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March 19, 2019

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**Re: Toxicity Due to PCDDs (Dioxins) and PCDFs (Furans) at Sky Valley Education Center and Other Schools with PCB Contamination**

Dear Public Officials:

Please find enclosed toxicological data from the January 4, 2019, inspection of Sky Valley Education Center in Monroe, Washington. The inspection was conducted in *Bard et al. v. Monsanto Co., et al.*, King Co. Sup. Ct. Case No. 18-2-00001-7 SEA. After consultation with an ethics attorney, we make this information public under RPC 1.6(b)(1).

The toxicity exceeds state and federal safety standards, although the school remains in use for children, parents, and teachers. Other schools with past or present PCB contamination may contain similar dioxin and furan hazards as those found here. Our concern is for public safety at this school and others with past or present PCB contamination.

Sincerely,

Sean J. Gamble

Enclosures: Dr. Faeder Letter w/Attachments 1-3 & CV

Environmental and Health Management, Inc.

TEL. Ex. 6 Personal Privacy (PP)
Cell: Ex. 6 Personal Privacy (PP)

March 18, 2019

Sean J. Gamble, Esq.
Friedman | Rubin®
1109 1st Avenue, Suite 501
Seattle, Washington 98101

SUBJECT: **Analysis Results for Chemicals at the Sky Valley Education Center, Monroe, Washington, Collected in January 2019, that Require State and Federal Environmental and Health Protection Agencies to Investigate and Certify that the School is Safe for Occupancy and Use**

Dear Mr. Gamble:

I have received the information that you sent to me regarding the transmittal of samples, laboratory analytical results and a summary for polychlorinated biphenyls ("PCBs"), polychlorinated dibenzodioxins ("PCDDs", and polychlorinated dibenzofurans (PCDFs"). All samples were taken at the Sky Valley Education Center ("SVEC") in Monroe, Washington, on January 4, 2019 by Environmental Health & Engineering, Inc. ("EHE"), a national consulting firm based in Newton, Massachusetts. The samples were shared with representatives of the Monroe School District, and Monsanto Chemical Company at the time that they were collected, so both named parties have samples equivalent to the ones whose analytical results were sent to me

.

EHE had the samples analyzed for PCBs. Six samples were additionally analyzed for PCDDs, and PCDFs, over the next two months. PCDD and PCDF results from all six of the indoor samples analyzed for these chemicals were well above the federal ATSDR screening level of 50 parts per trillion (ppt; equal to 50 picograms per gram of material sampled), and five of the six samples were above U.S. EPA's draft cleanup standards (cited by the State of Washington's Department of Ecology in 2011). All six samples also exceeded U.S. EPA's November 2018 *Regional Screening Level*, residential soil cleanup guidance level of 4.8 picograms per gram (ppt) by **10-100 fold**.
Five of the six samples analyzed were taken from indoor areas representative of what children and teachers could have been exposed to through 2018, in spite of cleanup and maintenance performed in the SVEC school environment. This is unacceptable, and may represent an extremely toxic indoor environment. These results occurred **after** the school district cleaned up the SVEC in preparation for the site inspection and sampling by EHE - in December 2018, according to information that I was given at an informal meeting with former teachers at the school prior to the site inspection, and consistent with the signs of intense cleaning that I observed during my inspection of the school on January 3, 2019.

## HISTORY

You retained a group of experts to assist you with litigation involving the exposure, or potential exposure of a group of children and teachers to polychlorinated biphenyls ("PCBs") released into

Ex. 6 Personal Privacy (PP) Diamond Bar, California, 91765-3216

their school environment in rural Washington state, over a period of years up to and including the present. The school in question was the Sky Valley Education Center, an alternative school chartered under WAC 392-121-182 Alternative Learning Experience Requirements (per https://www.monroe.wednet.edu/svec/about/who-we-are). The Sky Valley program has been operating at its present location since 2011. Prior to that the school site was occupied by a middle school, which operated at that location for many years. Parts of the buildings on the site were initially constructed in 1950, more in 1968, and modifications since then.
The school accommodates Montessori-based learning, and families choosing to participate in education at SVEC often bring younger children to school to be with a care-giving parent that cannot leave them at home. Pregnant women may also accompany their children to SVEC, for learning days of their older children.

## CHLORINATED ORGANIC CHEMICALS

The chlorinated chemicals of concern for your expert retention focused initially around polychlorinated biphenyls, a family of 209 congeners (multi-ring compounds with chlorine atoms in different ring positions). However, the PCBs used in fluorescent light ballasts were heated, and leaked, and chemically formed new groups of far more toxic compounds, called PCDDs ("dioxins") and PCDFs ("furans"). There are 135 different PCDFs, and 75 different PCDDs. The relative toxicity of the different congeners of these materials varies over almost five orders of magnitude (i.e., the most toxic congener, 2,3,7,8-tetrachlorodibenzodioxin, is more potent (toxic) than, for example, 2,3,3',4,4',5,5'-heptachlorobiphenyl, by a factor of 33,333). Depending upon the relative concentrations of the different chlorinated chemical concentrations, the generally lower concentration amounts of dioxin and furan congeners to which children and teachers could be exposed at SVEC could easily dominate the list of chemicals able to make people at SVEC very sick.

The U.S. EPA, and other international (e.g., World Health Organization), and state environmental programs (e.g., California Office of Environmental Health Hazard Evaluation) developed ways to catalog the toxicity of mixtures of these congeners to which humans or other animals and plants could be exposed through relative toxicity equivalence factors ("TEFs"- all congeners relative to 2,3,7,8 tetrachlorodibenzodioxin's potency assigned a TEF value less than or equal to 1) and assigned a toxicity equivalence ("TEQ") amount based upon adding up all the amounts of a mixture based upon the TEFs and measured amounts of all congeners present to which a target organism is exposed.

The values discussed in this letter are all TEQ-based amounts of dioxins and furans, as are the comparison numbers in the regulatory values tables.

## FRAME OF REFERENCE

Different regulatory agencies and their scientific and monitoring advisory groups have measured PCB, PCDD, and PCDF levels in a variety of media and places. I will only point out, in this short letter, two examples of summary information prepared by the state of Washington's Department of Ecology. They summarized dioxin levels (as TEQ concentrations) in some Seattle neighborhoods, obtained from their measurements in soil outside buildings. They also summarized dioxin levels (also in TEQ concentrations) in Washington State soils by land use. These tables are reproduced in this letter so that you can see the low levels they found, compared to what EHE found inside SVEC. Even the highest values measured **outside** in these studies are exceeded, often by many times, the values found **inside** in the SVEC samples that EHE measured. One part per trillion (ppt) TEQ is the same as one nanogram per kilogram (nG/kG) in EHE results).

I leave it as an exercise for the regulatory agencies to collect further data inside SVEC, and establish that the environment is safe for children, pregnant women, teachers, and other people wandering through the school, **and certify it as safe**.

**Table 1. Dioxin Levels in Seattle Neighborhoods and Comparisons to State and Federal Regulatory Limits**

| Neighborhood | [1]Range (ppt) | Average | [2]Number of Samples above State MTCA Method B cleanup level (11 ppt) | [3]Number of Samples above Federal ATSDR screening Level (50 ppt) | [4]Number of Samples above EPA Draft cleanup Level (72 ppt) |
|---|---|---|---|---|---|
| Ballard | 1.9 - 62.4 | 26 | 17 | 2 | 0 |
| Capitol Hill | 3.2 - 96.2 | 18 | 8 | 3 | 1 |
| Georgetown | 5.3 - 114.7 | 36 | 17 | 4 | 2 |
| Ravenna | 5.2 - 49.6 | 15 | 7 | 0 | 0 |
| South Park | 3.6 - 22.7 | 12 | 12 | 0 | 0 |
| West Seattle | 1.7 - 32.8 | 7.5 | 2 | 0 | 0 |
| All areas | 1.7 - 114.7 | 19 | 63 | 9 | 3 |

[1] Soil data for dioxins is reported as toxic equivalents (TEQs). This means that the measured concentrations have been adjusted to reflect the different levels of potency of individual dioxin and furan components. The concentrations, adjusted for potency level, are combined into a single concentration that reflects the potential toxicity of the mixture of dioxin and furan components.

[2] State MTCA is a rule that outlines procedures for setting cleanup levels for hazardous substances.

[3] Federal Agency for Toxic Substances Disease Registry Screening Levels. This level is used to identify areas where more study is needed and is not a cleanup level.

[4] Environmental Protection Agency proposed soil screening levels. EPA's Superfund cleanup program published draft soil cleanup guidelines in 2009. These guidelines are used for setting cleanup levels for hazardous substances.

[5] The EPA cPAH screening level is a guideline used for setting cleanup levels for hazardous substances.

**Taken from:**
**Washington State Department of Ecology,**
**Publication 11-09-219, September 2011**

**Table 2**

**Dioxin concentrations in Washington State soils by land use**
Reported as Toxic Equivalents (TEQ), parts per trillion. Non-detect samples given a value of zero.

| Land Use | Range | Average | Median | Geometric Mean* | Number of Samples |
|---|---|---|---|---|---|
| Urban | 0.13 – 19 | 4.1 | 1.7 | 1.9 | 14 |
| Forest | 0.033 – 5.2 | 2.3 | 2.2 | 1.2 | 8 |
| Open | 0.040 – 4.6 | 1.0 | 0.27 | 0.24 | 8 |
| **Agricultural** | **0.0078-1.2** | **0.14** | **0.054** | **0.062** | **54** |

*A geometric mean is similar to an average. In many environmental studies, including this one, a geometric mean is the best estimate of the central or most common value in a data set.

**Taken from:**
**Washington State Department of Ecology,**
**Focus, Publication 99-1380, November 1999**

## EHE Results from SVEC Sampling

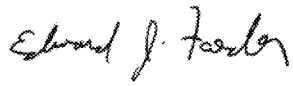
You provided me with three documents created by EHE or their testing laboratory, ALS Environmental, Houston, TX. They are attached to this letter. **Attachment 1** is the chain of custody form for the samples collected at SVEC on January 4, 2019. The actual lab-generated data are contained in **Attachment 2**. EHE analyzed those results and summarized them for the samples taken January 4, 2019, and summarized those results in their Table 1, attached to this letter as **Attachment 3**. Only six of the samples analyzed were tested for dioxins and furans. They are highlighted in yellow, as are their numerical results, in units of nG/kG (written in the table as ng/Kg), which are the same units as parts per trillion (ppt) (used in the Department of Ecology tables). Five of the six samples came from rooms which were used by children, parents, teachers, as they were active area portions of the SVEC. The sixth sample came from a lighting fixture base plate with "black tar-like material," presumably from a ruptured/leaking fluorescent light ballast that was used at SVEC, and later stored in the School District Building Shed. The latter should be investigated for its hold time at the storage area, as it had a PCB concentration at a measured value of 180 parts per million (*cf.* sample ***Field ID*** 184852 results, **Attachment 3**).

Five of the six results for the measured dioxin and furan levels exceeded every measured value reported by the Department of Ecology in its summary tables, as included in this letter.

**Discussion and Conclusion**

I have carefully avoided a detailed discussion of the risks that children, parents, teachers, and others were exposed to by their presence at SVEC in this letter. The purpose of this letter is to urge you to contact the cognizant parties who are responsible for protecting the public. They should consider the scientific data presented herein and conduct additional testing and a thorough evaluation of safety for all who continue to occupy SVEC. Demand that the agencies certify SVEC as a safe environment, especially for sensitive individuals like children and pregnant women. This is clearly the duty and responsibility of public health and environmental protection agencies. Historic exposure and its aftermath will sort itself out in court.

Sincerely,



Edward J. Faeder, Ph.D., Q.E.P.

Attachments (3)

srf1903.4271

**Environmental Health & Engineering, Inc.**

# CHAIN OF CUSTODY FORM

**Attachment 1**

DATE: 1/4/2019

FROM: Environmental Health and Engineering, Inc.
180 Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: EHE, Inc
Newton, MA

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22437

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

| SAMPLE ID | SAMPLE TYPE | ANALYTICAL METHOD/NUMBER | OTHER:Time/Date/Vol. |
|---|---|---|---|
| 184824 | BULK | SAMPLES SHIPPED TO: | 1/4/2019 |
| 184825 | | EHE INC, | |
| 184826 | | 180 WELLS AVENUE | |
| 184827 | | SUITE 200 | |
| 184828 | | NEWTON, MA 02459 | |
| 184829 | | | |
| 184830 | | | |
| 184844 | | | |
| 184845 | | | |
| 184846 | | | |
| 184849 | | | |
| 184852 | | | |
| 184831 | WIPE | | |
| 184832 | | | |
| 184833 | | | |
| 184834 | | | |

**Special instructions:**

☐ Standard turn around time ☐ Rush by _____ date/time ☒ Other SAMPLE SHIPMENT

☐ Fax results 781-247-4305

☐ **RETURN SAMPLES** ☐ Electronic transfer - datacoordinator@eheinc.com

☐ Additional report recipient _____

**Each signatory please return one copy of this form to the above address**

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/4/2019

Received by: FEDEX of (company name) FEDEX Date: 1/4/2019

Relinquished by: FEDEX of (company name) FEDEX Date: 1/7/2019

Received by: [signature] of (company name) EHE Date: 1/7/2019

Relinquished by: [signature] of (company name) EHE Date: 1/7/2019

Received by: [signature] of (company name) EHE Date: 1/7/2019

Lab Data
Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

Page 1 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

**Environmental Health & Engineering, Inc.**

# CHAIN OF CUSTODY FORM

**Attachment 1**

DATE: 1/4/2019

FROM: Environmental Health and Engineering, Inc.
180 Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: EHE, Inc.
Newton, MA

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22432

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

| SAMPLE ID | SAMPLE TYPE | ANALYTICAL METHOD/NUMBER | OTHER:Time/Date/Vol. |
|---|---|---|---|
| 184835 | WIPE | SAMPLES SHIPPED TO: | 1/4/2019 |
| 184836 | | EHE, Inc. | |
| 184837 | | 180 WELLS AVE | |
| 184838 | | SUITE 200 | |
| 184839 | | Newton, MA 02459 | |
| 184840 | | | |
| 184841 | | | |
| 184842 | | | |
| 184843 | | | |
| 184844 | | | |
| 184848 | | | |
| 184850 | | | |
| 184851 | | | |
| | | | |
| | | | |
| | | | |

**Special instructions:**

☐ Standard turn around time ☐ Rush by _____ date/time ☒ Other SAMPLE SHIPPED
☐ Fax results 781-247-4305
☐ **RETURN SAMPLES** ☐ Electronic transfer - datacoordinator@eheinc.com
☐ Additional report recipient _____

**Each signatory please return one copy of this form to the above address**

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/4/2019
Received by: FEDEX of (company name) FEDEX Date: 1/4/2019
Relinquished by: FEDEX of (company name) FEDEX Date: 1/7/2019
Received by: [signature] of (company name) EHE Date: 1/7/2019
Relinquished by: [signature] of (company name) EHE Date: 1/7/2019
Received by: [signature] of (company name) EHE Date: 1/7/2019
Lab Data
Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

