         ensi Information available to reconcile the samples to watrix.       Matrix.       11. Note if sediment is visible in the dissolved container intervation have been watrix.       12.         aners needing add/base preservation are found to be in an exitifie RPA recommendation?       13. Note if sediment is visible in the dissolved container and samples to reconcile the samples to the amplete of added and Grease, and Grease, and Grease, and Completed: and Disolin/FFAS       14.         Also, XoA, Coliform.       70A Vials (>6mm)?       14.       14.         In K Present?       10.       20.       14.       14.         In K Present?       11.       14.       14.       14.         In K Present?       15.       14.       14.       14.         In K Present?       10.       20.       20.       20.       14.         In K Present?       11.       14.       14.       14.       14.         In K Present?       11.       11.       14.       14.       14	Containers Used?       Event       No       9.         e Containers Used?       Ives       No       Yes       No         ers intract?       Ives       No       Yes       Ivo       Ivo         ers intract?       Ives       No       Yes       Ivo       Ivo       Ivo         ers intract?       Ivolume Received for Dissolved Tests?       Ives       Ivo       Ivo       Ivo       Ivo         einer information available to reconcile the samples to Matrix:       Matrix:       Mo       Ivo       I
e Containers Used?  Containers Used?  Containers Used?  Containers Used?  Volume Received for Dissolved Test?  Volume Received Volue Connecting Test Recommendation?  Volume Received Test  Volume Received Dissolved Test?  Volume Received Test  Received Test  Received Test  Received Test  Rec	ers Intact?  Containers Used?  Containers Used?  Eaci Intact?  Container Received for Dissolved Tests?  I volume Received for Dissolved Tests?   Construction are found to be in  Nach Received for Dissolved Tests?  Volume Received for Dissolved Tests?   Received Vals (Semm)?  Nach Received Received for Dissolved Tests?  Received Vals (Semm)?  Received Received Received Received Received Interventive:  Received Vals (Semm)?  Received Received Received Received Received Received Vals (Semm)?  Received Received Received Received Received Received Received Vals (Semm)?  Received Received Received Received Received Received Received Vals (Semm)?  Received Receive	e Containers Used? ☐Ves ☐Vo lers Intact? 10. 10. 11. Note if sediment is visible in the dissolved container ient information available to reconcile the samples to The mattion available to reconcile the sample # The mattion are found to be in The ma
ers Intact?           ers         INO         20.           Volume Received for Dissolved Test?         Ives         Ivo         Advis           Volume Received for Dissolved Test?         Ives         Ivo         Advis           c?         Matrix:         Advisor         Ives         Ivo         Ives           c?         Matrix:         Advisor         Ives         Ivo         Ives         Ivo           c?         Matrix:         Advisor         Ives         Ivo         Ives         Ivo         Ives         Ivo	ers Intact? ers Intact? ers Intact? ers Intact? Volume Received for Dissolved Test? Vers Natrix: Action Action Natrix: Action Natrix: Action Natrix: Action Natrix: Acti	ers Intact? I volume Received for Dissolved Tests? Ves UNA Plassola, <2pH, NaOH >9 suffide, NaOH>12 C Plassola, <2pH, NaOH >9 suffide, NaOH>12 Cyanide) H3Sola, <2pH, NaOH >9 suffide, NaOH>12 Cyanide) H3Sola, <2pH, NaOH >9 suffide, NaOH>12 Cyanide) Uns VOA, Coliform, ToC/DOC Oil and Grease, Ols UNA Vials (>6m)? C Plassolation C Plassol
Volume Received for Dissolved Text?       Uves	Volume Received for Dissolved Test?       Uves       Uves       Uves       Uves       I.1       Note if sediment is visible in the dissolved container ier visible in the dissolved container ier visible in the dissolved Test?         c?       Matrix:       Matritor       Matritor:       Ma	Volume Received for Dissolved Test?       Uves       No       Note if sediment is visible in the dissolved container         c?       Matrix:       Ma
ient information available to reconcile the samples to matrix.       Most in information available to reconcile the samples to matrix.       12.         c7       Matrix.       Matrix.       Matrix.       Positive for Res.         31       inters meeding actd/base preservation have been       14.       13.       14.50.       10.01.         31       inters meeding actd/base preservation are found to be in more with EPA recommendation?       13.       14.00.3       14.50.4       10.00.4       Positive for Res.         14.50.4       Dives       Dive       Movia       Alvia       Intial when       Lot # of added       Chlorine? Y N         0.50.4.2.61/mm, TOC/DOC 01 and Grease,       Dive       Dive       Movia       14.       Intial when       Lot # of added       Intial when       Intial when       Lot # of added       Intial when       Intial when       Lot # of # of added       Inticle with the with the with the	Internation available to reconcile the samples to matrix. Arrew matrix. The arrew	ient information available to reconcile the samples to Criteria information available to reconcile the samples to Matrix: A m
ainers needing acid/base preservation have been 37 37 37 37 38 ainers needing preservation are found to be in ainers meding preservation are found to be in ainers meding preservation are found to be in ainers meding preservation are found to be in the with HSO, <2 pH, NaOH > 13 Sufficte, NaOH > 12 Synahlee) 315 (water) and Dioxin/PFAS 315 (water) and Dioxin/PFAS 316 (bott of fighter) 317 (bott of fighter) 318 (bott of # of added 315 (water) and Dioxin/PFAS 318 (bott of fighter) 319 (bott of fighter) 310 (bott of fighter) 310 (bott of fighter) 310 (bott of fighter) 311 (bott of fighter) 312 (bott of fighter) 313 (bott of fighter) 314 (bott of fighter) 315 (bott of fighter) 316 (bott of fighter) 317 (bott of fighter) 318 (bott of fighter) 319 (bott of fighter) 310 (bott of fighter) 310 (bott of fighter) 311 (bott of fighter) 312 (bott of fighter) 313 (bott of fighter) 314 (bott of fighter) 315 (bott of fighter) 316 (bott of fighter) 317 (bott of fighter) 318 (bott of fighter) 319 (bott of fighter) 310 (bott of fighter) 310 (bott of fighter) 311 (bott of fighter) 312 (bott of fighter) 313 (bott of fighter) 314 (bott of fighter) 315 (bott of fighter) 316 (bott of fighter) 317 (bott of fighter) 318 (bott of fighter) 31	ainers needing acid/base preservation have been 37 allers needing acid/base preservation have been allers needing preservation are found to be in aners meding preservation are found to be in aners meding preservation are found to be in the fPA recommendation? H 504, <2pl, NaOH > 10, H 504, <2pl, NaOH > 2 suffice, NaOH > 12 Cyanide) H 504, <2pl, NaOH > 2 suffice, NaOH > 12 Cyanide) H 504, <2pl, NaOH > 2 suffice, NaOH > 12 Cyanide) H 504, <2pl, NaOH > 2 suffice, NaOH > 12 Cyanide) H 504, <2pl, NaOH > 2 suffice, NaOH > 12 Cyanide) ace in VOA Vials ( >6mm)? m R Present? m R Present? m R Custody Seals Present? p Blank Lot # (If purchased): D ate/Time: Previously waived temp. m S A Suffice (If purchased): Previously waived temp. m S A Suffice (If purchased): Previously waived temp. M A Suffice (If purchased): Previously waived temp. M A Suffice (If purchased): M A Suffice (If purc	ainers needing acid/base preservation have been 37 ainers needing preservation are found to be in ainers needing preservation are found to be in H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) CMA H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH CMA H <sub>2</sub>
ainers needing preservation are found to be in nice with EPA recommendation? H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) Dons: VOA, Coliform, TOC/DOC Oil and Grease, Distribution: ToC/DOC OII and Grease, Distribution: ToC/DOC OII and Crease, Distribution: ToC/DOC O	ainers needing preservation are found to be in the feat recommendation? H <sub>5</sub> SO <sub>4</sub> , <2pH, NaOH > 9 Suffide, NaOH>12 Cyanide) H <sub>5</sub> SO <sub>4</sub> , <2pH, NaOH > 9 Suffide, NaOH>12 Cyanide) Dars: VOA, Coliform, TOC/DOC Oil and Grease, 15 (water) and Dioxin/PFAS and Dioxin/PFAS acc in VOA Vials ( >6mm)? acc in VOA Vials ( >6	ainers needing preservation are found to be in Ince with EPA recommendation? H <sub>3</sub> SO <sub>4</sub> , <2pH, NaOH >9 Suffide, NaOH>12 Cyanide) Dns: VOA, Coliform, TOC/DOC Oil and Grease, D15 (water) and Dioxin/PFAS D15 (water) and D10 D15 (water) and D10
H-SOu, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) H-SOu, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Ons: VOA, Coliform, TOC/DOC Oil and Grease, and Dioxin/PFAS ace in VOA Vials ( >6mm)? ace in V	H <sub>2</sub> SOu, <2pH, NaOH >9 Suffide, NaOH >9	H <sub>2</sub> SO <sub>4</sub> , <2PH, NaOH >9 Suffide, NaOH>12 Cyanide)
ons: VOA, Coliform, TOC/DOC Oil and Grease, 15 (water) and Dioxin/PFAS Lot # of added ace in VOA Vials ( >6mm)? Lot # of added ace in VOA Vials ( >6mm)? A 14. ace in VOA Vials ( >6mm)? A 14. ace in VOA Vials ( >6mm)? A 14. In R Custody Seals Present? In R Custody Present?	ons: VOA, Coliform, TOC/DOC Oil and Grease, 215 (water) and Dioxin/PFAS Indextended initial when breactive: Distribution active in VOA vials (>6mm)? Internation active active active in VOA vials (>6mm)? Internation active a	ons: VOA, Coliform, TOC/DOC Oil and Grease, D15 (water) and Dioxin/PFAS <u>D15 (water) and Dioxin/PFAS</u> completed: <u>preservative:</u> ace in VOA Vials ( >6mm)? <u>D18 ( &gt;6mm)?</u> 14.
ace in VOA Vials ( >6mm)? Uves UNO Kials ( >6mm)? Uves UNO Kals ( >6mm)? Uves UNO Kals ( >6mm)? Uves UNO Kals ( >6mn)? Uves UNO KALALALA IS. ink Custody Seals Present? Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. ip Blank Lot # (if purchased): Uves UNO KAN/A IS. Interview Contacted: Uves UNO Kesoturion K	ace in VOA Vials ( >6mm)? ace in VOA Vials ( >6mm)? in Present? in Custody Seals Present? ip Blank Lot # (if purchased): Contacted: Alex M Contacted: Previously waived temp. Previously waived temp.	ace in VOA Vials ( >6mm)?
Ink Present? Ink Custody Seals Present? Ink Custody Seals Present? IPPER Ink Lot # (If purchased): IPPENT NOTIFICATION/RESOLUTION CLIENT NOTIFICATION/RESOLUTION Contacted: Alex M Contacted: Alex M Date/Time: 08/30/18 Date/Time	ank Present? ank Custody Seals Present? Tip Blank Lot # (if purchased): CLIENT NOTIFICATION/RESOLUTION Contacted: Alex M Contacted: Date/Time: 08/30/18 Contacted: Previously waived temp.	
Ink Custody Seals Present?	ark Custody Seals Present? rip Blank Lot # (if purchased): CLIENT NOTIFICATION/RESOLUTION Contacted: Alex M ents/Resolution:	ank Present?
ip Blank Lot # (if purchased):  CLIENT NOTIFICATION/RESOLUTION Contacted: Alex M Contacted: Alex M Date/Time: 08/30/18 Date/Time: 08/30/18 Previously waived temp.	rip Blank Lot # (if purchased): CLIENT NOTIFICATION/RESOLUTION Contacted: Alex M Contacted: 08/30/18 ents/Resolution: Previously waived temp.	ank Custody Seals Present?
CLIENT NOTIFICATION/RESOLUTION       Field Data Required?       No         Contacted:       Alex M       08/30/18       08/30/18         ents/Resolution:       Previously waived temp.       7       08/30/18	CLIENT NOTIFICATION/RESOLUTION       Field Data Required?       Uves         I Contacted:       Alex M       Date/Time:       08/30/18         ents/Resolution:       Previously waived temp.       3	rip Blank Lot # (if purchased):
arts/Resolution:	ents/Resolution: Previously waived temp.	CLIENT NOTIFICATION/RESOLUTION Field Data Required? [Yes ] Contacted: Alex M Date/Time: 08/30/18
Previously waived temp.	Previously waived temp.	ents/Resolution:
		Previously waived temp.