Page 2 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900145 |
| **Project:** | HS19020856 | **Date Collected:** | 01/25/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 02/18/19 11:30 |
| **Sample Name:** | 187059 | **Units:** | ng/Kg |
| **Lab Code:** | E1900145-006 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/27/19 15:52 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/22/19 |
| **Sample Amount:** | 0.097g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520696 | **Blank File Name:** | P520690 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520686 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | 42.0**JK** | | 40.8 | 51.5 | 1.13 | 1.001 | 1 |
| 1,2,3,7,8-PeCDD | 117**JK** | | 7.84 | 258 | 1.26 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 114**JK** | | 3.56 | 258 | 1.47 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 780 | | 3.60 | 258 | 1.32 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 275 | | 3.41 | 258 | 1.10 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 11500 | | 22.0 | 258 | 1.05 | 1.000 | 1 |
| OCDD | 161000 | | 11.5 | 515 | 0.89 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 21.5**JK** | | 8.04 | 51.5 | 0.59 | 1.000 | 1 |
| 1,2,3,7,8-PeCDF | 29.2**J** | | 8.25 | 258 | 1.46 | 1.000 | 1 |
| 2,3,4,7,8-PeCDF | 95.0**J** | | 8.27 | 258 | 1.47 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDF | 118**J** | | 23.5 | 258 | 1.18 | 1.001 | 1 |
| 1,2,3,6,7,8-HxCDF | 122**J** | | 23.9 | 258 | 1.14 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | ND | U | 27.4 | 258 | | | 1 |
| 2,3,4,6,7,8-HxCDF | 134**J** | | 24.6 | 258 | 1.29 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 3050 | | 43.2 | 258 | 1.01 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 105**JK** | | 46.5 | 258 | 1.31 | 1.000 | 1 |
| OCDF | 6850 | | 13.0 | 515 | 0.87 | 1.004 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900145 |
| **Project:** | HS19020856 | **Date Collected:** | 01/25/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 02/18/19 11:30 |
| **Sample Name:** | 187059 | **Units:** | ng/Kg |
| **Lab Code:** | E1900145-006 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/27/19 15:52 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/22/19 |
| **Sample Amount:** | 0.097g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520696 | **Blank File Name:** | P520690 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520686 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | ND | U | 40.8 | 51.5 | | | 1 |
| Total Penta-Dioxins | 598 | | 7.84 | 258 | 1.66 | | 1 |
| Total Hexa-Dioxins | 4620 | | 3.52 | 258 | 1.37 | | 1 |
| Total Hepta-Dioxins | 25000 | | 22.0 | 258 | 1.07 | | 1 |
| Total Tetra-Furans | 56.9 | | 8.04 | 51.5 | 0.71 | | 1 |
| Total Penta-Furans | 266 | | 8.26 | 258 | 1.45 | | 1 |
| Total Hexa-Furans | 5890 | | 24.8 | 258 | 1.11 | | 1 |
| Total Hepta-Furans | 12800 | | 44.8 | 258 | 1.01 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900145 |
| **Project:** | HS19020856 | **Date Collected:** | 01/25/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 02/18/19 11:30 |
| **Sample Name:** | 187059 | **Units:** | Percent |
| **Lab Code:** | E1900145-006 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/27/19 15:52 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/22/19 |
| **Sample Amount:** | 0.097g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520696 | **Blank File Name:** | P520690 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520686 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 588.566 | 29 | | 25-164 | 0.79 | 1.025 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 1089.965 | 54 | | 25-181 | 1.62 | 1.223 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1141.119 | 57 | | 32-141 | 1.30 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1247.999 | 62 | | 28-130 | 1.28 | 0.993 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 1327.290 | 66 | | 23-140 | 1.09 | 1.070 |
| 13C-OCDD | 4000 | 1386.707 | 35 | | 17-157 | 0.87 | 1.143 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 760.054 | 38 | | 24-169 | 0.79 | 0.989 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 981.297 | 49 | | 24-185 | 1.57 | 1.173 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 944.389 | 47 | | 21-178 | 1.60 | 1.211 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 929.760 | 46 | | 26-152 | 0.51 | 0.968 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 965.506 | 48 | | 26-123 | 0.51 | 0.972 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1019.515 | 51 | | 29-147 | 0.51 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 962.609 | 48 | | 28-136 | 0.52 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 838.653 | 42 | | 28-143 | 0.45 | 1.045 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 1001.288 | 50 | | 26-138 | 0.44 | 1.083 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 306.003 | 38 | | 35-197 | NA | 1.026 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900145 |
| **Project:** | HS19020856 | **Date Collected:** | 01/25/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 02/18/19 11:30 |
| **Sample Name:** | 187059 | **Units:** | ng/Kg |
| **Lab Code:** | E1900145-006 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

**Analysis Method:** 1613B
**Prep Method:** Method Soxhlet

**Toxicity Equivalency Quotient**

| Analyte Name | Result | DL | MRL | Dilution Factor | TEF | TEF - Adjusted Concentration |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | **42.0** | 40.8 | 51.5 | 1 | 1 | 42.0 |
| 1,2,3,7,8-PeCDD | **117** | 7.84 | 258 | 1 | 1 | 117 |
| 1,2,3,4,7,8-HxCDD | **114** | 3.56 | 258 | 1 | 0.1 | 11.4 |
| 1,2,3,6,7,8-HxCDD | **780** | 3.60 | 258 | 1 | 0.1 | 78.0 |
| 1,2,3,7,8,9-HxCDD | **275** | 3.41 | 258 | 1 | 0.1 | 27.5 |
| 1,2,3,4,6,7,8-HpCDD | **11500** | 22.0 | 258 | 1 | 0.01 | 115 |
| OCDD | **161000** | 11.5 | 515 | 1 | 0.0003 | 48.3 |
| 2,3,7,8-TCDF | **21.5** | 8.04 | 51.5 | 1 | 0.1 | 2.15 |
| 1,2,3,7,8-PeCDF | **29.2** | 8.25 | 258 | 1 | 0.03 | 0.876 |
| 2,3,4,7,8-PeCDF | **95.0** | 8.27 | 258 | 1 | 0.3 | 28.5 |
| 1,2,3,4,7,8-HxCDF | **118** | 23.5 | 258 | 1 | 0.1 | 11.8 |
| 1,2,3,6,7,8-HxCDF | **122** | 23.9 | 258 | 1 | 0.1 | 12.2 |
| 1,2,3,7,8,9-HxCDF | ND | 27.4 | 258 | 1 | 0.1 | |
| 2,3,4,6,7,8-HxCDF | **134** | 24.6 | 258 | 1 | 0.1 | 13.4 |
| 1,2,3,4,6,7,8-HpCDF | **3050** | 43.2 | 258 | 1 | 0.01 | 30.5 |
| 1,2,3,4,7,8,9-HpCDF | **105** | 46.5 | 258 | 1 | 0.01 | 1.05 |
| OCDF | **6850** | 13.0 | 515 | 1 | 0.0003 | 2.06 |
| | | Total TEQ | | | | 542 |

2005 WHO TEFs, ND = 0

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900099 |
| **Project:** | HS19020127 | **Date Collected:** | 01/31/19 00:00 |
| **Sample Matrix:** | Soil | **Date Received:** | 02/04/19 14:10 |
| **Sample Name:** | 187065 | **Units:** | ng/Kg |
| **Lab Code:** | E1900099-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/19/19 17:08 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/13/19 |
| **Sample Amount:** | 0.700g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520515 | **Blank File Name:** | P520511 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520507 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | U | 4.94 | 7.14 | | | 1 |
| 1,2,3,7,8-PeCDD | 10.4**J** | | 0.815 | 35.7 | 1.59 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 23.6**J** | | 1.09 | 35.7 | 1.20 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 331 | | 1.09 | 35.7 | 1.33 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 60.0 | | 1.04 | 35.7 | 1.11 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 1820 | | 0.892 | 35.7 | 1.03 | 1.000 | 1 |
| OCDD | 3560 | | 1.40 | 71.4 | 0.89 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 11.8**K** | | 2.17 | 7.14 | 0.63 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | 40.4 | | 3.04 | 35.7 | 1.40 | 1.001 | 1 |
| 2,3,4,7,8-PeCDF | 197 | | 3.02 | 35.7 | 1.41 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDF | 327 | | 4.76 | 35.7 | 1.20 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 131 | | 4.41 | 35.7 | 1.15 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | 39.5**K** | | 5.25 | 35.7 | 0.96 | 1.001 | 1 |
| 2,3,4,6,7,8-HxCDF | 87.3 | | 4.48 | 35.7 | 1.19 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 894 | | 1.97 | 35.7 | 1.00 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 18.7**J** | | 2.18 | 35.7 | 0.97 | 1.000 | 1 |
| OCDF | 147 | | 2.00 | 71.4 | 0.84 | 1.004 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900099 |
| **Project:** | HS19020127 | **Date Collected:** | 01/31/19 00:00 |
| **Sample Matrix:** | Soil | **Date Received:** | 02/04/19 14:10 |
| **Sample Name:** | 187065 | **Units:** | ng/Kg |
| **Lab Code:** | E1900099-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/19/19 17:08 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/13/19 |
| **Sample Amount:** | 0.700g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520515 | **Blank File Name:** | P520511 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520507 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | ND | U | 4.94 | 7.14 | | | 1 |
| Total Penta-Dioxins | 84.1 | | 0.815 | 35.7 | 1.70 | | 1 |
| Total Hexa-Dioxins | 1580 | | 1.07 | 35.7 | 1.25 | | 1 |
| Total Hepta-Dioxins | 3600 | | 0.892 | 35.7 | 1.04 | | 1 |
| Total Tetra-Furans | 37.3 | | 2.17 | 7.14 | 0.77 | | 1 |
| Total Penta-Furans | 689 | | 3.04 | 35.7 | 1.45 | | 1 |
| Total Hexa-Furans | 3040 | | 4.70 | 35.7 | 1.21 | | 1 |
| Total Hepta-Furans | 1700 | | 2.07 | 35.7 | 1.00 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900099 |
| **Project:** | HS19020127 | **Date Collected:** | 01/31/19 00:00 |
| **Sample Matrix:** | Soil | **Date Received:** | 02/04/19 14:10 |
| **Sample Name:** | 187065 | **Units:** | Percent |
| **Lab Code:** | E1900099-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/19/19 17:08 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/13/19 |
| **Sample Amount:** | 0.700g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520515 | **Blank File Name:** | P520511 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520507 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 808.109 | 40 | | 25-164 | 0.82 | 1.024 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 1410.101 | 71 | | 25-181 | 1.59 | 1.214 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1358.284 | 68 | | 32-141 | 1.29 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1474.899 | 74 | | 28-130 | 1.27 | 0.994 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 1765.043 | 88 | | 23-140 | 1.08 | 1.070 |
| 13C-OCDD | 4000 | 2074.195 | 52 | | 17-157 | 0.93 | 1.142 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 1151.478 | 58 | | 24-169 | 0.81 | 0.990 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 1312.951 | 66 | | 24-185 | 1.57 | 1.166 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 1273.818 | 64 | | 21-178 | 1.59 | 1.202 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1200.041 | 60 | | 26-152 | 0.52 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1257.023 | 63 | | 26-123 | 0.54 | 0.972 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1259.880 | 63 | | 29-147 | 0.52 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1256.874 | 63 | | 28-136 | 0.52 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 1145.499 | 57 | | 28-143 | 0.45 | 1.045 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 1238.612 | 62 | | 26-138 | 0.45 | 1.082 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 453.178 | 57 | | 35-197 | NA | 1.025 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900099 |
| **Project:** | HS19020127 | **Date Collected:** | 01/31/19 00:00 |
| **Sample Matrix:** | Soil | **Date Received:** | 02/04/19 14:10 |
| **Sample Name:** | 187065 | **Units:** | ng/Kg |
| **Lab Code:** | E1900099-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

**Analysis Method:** 1613B
**Prep Method:** Method Soxhlet

**Toxicity Equivalency Quotient**

| Analyte Name | Result | DL | MRL | Dilution Factor | TEF | TEF - Adjusted Concentration |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | 4.94 | 7.14 | 1 | 1 | |
| 1,2,3,7,8-PeCDD | **10.4** | 0.815 | 35.7 | 1 | 1 | 10.4 |
| 1,2,3,4,7,8-HxCDD | **23.6** | 1.09 | 35.7 | 1 | 0.1 | 2.36 |
| 1,2,3,6,7,8-HxCDD | **331** | 1.09 | 35.7 | 1 | 0.1 | 33.1 |
| 1,2,3,7,8,9-HxCDD | **60.0** | 1.04 | 35.7 | 1 | 0.1 | 6.00 |
| 1,2,3,4,6,7,8-HpCDD | **1820** | 0.892 | 35.7 | 1 | 0.01 | 18.2 |
| OCDD | **3560** | 1.40 | 71.4 | 1 | 0.0003 | 1.07 |
| 2,3,7,8-TCDF | **11.8** | 2.17 | 7.14 | 1 | 0.1 | 1.18 |
| 1,2,3,7,8-PeCDF | **40.4** | 3.04 | 35.7 | 1 | 0.03 | 1.21 |
| 2,3,4,7,8-PeCDF | **197** | 3.02 | 35.7 | 1 | 0.3 | 59.1 |
| 1,2,3,4,7,8-HxCDF | **327** | 4.76 | 35.7 | 1 | 0.1 | 32.7 |
| 1,2,3,6,7,8-HxCDF | **131** | 4.41 | 35.7 | 1 | 0.1 | 13.1 |
| 1,2,3,7,8,9-HxCDF | **39.5** | 5.25 | 35.7 | 1 | 0.1 | 3.95 |
| 2,3,4,6,7,8-HxCDF | **87.3** | 4.48 | 35.7 | 1 | 0.1 | 8.73 |
| 1,2,3,4,6,7,8-HpCDF | **894** | 1.97 | 35.7 | 1 | 0.01 | 8.94 |
| 1,2,3,4,7,8,9-HpCDF | **18.7** | 2.18 | 35.7 | 1 | 0.01 | 0.187 |
| OCDF | **147** | 2.00 | 71.4 | 1 | 0.0003 | 0.0441 |
| | | Total TEQ | | | | 200 |

2005 WHO TEFs, ND = 0

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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February 13, 2019

Kevin M. Coglan
Environmental Health & Engineering
180 Wells Avenue, Suite 200,
Newton, MA 02459

Work Order: **HS19011056**

Laboratory Results for: **22437 Friedman/Rubin S.V.E.C.**

Dear Kevin,

ALS Environmental received 21 sample(s) on Jan 23, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Corey Grandits
Project Manager

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**Work Order:** HS19011056

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19011056-01 | 184838 | Wipe | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-02 | 184839 | Wipe | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☑ |
| HS19011056-03 | 184831 | Wipe | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-04 | 184840 | Wipe | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-05 | 184841 | Wipe | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☑ |
| HS19011056-06 | 187061 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-07 | 187062 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-08 | 187066 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-09 | 187067 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-10 | 187064 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-11 | 184824 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-12 | 184827 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-13 | 184829 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-14 | 187056 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-15 | 187057 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-16 | 187058 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-17 | 187059 | Dust | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☑ |
| HS19011056-18 | 184852 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-19 | 187069 | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-20 | 187087 Blank | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |
| HS19011056-21 | 187088 Blank | Solid | | 21-Jan-2019 00:00 | 23-Jan-2019 09:55 | ☐ |

**Client:** Environmental Health & Engineering

**Project:** 22437 Friedman/Rubin S.V.E.C.

**Work Order:** HS19011056

**CASE NARRATIVE**

## Work Order Comments

- The analyses for Dioxins/Furans and PCB Congeners were subcontracted to our ALS Houston TX, High Resolution Lab. Final report attached.

## ECD Organics by Method SW8082

### Batch ID: 136949

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

### Batch ID: 136985,137511

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184838

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-01

Matrix:Wipe

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541C/3665A / 23-Jan-2019 | | Analyst: JBA |
| Aroclor 1016 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| Aroclor 1221 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| Aroclor 1232 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| Aroclor 1242 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| Aroclor 1248 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| Aroclor 1254 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| Aroclor 1260 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| PCBs (Total) | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:19 |
| *Surr: Decachlorobiphenyl* | *106* | | | *30-150* | *%REC* | *1* | *25-Jan-2019 12:19* |
| *Surr: Tetrachloro-m-xylene* | *102* | | | *30-150* | *%REC* | *1* | *25-Jan-2019 12:19* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

**ANALYTICAL REPORT**

Project: 22437 Friedman/Rubin S.V.E.C.

WorkOrder:HS19011056

Sample ID: 184831

Lab ID:HS19011056-03

Collection Date: 21-Jan-2019 00:00

Matrix:Wipe

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541C/3665A / 23-Jan-2019 | | Analyst: JBA |
| Aroclor 1016 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| Aroclor 1221 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| Aroclor 1232 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| Aroclor 1242 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| Aroclor 1248 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| Aroclor 1254 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| Aroclor 1260 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| PCBs (Total) | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:36 |
| *Surr: Decachlorobiphenyl* | *102* | | | *30-150* | *%REC* | *1* | *25-Jan-2019 12:36* |
| *Surr: Tetrachloro-m-xylene* | *95.1* | | | *30-150* | *%REC* | *1* | *25-Jan-2019 12:36* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184840

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-04

Matrix:Wipe

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541C/3665A / 23-Jan-2019 | | Analyst: JBA |
| Aroclor 1016 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| Aroclor 1221 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| Aroclor 1232 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| Aroclor 1242 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| Aroclor 1248 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| Aroclor 1254 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| Aroclor 1260 | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| PCBs (Total) | | U | 500 | 500 | ng, Total | 1 | 25-Jan-2019 12:53 |
| *Surr: Decachlorobiphenyl* | *114* | | | *30-150* | *%REC* | *1* | *25-Jan-2019 12:53* |
| *Surr: Tetrachloro-m-xylene* | *97.1* | | | *30-150* | *%REC* | *1* | *25-Jan-2019 12:53* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | |
|---|---|---|
| Client: | Environmental Health & Engineering | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | WorkOrder:HS19011056 |
| Sample ID: | 187061 | Lab ID:HS19011056-06 |
| Collection Date: | 21-Jan-2019 00:00 | Matrix:Solid |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A** | | **Method:NA** | | | | | Analyst: SUB |
| Subcontract Analysis | See Attached | | 0 | | | 1 | 13-Feb-2019 15:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | |
|---|---|---|
| Client: | Environmental Health & Engineering | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | WorkOrder:HS19011056 |
| Sample ID: | 187062 | Lab ID:HS19011056-07 |
| Collection Date: | 21-Jan-2019 00:00 | Matrix:Solid |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 470 | 1900 | ug/Kg | 10 | 24-Jan-2019 16:08 |
| Aroclor 1221 | U | | 630 | 1900 | ug/Kg | 10 | 24-Jan-2019 16:08 |
| Aroclor 1232 | U | | 510 | 1900 | ug/Kg | 10 | 24-Jan-2019 16:08 |
| Aroclor 1242 | U | | 670 | 1900 | ug/Kg | 10 | 24-Jan-2019 16:08 |
| **Aroclor 1248** | **6,800** | P | **670** | **1900** | **ug/Kg** | 10 | 24-Jan-2019 16:08 |
| **Aroclor 1254** | **5,500** | | **530** | **1900** | **ug/Kg** | 10 | 24-Jan-2019 16:08 |
| Aroclor 1260 | U | | 450 | 1900 | ug/Kg | 10 | 24-Jan-2019 16:08 |
| **PCBs (Total)** | **12,000** | | **450** | **1900** | **ug/Kg** | 10 | 24-Jan-2019 16:08 |
| *Surr: Decachlorobiphenyl* | *142* | *J* | | *54-143* | *%REC* | *10* | *24-Jan-2019 16:08* |
| *Surr: Tetrachloro-m-xylene* | *98.3* | *J* | | *50-140* | *%REC* | *10* | *24-Jan-2019 16:08* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | | |
|---|---|---|---|
| Client: | Environmental Health & Engineering | | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | | WorkOrder:HS19011056 |
| Sample ID: | 187066 | | Lab ID:HS19011056-08 |
| Collection Date: | 21-Jan-2019 00:00 | | Matrix:Solid |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 270 | 1100 | ug/Kg | 10 | 24-Jan-2019 16:24 |
| Aroclor 1221 | U | | 360 | 1100 | ug/Kg | 10 | 24-Jan-2019 16:24 |
| Aroclor 1232 | U | | 290 | 1100 | ug/Kg | 10 | 24-Jan-2019 16:24 |
| Aroclor 1242 | U | | 380 | 1100 | ug/Kg | 10 | 24-Jan-2019 16:24 |
| **Aroclor 1248** | **2,400** | P | **380** | **1100** | **ug/Kg** | 10 | 24-Jan-2019 16:24 |
| **Aroclor 1254** | **2,500** | | **300** | **1100** | **ug/Kg** | 10 | 24-Jan-2019 16:24 |
| Aroclor 1260 | U | | 260 | 1100 | ug/Kg | 10 | 24-Jan-2019 16:24 |
| **PCBs (Total)** | **4,900** | | **260** | **1100** | **ug/Kg** | 10 | 24-Jan-2019 16:24 |
| *Surr: Decachlorobiphenyl* | *140* | *J* | | *54-143* | *%REC* | *10* | *24-Jan-2019 16:24* |
| *Surr: Tetrachloro-m-xylene* | *89.0* | *J* | | *50-140* | *%REC* | *10* | *24-Jan-2019 16:24* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | |
|---|---|---|
| Client: | Environmental Health & Engineering | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | WorkOrder:HS19011056 |
| Sample ID: | 187067 | Lab ID:HS19011056-09 |
| Collection Date: | 21-Jan-2019 00:00 | Matrix:Solid |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A** | | **Method:NA** | | | | | Analyst: SUB |
| Subcontract Analysis | See Attached | | 0 | | | 1 | 13-Feb-2019 15:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187064

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-10

Matrix:Solid

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 300 | 1200 | ug/Kg | 1 | 25-Jan-2019 10:43 |
| Aroclor 1221 | U | | 400 | 1200 | ug/Kg | 1 | 25-Jan-2019 10:43 |
| Aroclor 1232 | U | | 320 | 1200 | ug/Kg | 1 | 25-Jan-2019 10:43 |
| Aroclor 1242 | U | | 420 | 1200 | ug/Kg | 1 | 25-Jan-2019 10:43 |
| Aroclor 1248 | U | | 420 | 1200 | ug/Kg | 1 | 25-Jan-2019 10:43 |
| **Aroclor 1254** | **3,000** | | **340** | **1200** | **ug/Kg** | 1 | 25-Jan-2019 10:43 |
| **Aroclor 1260** | **1,200** | J | **290** | **1200** | **ug/Kg** | 1 | 25-Jan-2019 10:43 |
| **PCBs (Total)** | **4,200** | | **290** | **1200** | **ug/Kg** | 1 | 25-Jan-2019 10:43 |
| *Surr: Decachlorobiphenyl* | *105* | | | *54-143* | *%REC* | *1* | *25-Jan-2019 10:43* |
| *Surr: Tetrachloro-m-xylene* | *117* | | | *50-140* | *%REC* | *1* | *25-Jan-2019 10:43* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184824

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-11

Matrix:Dust

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | | U | 2500 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| Aroclor 1221 | | U | 3400 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| Aroclor 1232 | | U | 2700 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| Aroclor 1242 | | U | 3500 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| Aroclor 1248 | | U | 3500 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| Aroclor 1254 | | U | 2800 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| Aroclor 1260 | | U | 2400 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| PCBs (Total) | | U | 2400 | 10000 | ug/Kg | 1 | 25-Jan-2019 10:59 |
| *Surr: Decachlorobiphenyl* | *109* | | | *54-143* | *%REC* | *1* | *25-Jan-2019 10:59* |
| *Surr: Tetrachloro-m-xylene* | *91.5* | | | *50-140* | *%REC* | *1* | *25-Jan-2019 10:59* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 184827

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-12

Matrix:Dust

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | | U | 3200 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| Aroclor 1221 | | U | 4200 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| Aroclor 1232 | | U | 3400 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| Aroclor 1242 | | U | 4400 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| Aroclor 1248 | | U | 4400 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| Aroclor 1254 | | U | 3500 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| Aroclor 1260 | | U | 3000 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| PCBs (Total) | | U | 3000 | 13000 | ug/Kg | 1 | 25-Jan-2019 11:15 |
| *Surr: Decachlorobiphenyl* | *92.7* | | | *54-143* | *%REC* | *1* | *25-Jan-2019 11:15* |
| *Surr: Tetrachloro-m-xylene* | *76.0* | | | *50-140* | *%REC* | *1* | *25-Jan-2019 11:15* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | |
|---|---|---|
| Client: | Environmental Health & Engineering | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | WorkOrder:HS19011056 |
| Sample ID: | 184829 | Lab ID:HS19011056-13 |
| Collection Date: | 21-Jan-2019 00:00 | Matrix:Dust |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 970 | 3900 | ug/Kg | 1 | 25-Jan-2019 11:31 |
| Aroclor 1221 | U | | 1300 | 3900 | ug/Kg | 1 | 25-Jan-2019 11:31 |
| Aroclor 1232 | U | | 1000 | 3900 | ug/Kg | 1 | 25-Jan-2019 11:31 |
| Aroclor 1242 | U | | 1400 | 3900 | ug/Kg | 1 | 25-Jan-2019 11:31 |
| Aroclor 1248 | U | | 1400 | 3900 | ug/Kg | 1 | 25-Jan-2019 11:31 |
| **Aroclor 1254** | **1,900** | J | **1100** | **3900** | **ug/Kg** | 1 | 25-Jan-2019 11:31 |
| Aroclor 1260 | U | | 920 | 3900 | ug/Kg | 1 | 25-Jan-2019 11:31 |
| **PCBs (Total)** | **1,900** | J | **920** | **3900** | **ug/Kg** | 1 | 25-Jan-2019 11:31 |
| *Surr: Decachlorobiphenyl* | *108* | | | *54-143* | *%REC* | *1* | *25-Jan-2019 11:31* |
| *Surr: Tetrachloro-m-xylene* | *83.7* | | | *50-140* | *%REC* | *1* | *25-Jan-2019 11:31* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | | |
|---|---|---|---|
| Client: | Environmental Health & Engineering | | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | | WorkOrder:HS19011056 |
| Sample ID: | 187056 | | Lab ID:HS19011056-14 |
| Collection Date: | 21-Jan-2019 00:00 | | Matrix:Dust |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 570 | 2300 | ug/Kg | 1 | 25-Jan-2019 11:47 |
| Aroclor 1221 | U | | 760 | 2300 | ug/Kg | 1 | 25-Jan-2019 11:47 |
| Aroclor 1232 | U | | 610 | 2300 | ug/Kg | 1 | 25-Jan-2019 11:47 |
| **Aroclor 1242** | **17,000** | | **800** | **2300** | **ug/Kg** | 1 | 25-Jan-2019 11:47 |
| Aroclor 1248 | U | | 800 | 2300 | ug/Kg | 1 | 25-Jan-2019 11:47 |
| **Aroclor 1254** | **6,800** | | **640** | **2300** | **ug/Kg** | 1 | 25-Jan-2019 11:47 |
| Aroclor 1260 | U | | 550 | 2300 | ug/Kg | 1 | 25-Jan-2019 11:47 |
| **PCBs (Total)** | **24,000** | | **550** | **2300** | **ug/Kg** | 1 | 25-Jan-2019 11:47 |
| *Surr: Decachlorobiphenyl* | *94.6* | | | *54-143* | *%REC* | *1* | *25-Jan-2019 11:47* |
| *Surr: Tetrachloro-m-xylene* | *87.9* | | | *50-140* | *%REC* | *1* | *25-Jan-2019 11:47* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | |
|---|---|---|
| Client: | Environmental Health & Engineering | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | WorkOrder:HS19011056 |
| Sample ID: | 187057 | Lab ID:HS19011056-15 |
| Collection Date: | 21-Jan-2019 00:00 | Matrix:Dust |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A** | | **Method:NA** | | | | | Analyst: SUB |
| Subcontract Analysis | See Attached | | 0 | | | 1 | 13-Feb-2019 15:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187058

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-16

Matrix:Dust

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 1300 | 5000 | ug/Kg | 1 | 25-Jan-2019 12:03 |
| Aroclor 1221 | U | | 1700 | 5000 | ug/Kg | 1 | 25-Jan-2019 12:03 |
| Aroclor 1232 | U | | 1400 | 5000 | ug/Kg | 1 | 25-Jan-2019 12:03 |
| Aroclor 1242 | U | | 1800 | 5000 | ug/Kg | 1 | 25-Jan-2019 12:03 |
| Aroclor 1248 | U | | 1800 | 5000 | ug/Kg | 1 | 25-Jan-2019 12:03 |
| Aroclor 1254 | U | | 1400 | 5000 | ug/Kg | 1 | 25-Jan-2019 12:03 |
| **Aroclor 1260** | **3,700** | J | **1200** | **5000** | **ug/Kg** | 1 | 25-Jan-2019 12:03 |
| **PCBs (Total)** | **3,700** | J | **1200** | **5000** | **ug/Kg** | 1 | 25-Jan-2019 12:03 |
| *Surr: Decachlorobiphenyl* | *105* | | | *54-143* | *%REC* | *1* | *25-Jan-2019 12:03* |
| *Surr: Tetrachloro-m-xylene* | *94.6* | | | *50-140* | *%REC* | *1* | *25-Jan-2019 12:03* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | | |
|---|---|---|---|
| Client: | Environmental Health & Engineering | | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | | WorkOrder:HS19011056 |
| Sample ID: | 184852 | | Lab ID:HS19011056-18 |
| Collection Date: | 21-Jan-2019 00:00 | | Matrix:Solid |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541/3665A / 23-Jan-2019 | | Analyst: JLJ |
| Aroclor 1016 | U | | 2700 | 11000 | ug/Kg | 10 | 24-Jan-2019 18:15 |
| Aroclor 1221 | U | | 3700 | 11000 | ug/Kg | 10 | 24-Jan-2019 18:15 |
| Aroclor 1232 | U | | 2900 | 11000 | ug/Kg | 10 | 24-Jan-2019 18:15 |
| **Aroclor 1242** | **130,000** | | **3800** | **11000** | **ug/Kg** | 10 | 24-Jan-2019 18:15 |
| **Aroclor 1248** | **49,000** | P | **3800** | **11000** | **ug/Kg** | 10 | 24-Jan-2019 18:15 |
| Aroclor 1254 | U | | 3100 | 11000 | ug/Kg | 10 | 24-Jan-2019 18:15 |
| Aroclor 1260 | U | | 2600 | 11000 | ug/Kg | 10 | 24-Jan-2019 18:15 |
| **PCBs (Total)** | **180,000** | | **2600** | **11000** | **ug/Kg** | 10 | 24-Jan-2019 18:15 |
| *Surr: Decachlorobiphenyl* | *109* | *J* | | *54-143* | *%REC* | *10* | *24-Jan-2019 18:15* |
| *Surr: Tetrachloro-m-xylene* | *100* | *J* | | *50-140* | *%REC* | *10* | *24-Jan-2019 18:15* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

| | | |
|---|---|---|
| Client: | Environmental Health & Engineering | **ANALYTICAL REPORT** |
| Project: | 22437 Friedman/Rubin S.V.E.C. | WorkOrder:HS19011056 |
| Sample ID: | 187069 | Lab ID:HS19011056-19 |
| Collection Date: | 21-Jan-2019 00:00 | Matrix:Solid |

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A** | | **Method:NA** | | | | | Analyst: SUB |
| Subcontract Analysis | See Attached | | 0 | | | 1 | 13-Feb-2019 15:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

Project: 22437 Friedman/Rubin S.V.E.C.

Sample ID: 187087 Blank

Collection Date: 21-Jan-2019 00:00

**ANALYTICAL REPORT**

WorkOrder:HS19011056

Lab ID:HS19011056-20

Matrix:Solid

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541C/3665A / 07-Feb-2019 | | Analyst: JBA |
| Aroclor 1016 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| Aroclor 1221 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| Aroclor 1232 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| Aroclor 1242 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| Aroclor 1248 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| Aroclor 1254 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| Aroclor 1260 | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| PCBs (Total) | | U | 500 | 500 | ng, Total | 1 | 07-Feb-2019 23:56 |
| *Surr: Decachlorobiphenyl* | *85.6* | | | *30-150* | *%REC* | *1* | *07-Feb-2019 23:56* |
| *Surr: Tetrachloro-m-xylene* | *89.2* | | | *30-150* | *%REC* | *1* | *07-Feb-2019 23:56* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Environmental Health & Engineering

**ANALYTICAL REPORT**

Project: 22437 Friedman/Rubin S.V.E.C.