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# **Reporting Flags**

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interferencepresent | =
- Estimated value J =
- Suppressive interference, analyte may be biased low L =
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X =%DExceeds limits
- Y = Calculated using average of daily RFs
- \* = SeeDiscussion

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix B

Sample Analysis Summary



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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-00 1044 U180 ZMS 2.48 U180 U180 BLAI	01 5797001 0907A_10 m3 0508 0907A_01 NK-64437			Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/29/20 08/31/20 08/31/20 09/07/20	018 16:31 018 10:15 018 18:00 018 15:58	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	<b>LRL</b> pg/m3		Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	27 1700		1.4 1.4		2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	96 76
2,3,7,8-TCDD Total TCDD	7.2 1100		2.1 2.1		1,2,3,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C 13C -13C	2.00 2.00 2.00	75 77 90
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	27  450	 10 	0.95 1.0 0.98	PJ	1,2,3,6,7,8-HXCDL 1,2,3,4,6,7,8-HpCI 1,2,3,4,6,7,8-HpCI OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	85 84 83 110
1,2,3,7,8-PeCDD Total PeCDD	7.2 300		0.96 0.96	J	Recovery Standards		2.00	NIA
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	7.7  ND 63	7.3 3.0	0.92 0.79 0.90 2.0 1.2	n N I	1,2,3,4-1CDD-13C 1,2,3,7,8,9-HxCDD Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-1	0-13C 14 3C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	5.2 6.3 160	2.5 	1.9 2.0 2.2 2.0	J J	1,2,3,4,7,8-HxCDE 1,2,3,4,7,8-HxCDE 1,2,3,4,7,8,9-HpCE	-13C 0-13C 0F-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	5.7 ND 5.7	 	1.4 1.8 1.6	J	Total 2,3,7,8-TCD Equivalence: 23 po (Lower-bound - Us	D g/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	17 38		1.8 1.8	J				
OCDF OCDD	ND	 19	2.7 3.2	ม				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-0 1044 Y180 SMT 2.45 Y180 Y180 BLA	02 15797002 0913A_13 m3 0827 0913A_01 NK-64437			Matrix Dilution Collected Received Extracted Analyzed	Filter 5 08/29/20 08/31/20 08/31/20 09/13/20	018 16:30 018 10:15 018 18:00 018 11:38	
Native Isomers	Conc pg/m3	EMPC pg/m3	LRL pg/m3		Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	79 3700		7.7 7.7	D D	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	105 D 95 D
2,3,7,8-TCDD Total TCDD	15 820		7.0 7.0	JD D	1,2,3,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C 13C 5-13C	2.00 2.00 2.00	126 RD 126 RD 116 D
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	 18 410	22 	6.2 5.7 5.9	JD JD D	1,2,3,4,6,7,8-HpCE 1,2,3,4,6,7,8-HpCE 0CDD-13C	DF-13C DD-13C	2.00 2.00 2.00 4.00	91 D 91 D 84 D 70 D
1,2,3,7,8-PeCDD Total PeCDD	9.7 220		3.0 3.0	JD D	Recovery Standards		2.00	NIA
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND  26	 8.5	5.1 3.2 4.0 4.2 4.1	D D JD JD	1,2,3,4-1CDD-13C 1,2,3,7,8,9-HxCDD Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-1	0-13C 14 3C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND  160	 4.8	6.4 4.1 3.6 4.7	D D IJD D	1,2,3,4,7,8-HXCDF 1,2,3,4,7,8-HxCDE 1,2,3,4,7,8,9-HpCE	-13C )-13C )F-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND	3.6 	3.0 3.8 3.4	IJD D D	Total 2,3,7,8-TCD Equivalence: 40 pç (Lower-bound - Us	D g/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	16 40		2.6 2.6	JD JD				
OCDF OCDD	ND 22		5.6 5.5	D JD				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal

ND = Not Detected

NA = Not Applicable NC = Not Calculated

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## Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-0 1044 ZMS 2.46 U180 U180 BLA	03 15797003 0907A_12 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/29/20 08/31/20 08/31/20 09/07/20	018 16:35 018 10:15 018 18:00 018 17:33	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	28 2100		2.0 2.0	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	; ;	2.00 2.00	75 64 70
2,3,7,8-TCDD Total TCDD	5.2 990		3.6 3.6	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDI	13C 13C -13C	2.00 2.00 2.00	60 60
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	23 28 620	 	0.89 0.96 0.92	1,2,3,6,7,8-HXCDI 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	53 50 57 80
1,2,3,7,8-PeCDD Total PeCDD	10 430		1.1 J 1.1	Recovery Standards		2.00	ΝΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	16 16 18 3.7 200	  	1.4 J 1.2 J 1.3 J 1.6 J 1.4	1,2,3,4-10DD-13C 1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-	, D-13C 04 13C = 12C	2.00 2.00 2.00 2.00	NA NA NC NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	6.0 8.2 6.6 210	  	2.0 J 0.96 J 1.1 J 1.4	1,2,3,4,7,8-HxCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpC	D-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	23 ND 23	 	2.4 3.5 3.0	Total 2,3,7,8-TCE Equivalence: 36 p (Lower-bound - Us	DD g/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	22 61		1.3 1.3				
OCDF OCDD	ND 34		1.7 1.6 J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-0 1044 ZMS 2.54 U180 U180 BLA	04 5797004 0907A_13 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/29/20 08/31/20 08/31/20 09/07/20	)18 17:05 )18 10:15 )18 18:00 )18 18:20	
Native Isomers	Conc pg/m3	EMPC pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	17000	350 	2.0 P 2.0 E	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00	133 R 97
2,3,7,8-TCDD Total TCDD	150 25000		2.0 2.0 E	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDI	13C 13C -13C	2.00 2.00 2.00	141 R 124 R 81
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	170 280 4000	 	1.0 1.1 1.1	1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	67 70 62 96
1,2,3,7,8-PeCDD Total PeCDD	270 9300		1.1 1.1	Recovery Standards		2.00	ΝΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	120 150  19 1400	 96 	2.2 0.84 1.8 P 0.90 J 1.4	1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-	, D-13C 04 13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	140 300 240 5700	  	3.4 2.6 2.8 2.9	1,2,3,4,7,8-HXCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpC	D-13C DF-13C DF-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	400 17 510	 	1.3 2.4 J 1.9	Total 2,3,7,8-TCD Equivalence: 590 (Lower-bound - Us	D pg/m3 sing ITE Fa	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	720 2200		2.2 2.2				
OCDF OCDD	27 480		2.0 J 2.1				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-00 1044 Y180 SMT 2.51 Y180 Y180 BLAN	05 5797005 913A_06 m3 827 913A_01 NK-64437			Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/29/201 08/31/201 08/31/201 09/13/201	8 17:06 8 10:15 8 18:00 8 06:05	
Native Isomers	Conc pg/m3	EMPC pg/m3	LRL pg/m3		Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	 110	0.66	0.54 0.54	IJ	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	81 74 87
2,3,7,8-TCDD Total TCDD	ND 280		0.60 0.60		1,2,3,7,8-PeCDP-1 1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C 3C -13C	2.00 2.00 2.00	87 75 76
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND  22	1.0	0.61 0.58 0.60	IJ	1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD OCDD-13C	-13C PF-13C PD-13C	2.00 2.00 2.00 4.00	63 69 66 71
1,2,3,7,8-PeCDD Total PeCDD	ND 110		1.1 1.1		Recovery Standards		2.00	NΙΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	0.56  0.49 ND 2.4	0.33  	0.29 0.23 0.25 0.24 0.25	ງ ຖ ງ	1,2,3,4-10D-130 1,2,3,7,8,9-HxCDD Surrogates 2,3,7,8-TCDD-37Cl 2,3,4,7,8-PeCDF-1	-13C 4 3C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	 1.4 0.87 64	0.84  	0.59 0.30 0.32 0.40	n 1 1	1,2,3,4,7,8-HxCDD 1,2,3,4,7,8-HxCDD 1,2,3,4,7,8,9-HpCD	-13C -13C 9F-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND	0.55 	0.15 0.29 0.22	IJ	Total 2,3,7,8-TCDI Equivalence: 1.1 p (Lower-bound - Usi	) g/m3 ing ITE Fa	ctors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	2.8 8.0		0.61 0.61	J J				
OCDF OCDD	ND	 1.7	0.39 0.33	IJ				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-0 1044 ZMS 2.22 U180 U180 BLA	06 45797006 0907A_15 3 m3 0508 0907A_01 NK-64437			Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/29/20 08/31/20 08/31/20 09/07/20	018 16:20 018 10:15 018 18:00 018 19:55	
Native Isomers	Conc pg/m3	EMPC pg/m3	LRL pg/m3		Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 16		0.74 0.74		2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	108 89
2,3,7,8-TCDD Total TCDD	ND 34		1.0 1.0		1,2,3,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C 3C -13C	2.00 2.00 2.00	121 R 109 88
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND 6.2	 	0.69 0.90 0.79	J	1,2,3,6,7,8-HXCDD 1,2,3,4,6,7,8-HpCE 1,2,3,4,6,7,8-HpCE OCDD-13C	)F-13C )F-13C )D-13C	2.00 2.00 2.00 4.00	80 75 77 88
1,2,3,7,8-PeCDD Total PeCDD	ND 13		0.98 0.98	J	Recovery Standards		2.00	NIA
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND 1.1	  	0.77 0.48 0.66 0.83 0.68	J	1,2,3,4-1CDD-13C 1,2,3,7,8,9-HxCDD Surrogates 2,3,7,8-TCDD-37Cl 2,3,4,7,8-PeCDF-1	-13C  4  3C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 9.9	  	1.4 1.1 0.94 1.2	J	1,2,3,4,7,8-HxCDD 1,2,3,4,7,8-HxCDD 1,2,3,4,7,8,9-HpCD	-13C -13C )F-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	0.65 ND 0.65	 	0.54 0.81 0.68	J	Total 2,3,7,8-TCDI Equivalence: 0.021 (Lower-bound - Us	D I pg/m3 ing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	2.6	1.1	0.60 0.60	ม ป				
OCDF OCDD	ND 3.0		0.87 1.2	BJ				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal

ND = Not Detected NA = Not Applicable

NC = Not Calculated

# **REPORT OF LABORATORY ANALYSIS**

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### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	02-0 1044 U180 ZMS 2.44 U180 U180 BLA	07 5797007 0907A_16 m3 0508 0907A_01 NK-64437		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/29/20 08/31/20 08/31/20 09/07/20	018 17:22 018 10:15 018 18:00 018 20:42	
Native Isomers	<b>Conc</b> pg/m3	EMPC pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 9.2		0.44 0.44	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00	91 78
2,3,7,8-TCDD Total TCDD	ND 11		0.86 0.86	1,2,3,7,6-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDI	13C 13C F-13C	2.00 2.00 2.00	92 73
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND 1.9	 	0.25 0.27 0.26 J	1,2,3,6,7,8-HxCDI 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	68 65 65 72
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.42 0.42	Recovery Standards	<b>`</b>	2.00	NΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND ND	  	0.41 0.35 0.40 0.50 0.41	1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-	) D-13C D-13C 13C 13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 1.7	  	0.64 0.65 0.50 0.60 J	1,2,3,4,7,8-HxCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpC	D-13C DF-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.58 0.66 0.62	Total 2,3,7,8-TCD Equivalence: 0.00 (Lower-bound - Us	D 16 pg/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.59 0.59				
OCDF OCDD	ND 1.6		0.78 1.0 BJ				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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## Method TO9 Blank Analysis Results