WorkOrder:HS19011056

Sample ID: 187088 Blank

Lab ID:HS19011056-21

Collection Date: 21-Jan-2019 00:00

Matrix:Solid

| ANALYSES | RESULT | QUAL | MDL | REPORT LIMIT | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|
| **PCBS BY SW8082A** | | **Method:SW8082** | | | Prep:SW3541C/3665A / 07-Feb-2019 | | Analyst: JBA |
| Aroclor 1016 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| Aroclor 1221 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| Aroclor 1232 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| Aroclor 1242 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| Aroclor 1248 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| Aroclor 1254 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| Aroclor 1260 | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| PCBs (Total) | | U | 500 | 500 | ng, Total | 1 | 08-Feb-2019 00:13 |
| *Surr: Decachlorobiphenyl* | *72.1* | | | *30-150* | *%REC* | *1* | *08-Feb-2019 00:13* |
| *Surr: Tetrachloro-m-xylene* | *79.9* | | | *30-150* | *%REC* | *1* | *08-Feb-2019 00:13* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

# Attachment 2

## WEIGHT LOG

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** HS19011056

**Batch ID:** 136949 **Method:** PCBS BY SW8082A **Prep:** PCBPR_SOX

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS19011056-07 | 1 | 2.66 | 10 (mL) | 3.759 |
| HS19011056-08 | 1 | 4.68 | 10 (mL) | 2.137 |
| HS19011056-10 | 1 | 0.42 | 10 (mL) | 23.81 |
| HS19011056-11 | 1 | 0.05 | 10 (mL) | 200 |
| HS19011056-12 | 1 | 0.04 | 10 (mL) | 250 |
| HS19011056-13 | 1 | 0.13 | 10 (mL) | 76.92 |
| HS19011056-14 | 1 | 0.22 | 10 (mL) | 45.45 |
| HS19011056-16 | 1 | 0.1 | 10 (mL) | 100 |
| HS19011056-18 | 1 | 0.46 | 10 (mL) | 21.74 |

**Batch ID:** 136985 **Method:** PCBS BY SW8082A **Prep:** PCBWIPEPR_SOX

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS19011056-01 | 1 | 1 | 10 (mL) | 10 |
| HS19011056-03 | 1 | 1 | 10 (mL) | 10 |
| HS19011056-04 | 1 | 1 | 10 (mL) | 10 |

**Batch ID:** 137511 **Method:** PCBS BY SW8082A **Prep:** PCBWIPEPR_SOX

| SampID | Container | Sample Wt/Vol | Final Volume | Prep Factor |
|---|---|---|---|---|
| HS19011056-20 | 1 | 1 | 10 (mL) | 10 |
| HS19011056-21 | 1 | 1 | 10 (mL) | 10 |

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** HS19011056

**DATES REPORT**

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** 136949 | **Test Name :** PCBS BY SW8082A | | | **Matrix:** Dust | | |
| HS19011056-11 | 184824 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 25 Jan 2019 10:59 | 1 |
| HS19011056-12 | 184827 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 25 Jan 2019 11:15 | 1 |
| HS19011056-13 | 184829 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 25 Jan 2019 11:31 | 1 |
| HS19011056-14 | 187056 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 25 Jan 2019 11:47 | 1 |
| HS19011056-16 | 187058 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 25 Jan 2019 12:03 | 1 |
| **Batch ID** 136949 | **Test Name :** PCBS BY SW8082A | | | **Matrix:** Solid | | |
| HS19011056-07 | 187062 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 24 Jan 2019 16:08 | 10 |
| HS19011056-08 | 187066 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 24 Jan 2019 16:24 | 10 |
| HS19011056-10 | 187064 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 25 Jan 2019 10:43 | 1 |
| HS19011056-18 | 184852 | 21 Jan 2019 00:00 | | 23 Jan 2019 11:43 | 24 Jan 2019 18:15 | 10 |
| **Batch ID** 136985 | **Test Name :** PCBS BY SW8082A | | | **Matrix:** Wipe | | |
| HS19011056-01 | 184838 | 21 Jan 2019 00:00 | | 23 Jan 2019 16:30 | 25 Jan 2019 12:19 | 1 |
| HS19011056-03 | 184831 | 21 Jan 2019 00:00 | | 23 Jan 2019 16:30 | 25 Jan 2019 12:36 | 1 |
| HS19011056-04 | 184840 | 21 Jan 2019 00:00 | | 23 Jan 2019 16:30 | 25 Jan 2019 12:53 | 1 |
| **Batch ID** 137511 | **Test Name :** PCBS BY SW8082A | | | **Matrix:** Solid | | |
| HS19011056-20 | 187087 Blank | 21 Jan 2019 00:00 | | 07 Feb 2019 12:28 | 07 Feb 2019 23:56 | 1 |
| HS19011056-21 | 187088 Blank | 21 Jan 2019 00:00 | | 07 Feb 2019 12:28 | 08 Feb 2019 00:13 | 1 |
| **Batch ID** R332801 | **Test Name :** SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A | | | **Matrix:** Dust | | |
| HS19011056-15 | 187057 | 21 Jan 2019 00:00 | | | 13 Feb 2019 15:02 | 1 |
| **Batch ID** R332801 | **Test Name :** SUBCONTRACT ANALYSIS - DIOXINS/FURANS 8290A | | | **Matrix:** Solid | | |
| HS19011056-06 | 187061 | 21 Jan 2019 00:00 | | | 13 Feb 2019 15:02 | 1 |
| HS19011056-09 | 187067 | 21 Jan 2019 00:00 | | | 13 Feb 2019 15:02 | 1 |
| HS19011056-19 | 187069 | 21 Jan 2019 00:00 | | | 13 Feb 2019 15:02 | 1 |



RIGHT SOLUTIONS | RIGHT PARTNER

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** HS19011056

**QC BATCH REPORT**

**Batch ID: 136949** **Instrument: ECD_7** **Method: SW8082**

**MBLK** Sample ID: **MBLK-136949** Units: **ug/Kg** Analysis Date: **24-Jan-2019 08:24**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924836** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | U | 17 | | | | | | | | |
| Aroclor 1221 | U | 17 | | | | | | | | |
| Aroclor 1232 | U | 17 | | | | | | | | |
| Aroclor 1242 | U | 17 | | | | | | | | |
| Aroclor 1248 | U | 17 | | | | | | | | |
| Aroclor 1254 | U | 17 | | | | | | | | |
| Aroclor 1260 | U | 17 | | | | | | | | |
| PCBs (Total) | U | 17 | | | | | | | | |
| *Surr: Decachlorobiphenyl* | *5.921* | *1.6* | *6.667* | *0* | *88.8* | *54 - 143* | | | | |
| *Surr: Tetrachloro-m-xylene* | *6.129* | *1.6* | *6.667* | *0* | *91.9* | *50 - 140* | | | | |

**LCS** Sample ID: **LCS-136949** Units: **ug/Kg** Analysis Date: **24-Jan-2019 08:40**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924837** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 158.9 | 17 | 166.7 | 0 | 95.3 | 53 - 135 | | | | |
| Aroclor 1260 | 157.3 | 17 | 166.7 | 0 | 94.3 | 54 - 137 | | | | |
| *Surr: Decachlorobiphenyl* | *6.335* | *1.6* | *6.667* | *0* | *95.0* | *54 - 143* | | | | |
| *Surr: Tetrachloro-m-xylene* | *6.452* | *1.6* | *6.667* | *0* | *96.8* | *50 - 140* | | | | |

**MS** Sample ID: **HS19011054-02MS** Units: **ug/Kg** Analysis Date: **24-Jan-2019 09:28**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924839** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 160.6 | 17 | 166.3 | 0 | 96.6 | 53 - 135 | | | | |
| Aroclor 1260 | 187.2 | 17 | 166.3 | 27.16 | 96.2 | 54 - 137 | | | | |
| *Surr: Decachlorobiphenyl* | *6.88* | *1.6* | *6.651* | *0* | *103* | *54 - 143* | | | | |
| *Surr: Tetrachloro-m-xylene* | *6.621* | *1.6* | *6.651* | *0* | *99.5* | *50 - 140* | | | | |

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** HS19011056

**QC BATCH REPORT**

**Batch ID: 136949** **Instrument: ECD_7** **Method: SW8082**

**MSD** Sample ID: **HS19011054-02MSD** Units: **ug/Kg** Analysis Date: **24-Jan-2019 09:43**
Client ID: Run ID: **ECD_7_331650** SeqNo: **4924840** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 149.7 | 17 | 166.5 | 0 | 89.9 | 53 - 135 | 160.6 | 7.02 | 30 | |
| Aroclor 1260 | 187.8 | 17 | 166.5 | 27.16 | 96.5 | 54 - 137 | 187.2 | 0.338 | 30 | |
| *Surr: Decachlorobiphenyl* | *6.448* | *1.6* | *6.66* | *0* | *96.8* | *54 - 143* | *6.88* | *6.49* | *30* | |
| *Surr: Tetrachloro-m-xylene* | *6.124* | *1.6* | *6.66* | *0* | *91.9* | *50 - 140* | *6.621* | *7.81* | *30* | |

**The following samples were analyzed in this batch:** HS19011056-07 HS19011056-08 HS19011056-10 HS19011056-11 HS19011056-12 HS19011056-13 HS19011056-14 HS19011056-16 HS19011056-18

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** HS19011056

**QC BATCH REPORT**

**Batch ID: 136985** **Instrument: ECD_7** **Method: SW8082**

**MBLK** Sample ID: **MBLK-136985** Units: **ng, Total** Analysis Date: **24-Jan-2019 20:22**
Client ID: Run ID: **ECD_7_331725** SeqNo: **4925168** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | U | 500 | | | | | | | | |
| Aroclor 1221 | U | 500 | | | | | | | | |
| Aroclor 1232 | U | 500 | | | | | | | | |
| Aroclor 1242 | U | 500 | | | | | | | | |
| Aroclor 1248 | U | 500 | | | | | | | | |
| Aroclor 1254 | U | 500 | | | | | | | | |
| Aroclor 1260 | U | 500 | | | | | | | | |
| PCBs (Total) | U | 500 | | | | | | | | |
| *Surr: Decachlorobiphenyl* | *189.1* | *0* | *200* | *0* | *94.5* | *30 - 150* | | | | |
| *Surr: Tetrachloro-m-xylene* | *180.3* | *0* | *200* | *0* | *90.2* | *30 - 150* | | | | |

**LCS** Sample ID: **LCS-136985** Units: **ng, Total** Analysis Date: **24-Jan-2019 20:38**
Client ID: Run ID: **ECD_7_331725** SeqNo: **4925169** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 4793 | 500 | 5000 | 0 | 95.9 | 50 - 130 | | | | |
| Aroclor 1260 | 5156 | 500 | 5000 | 0 | 103 | 50 - 130 | | | | |
| *Surr: Decachlorobiphenyl* | *201.9* | *0* | *200* | *0* | *101* | *30 - 150* | | | | |
| *Surr: Tetrachloro-m-xylene* | *193.6* | *0* | *200* | *0* | *96.8* | *30 - 150* | | | | |

**LCSD** Sample ID: **LCSD-136985** Units: **ng, Total** Analysis Date: **24-Jan-2019 20:54**
Client ID: Run ID: **ECD_7_331725** SeqNo: **4925170** PrepDate: **23-Jan-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 4960 | 500 | 5000 | 0 | 99.2 | 50 - 130 | 4793 | 3.42 | 30 | |
| Aroclor 1260 | 5318 | 500 | 5000 | 0 | 106 | 50 - 130 | 5156 | 3.08 | 30 | |
| *Surr: Decachlorobiphenyl* | *205.4* | *0* | *200* | *0* | *103* | *30 - 150* | *201.9* | *1.73* | *30* | |
| *Surr: Tetrachloro-m-xylene* | *198.9* | *0* | *200* | *0* | *99.5* | *30 - 150* | *193.6* | *2.73* | *30* | |

**The following samples were analyzed in this batch:** HS19011056-01 HS19011056-03 HS19011056-04

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** HS19011056

**QC BATCH REPORT**

**Batch ID: 137511** **Instrument: ECD_7** **Method: SW8082**

**MBLK** Sample ID: **MBLK-137511** Units: **ng, Total** Analysis Date: **07-Feb-2019 21:24**
Client ID: Run ID: **ECD_7_332552** SeqNo: **4943020** PrepDate: **07-Feb-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | U | 500 | | | | | | | | |
| Aroclor 1221 | U | 500 | | | | | | | | |
| Aroclor 1232 | U | 500 | | | | | | | | |
| Aroclor 1242 | U | 500 | | | | | | | | |
| Aroclor 1248 | U | 500 | | | | | | | | |
| Aroclor 1254 | U | 500 | | | | | | | | |
| Aroclor 1260 | U | 500 | | | | | | | | |
| PCBs (Total) | U | 500 | | | | | | | | |
| *Surr: Decachlorobiphenyl* | *136.4* | *0* | *200* | *0* | *68.2* | *30 - 150* | | | | |
| *Surr: Tetrachloro-m-xylene* | *125.9* | *0* | *200* | *0* | *62.9* | *30 - 150* | | | | |

**LCS** Sample ID: **LCS-137511** Units: **ng, Total** Analysis Date: **07-Feb-2019 21:41**
Client ID: Run ID: **ECD_7_332552** SeqNo: **4943021** PrepDate: **07-Feb-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 3191 | 500 | 5000 | 0 | 63.8 | 50 - 130 | | | | |
| Aroclor 1260 | 2685 | 500 | 5000 | 0 | 53.7 | 50 - 130 | | | | |
| *Surr: Decachlorobiphenyl* | *112.8* | *0* | *200* | *0* | *56.4* | *30 - 150* | | | | |
| *Surr: Tetrachloro-m-xylene* | *142.6* | *0* | *200* | *0* | *71.3* | *30 - 150* | | | | |

**LCSD** Sample ID: **LCSD-137511** Units: **ng, Total** Analysis Date: **07-Feb-2019 21:58**
Client ID: Run ID: **ECD_7_332552** SeqNo: **4943022** PrepDate: **07-Feb-2019** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 3593 | 500 | 5000 | 0 | 71.9 | 50 - 130 | 3191 | 11.9 | 30 | |
| Aroclor 1260 | 3219 | 500 | 5000 | 0 | 64.4 | 50 - 130 | 2685 | 18.1 | 30 | |
| *Surr: Decachlorobiphenyl* | *127.9* | *0* | *200* | *0* | *64.0* | *30 - 150* | *112.8* | *12.5* | *30* | |
| *Surr: Tetrachloro-m-xylene* | *178.3* | *0* | *200* | *0* | *89.2* | *30 - 150* | *142.6* | *22.2* | *30* | |

**The following samples were analyzed in this batch:** HS19011056-20 HS19011056-21

**Client:** Environmental Health & Engineering
**Project:** 22437 Friedman/Rubin S.V.E.C.
**WorkOrder:** **HS19011056**

**QUALIFIERS, ACRONYMS, UNITS**

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| M | Manually integrated, see raw data for justification |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL/SDL |

| Acronym | Description |
|---|---|
| DCS | Detectability Check Study |
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitaion Limit |
| SD | Serial Dilution |
| SDL | Sample Detection Limit |
| TRRP | Texas Risk Reduction Program |



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## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| Arkansas | 88-0356 | 27-Mar-2019 |
| Texas | T10470231-18-21 | 30-Apr-2019 |
| North Dakota | R193 2018-2019 | 30-Apr-2019 |
| Illinois | 004438 | 29-Jun-2019 |
| Louisiana | 03087 | 30-Jun-2019 |
| Dept of Defense | ANAB L2231 | 20-Dec-2021 |
| Kentucky | 123043 - 2018 | 30-Apr-2019 |
| Kansas | E-10352 2018-2019 | 31-Jul-2019 |
| Oklahoma | 2018-156 | 31-Aug-2019 |



RIGHT SOLUTIONS | RIGHT PARTNER

## Sample Receipt Checklist

Client Name: Environmental Health & Engineering

Work Order: HS19011056

Date/Time Received: **23-Jan-2019 09:55**

Received by: **PJM**

Checklist completed by: *Paresh M. Giga* eSignature | 23-Jan-2019 Date

Reviewed by: *RJ Modashia* eSignature | 23-Jan-2019 Date

Matrices: **Dust/Solid/Wipe**

Carrier name: **FedEx**

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 2 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:None |
| Samplers name present on COC? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |

| | | |
|---|---|---|
| Temperature(s)/Thermometer(s): | 1.8c/2.1c U/C | IR25 |
| Cooler(s)/Kit(s): | 44451 | |
| Date/Time sample(s) sent to storage: | 1/23/19 11:35 | |

| | | | |
|---|---|---|---|
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

**Environmental Health & Engineering, Inc.**

# CHAIN OF CUSTODY FORM

DATE: 1/21/2019

**Attachment 2**

FROM: Environmental Health and Engineering, Inc.
[illegible] Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: ALS Environmental
Houston, TX

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22437 (Friedman/Rubin S.V.E.C.)

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

| SAMPLE ID | SAMPLE TYPE | ANALYTICAL METHOD/NUMBER | OTHER:Time/Date/Vol. |
|---|---|---|---|
| 184838 | WIPE-Hexane | PCB Aroclor - 8082 | Due: 1/25/19 |
| 184839 | WIPE-Hexane | Dioxin/Furan - 1613B | HOLD |
| 184831 | WIPE-Hexane | PCB Aroclor - 8082 | Due: 1/25/19 |
| 184840 | WIPE-Hexane | PCB Aroclor - 8082 | Due: 1/25/19 |
| 184841 | WIPE-Hexane | Dioxin/Furan - 1613B | HOLD |
| 187061 | BULK-CARPET | Dioxin/Furan - 1613B | HOLD |
| 187062 | BULK-CARPET | PCB Aroclor - 8082 | Due: 1/25/19 |
| 187066 | BULK-CARPET | PCB Aroclor - 8082 | Due: 1/25/19 |
| 187062 | BULK-CARPET | Dioxin/Furan - 1613B | HOLD |
| 187064 | BULK-CARPET | PCB Aroclor - 8082 | Due: 1/25/19 |
| 184824 | BULK-DUST | PCB Aroclor - 8082 | Due: 1/25/19 |
| 184827 | BULK-DUST | PCB Aroclor - 8082 | Due: 1/25/19 |
| 184829 | BULK-DUST | PCB Aroclor - 8082 | Due: 1/25/19 |
| 187056 | BULK-DUST | PCB Aroclor - 8082 | Due: 1/25/19 |
| 187057 | BULK-DUST | (HOLD) ~~PCB Aroclor - 8082~~ 1613B(01A) | HOLD |
| 187058 | BULK-DUST | PCB Aroclor - 8082 | Due: 1/25/19 |

**HS19011056**

Environmental Health & Engineering
22437 Friedman/Rubin S.V.E.C.

☑ Rush by 1/25/19 or As Indicated date/time ☐ Other

☒ Electronic transfer - datacoordinator@eheinc.com
cghlan@eheinc.com

**is form to the above address**

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/21/19
Received by: [signature] of (company name) FEDEX Date: 1/21/19
Relinquished by: of (company name) Date:
Received by: P.M. [signature] of (company name) ALS. Date: 1/23/19 09:55
Relinquished by: of (company name) Date:
Received by: of (company name) Date:
Lab Data
Received by: of Environmental Health & Engineering, Inc. Date:

Page 1 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY



RIGHT SOLUTIONS | RIGHT PARTNER

**Environmental Health & Engineering, Inc.**

# CHAIN OF CUSTODY FORM

DATE: 1/21/2019

**Attachment 2**

FROM: Environmental Health and Engineering, Inc.
[illegible] Wells Avenue, Suite 200
Newton, MA 02459-3328

TO: ALS Environmental
Houston, TX

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 22437 (Friedman/Rubin S.V.E.C.)

The cost of this analysis will be covered by EH&E Purchase Order # N.A.

For EH & E Data Coordinator - URGENT DATA ☐

| SAMPLE ID | SAMPLE TYPE | ANALYTICAL METHOD/NUMBER | OTHER:Time/Date/Vol. |
|---|---|---|---|
| 187059 | BULK-DUST | DIOXIN/FURAN - 1613B | HOLD |
| 184852 | BULK-TAR | PCB Aroclor - 8082 | Due: 1/25/19 |
| 187069 | BULK-TAR | DIOXIN/FURAN - 1613B | HOLD |
| 187087 | BLANK | PCB (8082) & DIOXIN/FURAN (1613B | HOLD |
| 187088 | BLANK | PCB (8082) & DIOXIN/FURAN (1613B) | HOLD |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |
| | | | |

HS19011056
Environmental Health & Engineering
22437 Friedman/Rubin S.V.E.C.

**Special instructions:**

☐ Standard turn around time ☑ Rush by 1/25/19 or as indicated date/time ☐ Other _____

☐ Fax results 781-247-4305

☐ **RETURN SAMPLES** ☐ Electronic transfer - datacoordinator@eheinc.com

☑ Additional report recipient Kroghlan@eheinc.com

**Each signatory please return one copy of this form to the above address**

Relinquished by: [signature] of Environmental Health & Engineering, Inc. Date: 1/21/2019

Received by: [signature] of (company name) FEDEX Date: 1/21/2019

Relinquished by: _____ of (company name) _____ Date: _____

Received by: [signature] of (company name) ALS. Date: 1/23/19 09:55

Relinquished by: _____ of (company name) _____ Date: _____

Received by: _____ of (company name) _____ Date: _____

Lab Data
Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

Page 2 of 2

WHITE-EH&E FILE COPY YELLOW-LAB COPY PINK-PROJECT MANAGER COPY GOLD-DATA COORDINATOR COPY

Attachment B

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 1/18/19 Time: 4:55 PM
Name: E. COGHLAN
Company: EHTE, INC.

Seal Broken By:
Date: 1/28/19

FedEx
TRK# 0215 8137 0760 7599
TUE - 22 JAN AA
STANDARD OVERNIGHT
DSR
77099
TX-US
IAH
NH SGRA

FTD 187013 21JAN19 OWDA 563C2/D74C/0CBA

FedEx Express Package US Airbill
FedEx Tracking Number 8137 0760 7599
Form ID No. 0215

1 From
Date
Sender's Name Phone
Company
Address Dept./Floor/Suite/Room
City State ZIP

2 Your Internal Billing Reference 22437

3 To
Recipient's Name CLIENT SERVICES Phone 281-530-5656
Company ALS ENVIRONMENTAL Houston LAB
Address 10450 STANCLIFF RD STE 210 Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City Houston State TX ZIP 77099-4338

Hold Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.
Hold Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8137 0760 7599

4 Express Package Service * To most locations.
Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day
- FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.
- [x] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days
- FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.
- FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.
FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube [x] Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
Saturday Delivery NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
No Signature Required — Package may be left without obtaining a signature for delivery.
[x] Direct Signature — Someone at recipient's address may sign for delivery.
Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?
One box must be checked.
[x] No
Yes — As per attached Shipper's Declaration.
Yes — Shipper's Declaration not required.
Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
Restrictions apply for dangerous goods — see the current FedEx Service Guide.
Cargo Aircraft Only

7 Payment Bill to:
Enter FedEx Acct. No. or Credit Card No. below.
Obtain FedEx Acct. No.
[x] Sender — Acct. No. in Section 1 will be billed.
Recipient Third Party Credit Card Cash/Check

Total Packages 1 Total Weight 10 lbs.
Credit Card Auth.

*Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

611

Rev. Date 5/15 • Part #183194 • ©1994-2015 FedEx • PRINTED IN U.S.A. SRM



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**Attachment 2**

February 07, 2019

Service Request No:E1900077

ALS Environmental - US
10450 Stancliff Road
Suite 210
Houston, TX 77099

**Laboratory Results for: HS19011056**

Enclosed are the results of the sample(s) submitted to our laboratory January 29, 2019
For your reference, these analyses have been assigned our service request number **E1900077.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the final complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

ALS Environmental

# Certificate of Analysis

**ALS Environmental - Houston HRMS**
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

# Attachment 2

**ALS Environmental**

| | | | |
|---|---|---|---|
| **Client:** | ALS Houston | **Service Request No.:** | E1900077 |
| **Project:** | HS19011056 | **Date Received:** | 01/29/19 |
| **Sample Matrix:** | Misc Solid | | |

## CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

### Sample Receipt

Four samples were received for analysis at ALS Environmental in Houston on 01/29/19.

The samples were received at 0.9°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

### Data Validation Notes and Discussion

**Method Blank**

The Method Blank EQ1900034-01 contained low levels of target Dioxin/Furan compounds above the EDL however below the Method Reporting Limit (MRL). The associated compounds in the samples are not flagged with a 'B' flag as the sample results are greater than ten times the level detected in the method blank.

**Precision and Accuracy:**

EQ1900034: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS and DLCS recoveries are within control limits.

**E flags**

When OCDD exceeds the upper method calibration limit (MCL), we use an 'E' flag on the Sample Analytical Report results page when the detector is not saturated. Sample E1900077-004 is reported with an 'E' flag to denote that the sample had concentration greater than the highest calibration point. The process of dilution is counter to the isotopic dilution technique that the laboratory uses to determine recovery and produces variability in the final value. The laboratory only dilutes when detector saturation occurs.

**K flags**

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

**2378-TCDF**

Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

# Attachment 2

**Detection Limits**

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

**The TEQ Summary results for each sample have been calculated by ALS/Houston to include:**

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds reported as ND = ½ * Detection Limit
- Non-detected compounds are not included in the 'Total'

*The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.*

*Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.*

## SAMPLE CROSS-REFERENCE

| SAMPLE # | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|
| E1900077-001 | 187061 | 1/21/2019 | 0000 |
| E1900077-002 | 187067 | 1/21/2019 | 0000 |
| E1900077-003 | 187057 | 1/21/2019 | 0000 |
| E1900077-004 | 187069 | 1/21/2019 | 0000 |

# Service Request Summary

**Attachment 2**

**Folder #:** **E1900077**
Client Name: ALS Environmental - US
Project Name: HS19011056
Project Number:

**Report To:** Corey Grandits
ALS Environmental - US
10450 Stancliff Road
Houston, TX 77099
USA
Phone Number: 281-575-2146
Cell Number:
Fax Number:
E-mail: corey.grandits@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: TWOODS
Date Received: 01/29/19
Internal Due Date: 2/13/2019
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS19011056
EDD: No EDD Specified

2 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
2 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
**Location:** EHRMS-WIC 6D
**Pressure Gas:**
**Rush**

| Lab Samp No. | Client Samp No | Matrix | Collected | HOUSTON Dioxins Furans/1613B |
|---|---|---|---|---|
| E1900077-001 | 187061 | Solid | 01/21/19 0000 | II |
| E1900077-002 | 187067 | Solid | 01/21/19 0000 | II |
| E1900077-003 | 187057 | Solid | 01/21/19 0000 | II |
| E1900077-004 | 187069 | Solid | 01/21/19 0000 | II |

# Service Request Summary

**Attachment 2**

| | |
|---|---|
| **Folder #:** | **E1900077** |
| Client Name: | ALS Environmental - US |
| Project Name: | HS19011056 |
| Project Number: | |
| **Report To:** | Corey Grandits<br>ALS Environmental - US<br>10450 Stancliff Road<br>Houston, TX 77099<br>USA |
| Phone Number: | 281-575-2146 |
| Cell Number: | |
| Fax Number: | |
| E-mail: | corey.grandits@alsglobal.com |

| | |
|---|---|
| Project Chemist: | Corey Grandits |
| Originating Lab: | HOUSTON |
| Logged By: | TWOODS |
| Date Received: | 01/29/19 |
| Internal Due Date: | 2/13/2019 |
| QAP: | LAB QAP |
| Qualifier Set: | HRMS Qualifier Set |
| Formset: | Lab Standard |
| Merged?: | Y |
| Report to MDL?: | Y |
| P.O. Number: | HS19011056 |
| EDD: | No EDD Specified |

| | |
|---|---|
| 2 | 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved |
| 2 | 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved |

**Location:** EHRMS-WIC 6D

**Pressure Gas:**

**Rush**

## Attachment 2

# Data Qualifiers

### HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

# ALS Laboratory Group

## Acronyms

| | |
|---|---|
| Cal | Calibration |
| Conc | CONCentration |
| Dioxin(s) | Polychlorinated dibenzo-p-dioxin(s) |
| EDL | Estimated Detection Limit |
| EMPC | Estimated Maximum Possible Concentration |
| Flags | Data qualifiers |
| Furan(s) | Polychlorinated dibenzofuran(s) |
| g | Grams |
| ICAL | Initial CALibration |
| ID | IDentifier |
| Ions | Masses monitored for the analyte during data acquisition |
| L | Liter (s) |
| LCS | Laboratory Control Sample |
| DLCS | Duplicate Laboratory Control Sample |
| MB | Method Blank |
| MCL | Method Calibration Limit |
| MDL | Method Detection Limit |
| mL | Milliliters |
| MS | Matrix Spiked sample |
| DMS | Duplicate Matrix Spiked sample |
| NO | Number of peaks meeting all identification criteria |
| PCDD(s) | Polychlorinated dibenzo-p-dioxin(s) |
| PCDF(s) | Polychlorinated dibenzofuran(s) |
| ppb | Parts per billion |
| ppm | Parts per million |
| ppq | Parts per quadrillion |
| ppt | Parts per trillion |
| QA | Quality Assurance |
| QC | Quality Control |
| Ratio | Ratio of areas from monitored ions for an analyte |
| % Rec. | Percent recovery |
| RPD | Relative Percent Difference |
| RRF | Relative Response Factor |
| RT | Retention Time |
| SDG | Sample Delivery Group |
| S/N | Signal-to-noise ratio |
| TEF | Toxicity Equivalence Factor |
| TEQ | Toxicity Equivalence Quotient |

Attachment 2

# ALS ENVIRONMENTAL – Houston
## Data Processing/Form Production and Peer Review Signatures

SR# Unique ID: E190077 DB-5MSUI SPB-Octyl

**First Level - Data Processing** - to be filled by person generating the forms

| Date: | Analyst: | Samples: |
|---|---|---|
| 02/06/19 | JC | 001-004 |

**Second Level - Data Review** – to be filled by person doing peer review

| Date: | Analyst: | Samples: |
|---|---|---|
| 2/6/19 | LG | 001-004 |

HS-HRMSREVIEW R1.0

PEER REVIEW PAGE2015

ALS Environmental

# Chain of Custody

**ALS Environmental - Houston HRMS**
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**Attachment 2**

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**T:** +1 281 530 5656
**F:** +1 281 530 5887
**www.alsglobal.com**

# Subcontract Chain of Custody

**COC ID: 10670**

E1900077 5
ALS Environmental - US
HS19011056

**SUBCONTRACT TO:**

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

**Phone:** +1 281 530 5656

**CUSTOMER INFORMATION:**

| | |
|---|---|
| **Company:** | ALS Houston |
| **Contact:** | Corey Grandits |
| **Address:** | 10450 Stancliff Rd, Ste 210 |
| **Phone:** | +1 281 530 5656 |
| **Email:** | Corey.Grandits@alsglobal.com |
| **Alternate Contact:** | Jumoke M. Lawal |
| **Email:** | jumoke.lawal@alsglobal.com |

**INVOICE INFORMATION:**

| | |
|---|---|
| **Company:** | ALS Houston |
| **Contact:** | Accounts Payable |
| **Address:** | 10450 Stancliff Rd, Ste 210 |
| **Phone:** | +1 281 530 5656 |
| **Reference:** | HS19011056 |
| **TSR:** | Jennifer Bell |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| 1. | **HS19011056-06** | **187061** | **Solid** | **21 Jan 2019 00:00** |
| | Sub 1613B Dioxin/Furans Full List | | | 11 Feb 2019 |
| 2. | **HS19011056-09** | **187067** | **Solid** | **21 Jan 2019 00:00** |
| | Sub 1613B Dioxin/Furans Full List | | | 11 Feb 2019 |
| 3. | **HS19011056-15** | **187057** | **Dust** | **21 Jan 2019 00:00** |
| | Sub 1613B Dioxin/Furans Full List | | | 11 Feb 2019 |
| 4. | **HS19011056-19** | **187069** | **Solid** | **21 Jan 2019 00:00** |
| | Sub 1613B Dioxin/Furans Full List | | | 11 Feb 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.