Lab Sample ID Filename Amount Extracted ICAL ID CCal Filename(s)	BLANK-64437 U180907A_04 2.22 m3 U180508 U180907A_01			Matrix XAD/PU Dilution NA Extracted 08/31/20 Analyzed 09/07/20 Injected By ZMS	F 018 18:00 018 11:13	
Native Isomers	Conc pg/m3	<b>EMPC</b> pg/m3	LRL pg/m3	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		1.3 1.3	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	91 77 106
2,3,7,8-TCDD Total TCDD	ND ND		1.9 1.9	1,2,3,7,8-PeCDD-13C 1,2,3,6,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C	2.00 2.00 2.00	100 100 101
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.46 0.47 0.47	1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDD-13C 0CDD-13C	2.00 2.00 2.00 4.00	71 70 65
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.58 0.58	Recovery Standards	2.00	NΛ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND  ND	0.65 0.72	0.41 0.40 0.43 JJ 0.52 JJ 0.44	1,2,3,7,8,9-HxCDD-13C Surrogates 2,3,7,8-TCDD-37Cl4 2,3,4,7,8-PeCDF-13C	2.00 2.00 2.00 2.00	104 105
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	 	0.64 0.61 0.52 0.59	1,2,3,4,7,8-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00	79 95 93
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.46 0.72 0.59	Total 2,3,7,8-TCDD Equivalence: 0.14 pg/m3 (Lower-bound - Using ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.95 0.95			
OCDF OCDD	ND 1.4		1.3 1.4 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

R = Recovery outside of target range

I = Interference P = PCDE Interference ND = Not Detected

NA = Not Applicable

NC = Not Calculated

# **REPORT OF LABORATORY ANALYSIS**

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#### Method TO9 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS U18 1.00 U18 U18 BLA	S-64438 30914A_02 D Sample 30508 30914A_01 ANK-64437		Matrix Dilution Extracted Analyzed Injected By	XAD/PUF NA 08/31/20 09/13/20 SMT	18 18:00 18 23:55	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-1	30	2.0 2.0 2.0	88 97 87
2,3,7,8-TCDD Total TCDD	0.20	0.23	115	1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C -13C -13C	2.0 2.0 2.0	102 69
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	0.94 1.1	94 109	1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD OCDD-13C	PF-13C D-13C	2.0 2.0 4.0	98 114 99
1,2,3,7,8-PeCDD Total PeCDD	1.0	1.1	105	Recovery Standards		2.0	NΛ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1 2 3 7 8 9-HxCDF	1.0 1.0 1.0	1.1 1.0 1.0 1 1	106 104 105 105	1,2,3,7,8,9-HxCDD Surrogates	-13C	2.0	NA NA
Total HxCDF	1.0	1.1	105	2,3,4,7,8-PeCDF-1 1,2,3,4,7,8-HxCDF	4 3C -13C	2.0 2.0 2.0	101 100
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.1 1.2 1.00	108 116 100	1,2,3,4,7,8-HxCDD 1,2,3,4,7,8,9-HpCD	-13C 9F-13C	2.0 2.0	106 108
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.3 1.3	129 130				
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.2	120				
OCDF OCDD	2.0 2.0	1.9 2.5	93 123				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

R = Outside the method specified target recovery range

NA = Not Applicable

Nn = Value obtained from additional analysis

# **REPORT OF LABORATORY ANALYSIS**

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#### Method TO9 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS U18 1.0 U18 U18 BL/	SD-64439 30914A_03 0 Sample 30508 30914A_01 ANK-64437		Matrix Dilution Extracted Analyzed Injected By	XAD/PU NA 08/31/20 09/14/20 SMT	IF 018 18:00 018 00:43	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.21	104	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-	; 13C	2.0 2.0 2.0	71 79 72
2,3,7,8-TCDD Total TCDD	0.20	0.23	113	1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDI 1,2,3,6,7,8-HxCDI	13C -13C	2.0 2.0 2.0	85 59 77
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	0.99 1.1	99 112	1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC 0CDD-13C	DF-13C DD-13C	2.0 2.0 4.0	77 89 79
1,2,3,7,8-PeCDD Total PeCDD	1.0	1.0	105	Recovery Standards	,	2.0	NΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDE	1.0 1.0 1.0 1.0	1.1 1.0 1.1 1.00	105 101 106 100	1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C	, D-13C	2.0 2.0 2.0	94 102
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.1 1.2 1.1	115 120 108	1,2,3,4,7,8-HxCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpC	-13C D-13C DF-13C	2.0 2.0 2.0 2.0	99 110 108
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.3 1.2	130 124				
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.2	122				
OCDF OCDD	2.0 2.0	1.9 2.4	94 122				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

R = Outside the method specified target recovery range

NA = Not Applicable

Nn = Value obtained from additional analysis

## **REPORT OF LABORATORY ANALYSIS**

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#### **Method TO9**

#### Spike Recovery Relative Percent Difference (RPD) Results

Client		EE&G Environmenta	al			
Spike 1 ID Spike 1 Fil	lename	LCS-64438 U180914A_02		Spike 2 ID Spike 2 Filenam	LCSD-64439 ne U180914A_03	3
Cor	npound		Spike 1 %REC	Spike %REC	2 %RPD	
2,3,	7,8-TCDF		100	104	3.9	
2,3,	7,8-TCDD		115	113	1.8	
1,2, <sup>-</sup> 2,3,-	3,7,8-PeCDF 4,7,8-PeCDF	-	94 109	99 112	5.2 2.7	
1,2,	3,7,8-PeCDD	)	105	105	0.0	
1,2, 1,2, 2,3, 1,2,	3,4,7,8-HxC[ 3,6,7,8-HxC[ 4,6,7,8-HxC[ 3,7,8,9-HxC[	DF DF DF DF	106 104 105 105	105 101 106 100	0.9 2.9 0.9 4.9	
1,2, 1,2, 1,2,	3,4,7,8-HxCE 3,6,7,8-HxCE 3,7,8,9-HxCE		108 116 100	115 120 108	6.3 3.4 7.7	
1,2, 1,2,	3,4,6,7,8-Hp0 3,4,7,8,9-Hp0	CDF CDF	129 130	130 124	0.8 4.7	
1,2,	3,4,6,7,8-Hp0	CDD	120	122	1.7	
OCI OCI	DF DD		93 123	94 122	1.1 0.8	

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

## **REPORT OF LABORATORY ANALYSIS**

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#### **Report Prepared for:**

Alex Mavrelis EE&G Environmental 5751 Miami Lakes Dr. Miami Lakes FL 33014

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

# Report Prepared Date:

September 18, 2018

Pace Analytical Services, LLC. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

#### **Report Information:**

Pace Project #: 10446080 Sample Receipt Date: 09/04/2018 Client Project #: 2018-4191 Client Sub PO #: 2018-4191.Debris.T10 State Cert #: E87605

#### **Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

#### This report has been reviewed by:

September 19, 2018 Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



#### **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



#### **DISCUSSION**

This report presents the results from the analyses performed on six of seven samples submitted by a representative of EE&G Environmental. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method TO9A. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The samples were received above the laboratory-recommended temperature range of 0-6 degrees Celsius. One sample, 03-002, was received broken.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The recoveries of the isotopically labeled PCDD/PCDF internal standards in the sample extracts ranged from 26-91%. Except for three low values, which were flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the target ranges for the method. Also, since the internal standards were added to the sample prior to the extraction step, the data were automatically corrected for recovery and accurate values were obtained.

Since the field samples did not include PUF cartridge components, surrogates were not present in the field sample extracts. One surrogate in the method blank was recovered above the target range and flagged "R".

Values were flagged "I" where incorrect isotope ratios were obtained or "P" where polychlorinated diphenyl ethers were present. Concentrations below the calibration range were flagged "J" and should be regarded as estimates. Concentrations above the calibration range were flagged "E" and should also be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that PCDDs and PCDFs were not detected.

Laboratory quality control PCDD/PCDF spike samples were also prepared with the sample batch using clean PUF cartridges that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 104-141% with relative percent differences of 0.0-8.1%. Three recovery values obtained for spiked native HxCDD isomers were above the 70-130% target range and may indicate high biases for these isomers in these determinations. Matrix spikes were not prepared with the sample batch.

# **REPORT OF LABORATORY ANALYSIS**

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### Minnesota Laboratory Certifications

 Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Minnesota - Pet	1240
Alabama	40770	Mississippi	MN00064
Alaska - DW	MN00064	Missouri - DW	10100
Alaska - UST	17-009	Montana	CERT0092
Arizona	AZ0014	Nebraska	NE-OS-18-06
Arkansas - DW	MN00064	Nevada	MN00064
Arkansas - WW	88-0680	New Hampshire	2081
CNMI Saipan	MP0003	New Jersey (NE	MN002
California	2929	New York	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Carolina -	27700
EPA Region 8+	via MN 027-053	North Carolina -	530
Florida (NELAP	E87605	North Dakota	R-036
Georgia	959	Ohio - DW	41244
Guam	17-001r	Ohio - VAP	CL101
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon - Primar	MN300001
Illinois	200011	Oregon - Secon	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
lowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky - DW	90062	South Dakota	NA
Kentucky - WW	90062	Tennessee	TN02818
Louisiana - DE	03086	Texas	T104704192
Louisiana - DW	MN00064	Utah (NELAP)	MN00064
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Massachusetts	M-MN064	West Virginia -	382
Michigan	9909	West Virginia -	9952C
Minnesota	027-053-137	Wisconsin	999407970
Minnesota - De	via MN 027-053	Wyoming - UST	2926.01