**QC Level:** STD (Laboratory Standard QC: method blank and LCS required)

| | | | |
|---|---|---|---|
| Relinquished By: | J. [illegible] | Date/Time: | 1/29/19 15:30 |
| Received By: | [illegible] | Date/Time: | 1/29/19 15:30 |
| Cooler ID(s): | | Temperature(s): | |



0.5°C

ALS Environmental

# Cooler Receipt Form
**Attachment 2**

Project Chemist: CG

Client/Project: ALS - Houston.

Thermometer ID: SM04

Date/Time Received: 01/29/19 1530 Initials: KW

Date/Time Logged in: 01/30/19 1400 Initials: KW

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ○ Courier ☒ Client
2. Samples received in: ☒ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ○ Yes ☒ No
   Were they intact? ○ Yes ○ No ☒ N/A
   Were they signed and dated? ○ Yes ○ No ☒ N/A
   If yes, how many and where?
4. Packing Material: ○ Inserts ☒ Baggies ☒ Bubble Wrap ○ Gel Packs ☒ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ☒ No Location of Sampling:

| Cooler Tracking Number | COC ID | Date Opened | Time Opened | Opened By | Temp. °C | Temp Blank? |
|---|---|---|---|---|---|---|
| N/A | | 01/29/19 | 1531 | JG | 0.5/0.9 | ☒ |
| | | | | | | ☐ |
| | | | | | | ☐ |
| | | | | | | ☐ |

6. Were custody papers properly filled out (ink, signed, dated, etc)? ☒ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ☒ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ☒ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ☒ Yes ○ No
10. Did sample labels and tags agree with custody documents? ☒ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: E1900077 5
ALS Environmental - US
HS19011056

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**www.alsglobal.com**

# SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

**Cooler Custody Seals (desirable, mandatory if specified in SAP):**

- ✓ Intact on outside of cooler, signed and dated

**Chain-of-Custody (COC) documentation (mandatory):**

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

**Sample Integrity (mandatory):**

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

**Temperature Requirement (varies by sample matrix):**

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C.
- ✓ Air samples are shipped and stored cold, at 0 to 6°C
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

ALS Environmental

# Preparation Information Benchsheets

**ALS Environmental - Houston HRMS**
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Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

# *Preparation Information Benchsheet*

**Prep Run#:** 330769 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
**Team:** Semivoa GCMS/TWOODS **Prep Method:** Method Soxhlet **Prep Date/Time:** 2/1/19 01:44 PM

Attachment 2

| # | Lab Code | Client ID | B# | Method /Test | pH | Cl | Matrix | Amt. Ext. | Sample Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | E1900050-001 | Breeder Feed Dioxins Test | .01 | 1613B/Dioxins Furans | | | Misc. Solid | 10.094g | brown pellets/pet food |
| 2 | E1900061-001 | Sludge Full-January 2019 | .01 | 1613B/Dioxins Furans | | | Soil | 10.192g | tan powder |
| 3 | E1900077-001 | 187061 | .01 | 1613B/Dioxins Furans | | | Solid | 2.954g | brown carpet |
| 4 | E1900077-002 | 187067 | .01 | 1613B/Dioxins Furans | | | Solid | 4.145g | brown carpet |
| 5 | E1900077-003 | 187057 | .01 | 1613B/Dioxins Furans | | | Solid | 0.188g | dark fuzz |
| 6 | E1900077-004 | 187069 | .01 | 1613B/Dioxins Furans | | | Solid | 0.609g | black hard substance |
| 7 | EQ1900034-01 | MB | | 1613B/Dioxins Furans | | | Solid | 10.072g | |
| 8 | EQ1900034-02 | LCS | | 1613B/Dioxins Furans | | | Solid | 10.031g | |
| 9 | EQ1900034-03 | DLCS | | 1613B/Dioxins Furans | | | Solid | 10.001g | |

## Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 196331 Logbook Ref: 196331 JG 1/16/19 2-20ng/ml Expires On: 07/15/2019

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E1900050-001 | 100.00µL | E1900061-001 | 100.00µL | E1900077-001 | 100.00µL | E1900077-002 | 100.00µL | E1900077-003 | 100.00µL | E1900077-004 | 100.00µL |
| EQ1900034-01 | 100.00µL | EQ1900034-02 | 100.00µL | EQ1900034-03 | 100.00µL | | | | | | |

Name: 8290/1613B Cleanup Working Standard Inventory ID 196382 Logbook Ref: JG 1/18/19 196382 8ng/ml Expires On: 04/27/2019

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E1900050-001 | 100.00µL | E1900061-001 | 100.00µL | E1900077-001 | 100.00µL | E1900077-002 | 100.00µL | E1900077-003 | 100.00µL | E1900077-004 | 100.00µL |
| EQ1900034-01 | 100.00µL | EQ1900034-02 | 100.00µL | EQ1900034-03 | 100.00µL | | | | | | |

Name: 1613B Labeled Working Standard Inventory ID 196739 Logbook Ref: 196739 tw 020119 2/4ng/ml Expires On: 07/31/2019

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E1900050-001 | 1,000.00µL | E1900061-001 | 1,000.00µL | E1900077-001 | 1,000.00µL | E1900077-002 | 1,000.00µL | E1900077-003 | 1,000.00µL | E1900077-004 | 1,000.00µL |
| EQ1900034-01 | 1,000.00µL | EQ1900034-02 | 1,000.00µL | EQ1900034-03 | 1,000.00µL | | | | | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Carbon, High Purity | tw 012819 carbon (196585) | Ethyl Acetate 99.9% Minimum EtOAc | AL 12/31/18 (195971) | Glass Wool | tw 011119 glass wool (196223) |
| Hexanes 95% | tw 011119 hexane (196222) | Dichloromethane (Methylene Chloride) 99.9% MeCl2 | AL (195005) | Sodium Hydroxide 1N NaOH | TW 6/14/18 (191093) |
| Sodium Sulfate Anhydrous Reagent Grade Na2SO4 | JG 01/07/19 (196116) | Tridecane (n-Tridecane) | AL 12/12/18 (195585) | Silica Gel | tw 12/31/18 (195984) |
| sulfuric acid | tw 1/28/19 sulfuric (196582) | Toluene 99.9% Minimum | tw 011119 toluene (196224) | | |

# *Preparation Information Benchsheet*

**Prep Run#:** 330769
**Team:** Semivoa GCMS/TWOODS

**Prep WorkFlow:** OrgExtS(365)
**Prep Method:** Method Soxhlet

**Status:** Prepped
**Prep Date/Time:** 2/1/19 01:44 PM

Attachment 2

## Preparation Steps

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Step: | Extraction | Step: | Acid Clean | Step: | Silica Gel Clean | Step: | Final Volume |
| Started: | 2/1/19 13:44 | Started: | 2/4/19 10:00 | Started: | 2/4/19 14:00 | Started: | 2/5/19 09:00 |
| Finished: | 2/2/19 08:00 | Finished: | 2/4/19 11:00 | Finished: | 2/4/19 17:00 | Finished: | 2/5/19 12:00 |
| By: | JGUIN | By: | JGUIN | By: | JGUIN | By: | JGUIN |
| Comments | | Comments | | Comments | | Comments | |

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

ALS Environmental

# Analytical Results

**ALS Environmental - Houston HRMS**
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187061 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 17:05 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 2.954g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616742 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | U | 1.48 | 1.69 | | | 1 |
| 1,2,3,7,8-PeCDD | 7.97**J** | | 0.923 | 8.46 | 1.77 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 9.49**K** | | 0.994 | 8.46 | 1.60 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 91.8 | | 1.07 | 8.46 | 1.22 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 16.3**K** | | 0.956 | 8.46 | 1.47 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 521 | | 3.01 | 8.46 | 1.05 | 1.000 | 1 |
| OCDD | 2130 | | 4.21 | 16.9 | 0.88 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 28.1 | | 1.69 | 1.69 | 0.69 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | 42.4 | | 2.41 | 8.46 | 1.68 | 1.001 | 1 |
| 2,3,4,7,8-PeCDF | 76.7 | | 2.27 | 8.46 | 1.60 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDF | 70.5 | | 1.30 | 8.46 | 1.19 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 32.1 | | 1.28 | 8.46 | 1.21 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | 5.37**JK** | | 1.60 | 8.46 | 1.56 | 1.001 | 1 |
| 2,3,4,6,7,8-HxCDF | 20.4 | | 1.43 | 8.46 | 1.13 | 1.001 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 136 | | 1.19 | 8.46 | 1.10 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 3.67**JK** | | 1.54 | 8.46 | 1.30 | 1.000 | 1 |
| OCDF | 61.6 | | 5.21 | 16.9 | 0.89 | 1.005 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187061 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 17:05 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 2.954g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616742 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | 10.4 | | 1.48 | 1.69 | 0.84 | | 1 |
| Total Penta-Dioxins | 153 | | 0.923 | 8.46 | 1.52 | | 1 |
| Total Hexa-Dioxins | 579 | | 1.01 | 8.46 | 1.26 | | 1 |
| Total Hepta-Dioxins | 1130 | | 3.01 | 8.46 | 1.02 | | 1 |
| Total Tetra-Furans | 435 | | 1.69 | 1.69 | 0.68 | | 1 |
| Total Penta-Furans | 1310 | | 2.34 | 8.46 | 1.66 | | 1 |
| Total Hexa-Furans | 949 | | 1.39 | 8.46 | 1.26 | | 1 |
| Total Hepta-Furans | 241 | | 1.35 | 8.46 | 1.10 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187061 | **Units:** | Percent |
| **Lab Code:** | E1900077-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 17:05 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 2.954g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616742 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 1021.343 | 51 | | 25-164 | 0.81 | 1.022 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 868.564 | 43 | | 25-181 | 1.55 | 1.197 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1123.550 | 56 | | 32-141 | 1.32 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1093.183 | 55 | | 28-130 | 1.25 | 0.994 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 735.033 | 37 | | 23-140 | 1.04 | 1.067 |
| 13C-OCDD | 4000 | 818.694 | 20 | | 17-157 | 0.94 | 1.139 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 1015.450 | 51 | | 24-169 | 0.79 | 0.991 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 839.425 | 42 | | 24-185 | 1.58 | 1.153 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 885.838 | 44 | | 21-178 | 1.56 | 1.187 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1182.683 | 59 | | 26-152 | 0.55 | 0.971 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1163.529 | 58 | | 26-123 | 0.54 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1050.012 | 53 | | 29-147 | 0.53 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1068.767 | 53 | | 28-136 | 0.54 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 712.129 | 36 | | 28-143 | 0.45 | 1.043 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 678.910 | 34 | | 26-138 | 0.45 | 1.079 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 440.914 | 55 | | 35-197 | NA | 1.022 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187061 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-001 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

**Analysis Method:** 1613B
**Prep Method:** Method Soxhlet

**Toxicity Equivalency Quotient**

| Analyte Name | Result | DL | MRL | Dilution Factor | TEF | TEF - Adjusted Concentration |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | 1.48 | 1.69 | 1 | 1 | |
| 1,2,3,7,8-PeCDD | **7.97** | 0.923 | 8.46 | 1 | 1 | 7.97 |
| 1,2,3,4,7,8-HxCDD | **9.49** | 0.994 | 8.46 | 1 | 0.1 | 0.949 |
| 1,2,3,6,7,8-HxCDD | **91.8** | 1.07 | 8.46 | 1 | 0.1 | 9.18 |
| 1,2,3,7,8,9-HxCDD | **16.3** | 0.956 | 8.46 | 1 | 0.1 | 1.63 |
| 1,2,3,4,6,7,8-HpCDD | **521** | 3.01 | 8.46 | 1 | 0.01 | 5.21 |
| OCDD | **2130** | 4.21 | 16.9 | 1 | 0.0003 | 0.639 |
| 2,3,7,8-TCDF | **28.1** | 1.69 | 1.69 | 1 | 0.1 | 2.81 |
| 1,2,3,7,8-PeCDF | **42.4** | 2.41 | 8.46 | 1 | 0.03 | 1.27 |
| 2,3,4,7,8-PeCDF | **76.7** | 2.27 | 8.46 | 1 | 0.3 | 23.0 |
| 1,2,3,4,7,8-HxCDF | **70.5** | 1.30 | 8.46 | 1 | 0.1 | 7.05 |
| 1,2,3,6,7,8-HxCDF | **32.1** | 1.28 | 8.46 | 1 | 0.1 | 3.21 |
| 1,2,3,7,8,9-HxCDF | **5.37** | 1.60 | 8.46 | 1 | 0.1 | 0.537 |
| 2,3,4,6,7,8-HxCDF | **20.4** | 1.43 | 8.46 | 1 | 0.1 | 2.04 |
| 1,2,3,4,6,7,8-HpCDF | **136** | 1.19 | 8.46 | 1 | 0.01 | 1.36 |
| 1,2,3,4,7,8,9-HpCDF | **3.67** | 1.54 | 8.46 | 1 | 0.01 | 0.0367 |
| OCDF | **61.6** | 5.21 | 16.9 | 1 | 0.0003 | 0.0185 |
| | | Total TEQ | | | | 66.9 |

2005 WHO TEFs, ND = 0

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187067 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-002 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 17:53 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 4.145g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616743 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | U | 1.05 | 1.21 | | | 1 |
| 1,2,3,7,8-PeCDD | 9.51 | | 0.692 | 6.03 | 1.74 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 13.5 | | 1.48 | 6.03 | 1.23 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 155 | | 1.57 | 6.03 | 1.30 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 27.6 | | 1.42 | 6.03 | 1.30 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 925 | | 2.22 | 6.03 | 1.09 | 1.000 | 1 |
| OCDD | 3260 | | 2.43 | 12.1 | 0.88 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 48.3 | | 0.880 | 1.21 | 0.80 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | 74.1 | | 3.23 | 6.03 | 1.58 | 1.001 | 1 |
| 2,3,4,7,8-PeCDF | 172 | | 3.37 | 6.03 | 1.51 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDF | 162 | | 2.15 | 6.03 | 1.24 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 63.9 | | 1.88 | 6.03 | 1.37 | 1.001 | 1 |
| 1,2,3,7,8,9-HxCDF | 14.3 | | 2.60 | 6.03 | 1.29 | 1.001 | 1 |
| 2,3,4,6,7,8-HxCDF | 32.5 | | 2.17 | 6.03 | 1.32 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 254 | | 1.12 | 6.03 | 1.07 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 7.15 | | 1.52 | 6.03 | 1.00 | 1.000 | 1 |
| OCDF | 104 | | 3.58 | 12.1 | 0.87 | 1.004 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187067 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-002 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 17:53 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 4.145g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616743 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | 12.4 | | 1.05 | 1.21 | 0.78 | | 1 |
| Total Penta-Dioxins | 133 | | 0.692 | 6.03 | 1.64 | | 1 |
| Total Hexa-Dioxins | 957 | | 1.49 | 6.03 | 1.24 | | 1 |
| Total Hepta-Dioxins | 1870 | | 2.22 | 6.03 | 1.07 | | 1 |
| Total Tetra-Furans | 587 | | 0.880 | 1.21 | 0.83 | | 1 |
| Total Penta-Furans | 2010 | | 3.30 | 6.03 | 1.45 | | 1 |
| Total Hexa-Furans | 2070 | | 2.17 | 6.03 | 1.27 | | 1 |
| Total Hepta-Furans | 501 | | 1.30 | 6.03 | 1.07 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187067 | **Units:** | Percent |
| **Lab Code:** | E1900077-002 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 17:53 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 4.145g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616743 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 1095.918 | 55 | | 25-164 | 0.80 | 1.022 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 907.207 | 45 | | 25-181 | 1.50 | 1.197 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1120.473 | 56 | | 32-141 | 1.28 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1118.469 | 56 | | 28-130 | 1.28 | 0.993 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 735.964 | 37 | | 23-140 | 1.13 | 1.067 |
| 13C-OCDD | 4000 | 799.643 | 20 | | 17-157 | 0.86 | 1.139 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 1062.687 | 53 | | 24-169 | 0.77 | 0.991 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 992.819 | 50 | | 24-185 | 1.60 | 1.153 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 944.653 | 47 | | 21-178 | 1.54 | 1.186 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1202.302 | 60 | | 26-152 | 0.56 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1317.554 | 66 | | 26-123 | 0.55 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1087.574 | 54 | | 29-147 | 0.53 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1175.114 | 59 | | 28-136 | 0.54 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 743.019 | 37 | | 28-143 | 0.49 | 1.042 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 683.995 | 34 | | 26-138 | 0.43 | 1.079 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 467.570 | 58 | | 35-197 | NA | 1.023 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187067 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-002 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