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# Appendix A

Sample Management



# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

WO#	: 10446080 
Document	×

10	Section A Required Client Information:	Section B Required Pro	oject Inf	ormation:					Sect	ion C	mation										F	°age;		l	of	1		٦
)44	company: EEtG Environ mental	Report To:	Ale	x Ma	vrelis				Atten	tion:	A	ex.	Mo		etis	, ,		1										
309	Address 5751 Miami Lakes Dr.	Сору То:							Com	bany N	lame:	<u>) V</u>	NA6					REG	JLATO	DRY A	GEN	CY	·		_			
õ	Miami Lakes, rl 33014	<u> </u>							Addre	ess:	(	CA	M	<i></i>	• •			۲ <b>۳</b> ۱	NPDES	Г	GR	DUND	WATE	R	DRII	NKING	WATER	
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	Required Client Information MATRIX /		COMP)		COLL	ECTED					Pres	erva	tives		N X													
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Ч,	Sent via redex St. Maarten	<u> </u>	2yCl	14	(EE+(	3)	8/31/1	8	1:0	Spr	h7	Q,	M	11	, P¥	VE		41	118	90	0	23	51	V	$\overline{\Lambda}$	۱. ۱		-
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and the second se	Do	cument Name:		Document Revised: 02May2018			
Pace Analytical"	Sample Cond	lition Upon Rec	eipt Form	Page 1 of 2			
	F-N	1N-L-213-rev.23	3	Pace Minnesota Quality Office			
Sample Condition Client Name:   Upon Receipt EF+G   Courier: Fed Ex	<u> </u>	Projec 201a) Client	et #: W PM: CL 7	O#: 10446080 SCU Due Date: 09/18/18			
Commercial Pace Speer Tracking Number: SI34283796	Dee Other:_ 0			LNT: EE&G Enviro			
Custody Seal on Cooler/Box Present?	No s	ieals Intact?	Yes N	Optional: Proj. Due Date: Proj. Name:			
Packing Material:	e Bags 🗌 None	e 🛛 🖉 Other:_	Nausyr	Temp Blank? Yes No			
Thermometer G87A9170600254 Used: G87A9155100842	Туре	of Ice:	/et 🛄Blue	None Dry Melted			
Cooler Temp Read (°C): <u>13.1</u> Temp should be above freezing to 6°C Correcti USDA Regulated Soil ( N/A, water sample) Did samples originate in a quarantine zone within the NC NM NY OK OB SC TN TX or VA (check maps):	mp Corrected (°C): on Factor:	R, CA, FL, GA, ID	B ate and Initials , LA. MS, D	iological Tissue Frozen? Yes No A of Person Examining Contents: A of A o			
If Yes to either question, fill or	ut a Regulated Soil	Checklist (F-M	N-Q-338) and ii	nclude with SCUR/COC paperwork.			
				COMMENTS:			
Chain of Custody Present?	Yes	No	1.				
Chain of Custody Filled Out?	Yes	ΠNo	2.	······································			
Chain of Custody Relinquished?	Yes	No	3.				
Sampler Name and/or Signature on COC?	Yes		4.				
Samples Arrived within Hold Time?	Yes	No	5.				
Short Hold Time Analysis (<72 hr)?	Yes	No	6.				
Rush Turn Around Time Requested?	Yes	No	7.				
Sufficient Volume?	Yes	No	8.				
Correct Containers Used?	res	No	9.				
-Pace Containers Used?							
Containers Intact?	 ∏Yes		10. Samo	the AT-mat available have			
Filtered Volume Received for Dissolved Tests?	 □ Yes		11. Note i	f sediment is visible in the dissolved container			
Is sufficient information available to reconcile the sam	uples to Kes		12				
the COC? Matrix:			12.				
All containers needing acid/base preservation have be checked? All containers needing preservation are found to be in complicate with 504 recommendation?	een 🗌 Yes		13. Sample #	HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH Positive for Res. Chlorine? Y N			
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH>12 Cyan Exceptions: VOA, Coliform, TOC/DOC Oil and Grease,	iide) 🗌 Yes		Initial when	Lot # of added			
DRO/8015 (water) and Dioxin/PFAS	Yes		completed:	preservative;			
Headspace in VOA Vials ( >6mm)?	Yes		<u>14.</u>				
Trip Blank Present?	∐Yes		15.				
Pace Trip Blank Lot # (if purchased)	Lives		*				
CLIENT NOTIFICATION/RESOLUTION				Field Data Required?			
Commonts (Posolution)	·····		Date/Time				
Previously waived ter	np.						
		2/		······································			
Project Manager Review: Note: Whenever there is a discrepancy affecting North Ca	volina compliance sar	mpies, a)copy of t	D his form will be s	ate: 09/04/18 ent to the North Carolina DEHNR Certification Office ( i.e. out of			

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

•



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# **Reporting Flags**

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interferencepresent | =
- Estimated value J =
- Suppressive interference, analyte may be biased low L =
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X =%DExceeds limits
- Y = Calculated using average of daily RFs
- \* SeeDiscussion =

# **REPORT OF LABORATORY ANALYSIS**

Report No....10446080

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Report No.....10446080\_TO9\_DFR

# Appendix B

Sample Analysis Summary



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#### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	03-0 1044 Y180 SMT 1.35 Y180 Y180 BLA	01 46080001 0913A_07 - m3 0827 0913A_01 NK-64463		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/30/20 09/04/20 09/05/20 09/13/20	018 14:15 018 09:50 018 15:10 018 06:52	
Native Isomers	Conc pg/m3	EMPC pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	42000	520 	3.5 P 3.5 E	2,3,7,8-TCDF-130 2,3,7,8-TCDD-130	120	2.00 2.00	79 74
2,3,7,8-TCDD Total TCDD	180 54000		3.2 3.2 E	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCD	-13C F-13C	2.00 2.00 2.00	85 68
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	200 300 6700	 	5.4 5.5 5.4	1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC 0CDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	65 65 39 R 66
1,2,3,7,8-PeCDD Total PeCDD	200 21000		3.5 3.5 E	Recovery Standards	~	2.00	ΝΑ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	82 75 90 10 1100	  	2.1 1.8 2.4 2.4 J 2.2	1,2,3,470DD-130 1,2,3,7,8,9-HxCDl Surrogates 2,3,7,8-TCDD-370 2,3,4,7,8-PeCDF-	D-13C Cl4 13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	76 130 100 8700	  	2.7 1.4 1.9 2.0	1,2,3,4,7,8-нхСD 1,2,3,4,7,8-HxCD 1,2,3,4,7,8,9-НрС	D-13C D-13C DF-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	64 ND 64	 	1.7 2.1 1.9	Total 2,3,7,8-TCE Equivalence: 550 (Lower-bound - U	DD pg/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	200 790		4.5 4.5				
OCDF OCDD	ND 54		4.4 2.1 J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

 $\mathsf{B} = \mathsf{Less}$  than 10 times higher than method blank level

R = Recovery outside of target range Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

## **REPORT OF LABORATORY ANALYSIS**

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#### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	03-0 1044 Y180 SMT 2.40 Y180 Y180 BLA	03 46080003 0913A_08 - 0 m3 0827 0913A_01 NK-64463		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/30/20 09/04/20 09/05/20 09/13/20	018 16:55 018 09:50 018 15:10 018 07:40		
Native Isomers	<b>Conc</b> pg/m3	EMPC pg/m3	<b>LRL</b> pg/m3	Internal Standards		ng's Added	Percent Recovery	
2,3,7,8-TCDF Total TCDF	33 1900		3.0 3.0	2,3,7,8-TCDF-130 2,3,7,8-TCDD-130		2.00 2.00	68 63	
2,3,7,8-TCDD Total TCDD	15 4400		1.3 1.3 E	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCD	1,2,3,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,6,7,8-HxCDF-13C		80 73 66	
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	15 23 580	 	1.5 J 2.1 1.8	1,2,3,6,7,8-HxCD 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	F-13C 2.00 F-13C 2.00 D-13C 2.00 4.00		
1,2,3,7,8-PeCDD Total PeCDD	24 2400		3.8 3.8	Recovery Standards	~	2.00	ΝΔ	
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	6.3 6.1 6.7 ND 58	  	0.86 J 0.89 J 0.97 J 0.71 0.86	1,2,3,7,8,9-HxCD Surrogates 2,3,7,8-TCDD-37( 2,3,4,7,8-PeCDF-	D-13C Cl4 13C	2.00 2.00 2.00 2.00	NA NA NC	
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	7.3 13 12 780	  	1.8 J 1.1 J 0.99 J 1.3	1,2,3,4,7,8-HxCD 1,2,3,4,7,8-HxCD 1,2,3,4,7,8,9-HpC	D-13C DF-13C DF-13C	2.00 2.00 2.00	NC NC	
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	5.0 ND 5.0	 	0.58 J 0.93 0.75 J	Total 2,3,7,8-TCI Equivalence: 48 p (Lower-bound - U	DD bg/m3 sing ITE F	actors)		
1,2,3,4,6,7,8-HpCDD Total HpCDD	17 87		2.8 J 2.8					
OCDF OCDD	ND	7.1	1.7 3.3 JJ					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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#### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	03-00 1044 Y180 SMT 1.28 Y180 Y180 BLAI	04 6080004 9918A_07 m3 0827 9918A_02 NK-64463		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/30/20 09/04/20 09/05/20 09/18/20	)18 14:14 )18 09:50 )18 15:10 )18 13:46	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	<b>LRL</b> pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	2500	39	1.3 P 1.3	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	) 12C	2.00 2.00	78 69
2,3,7,8-TCDD Total TCDD	15 3300		1.2 1.2	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF	13C 13C -13C	2.00 2.00 2.00	83 68
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	19 34 740	 	3.3 J 3.0 J 3.2	1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl 1,2,3,4,6,7,8-HpCl OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	60 61 26 R 53
1,2,3,7,8-PeCDD Total PeCDD	23 1300		4.0 J 4.0	Recovery Standards		2.00	ΝΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	14 13 13 ND 150	  	1.2 J 0.95 J 1.5 J 1.6 1.3	1,2,3,7,8,9-HxCDI Surrogates 2,3,7,8-TCDD-37C 2,3,4,7,8-PeCDF-	, D-13C 04 13C = 13C	2.00 2.00 2.00 2.00	NA NA NC NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	12 17 15 620	  	1.4 J 1.2 J 1.4 J 1.3	1,2,3,4,7,8-HxCDI 1,2,3,4,7,8-HxCDI 1,2,3,4,7,8,9-HpCl	D-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	19 ND 19	 	1.1 J 1.5 1.3 J	Total 2,3,7,8-TCD Equivalence: 58 p (Lower-bound - Us	D g/m3 sing ITE Fa	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	43 210		3.9 3.9				
OCDF OCDD	ND 43		3.7 3.8 J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

 $\mathsf{B} = \mathsf{Less}$  than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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#### Method TO9 Sample Analysis Results

**Client - EE&G Environmental** 

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	03-0 1044 Y186 SMT 2.40 Y186 Y186 BLA	05 46080005 0913A_10 - 0m3 0827 0913A_01 NK-64463		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/30/20 09/04/20 09/05/20 09/13/20	)18 17:05 )18 09:50 )18 15:10 )18 09:15	
Native Isomers	<b>Conc</b> pg/m3	EMPC pg/m3	<b>LRL</b> pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 0.97		0.63 0.63 J	2,3,7,8-TCDF-130 2,3,7,8-TCDD-130		2.00 2.00	80 74
2,3,7,8-TCDD Total TCDD	ND ND		0.80 0.80	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCD	13C 13C F-13C	2.00 2.00 2.00	86 72 67
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.88 0.72 0.80	1,2,3,6,7,8-HxCD 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	D-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	52 52 48 44
1,2,3,7,8-PeCDD Total PeCDD	ND ND		1.2 1.2	Recovery Standards		2.00	NIA
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND ND	  	0.44 0.42 0.40 0.46 0.43	Surrogates 2,3,7,8-PeCDF- 2,3,4,7,8-PeCDF-	D-13C Cl4 13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.83 0.70 0.75 0.76	1,2,3,4,7,8-HxCD 1,2,3,4,7,8-HxCD 1,2,3,4,7,8,9-HpC	D-13C D-13C DF-13C	2.00 2.00 2.00	NC NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.51 1.0 0.76	Total 2,3,7,8-TCE Equivalence: 0.00 (Lower-bound - U	DD ) pg/m3 sing ITE Fa	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		1.5 1.5				
OCDF OCDD	ND ND		1.2 1.2				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference P = PCDE Interference

S = Saturated signal

ND = Not Detected

NA = Not Applicable

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#### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	03-0 1044 Y184 SMT 2.28 Y184 Y184 Y184 BLA	06 46080006 0913A_11 - m3 0827 0913A_01 NK-64463		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/30/20 09/04/20 09/05/20 09/13/20	018 17:20 018 09:50 018 15:10 018 10:03	
Native Isomers	<b>Conc</b> pg/m3	<b>EMPC</b> pg/m3	LRL pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 14		1.3 1.3	2,3,7,8-TCDF-130 2,3,7,8-TCDD-130		2.00 2.00	81 70
2,3,7,8-TCDD Total TCDD	ND 19		1.9 1.9	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCD	-13C -13C F-13C	2.00 2.00 2.00	80 78 76
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	2.3 2.8 2.5	1,2,3,6,7,8-HxCD 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	64 65 62 63
1,2,3,7,8-PeCDD Total PeCDD	ND ND		2.7 2.7	Recovery Standards	~	2.00	NA
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND ND	  	1.8 1.8 2.0 2.1 1.9	1,2,3,7,8,9-HxCD Surrogates 2,3,7,8-TCDD-37( 2,3,4,7,8-PeCDF-	D-13C D-13C D4 13C 5 12C	2.00 2.00 2.00 2.00	NA NA NC NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 5.8	  	2.9 1.9 1.7 2.1 J	1,2,3,4,7,8-HxCD 1,2,3,4,7,8-HxCD 1,2,3,4,7,8,9-HpC	D-13C DF-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	3.1 ND 8.4	 	1.2 J 1.9 1.6 J	Total 2,3,7,8-TCE Equivalence: 0.33 (Lower-bound - U	DD 3 pg/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	12 24		1.8 J 1.8				
OCDF OCDD	9.3 160		3.7 J 5.6				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference

S = Saturated signal

ND = Not Detected NA = Not Applicable

NC = Not Calculated

#### **REPORT OF LABORATORY ANALYSIS**

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#### Method TO9 Sample Analysis Results

Client - EE&G Environmental

Client's Sample ID Lab Sample ID Filename Injected By Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	03-0 1044 Y180 SMT 2.35 Y180 Y180 BLA	07 16080007 0913A_12 m3 0827 0913A_01 NK-64463		Matrix Dilution Collected Received Extracted Analyzed	Filter NA 08/30/20 09/04/20 09/05/20 09/13/20	018 17:15 018 09:50 018 15:10 018 10:50	
Native Isomers	Conc pg/m3	<b>EMPC</b> pg/m3	<b>LRL</b> pg/m3	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 19		0.96 0.96	2,3,7,8-TCDF-130 2,3,7,8-TCDD-130		2.00 2.00	81 73
2,3,7,8-TCDD Total TCDD	ND 28		1.5 1.5	1,2,3,7,8-PeCDF- 1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCD	13C 13C F-13C	2.00 2.00 2.00	80 75 78
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND 2.0	 	1.4 1.5 1.4 J	1,2,3,6,7,8-HxCD 1,2,3,4,6,7,8-HpC 1,2,3,4,6,7,8-HpC OCDD-13C	DF-13C DF-13C DD-13C	2.00 2.00 2.00 4.00	64 68 64 66
1,2,3,7,8-PeCDD Total PeCDD	ND 10		1.7 1.7 J	Recovery Standards		2.00	ΝΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND ND	  	0.64 0.60 0.47 0.68 0.60	1,2,3,7,8,9-HxCD 1,2,3,7,8,9-HxCD Surrogates 2,3,7,8-TCDD-37( 2,3,4,7,8-PeCDF-	D-13C D-13C D4 13C	2.00 2.00 2.00 2.00	NA NA NC
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 7.8	  	1.4 1.3 1.1 1.3 J	1,2,3,4,7,8-HxCD 1,2,3,4,7,8-HxCD 1,2,3,4,7,8,9-HpC	D-13C DF-13C DF-13C	2.00 2.00 2.00	NC NC
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.56 0.65 0.60	Total 2,3,7,8-TCE Equivalence: 0.00 (Lower-bound - U	D 16 pg/m3 sing ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND 1.8		0.92 0.92 J				
OCDF OCDD	ND 1.6		1.1 1.1 J				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

B = Less than 10 times higher than method blank level

R = Recovery outside of target range

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

I = Interference

P = PCDE Interference S = Saturated signal

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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. . . .

Pace Analytical Services, LLC 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612- 607-6444

#### Method TO9 Blank Analysis Results

Lab Sample ID	BLANK-64463	Matrix	PUF
Filename	Y180913A_05	Dilution	NA
Amount Extracted	1.28 m3	Extracted	09/05/2018 15:10
ICAL ID	Y180827	Analyzed	09/13/2018 05:17
CCal Filename(s)	Y180913A_01	Injected By	SMT
CCal Filename(s)	Y180913A_01	Injected By	SMT

Native Isomers	<b>Conc</b> pg/m3	EMPC pg/m3	LRL pg/m3	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	 ND	2.2	1.7 J 1.7	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PcCDF-13C	2.00 2.00 2.00	81 72 86
2,3,7,8-TCDD Total TCDD	ND ND		2.2 2.2	1,2,3,7,8-PeCDD-13C 1,2,3,6,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C	2.00 2.00 2.00	76 87 71
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	3.0 1.7 2.4	1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	70 68 68
1,2,3,7,8-PeCDD Total PeCDD	ND ND		3.3 3.3	Recovery Standards 1 2 3 4-TCDD-13C	2 00	NA
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND ND ND	  	1.2 1.0 1.0 1.1 1.1	1,2,3,7,8,9-HxCDD-13C Surrogates 2,3,7,8-TCDD-37Cl4 2,3,4,7,8-PeCDF-13C	2.00 2.00 2.00	108 106
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	1.5 1.1 1.2 1.3	1,2,3,4,7,8-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00	110 125 R 117
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.86 1.6 1.2	Total 2,3,7,8-TCDD Equivalence: 0.22 pg/m3 (Lower-bound - Using ITE F	actors)	
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		2.3 2.3			
OCDF OCDD	ND ND		3.3 3.7			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

LRL = Lower Reporting Limit

J = Estimated value

Nn = Value obtained from additional analysis

A = Detection Limit based on signal to noise

R = Recovery outside of target range

I = Interference P = PCDE Interference ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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#### Method TO9 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LC: Y18 1.0 Y18 Y18 BL/	S-64464 30913A_02 0 Sample 30827 30913A_01 ANK-64463		Matrix Dilution Extracted Analyzed Injected By	PUF NA 09/05/20 09/13/20 SMT	018 15:10 018 02:54	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.23	115	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-1	30	2.0 2.0 2.0	78 72 86
2,3,7,8-TCDD Total TCDD	0.20	0.21	107	1,2,3,7,8-PeCDD-1 1,2,3,6,7,8-HxCDF	3C -13C -13C	2.0 2.0 2.0	79 83 71
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	1.1 1.2	107 120	1,2,3,4,6,7,8-HpCE 1,2,3,4,6,7,8-HpCE OCDD-13C	DF-13C D-13C	2.0 2.0 4.0	66 66 65
1,2,3,7,8-PeCDD Total PeCDD	1.0	1.1	107	Recovery Standards		2.0	NΛ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.0 1.0 1.0	1.1 1.0 1.1	112 104 108	1,2,3,7,8,9-HxCDD	-13C	2.0	NA NA
Total HxCDF	1.0	1.0	104	2,3,7,8-TCDD-37Cl 2,3,4,7,8-PeCDF-1 1,2,3,4,7,8-HxCDF	4 3C -13C	2.0 2.0 2.0	99 98 103
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.3 1.3 1.2	132 R 130 116	1,2,3,4,7,8-HxCDD 1,2,3,4,7,8,9-HpCE	-13C )F-13C	2.0 2.0	108 104
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.1 1.2	112 116				
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.1	107				
OCDF OCDD	2.0 2.0	2.2 2.2	112 110				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

R = Outside the method specified target recovery range

NA = Not Applicable

Nn = Value obtained from additional analysis

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10446080\_TO9\_DFR



> Tel: 612-607-1700 Fax: 612- 607-6444

#### Method TO9 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS Y18 1.0 Y18 Y18 BL/	SD-64465 30913A_03 0 Sample 30827 30913A_01 ANK-64463		Matrix Dilution Extracted Analyzed Injected By	PUF NA 09/05/20 09/13/20 SMT	018 15:10 018 03:42	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.24	120	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-2	130	2.0 2.0 2.0	80 72 87
2,3,7,8-TCDD Total TCDD	0.20	0.23	113	1,2,3,7,8-PeCDD- 1,2,3,6,7,8-HxCDF 1,2,3,6,7,8-HxCDF	13C -13C	2.0 2.0 2.0	78 85 71
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	1.1 1.2	109 120	1,2,3,4,6,7,8-HpCI 1,2,3,4,6,7,8-HpCI 0CDD-13C	DF-13C DD-13C	2.0 2.0 4.0	68 68 70
1,2,3,7,8-PeCDD Total PeCDD	1.0	1.1	112	Recovery Standards		2.0	NΔ
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.0 1.0 1.0	1.2 1.1 1.1	115 108 114 111	1,2,3,7,8,9-HxCDE	D-13C	2.0	NA NA
Total HxCDF	1.0	1.1		2,3,4,7,8-PeCDF-7 1,2,3,4,7,8-HxCDF	13C -13C	2.0 2.0 2.0	98 97 100
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.4 1.3 1.2	141 R 134 R 124	1,2,3,4,7,8-HxCDL 1,2,3,4,7,8,9-HpCl	D-13C DF-13C	2.0 2.0	111 108
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.2 1.2	116 123				
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.2	116				
OCDF OCDD	2.0 2.0	2.4 2.2	119 111				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

R = Outside the method specified target recovery range

NA = Not Applicable

Nn = Value obtained from additional analysis

## **REPORT OF LABORATORY ANALYSIS**

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Report No.....10446080\_TO9\_DFR



Client

Pace Analytical Services, LLC 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

#### Method TO9

#### Spike Recovery Relative Percent Difference (RPD) Results

**EE&G** Environmental Spike 1 ID LCS-64464 Spike 2 ID LCSD-64465 Spike 1 Filename Y180913A 02 Spike 2 Filename Y180913A 03 Spike 1 Spike 2 %REC %RPD Compound %REC 2,3,7,8-TCDF 115 120 4.3 2,3,7,8-TCDD 107 113 5.5 1,2,3,7,8-PeCDF 107 109 1.9 2,3,4,7,8-PeCDF 120 120 0.0 1,2,3,7,8-PeCDD 107 112 4.6 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 112 115 2.6 3.8 104 108 2,3,4,6,7,8-HxCDF 5.4 108 114 6.5 1,2,3,7,8,9-HxCDF 104 111 1,2,3,4,7,8-HxCDD 132 141 6.6 1,2,3,6,7,8-HxCDD 130 134 3.0 1,2,3,7,8,9-HxCDD 116 124 6.7 112 116 3.5 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF 5.9 116 123 107 8.1 1,2,3,4,6,7,8-HpCDD 116 OCDF 112 119 6.1 OCDD 110 111 0.9

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

#### **REPORT OF LABORATORY ANALYSIS**

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#### ATTACHMENT I

#### LABORATORY RESULTS, POLYCHLORINATED BIPHENYLS (PCBS)



#### Attn: Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014

Phone: (305) 374-8300 Fax: (305) 374-8301

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 9/6/2018. The results are tabulated on the attached data pages for the following client designated project:

#### SXM Landfill

The reference number for these samples is EMSL Order #011807122. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry Laboratory Director



AIHA-LAP, LLC-IHLAP Lab # 100194 NELAP Certification: NJ 03036; NY 10872

A filter was not received with the florisil tube for sample -0006. The reporting limits for sample -0013 are elevated for one or more Aroclors due to matrix interference.

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements established by the AIHA, unless specifically indicated. The final results are not field blank corrected. The laboratory is not responsible for final results calculated using air volumes that have been provided by non-laboratory personnel. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

9/13/2018

•	EMSL	EMSL Analytical, 200 Route 130 North, Cinnami Phone/Fax: (856) 303-2500 / http://www.EMSL.com	Inc. nson, NJ 08077 (856) 858-4571 <u>EnvChemistry2@emsl.com</u>			EMSL Order: CustomerID: CustomerPO: ProjectID:	011807122 EEG50 2018-4191(T10)
Attn:	Alex Mav EE & G 5751 Mia Miami La	rrelis mi Lakes Drive East Ikes, FL 33014		Phone: Fax: Received:	(305) 374-8300 (305) 374-8301 09/06/18 9:30 AN	1	
Proje	ct: SXM Lan	dfill					
			Analytical I	Results			
Client	Sample Desc	cription 01-001		Collected:	8/28/2018	Lab ID:	011807122-0001

	D1-Site 001						
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA							
5503 Modified	Aroclor-1016	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1221	ND	0.00061 mg/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1232	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1242	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1248	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1254	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1260	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1262	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1268	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
Client Sample Desc	cription 01-002 D1-Site 002		<b>Collected:</b> 8/28/2	018 La	ab ID:	011807122	-0002
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA							
5503 Modified	Aroclor-1016	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1221	ND	0.00061 mg/m³	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1232	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1242	ND	0.00061 mg/m³	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1248	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1254	ND	0.00061 mg/m³	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1260	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1262	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1268	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
Client Sample Desc	<b>bription</b> 01-003 D1-Site 003		<b>Collected:</b> 8/28/2	018 <b>L</b> a	ab ID:	011807122	-0003
Mathad	Parameter	Result	RI Units	Prep Date	Analyst	Analysis Date	Analyst

GC-SVOA							
5503 Modified	Aroclor-1016	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1221	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1232	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1242	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1248	ND	0.00061 mg/m <sup>3</sup>	9/6/2018	AC	9/6/2018	EH

Attn: Alex May EE & G 5751 Mia Miami La	EMSL Analytical, Inc 200 Route 130 North, Cinnaminson, Phone/Fax: (856) 303-2500 / (856) http://www.EMSL.com vrelis ami Lakes Drive East akes, FL 33014	NJ 08077 858-4571 <u>EnvChemistry2@emsl.com</u> F	Phone: (3 Fax: (3 Received: 09	05) 374-8300 05) 374-8301 0/06/18 9:30 AM	EMSL C Custome Custome ProjectII	order: erID: erPO: D:	01180712 EEG50 2018-419	22 1(T10)
Project: SXM Lar	ndfill	Americal	<b>D</b>					)
Client Sample Des	cription 01-003	Analytical I	Collected:	8/28/2018	Lah	יחע	011807122	-0003
Chem Sample Des	D1-Site 003		Conected.	0/20/2010	Lau	D.	011007122	-0003
Method	Parameter	Result	RL Units	Pro Da	ep te A	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1254	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1260	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1262	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1268	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
Client Sample Des	<i>cription</i> 01-004 D1-Site 004		Collected:	8/28/2018	Lab	ID:	011807122	-0004
Method	Parameter	Result	RL Units	Pro Da	ep te A	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1221	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1232	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1242	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1248	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1254	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1260	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1262	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1268	ND	0.00060 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/12/2018	EH
Client Sample Des	cription 01-005 D1-Site 005		Collected:	8/28/2018	Lab	ID:	011807122	-0005
Method	Parameter	Result	RL Units	Pro Da	ep te A	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1221	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1232	ND	0.00061 mg/m	<sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1242	ND	0.00061 mg/m	<sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1248	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1254	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1260	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1262	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH
5503 Modified	Aroclor-1268	ND	0.00061 mg/m	1 <sup>3</sup> 9/6	/2018	AC	9/6/2018	EH

•		EMSL Analytical, Ir 200 Route 130 North, Cinnamins Phone/Fax: (856) 303-2500 / (8 http://www.EMSL.com	<b>IC.</b> on, NJ 08077 56) 858-4571 <u>EnvChemistry2@emsl.com</u>	2		EMSL Order: CustomerID: CustomerPO: ProjectID:	011807122 EEG50 2018-4191(T10)
Attn:	Alex Mavre EE & G 5751 Miami Miami Lake	lis Lakes Drive East s, FL 33014		Phone: Fax: Received:	(305) 374-8300 (305) 374-8301 09/06/18 9:30 AN	Λ	
_			Analytical	Results			
Client	Sample Descrip	<i>tion</i> 02-001 D2-001		Collected:	8/28/2018	Lab ID:	011807122-0006

	D2-001						
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA							
5503 Modified	Aroclor-1016	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00056 mg/m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00056 mg/m <sup>3</sup>	9/6/2018	AC	9/7/2018	EH
Client Sample Descri	<i>ption</i> 02-002 D2-002		<b>Collected:</b> 8/28/20	018 <i>La</i>	ab ID:	011807122	-0007
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA							
5503 Modified	Aroclor-1016	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Anaplan 4004	ND				0/12/2010	FH
	AFOCIOF-1221	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2010	
5503 Modified	Aroclor-1232	ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018	AC AC	9/12/2018 9/12/2018	EH
5503 Modified 5503 Modified	Aroclor-1221 Aroclor-1232 Aroclor-1242	ND ND ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018 9/6/2018	AC AC AC	9/12/2018 9/12/2018 9/12/2018	EH EH
5503 Modified 5503 Modified 5503 Modified	Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	ND ND ND ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018 9/6/2018 9/6/2018	AC AC AC AC	9/12/2018 9/12/2018 9/12/2018 9/12/2018	EH EH EH
5503 Modified 5503 Modified 5503 Modified 5503 Modified	Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254	ND ND ND ND ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018	AC AC AC AC AC	9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018	EH EH EH EH
5503 Modified 5503 Modified 5503 Modified 5503 Modified 5503 Modified	Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	ND ND ND ND ND ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018	AC AC AC AC AC AC	9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018	EH EH EH EH EH
5503 Modified 5503 Modified 5503 Modified 5503 Modified 5503 Modified 5503 Modified	Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260 Aroclor-1262	ND ND ND ND ND ND ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018	AC AC AC AC AC AC AC	9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018	EH EH EH EH EH EH
5503 Modified 5503 Modified 5503 Modified 5503 Modified 5503 Modified 5503 Modified 5503 Modified	Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260 Aroclor-1262 Aroclor-1268	ND ND ND ND ND ND ND ND ND	0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup> 0.00057 mg/m <sup>3</sup>	9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018 9/6/2018	AC AC AC AC AC AC AC AC	9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018 9/12/2018	EH EH EH EH EH EH EH

Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA							
5503 Modified	Aroclor-1016	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1221	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1232	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1242	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1248	ND	0.00057 mg/m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH

EMSL	EMSL Analytical, Inc 200 Route 130 North, Cinnaminson, Phone/Fax: (856) 303-2500 / (856) http://www.EMSL.com	• NJ 08077 858-4571 <u>EnvChemistry2@emsl.com</u>			EMSL Custo Custo Projec	Order: omerID: omerPO: ctID:	01180712 EEG50 2018-419	22 1(T10)
Attn: Alex Mavi EE & G 5751 Miar Miami Lal Project: SXM Land	relis ni Lakes Drive East kes, FL 33014 <sup>Ifill</sup>	F	Phone: Fax: Received:	(305) 374-830( (305) 374-830 <sup>-</sup> 09/06/18 9:30	)           			
		Analytical I	Results					
Client Sample Desci	<i>iption</i> 02-003 DS-003		Collected:	8/28/2018	L	.ab ID:	011807122	-0008
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1254	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1260	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1262	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1268	ND	0.00057 mg	′m³	9/6/2018	AC	9/12/2018	EH
Client Sample Desci	<i>iption</i> 02-004 D2-Site 004		Collected:	8/28/2018	L	.ab ID:	011807122	-0009
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1221	ND	0.00057 mg	′m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1232	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1242	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1248	ND	0.00057 mg	/m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1254	ND	0.00057 mg	′m³	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1260	ND	0.00057 mg	<sup>/</sup> m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1262	ND	0.00057 mg	<sup>/</sup> m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
5503 Modified	Aroclor-1268	ND	0.00057 mg	<sup>/</sup> m <sup>3</sup>	9/6/2018	AC	9/12/2018	EH
Client Sample Desci	<i>iption</i> 02-005 D2-Site 005		Collected:	8/28/2018	L	.ab ID:	011807122	-0010
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00057 mg	/m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00057 mg	′m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00057 mg	′m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00057 mg	/m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00057 mg	/m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00057 mg	/m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00057 mg	/m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00057 mg	′m³	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00057 mg	′m³	9/6/2018	AC	9/7/2018	EH

	EMSL	EMSL Analytical, Inc 200 Route 130 North, Cinnaminso Phone/Fax: (856) 303-2500 / (85 http://www.EMSL.com	C. n, NJ 08077 6) 858-4571 <u>EnvChemistry2@emsl.com</u>			EMSL Order: CustomerID: CustomerPO: ProjectID:	011807122 EEG50 2018-4191(T10)
Attn:	Alex Mavr EE & G 5751 Miar Miami Lal	relis ni Lakes Drive East kes, FL 33014	Pho Fax: Rece	ne: eived:	(305) 374-8300 (305) 374-8301 09/06/18 9:30 AN	Λ	
Proje	ct: SXM Land	Ifill					

		Analytical R	esults					
Client Sample Description	02-006 D2-Site 006		Collected:	8/28/2018	L	ab ID:	011807122	2-0011
Method I	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00060 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
Client Sample Description	02-007 D2-Site 007		Collected:	8/28/2018	L	ab ID:	011807122	2-0012
Method I	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00062 mg/m <sup>3</sup>	3	9/6/2018	AC	9/7/2018	EH
Client Sample Description	03-001 D3-Site 001		Collected:	8/28/2018	L	ab ID:	011807122	2-0013
Method I	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND D	0.0028 mg/m <sup>3</sup>	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1221	ND D	0.0028 mg/m <sup>3</sup>	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1232	ND D	0.0028 mg/m <sup>3</sup>	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1242	ND D	0.0028 mg/m <sup>3</sup>	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1248	ND D	0.0028 mg/m <sup>3</sup>	3	9/6/2018	SM	9/12/2018	EH

Attn: Alex May EE & G 5751 Mia Miami La	EMSL Analytical, Inc. 200 Route 130 North, Cinnaminson, N Phone/Fax: (856) 303-2500 / (856) 8 http://www.EMSL.com vrelis ami Lakes Drive East akes, FL 33014	I <b>J 08077</b> 58-4571 <u>EnvChemistry2@emsl.com</u> P F R	Phone: (3 'ax: (3 Received: 09	05) 374-8300 05) 374-8301 /06/18 9:30 AM	EMSL Custor Custor Projec	Order: merID: merPO: tID:	01180712 EEG50 2018-419	22 1(T10)
Project: SXM Lar	ndfill							)
		Analytical F	Results					
Client Sample Des	<i>cription</i> 03-001 D3-Site 001		Collected:	8/28/2018	La	ab ID:	011807122	-0013
Method	Parameter	Result	RL Units	Pr Da	ep te	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1254	ND D	0.0028 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1260	ND D	0.0028 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1262	ND D	0.0028 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1268	ND D	0.0028 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/12/2018	EH
Client Sample Des	cription 03-002 D3-Site 002		Collected:	8/28/2018	La	ab ID:	011807122	-0014
Method	Parameter	Result	RL Units	Pr Da	ep te	Analyst	Analysis Date	Analyst
GC-SVOA								
EE02 Modified	Arcolor 1016	ND	0.00056.mg/m	3 Q/A	/2018	SM	0/7/2018	FH
5503 Modified	Aroclor-1221	ND	0.00056 mg/m	3 Q/F	/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00056 mg/m	3 9/F	/2018	SM	9/7/2018	FH
5503 Modified	Aroclor-1242	ND	0.00056 mg/m	3 9/6	/2018	SM	9/7/2018	FH
5503 Modified	Aroclor-1248	ND	0.00056 mg/m	<sup>3</sup> 9/6	/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00056 mg/m	<sup>3</sup> 9/6	/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00056 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00056 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00056 mg/m	<sup>3</sup> 9/6	/2018	SM	9/7/2018	EH
Client Sample Des	cription 03-003 D3-Site 003		Collected:	8/28/2018	Li	ab ID:	011807122	-0015
Method	Parameter	Result	RL Units	Pr Da	ep te	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00055 mg/m	<sup>3</sup> 9/6	/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00055 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00055 mg/m	<sup>3</sup> 9/6	/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00055 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00055 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00055 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00055 mg/m	<sup>3</sup> 9/6	6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00055 mg/m	з 9/6	/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00055 mg/m	<sup>3</sup> 9/6	/2018	SM	9/7/2018	EH

•		EMSL Analytical, Inc 200 Route 130 North, Cinnaminson Phone/Fax: (856) 303-2500 / (856) http://www.EMSL.com	C. n, NJ 08077 6) 858-4571 <u>EnvChemistry2@emsl.com</u>			EMSL Order: CustomerID: CustomerPO: ProjectID:	011807122 EEG50 2018-4191(T10)
Attn:	Alex Mavr EE & G 5751 Miar Miami Lal	elis ni Lakes Drive East (es. El. 33014	Ph Fa Re	one: x: ceived:	(305) 374-8300 (305) 374-8301 09/06/18 9:30 AM	Λ	
Proje	ct: SXM Land	fill					