**Analysis Method:** 1613B
**Prep Method:** Method Soxhlet

**Toxicity Equivalency Quotient**

| Analyte Name | Result | DL | MRL | Dilution Factor | TEF | TEF - Adjusted Concentration |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | 1.05 | 1.21 | 1 | 1 | |
| 1,2,3,7,8-PeCDD | **9.51** | 0.692 | 6.03 | 1 | 1 | 9.51 |
| 1,2,3,4,7,8-HxCDD | **13.5** | 1.48 | 6.03 | 1 | 0.1 | 1.35 |
| 1,2,3,6,7,8-HxCDD | **155** | 1.57 | 6.03 | 1 | 0.1 | 15.5 |
| 1,2,3,7,8,9-HxCDD | **27.6** | 1.42 | 6.03 | 1 | 0.1 | 2.76 |
| 1,2,3,4,6,7,8-HpCDD | **925** | 2.22 | 6.03 | 1 | 0.01 | 9.25 |
| OCDD | **3260** | 2.43 | 12.1 | 1 | 0.0003 | 0.978 |
| 2,3,7,8-TCDF | **48.3** | 0.880 | 1.21 | 1 | 0.1 | 4.83 |
| 1,2,3,7,8-PeCDF | **74.1** | 3.23 | 6.03 | 1 | 0.03 | 2.22 |
| 2,3,4,7,8-PeCDF | **172** | 3.37 | 6.03 | 1 | 0.3 | 51.6 |
| 1,2,3,4,7,8-HxCDF | **162** | 2.15 | 6.03 | 1 | 0.1 | 16.2 |
| 1,2,3,6,7,8-HxCDF | **63.9** | 1.88 | 6.03 | 1 | 0.1 | 6.39 |
| 1,2,3,7,8,9-HxCDF | **14.3** | 2.60 | 6.03 | 1 | 0.1 | 1.43 |
| 2,3,4,6,7,8-HxCDF | **32.5** | 2.17 | 6.03 | 1 | 0.1 | 3.25 |
| 1,2,3,4,6,7,8-HpCDF | **254** | 1.12 | 6.03 | 1 | 0.01 | 2.54 |
| 1,2,3,4,7,8,9-HpCDF | **7.15** | 1.52 | 6.03 | 1 | 0.01 | 0.0715 |
| OCDF | **104** | 3.58 | 12.1 | 1 | 0.0003 | 0.0312 |
| | | Total TEQ | | | | 128 |

2005 WHO TEFs, ND = 0

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187057 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-003 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 18:42 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 0.188g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616744 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | 150 | | 23.9 | 26.6 | 0.71 | 1.001 | 1 |
| 1,2,3,7,8-PeCDD | 41.4 | **J** | 15.3 | 133 | 1.39 | 1.000 | 1 |
| 1,2,3,4,7,8-HxCDD | 53.6 | **JK** | 7.95 | 133 | 1.80 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 546 | | 7.85 | 133 | 1.08 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 116 | **J** | 7.35 | 133 | 1.11 | 1.006 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 6440 | | 28.4 | 133 | 1.02 | 1.000 | 1 |
| OCDD | 32400 | | 36.4 | 266 | 0.88 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 363 | | 16.9 | 26.6 | 0.68 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | 58.5 | **JK** | 9.05 | 133 | 1.85 | 1.001 | 1 |
| 2,3,4,7,8-PeCDF | 186 | | 9.82 | 133 | 1.46 | 1.000 | 1 |
| 1,2,3,4,7,8-HxCDF | 234 | **K** | 20.7 | 133 | 1.48 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 158 | | 19.9 | 133 | 1.35 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | 38.4 | **J** | 25.6 | 133 | 1.22 | 1.001 | 1 |
| 2,3,4,6,7,8-HxCDF | 160 | **K** | 21.6 | 133 | 1.01 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 3010 | | 21.6 | 133 | 1.06 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 107 | **JK** | 28.2 | 133 | 1.44 | 1.000 | 1 |
| OCDF | 4580 | | 31.5 | 266 | 0.87 | 1.005 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187057 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-003 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 18:42 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 0.188g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616744 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | 150 | | 23.9 | 26.6 | 0.71 | | 1 |
| Total Penta-Dioxins | 70.3**J** | | 15.3 | 133 | 1.65 | | 1 |
| Total Hexa-Dioxins | 2460 | | 7.71 | 133 | 1.12 | | 1 |
| Total Hepta-Dioxins | 13100 | | 28.4 | 133 | 1.06 | | 1 |
| Total Tetra-Furans | 1060 | | 16.9 | 26.6 | 0.74 | | 1 |
| Total Penta-Furans | 1220 | | 9.42 | 133 | 1.65 | | 1 |
| Total Hexa-Furans | 5350 | | 21.8 | 133 | 1.34 | | 1 |
| Total Hepta-Furans | 8900 | | 24.5 | 133 | 1.06 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187057 | **Units:** | Percent |
| **Lab Code:** | E1900077-003 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 18:42 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 0.188g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616744 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 1017.140 | 51 | | 25-164 | 0.80 | 1.022 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 911.472 | 46 | | 25-181 | 1.54 | 1.198 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1153.872 | 58 | | 32-141 | 1.28 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1196.094 | 60 | | 28-130 | 1.20 | 0.994 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 851.647 | 43 | | 23-140 | 1.06 | 1.067 |
| 13C-OCDD | 4000 | 1065.113 | 27 | | 17-157 | 0.91 | 1.139 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 1019.018 | 51 | | 24-169 | 0.78 | 0.991 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 1014.641 | 51 | | 24-185 | 1.60 | 1.153 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 940.006 | 47 | | 21-178 | 1.60 | 1.187 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1145.217 | 57 | | 26-152 | 0.53 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1175.176 | 59 | | 26-123 | 0.54 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1075.140 | 54 | | 29-147 | 0.52 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1153.447 | 58 | | 28-136 | 0.56 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 818.948 | 41 | | 28-143 | 0.46 | 1.043 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 758.042 | 38 | | 26-138 | 0.46 | 1.079 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 422.577 | 53 | | 35-197 | NA | 1.023 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187057 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-003 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

**Analysis Method:** 1613B
**Prep Method:** Method Soxhlet

**Toxicity Equivalency Quotient**

| Analyte Name | Result | DL | MRL | Dilution Factor | TEF | TEF - Adjusted Concentration |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | **150** | 23.9 | 26.6 | 1 | 1 | 150 |
| 1,2,3,7,8-PeCDD | **41.4** | 15.3 | 133 | 1 | 1 | 41.4 |
| 1,2,3,4,7,8-HxCDD | **53.6** | 7.95 | 133 | 1 | 0.1 | 5.36 |
| 1,2,3,6,7,8-HxCDD | **546** | 7.85 | 133 | 1 | 0.1 | 54.6 |
| 1,2,3,7,8,9-HxCDD | **116** | 7.35 | 133 | 1 | 0.1 | 11.6 |
| 1,2,3,4,6,7,8-HpCDD | **6440** | 28.4 | 133 | 1 | 0.01 | 64.4 |
| OCDD | **32400** | 36.4 | 266 | 1 | 0.0003 | 9.72 |
| 2,3,7,8-TCDF | **363** | 16.9 | 26.6 | 1 | 0.1 | 36.3 |
| 1,2,3,7,8-PeCDF | **58.5** | 9.05 | 133 | 1 | 0.03 | 1.76 |
| 2,3,4,7,8-PeCDF | **186** | 9.82 | 133 | 1 | 0.3 | 55.8 |
| 1,2,3,4,7,8-HxCDF | **234** | 20.7 | 133 | 1 | 0.1 | 23.4 |
| 1,2,3,6,7,8-HxCDF | **158** | 19.9 | 133 | 1 | 0.1 | 15.8 |
| 1,2,3,7,8,9-HxCDF | **38.4** | 25.6 | 133 | 1 | 0.1 | 3.84 |
| 2,3,4,6,7,8-HxCDF | **160** | 21.6 | 133 | 1 | 0.1 | 16.0 |
| 1,2,3,4,6,7,8-HpCDF | **3010** | 21.6 | 133 | 1 | 0.01 | 30.1 |
| 1,2,3,4,7,8,9-HpCDF | **107** | 28.2 | 133 | 1 | 0.01 | 1.07 |
| OCDF | **4580** | 31.5 | 266 | 1 | 0.0003 | 1.37 |
| | | Total TEQ | | | | 523 |

2005 WHO TEFs, ND = 0

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187069 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-004 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 16:16 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 0.609g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616741 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | U | 12.8 | 12.8 | | | 1 |
| 1,2,3,7,8-PeCDD | 14.7**JK** | | 10.5 | 41.1 | 3.11 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 13.2**J** | | 6.74 | 41.1 | 1.09 | 1.001 | 1 |
| 1,2,3,6,7,8-HxCDD | 164 | | 7.35 | 41.1 | 1.10 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 86.9 | | 6.55 | 41.1 | 1.34 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 8090 | | 21.0 | 41.1 | 1.07 | 1.000 | 1 |
| OCDD | 65700**E** | | 11.0 | 82.1 | 0.88 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 35.2**K** | | 11.7 | 11.7 | 0.94 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | ND | U | 6.77 | 41.1 | | | 1 |
| 2,3,4,7,8-PeCDF | 38.0**JK** | | 10.3 | 41.1 | 1.28 | 1.000 | 1 |
| 1,2,3,4,7,8-HxCDF | 37.3**J** | | 6.75 | 41.1 | 1.25 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 11.4**J** | | 7.52 | 41.1 | 1.14 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | ND | U | 8.45 | 41.1 | | | 1 |
| 2,3,4,6,7,8-HxCDF | ND | U | 7.64 | 41.1 | | | 1 |
| 1,2,3,4,6,7,8-HpCDF | 67.5**K** | | 3.38 | 41.1 | 0.87 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | ND | U | 4.65 | 41.1 | | | 1 |
| OCDF | 227 | | 15.4 | 82.1 | 0.96 | 1.005 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187069 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-004 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 16:16 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 0.609g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616741 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | ND | U | 12.8 | 12.8 | | | 1 |
| Total Penta-Dioxins | ND | U | 10.5 | 41.1 | | | 1 |
| Total Hexa-Dioxins | 1390 | | 6.87 | 41.1 | 1.32 | | 1 |
| Total Hepta-Dioxins | 15200 | | 21.0 | 41.1 | 1.02 | | 1 |
| Total Tetra-Furans | ND | U | 11.7 | 11.7 | | | 1 |
| Total Penta-Furans | 223 | | 8.11 | 41.1 | 1.63 | | 1 |
| Total Hexa-Furans | 128 | | 7.59 | 41.1 | 1.26 | | 1 |
| Total Hepta-Furans | 247 | | 3.92 | 41.1 | 1.05 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187069 | **Units:** | Percent |
| **Lab Code:** | E1900077-004 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 16:16 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 0.609g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616741 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 1187.134 | 59 | | 25-164 | 0.74 | 1.022 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 909.885 | 45 | | 25-181 | 1.46 | 1.198 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1333.954 | 67 | | 32-141 | 1.27 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1308.224 | 65 | | 28-130 | 1.24 | 0.993 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 1030.788 | 52 | | 23-140 | 1.11 | 1.067 |
| 13C-OCDD | 4000 | 1437.471 | 36 | | 17-157 | 0.88 | 1.140 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 855.089 | 43 | | 24-169 | 0.78 | 0.992 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 881.637 | 44 | | 24-185 | 1.60 | 1.153 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 561.446 | 28 | | 21-178 | 1.53 | 1.188 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1210.525 | 61 | | 26-152 | 0.54 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1060.572 | 53 | | 26-123 | 0.53 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1232.965 | 62 | | 29-147 | 0.50 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1132.628 | 57 | | 28-136 | 0.55 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 875.371 | 44 | | 28-143 | 0.46 | 1.042 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 757.225 | 38 | | 26-138 | 0.42 | 1.079 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 473.841 | 59 | | 35-197 | NA | 1.023 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | 01/21/19 00:00 |
| **Sample Matrix:** | Solid | **Date Received:** | 01/29/19 15:30 |
| **Sample Name:** | 187069 | **Units:** | ng/Kg |
| **Lab Code:** | E1900077-004 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

**Analysis Method:** 1613B
**Prep Method:** Method Soxhlet

**Toxicity Equivalency Quotient**

| Analyte Name | Result | DL | MRL | Dilution Factor | TEF | TEF - Adjusted Concentration |
|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | 12.8 | 12.8 | 1 | 1 | |
| 1,2,3,7,8-PeCDD | **14.7** | 10.5 | 41.1 | 1 | 1 | 14.7 |
| 1,2,3,4,7,8-HxCDD | **13.2** | 6.74 | 41.1 | 1 | 0.1 | 1.32 |
| 1,2,3,6,7,8-HxCDD | **164** | 7.35 | 41.1 | 1 | 0.1 | 16.4 |
| 1,2,3,7,8,9-HxCDD | **86.9** | 6.55 | 41.1 | 1 | 0.1 | 8.69 |
| 1,2,3,4,6,7,8-HpCDD | **8090** | 21.0 | 41.1 | 1 | 0.01 | 80.9 |
| OCDD | **65700** | 11.0 | 82.1 | 1 | 0.0003 | 19.7 |
| 2,3,7,8-TCDF | **35.2** | 11.7 | 11.7 | 1 | 0.1 | 3.52 |
| 1,2,3,7,8-PeCDF | ND | 6.77 | 41.1 | 1 | 0.03 | |
| 2,3,4,7,8-PeCDF | **38.0** | 10.3 | 41.1 | 1 | 0.3 | 11.4 |
| 1,2,3,4,7,8-HxCDF | **37.3** | 6.75 | 41.1 | 1 | 0.1 | 3.73 |
| 1,2,3,6,7,8-HxCDF | **11.4** | 7.52 | 41.1 | 1 | 0.1 | 1.14 |
| 1,2,3,7,8,9-HxCDF | ND | 8.45 | 41.1 | 1 | 0.1 | |
| 2,3,4,6,7,8-HxCDF | ND | 7.64 | 41.1 | 1 | 0.1 | |
| 1,2,3,4,6,7,8-HpCDF | **67.5** | 3.38 | 41.1 | 1 | 0.01 | 0.675 |
| 1,2,3,4,7,8,9-HpCDF | ND | 4.65 | 41.1 | 1 | 0.01 | |
| OCDF | **227** | 15.4 | 82.1 | 1 | 0.0003 | 0.0681 |
| | | Total TEQ | | | | 162 |