		Analytical R	esults					
Client Sample Description	03-004 D3-Site 004		Collected:	8/28/2018	L	ab ID:	011807122	-0016
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1221	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1232	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1242	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1248	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1254	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1260	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1262	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
5503 Modified	Aroclor-1268	ND	0.00059 mg/m	3	9/6/2018	SM	9/12/2018	EH
Client Sample Description	03-005 D3-Site 005		Collected:	8/28/2018	L	ab ID:	011807122	-0017
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00060 mg/m	3	9/6/2018	SM	9/7/2018	EH
Client Sample Description	03-006 D3-Site 006		Collected:	8/28/2018	L	ab ID:	011807122	-0018
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00061 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00061 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00061 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00061 mg/m	3	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00061 mg/m	3	9/6/2018	SM	9/7/2018	EH

EMSL	EMSL Analytical, II 200 Route 130 North, Cinnamins Phone/Fax: (856) 303-2500 / (a http://www.EMSL.com	<b>1C.</b> son, NJ 08077 356) 858-4571 <u>EnvChemistry2@emsl.co</u>	<u>n</u>		EMSL Custo Custo Projec	. Order: merID: merPO: ctID:	0118071 EEG50 2018-419	22 91(T10)
Attn: Alex Mavr EE & G 5751 Mian Miami Lak	elis ni Lakes Drive East æs, FL 33014		Phone: ( Fax: ( Received: (	305) 374-830 305) 374-830 )9/06/18 9:30	0 1 AM			
Project: SXM Land	fill							)
Oliont Comple Decem		Analytical	Results	0/20/2040		-1 /D-	044007400	0010
Client Sample Descri	D3-Site 006		Collected:	8/28/2018	L	ad ID:	011807122	2-0018
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1254	ND	0.00061 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00061 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00061 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1268	ND	0.00061 mg/	m³	9/6/2018	SM	9/7/2018	EH
Client Sample Descri	<i>ption</i> 03-007 D3-Site 007		Collected:	8/28/2018	L	ab ID:	011807122	2-0019
Method	Parameter	Result	RL Units		Prep Date	Analyst	Analysis Date	Analyst
GC-SVOA								
5503 Modified	Aroclor-1016	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1221	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1232	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1242	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1248	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1254	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1260	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH
5503 Modified	Aroclor-1262	ND	0.00064 mg/	m³	9/6/2018	SM	9/7/2018	EH

ND

0.00064 mg/m<sup>3</sup>

9/6/2018

SM

9/7/2018

EH

#### **Definitions:**

5503 Modified

ND - indicates that the analyte was not detected at the reporting limit RL - Reporting Limit (Analytical) D - Dilution

Aroclor-1268

#### ATTACHMENT J

#### LABORATORY RESULTS, HEAVY METALS



#### Attn: Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014

Phone: (305) 374-8300 Fax: (305) 374-8301

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 9/6/2018. The results are tabulated on the attached data pages for the following client designated project:

#### SXM Landfill

The reference number for these samples is EMSL Order #011807125. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry Laboratory Director



AIHA-LAP, LLC-IHLAP Lab # 100194 NELAP Certification: NJ 03036; NY 10872

The filters received were PVC which does not completely dissolve during digestion. The results may be biased low.

The samples associated with this report were received in good condition unless otherwise noted. This report relates only to those items tested as received by the laboratory. The QC data associated with the sample results meet the recovery and precision requirements unless specifically indicated. The final results are not blank corrected unless specifically indicated. The laboratory is not responsible for final results calculated using air volumes that have been provided by non-laboratory personnel. This report may not be reproduced except in full and without written approval by EMSL Analytical, Inc.

9/12/2018

EMSL	EMSL Analytical, Inc 200 Route 130 North, Cinnaminson Phone/Fax: (856) 303-2500 / (85 http://www.EMSL.com	C. n, NJ 08077 6) 858-4571 <u>EnvChemistry2@emsl.co</u>	<u>m</u>		EMSL Custo Custo Projec	. Order: merID: merPO: ctID:	0118071 EEG50 2018-41	25 91T010
Attn: Alex Mav EE & G 5751 Mia Miami La Project: SXM Lan	rrelis mi Lakes Drive East kes, FL 33014 dfill		Phone: ( Fax: ( Received: (	305) 374-8300 305) 374-8301 )9/06/18 9:30 A	Μ			
		Analytica	Results					
Client Sample Desc	r <b>iption</b> 01-001 D1-Site 001		Collected:	8/28/2018	L	ab ID:	01180712	5-0001
Method	Parameter	Result	RL Units	P D	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.000077	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00034 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.00068 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000034 mg/	m³ 9.	/7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000034 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
Client Sample Desc	ription 01-002 D1-Site 002		Collected:	8/28/2018	L	ab ID:	01180712	5-0002
Method	Parameter	Result	RL Units	P D	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.00016	0.000034 mg/	m <sup>3</sup> 9,	7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00034 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.00068 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Lead	0.000088	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000034 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
Client Sample Desc	cription 01-003 D1-Site 003		Collected:	8/28/2018	L	ab ID:	01180712	5-0003
Method	Parameter	Result	RL Units	P D	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.00018	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00034 mg/	m³ 9.	/7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	0.00076	0.00068 mg/	m³ 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Lead	0.000047	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00034 mg/	m <sup>3</sup> 9,	/7/2018	KB	9/7/2018	JW

EMSL	EMSL Analytical, Ir 200 Route 130 North, Cinnamins Phone/Fax: (856) 303-2500 / (8 http://www.EMSL.com	<b>1C.</b> on, NJ 08077 56) 858-4571 <u>EnvChemistry2@emsl.cor</u>	<u>n</u>	EMS Cus Cus Proj	SL Order: tomerID: tomerPO: ectID:	0118071 EEG50 2018-41	91T010
Attn: Alex Ma EE & G 5751 Mia Miami L Project: SXM La	vrelis ami Lakes Drive East akes, FL 33014 ndfill		Phone: (30 Fax: (30 Received: 09/	95) 374-8300 95) 374-8301 96/18 9:30 AM			
		Analytical	Results				
Client Sample Des	<b>cription</b> 01-004 D1-Site 004		Collected:	8/28/2018	Lab ID:	01180712	5-0004
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
METALS							
7300 Modified	Arsenic	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00034 mg/m <sup>3</sup>	9/7/2018	3 KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.00067 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00034 mg/m <sup>3</sup>	9/7/2018	3 KB	9/7/2018	JW
Client Sample Des	cription 01-005 D1-Site 005		Collected:	8/28/2018	Lab ID:	01180712	5-0005
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
METALS							
7300 Modified	Arsenic	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Chromium	0.00073	0.00067 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00034 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
Client Sample Des	<b>Cription</b> 02-001 D2-Site 001		Collected:	8/28/2018	Lab ID:	01180712	5-0006
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst
METALS							
7300 Modified	Arsenic	0.000073	0.000038 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00038 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000038 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.00076 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000038 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000038 mg/m <sup>3</sup>	9/7/2018	B KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00038 mg/m <sup>3</sup>	9/7/2018	3 KB	9/7/2018	JW

EMSL	EMSL Analytical, Inc 200 Route 130 North, Cinnaminsor Phone/Fax: (856) 303-2500 / (856) http://www.EMSL.com	(a) NJ 08077 (b) 858-4571 EnvChemistry2@emsl.com	<u>n</u>	EM Cus Cus Pro	SL Order: tomerID: tomerPO: jectID:	0118071 EEG50 2018-41	91T010	
Attn: Alex Mavi EE & G 5751 Mian Miami La	relis mi Lakes Drive East kes, FL 33014 ﷺ		Phone: (30 Fax: (30 Received: 09/	5) 374-8300 5) 374-8301 06/18 9:30 AM				
		Analytical	Results					
Client Sample Desc	ription 02-002 D2-Site 002		Collected:	8/28/2018	Lab ID:	01180712	5-0007	
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst	
METALS								
7300 Modified	Arsenic	0.00020	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Barium	ND	0.00033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Cadmium	ND	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Chromium	ND	0.00067 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Lead	ND	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Selenium	ND	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Silver	ND	0.00033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
Client Sample Desci	ription 02-003 D2-Site 003		Collected:	8/28/2018	Lab ID:	01180712	5-0008	
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst	
METALS								
7300 Modified	Arsenic	0.00016	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Barium	ND	0.00033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Cadmium	ND	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Chromium	0.00068	0.00066 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Lead	0.000038	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Selenium	ND	0.000033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Silver	ND	0.00033 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
Client Sample Desci	ription 02-004 D2-Site 004		Collected:	8/28/2018	Lab ID:	01180712	5-0009	
Method	Parameter	Result	RL Units	Prep Date	Analyst	Analysis Date	Analyst	
METALS								
7300 Modified	Arsenic	0.00050	0.000031 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Barium	ND	0.00031 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Cadmium	0.000071	0.000031 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Chromium	ND	0.00063 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Lead	0.0017	0.000031 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Selenium	0.000047	0.000031 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7300 Modified	Silver	ND	0.00031 mg/m <sup>3</sup>	9/7/201	8 KB	9/7/2018	JW	
7 See Medilled								
Attn: Alex Mav EE & G 5751 Mian Miami La	EMSL Analytical, Inc. 200 Route 130 North, Cinnaminson, Phone/Fax: (856) 303-2500 / (856) http://www.EMSL.com relis mi Lakes Drive East kes, FL 33014	NJ 08077 858-4571 EnvChemistry2@emsl.co	m Phone: Fax: Received:	(305) 374-8300 (305) 374-8301 09/06/18 9:30 A	EMSL Custo Custo Projec	Order: merID: merPO: ctID:	01180712 EEG50 2018-419	25 91T010
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		Analytical	Results					
Client Sample Desc	<i>ription</i> 02-005 D2-Site 005		Collected:	8/28/2018	L	ab ID:	011807125	5-0010
Method	Parameter	Result	RL Units	F D	Prep Date	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	ND	0.000031 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00031 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000031 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.00063 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000031 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000031 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00031 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
Client Sample Desc	<i>ription</i> 02-006 D2-Site 006 Pers.		Collected:	8/28/2018	L	ab ID:	011807125	5-0011
Method	Parameter	Result	RL Units	F L	rep Date	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	ND	0.000044 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00044 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000044 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.00088 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000044 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000044 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00044 mg	/m³ 9	/7/2018	KB	9/7/2018	JW
Client Sample Desc	<i>ription</i> 02-007 D2-Site 007 Pers.		Collected:	8/28/2018	L	ab ID:	011807125	5-0012
Method	Parameter	Result	RL Units	F L	Prep Date	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	ND	0.000038 mg	/m³ 9	/7/2018	KB	9/10/2018	JW
7300 Modified	Barium	ND	0.00038 mg	/m³ 9	/7/2018	KB	9/10/2018	JW
7300 Modified	Cadmium	ND	0.000038 mg	/m³ 9	/7/2018	KB	9/10/2018	JW
7300 Modified	Chromium	0.00083	0.00076 mg	/m³ 9	/7/2018	KB	9/10/2018	JW
7300 Modified	Lead	ND	0.000038 mg	/m³ 9	/7/2018	KB	9/10/2018	JW
7300 Modified	Selenium	ND	0.000038 mg	/m³ 9	/7/2018	KB	9/10/2018	JW
7300 Modified	Silver	ND	0.00038 mg	/m³ 9	/7/2018	KB	9/10/2018	JW

EMSL	EMSL Analytical, Inc 200 Route 130 North, Cinnaminson Phone/Fax: (856) 303-2500 / (856 http://www.EMSL.com	, NJ 08077 ) 858-4571 <u>EnvChemistry2@emsl.cc</u>	<u>m</u>		EMSL Custo Custo Projec	. Order: merID: merPO: ctID:	0118071: EEG50 2018-419	25 91T010
Attn: Alex May EE & G 5751 Mia Miami La Project: SXM Lar	vrelis ami Lakes Drive East akes, FL 33014 adfill		Phone: (3 Fax: (3 Received: 0	305) 374-8300 305) 374-8301 9/06/18 9:30 Al	м			
		Analytica	l Results					
Client Sample Des	<i>cription</i> 03-001 D3-Site 001		Collected:	8/28/2018	L	ab ID:	011807125	5-0013
Method	Parameter	Result	RL Units	Pi Di	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.00065	0.000053 mg/r	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00053 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000053 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.0011 mg/n	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Lead	0.0023	0.000053 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	0.00014	0.000053 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00053 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
Client Sample Des	cription 03-002 D3-Site 002		Collected:	8/28/2018	L	ab ID:	011807125	5-0014
Method	Parameter	Result	RL Units	Pi Di	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.00015	0.000032 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Barium	ND	0.00032 mg/r	n³ 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Cadmium	ND	0.000032 mg/r	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Chromium	0.00080	0.00065 mg/n	n³ 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Lead	ND	0.000032 mg/r	n³ 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Selenium	ND	0.000032 mg/r	n³ 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Silver	ND	0.00032 mg/r	n³ 9/	7/2018	KB	9/10/2018	JW
Client Sample Des	<i>cription</i> 03-003 D3-Site 003		Collected:	8/28/2018	L	ab ID:	011807125	5-0015
Method	Parameter	Result	RL Units	Pi Da	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.00018	0.000032 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00032 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000032 mg/r	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	0.00070	0.00065 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000032 mg/r	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	ND	0.000032 mg/r	n³ 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00032 mg/r	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW

EMSL Analytical, Inc. 200 Route 130 North, Cinnaminson, NJ 08077 Phone/Fax: (856) 303-2500 / (856) 858-4571 http://www.EMSL.com EnvChemistry2@emsl.com					EMSL Order: CustomerID: CustomerPO: ProjectID:		01180712 EEG50 2018-419	25 91T010
Attn: Alex May EE & G 5751 Mia Miami La Project: SXM Lan	vrelis Imi Lakes Drive East Ikes, FL 33014 Idfill		Phone: (3 Fax: (3 Received: 0	305) 374-8300 305) 374-8301 9/06/18 9:30 Al	M			
		Analytica	l Results					
Client Sample Desc	<b>Cription</b> 03-004 D3-Site 004		Collected:	8/28/2018	L	ab ID:	011807125	5-0016
Method	Parameter	Result	RL Units	Pi Di	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	0.0013	0.000056 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Barium	ND	0.00056 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Cadmium	ND	0.000056 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Chromium	ND	0.0011 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Lead	ND	0.000056 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Selenium	0.00014	0.000056 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
7300 Modified	Silver	ND	0.00056 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/7/2018	JW
Client Sample Desc	cription 03-005 D3-Site 005		Collected:	8/28/2018	L	ab ID:	011807125	5-0017
Method	Parameter	Result	RL Units	Pi Di	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	ND	0.000034 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Barium	ND	0.00034 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Cadmium	ND	0.000034 mg/m	1 <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Chromium	ND	0.00068 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Lead	ND	0.000034 mg/m	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Selenium	ND	0.000034 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Silver	ND	0.00034 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
Client Sample Desc	cription 03-006 D3-Site 006		Collected:	8/28/2018	L	ab ID:	011807125	5-0018
Method	Parameter	Result	RL Units	PI D	rep ate	Analyst	Analysis Date	Analyst
METALS								
7300 Modified	Arsenic	ND	0.000038 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Barium	ND	0.00038 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Cadmium	ND	0.000038 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Chromium	ND	0.00075 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Lead	ND	0.000038 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Selenium	ND	0.000038 mg/n	n <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW
7300 Modified	Silver	ND	0.00038 mg/n	1 <sup>3</sup> 9/	7/2018	KB	9/10/2018	JW

EMSL 20 Pi	MSL Analytical, Inc. D0 Route 130 North, Cinnaminson, hone/Fax: (856) 303-2500 / (856) tp://www.EMSL.com	NJ 08077 858-4571 <u>EnvChemistry2@emsl.com</u>				EMSL Order: CustomerID: CustomerPO: ProjectID:	01180712 EEG50 2018-4191	5 IT010
Attn: Alex Mavreli	s	I	Phone:	(;	305) 374-8300			
EE & G	1	rax: Poooivod:	(;	305) 374-8301	٨			
Project: SXM Landfill	5, FL 33014	Analytical I	Result	S				
Client Sample Descripti	on 03-007 D3-Site 007		Colle	ected:	8/28/2018	Lab ID:	011807125-	0019
Method	Parameter	Result	RL	Units	Pr Da	ep ite Analyst	Analysis Date	Analyst
METALS								

ND

ND

ND

ND

ND

ND

ND

Result

ND

ND

ND

ND

ND

ND

ND

0.000040 mg/m<sup>3</sup>

0.00040 mg/m<sup>3</sup>

0.000040 mg/m<sup>3</sup>

0.00079 mg/m<sup>3</sup>

0.000040 mg/m<sup>3</sup>

0.000040 mg/m<sup>3</sup>

0.00040 mg/m<sup>3</sup>

Collected:

RL Units

0.000050 mg/filter

0.00050 mg/filter

0.000050 mg/filter

0.000050 mg/filter

0.000050 mg/filter

0.00050 mg/filter

0.0010 mg/filter

9/7/2018

9/7/2018

9/7/2018

9/7/2018

9/7/2018

9/7/2018

9/7/2018

Prep

Date

9/7/2018

9/7/2018

9/7/2018

9/7/2018

9/7/2018

9/7/2018

9/7/2018

8/28/2018

KB

KB

KB

KΒ

KB

KΒ

KB

Analyst

KB

KB

KB

KΒ

KΒ

KΒ

KΒ

Lab ID:

9/10/2018

9/10/2018

9/10/2018

9/10/2018

9/10/2018

9/10/2018

9/10/2018

Analysis

9/10/2018

9/10/2018

9/10/2018

9/10/2018

9/10/2018

9/10/2018

9/10/2018

Date

011807125-0020

JW

JW

JW

JW

JW

JW

JW

Analyst

JW

JW

JW

JW

JW

JW

JW

# 7300 Modified Definitions:

7300 Modified

Method

METALS

7300 Modified

7300 Modified

7300 Modified

7300 Modified

7300 Modified

7300 Modified

**Client Sample Description** 

ND - indicates that the analyte was not detected at the reporting limit

Arsenic

Barium

Lead

Silver

Cadmium

Chromium

Selenium

FB001

Parameter

Arsenic

Barium

Lead

Silver

Cadmium

Chromium

Selenium

Field Blank

RL - Reporting Limit (Analytical)

D - Dilution

## ATTACHMENT K

## LABORATORY RESULTS, ASBESTOS FIBERS



**EMSL Analytical, Inc.** 200 Route 130 North Cinnaminson, NJ 08077 Tel/Fax: (800) 220-3675 /

http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 041827066 Customer ID: EEG50 Customer PO: Project ID:

Attention: Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014 
 Phone:
 (305) 374-8300

 Fax:
 (305) 374-8301

 Received Date:
 09/06/2018 09:30 AM

 Analysis Date:
 09/11/2018 - 09/12/2018

 Collected Date:

Project: SXM Landfill

### Test Report: Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

			Area					Analytical	Asb	estos
		Volume	Analyzed	Non	Asbestos	#Structu	res	Sensitivity	Conce	ntration
Sample	Location	(Liters)	(mm²)	Asb	Type(s)	≥0.5µ < 5µ	≥5µ	(S/cc)	(S/mm²)	(S/cc)
01-001	D1- Site 001	480.00	0.1290	0	None Detected	0	0	0.0062	<7.80	<0.0062
041827066-0001										
01-002	D1- Site 002	220.00	0.1300	0	None Detected	0	0	0.0135	<7.70	<0.0130
041827066-0002										
01-003	D1- Site 003	352.80	0.1300	0	None Detected	0	0	0.0084	<7.70	<0.0084
041827066-0003										
01-004	D1- Site 004	356.00	0.1290	0	None Detected	0	0	0.0084	<7.80	<0.0084
041827066-0004										
01-005	D1- Site 005	291.60	0.1300	0	None Detected	0	0	0.0102	<7.70	<0.0100
041827066-0005										
02-001	D2- Site 001	306.80			Not Analyzed					N/A
041827066-0006										
Sample muddy.										
Particulate loading	greater than 10%.									
02-002	D2- Site 002	460.00	0.1300	0	None Detected	0	0	0.0064	<7.70	<0.0064
041827066-0007										
02-003	D2- Site 003	387.60	0.1290	0	None Detected	0	0	0.0077	<7.80	<0.0077
041827066-0008										
02-004	D2- Site 004	333.00	0.1290	0	None Detected	0	0	0.0090	<7.80	<0.0090
041827066-0009										
02-005	D2- Site 005	346.50	0.1290	0	None Detected	0	0	0.0086	<7.80	<0.0086
041827066-0010										
02-006	D2- Site 006	282.80	0.1290	0	None Detected	0	0	0.0106	<7.80	<0.0110
041827066-0011										
02-007	D2- Site 007	474.00	0.1290	0	None Detected	0	0	0.0063	<7.80	< 0.0063
041827066-0012										
03-001	D3- Site 001	304.00	0.1290	0	None Detected	0	0	0.0098	<7.80	<0.0098
041827066-0013										
03-002	D3- Site 002	247.00	0.1290	0	None Detected	0	0	0.0121	<7.80	<0.0120
041827066-0014										
03-003	D3- Site 003	304.00	0.1300	0	None Detected	0	0	0.0097	<7.70	< 0.0097
041827066-0015										
03-004	D3- Site 004	285.00	0 1290	0	None Detected	0	0	0.0105	<7 80	<0.0100
041827066-0016		200.00	0.1200	0		Ũ	0	0.0100	1.00	0.0100
03-005		304.00	0 1300	0	None Detected	0	0	0.0097	<7.70	<0.0097
041827066-0017	D0- 0110 000	304.00	0.1500	0	None Delected	0	0	0.0037	\$1.10	<0.0037
03.006		157 60	0 1200	0	None Detected	0	0	0.0065	<7.70	
03-000		407.00	0.1300	U		0	U	0.0000	~1.10	<b>~0.000</b> 0
02 007		450.00	0.1200	0	Nono Dotostad	0	0	0.0065	~7.90	
03-007	D3- SILE 007	459.00	0.1290	U	None Delected	U	U	0.0000	<i>∖1.</i> 00	<0.000
041021000-0019										

EMSL	EMSL Analytical, Inc. 200 Route 130 North Cinnaminson, NJ 08077 Tel/Fax: (800) 220-3675 / http://www.EMSL.com / cinnasblab@EMSL.com	EMSL Order: Customer ID: Customer PO: Project ID:	041827066 EEG50
Attention:	Alex Mavrelis EE & G 5751 Miami Lakes Drive East Miami Lakes, FL 33014	Phone: Fax: Received Date: Analysis Date: Collected Date:	(305) 374-8300 (305) 374-8301 09/06/2018 09:30 AM 09/11/2018 - 09/12/2018
Project:	SXM Landfill		

### Test Report: Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

	Area Analyt				Area			ytical Asbestos	
		Volume	Analyzed	Non	Asbestos	#Structures Sensitivity		Concentration	
Sample	Location	(Liters)	(mm²)	Asb	Type(s)	≥0.5µ < 5µ ≥5µ	(S/cc)	(S/mm²)	(S/cc)

Analyst(s)

Garret Vliet (18)

Benjamin Ellis, Laboratory Manager or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367

Initial report from: 09/12/2018 08:58 AM

ASB\_TEMAHERA\_0004\_0001 Printed: 9/12/2018 8:58:53AM