2005 WHO TEFs, ND = 0

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Method Blank | **Units:** | ng/Kg |
| **Lab Code:** | EQ1900034-01 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 12:55 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.072g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616737 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | U | 0.391 | 0.496 | | | 1 |
| 1,2,3,7,8-PeCDD | ND | U | 0.101 | 2.48 | | | 1 |
| 1,2,3,4,7,8-HxCDD | ND | U | 0.0852 | 2.48 | | | 1 |
| 1,2,3,6,7,8-HxCDD | ND | U | 0.0915 | 2.48 | | | 1 |
| 1,2,3,7,8,9-HxCDD | ND | U | 0.0823 | 2.48 | | | 1 |
| 1,2,3,4,6,7,8-HpCDD | 0.130**JK** | | 0.0652 | 2.48 | 1.76 | 1.000 | 1 |
| OCDD | 0.882**JK** | | 0.118 | 4.96 | 1.10 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | ND | U | 0.234 | 0.496 | | | 1 |
| 1,2,3,7,8-PeCDF | ND | U | 0.0745 | 2.48 | | | 1 |
| 2,3,4,7,8-PeCDF | ND | U | 0.0797 | 2.48 | | | 1 |
| 1,2,3,4,7,8-HxCDF | 0.112**J** | | 0.0603 | 2.48 | 1.35 | 1.001 | 1 |
| 1,2,3,6,7,8-HxCDF | 0.0967**JK** | | 0.0551 | 2.48 | 1.66 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | ND | U | 0.0707 | 2.48 | | | 1 |
| 2,3,4,6,7,8-HxCDF | 0.0781**JK** | | 0.0589 | 2.48 | 0.75 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 0.0691**JK** | | 0.0665 | 2.48 | 0.80 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 0.0763**JK** | | 0.0577 | 2.48 | 1.41 | 1.000 | 1 |
| OCDF | 0.359**JK** | | 0.174 | 4.96 | 0.57 | 1.005 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Method Blank | **Units:** | ng/Kg |
| **Lab Code:** | EQ1900034-01 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 12:55 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.072g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616737 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | ND | U | 0.391 | 0.496 | | | 1 |
| Total Penta-Dioxins | ND | U | 0.101 | 2.48 | | | 1 |
| Total Hexa-Dioxins | ND | U | 0.0862 | 2.48 | | | 1 |
| Total Hepta-Dioxins | ND | U | 0.0652 | 2.48 | | | 1 |
| Total Tetra-Furans | ND | U | 0.234 | 0.496 | | | 1 |
| Total Penta-Furans | ND | U | 0.0770 | 2.48 | | | 1 |
| Total Hexa-Furans | 0.112**J** | | 0.0607 | 2.48 | 1.35 | | 1 |
| Total Hepta-Furans | ND | U | 0.0615 | 2.48 | | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Method Blank | **Units:** | Percent |
| **Lab Code:** | EQ1900034-01 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/05/19 12:55 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.072g | **Instrument Name:** | E-HRMS-08 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P616737 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 09/25/18 | **Cal Ver. File Name:** | P616735 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 972.024 | 49 | | 25-164 | 0.79 | 1.022 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 1063.411 | 53 | | 25-181 | 1.53 | 1.198 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1082.679 | 54 | | 32-141 | 1.29 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1144.040 | 57 | | 28-130 | 1.32 | 0.994 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 1187.124 | 59 | | 23-140 | 1.07 | 1.067 |
| 13C-OCDD | 4000 | 1989.798 | 50 | | 17-157 | 0.94 | 1.139 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 930.720 | 47 | | 24-169 | 0.78 | 0.991 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 1114.926 | 56 | | 24-185 | 1.60 | 1.154 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 1045.550 | 52 | | 21-178 | 1.56 | 1.188 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1039.469 | 52 | | 26-152 | 0.53 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1150.796 | 58 | | 26-123 | 0.54 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1053.278 | 53 | | 29-147 | 0.54 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1070.744 | 54 | | 28-136 | 0.54 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 721.709 | 36 | | 28-143 | 0.44 | 1.043 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 1035.649 | 52 | | 26-138 | 0.47 | 1.080 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 409.072 | 51 | | 35-197 | NA | 1.023 |

ALS Environmental

# Accuracy & Precision

**ALS Environmental - Houston HRMS**
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Analyzed:** | 02/06/19 |
| **Sample Matrix:** | Solid | **Date Extracted:** | 02/01/19 |

## Duplicate Lab Control Sample Summary
## Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Units:** | ng/Kg |
| **Prep Method:** | Method Soxhlet | **Basis:** | As Received |
| | | **Analysis Lot:** | 624485 |

| | Lab Control Sample EQ1900034-02 | | | Duplicate Lab Control Sample EQ1900034-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,2,3,4,6,7,8-HpCDD | 99.9 | 99.7 | 100 | 102 | 100 | 102 | 70-140 | 2 | 50 |
| 1,2,3,4,7,8-HxCDD | 110 | 99.7 | 110 | 114 | 100 | 114 | 70-164 | 4 | 50 |
| 1,2,3,6,7,8-HxCDD | 108 | 99.7 | 109 | 112 | 100 | 112 | 76-134 | 3 | 50 |
| 1,2,3,7,8,9-HxCDD | 106 | 99.7 | 106 | 113 | 100 | 113 | 64-162 | 6 | 50 |
| 1,2,3,7,8-PeCDD | 107 | 99.7 | 107 | 109 | 100 | 109 | 70-142 | 1 | 50 |
| 2,3,7,8-TCDD | 22.2 | 19.9 | 111 | 22.6 | 20.0 | 113 | 67-158 | 2 | 50 |
| OCDD | 203 | 199 | 102 | 211 | 200 | 106 | 78-144 | 4 | 50 |
| | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDF | 113 | 99.7 | 114 | 116 | 100 | 116 | 82-122 | 2 | 50 |
| 1,2,3,4,7,8,9-HpCDF | 102 | 99.7 | 102 | 103 | 100 | 103 | 78-138 | 1 | 50 |
| 1,2,3,4,7,8-HxCDF | 104 | 99.7 | 104 | 105 | 100 | 105 | 72-134 | 2 | 50 |
| 1,2,3,6,7,8-HxCDF | 101 | 99.7 | 101 | 105 | 100 | 105 | 84-130 | 3 | 50 |
| 1,2,3,7,8,9-HxCDF | 101 | 99.7 | 101 | 105 | 100 | 105 | 78-130 | 4 | 50 |
| 1,2,3,7,8-PeCDF | 99.3 | 99.7 | 100 | 102 | 100 | 102 | 80-134 | 3 | 50 |
| 2,3,4,6,7,8-HxCDF | 105 | 99.7 | 105 | 108 | 100 | 108 | 70-156 | 3 | 50 |
| 2,3,4,7,8-PeCDF | 104 | 99.7 | 104 | 107 | 100 | 107 | 68-160 | 4 | 50 |
| 2,3,7,8-TCDF | 21.4 | 19.9 | 107 | 22.0 | 20.0 | 110 | 75-158 | 3 | 50 |
| OCDF | 220 | 199 | 110 | 225 | 200 | 113 | 63-170 | 3 | 50 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Lab Control Sample | **Units:** | ng/Kg |
| **Lab Code:** | EQ1900034-02 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/06/19 16:24 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.031g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520272 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520262 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | 22.2 | | 0.354 | 0.498 | 0.82 | 1.001 | 1 |
| 1,2,3,7,8-PeCDD | 107 | | 0.0670 | 2.49 | 1.53 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 110 | | 0.0406 | 2.49 | 1.24 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 108 | | 0.0401 | 2.49 | 1.29 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 106 | | 0.0384 | 2.49 | 1.27 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 99.9 | | 0.0732 | 2.49 | 1.04 | 1.000 | 1 |
| OCDD | 203 | | 0.220 | 4.98 | 0.92 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 21.4 | | 0.280 | 0.498 | 0.88 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | 99.3 | | 0.0821 | 2.49 | 1.56 | 1.000 | 1 |
| 2,3,4,7,8-PeCDF | 104 | | 0.0819 | 2.49 | 1.46 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDF | 104 | | 0.0642 | 2.49 | 1.23 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 101 | | 0.0578 | 2.49 | 1.19 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | 101 | | 0.0745 | 2.49 | 1.21 | 1.000 | 1 |
| 2,3,4,6,7,8-HxCDF | 105 | | 0.0636 | 2.49 | 1.22 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 113 | | 0.263 | 2.49 | 1.03 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 102 | | 0.297 | 2.49 | 1.01 | 1.000 | 1 |
| OCDF | 220 | | 0.230 | 4.98 | 0.84 | 1.005 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Lab Control Sample | **Units:** | ng/Kg |
| **Lab Code:** | EQ1900034-02 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/06/19 16:24 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.031g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520272 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520262 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | 22.2 | | 0.354 | 0.498 | 0.82 | | 1 |
| Total Penta-Dioxins | 107 | | 0.0670 | 2.49 | 1.53 | | 1 |
| Total Hexa-Dioxins | 324 | | 0.0397 | 2.49 | 1.24 | | 1 |
| Total Hepta-Dioxins | 99.9 | | 0.0732 | 2.49 | 1.04 | | 1 |
| Total Tetra-Furans | 22.1 | | 0.280 | 0.498 | 0.69 | | 1 |
| Total Penta-Furans | 203 | | 0.0820 | 2.49 | 1.56 | | 1 |
| Total Hexa-Furans | 411 | | 0.0645 | 2.49 | 1.23 | | 1 |
| Total Hepta-Furans | 216 | | 0.279 | 2.49 | 1.03 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Lab Control Sample | **Units:** | Percent |
| **Lab Code:** | EQ1900034-02 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/06/19 16:24 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.031g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520272 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520262 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 799.673 | 40 | | 25-164 | 0.80 | 1.023 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 1129.364 | 56 | | 25-181 | 1.62 | 1.204 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 949.240 | 47 | | 32-141 | 1.33 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1039.910 | 52 | | 28-130 | 1.33 | 0.993 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 944.894 | 47 | | 23-140 | 1.08 | 1.068 |
| 13C-OCDD | 4000 | 1391.208 | 35 | | 17-157 | 0.91 | 1.141 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 813.943 | 41 | | 24-169 | 0.79 | 0.990 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 1112.409 | 56 | | 24-185 | 1.65 | 1.158 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 1086.881 | 54 | | 21-178 | 1.61 | 1.193 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 918.983 | 46 | | 26-152 | 0.52 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 996.100 | 50 | | 26-123 | 0.53 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 925.367 | 46 | | 29-147 | 0.52 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 920.006 | 46 | | 28-136 | 0.51 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 857.647 | 43 | | 28-143 | 0.44 | 1.043 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 963.451 | 48 | | 26-138 | 0.45 | 1.080 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 326.188 | 41 | | 35-197 | NA | 1.023 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Duplicate Lab Control Sample | **Units:** | ng/Kg |
| **Lab Code:** | EQ1900034-03 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/06/19 17:12 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.001g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520273 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520262 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | 22.6 | | 0.309 | 0.500 | 0.86 | 1.001 | 1 |
| 1,2,3,7,8-PeCDD | 109 | | 0.0781 | 2.50 | 1.56 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDD | 114 | | 0.0704 | 2.50 | 1.28 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDD | 112 | | 0.0726 | 2.50 | 1.28 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDD | 113 | | 0.0681 | 2.50 | 1.23 | 1.007 | 1 |
| 1,2,3,4,6,7,8-HpCDD | 102 | | 0.0530 | 2.50 | 1.11 | 1.000 | 1 |
| OCDD | 211 | | 0.104 | 5.00 | 0.91 | 1.000 | 1 |
| | | | | | | | |
| 2,3,7,8-TCDF | 22.0 | | 0.206 | 0.500 | 0.78 | 1.001 | 1 |
| 1,2,3,7,8-PeCDF | 102 | | 0.131 | 2.50 | 1.50 | 1.000 | 1 |
| 2,3,4,7,8-PeCDF | 107 | | 0.134 | 2.50 | 1.56 | 1.001 | 1 |
| 1,2,3,4,7,8-HxCDF | 105 | | 0.0452 | 2.50 | 1.21 | 1.000 | 1 |
| 1,2,3,6,7,8-HxCDF | 105 | | 0.0422 | 2.50 | 1.21 | 1.000 | 1 |
| 1,2,3,7,8,9-HxCDF | 105 | | 0.0528 | 2.50 | 1.23 | 1.000 | 1 |
| 2,3,4,6,7,8-HxCDF | 108 | | 0.0469 | 2.50 | 1.23 | 1.000 | 1 |
| 1,2,3,4,6,7,8-HpCDF | 116 | | 0.295 | 2.50 | 1.00 | 1.000 | 1 |
| 1,2,3,4,7,8,9-HpCDF | 103 | | 0.335 | 2.50 | 1.02 | 1.000 | 1 |
| OCDF | 225 | | 0.153 | 5.00 | 0.88 | 1.005 | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Duplicate Lab Control Sample | **Units:** | ng/Kg |
| **Lab Code:** | EQ1900034-03 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/06/19 17:12 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.001g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520273 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520262 |

**Native Analyte Results**

| Analyte Name | Result | Q | EDL | MRL | Ion Ratio | RRT | Dilution Factor |
|---|---|---|---|---|---|---|---|
| Total Tetra-Dioxins | 22.8 | | 0.309 | 0.500 | 0.86 | | 1 |
| Total Penta-Dioxins | 109 | | 0.0781 | 2.50 | 1.56 | | 1 |
| Total Hexa-Dioxins | 338 | | 0.0703 | 2.50 | 1.28 | | 1 |
| Total Hepta-Dioxins | 103 | | 0.0530 | 2.50 | 1.16 | | 1 |
| Total Tetra-Furans | 23.1 | | 0.206 | 0.500 | 0.83 | | 1 |
| Total Penta-Furans | 214 | | 0.133 | 2.50 | 1.42 | | 1 |
| Total Hexa-Furans | 424 | | 0.0465 | 2.50 | 1.21 | | 1 |
| Total Hepta-Furans | 220 | | 0.314 | 2.50 | 1.00 | | 1 |

**Attachment 2**

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | E1900077 |
| **Project:** | HS19011056 | **Date Collected:** | NA |
| **Sample Matrix:** | Solid | **Date Received:** | NA |
| **Sample Name:** | Duplicate Lab Control Sample | **Units:** | Percent |
| **Lab Code:** | EQ1900034-03 | **Basis:** | As Received |

**Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS**

| | | | |
|---|---|---|---|
| **Analysis Method:** | 1613B | **Date Analyzed:** | 02/06/19 17:12 |
| **Prep Method:** | Method Soxhlet | **Date Extracted:** | 2/1/19 |
| **Sample Amount:** | 10.001g | **Instrument Name:** | E-HRMS-07 |
| | | **GC Column:** | DB-5MSUI |
| **Data File Name:** | P520273 | **Blank File Name:** | P616737 |
| **ICAL Date:** | 01/29/19 | **Cal Ver. File Name:** | P520262 |

**Labeled Standard Results**

| Labeled Compounds | Spike Conc.(pg) | Conc. Found (pg) | % Rec | Q | Control Limits | Ion Ratio | RRT |
|---|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 2000 | 858.821 | 43 | | 25-164 | 0.83 | 1.023 |
| 13C-1,2,3,7,8-PeCDD | 2000 | 1241.105 | 62 | | 25-181 | 1.64 | 1.205 |
| 13C-1,2,3,4,7,8-HxCDD | 2000 | 1127.525 | 56 | | 32-141 | 1.28 | 0.991 |
| 13C-1,2,3,6,7,8-HxCDD | 2000 | 1192.594 | 60 | | 28-130 | 1.27 | 0.994 |
| 13C-1,2,3,4,6,7,8-HpCDD | 2000 | 1144.914 | 57 | | 23-140 | 1.07 | 1.068 |
| 13C-OCDD | 4000 | 1765.658 | 44 | | 17-157 | 0.88 | 1.141 |
| | | | | | | | |
| 13C-2,3,7,8-TCDF | 2000 | 866.820 | 43 | | 24-169 | 0.81 | 0.991 |
| 13C-1,2,3,7,8-PeCDF | 2000 | 1217.880 | 61 | | 24-185 | 1.59 | 1.159 |
| 13C-2,3,4,7,8-PeCDF | 2000 | 1173.117 | 59 | | 21-178 | 1.58 | 1.193 |
| 13C-1,2,3,4,7,8-HxCDF | 2000 | 1050.150 | 53 | | 26-152 | 0.52 | 0.970 |
| 13C-1,2,3,6,7,8-HxCDF | 2000 | 1147.800 | 57 | | 26-123 | 0.52 | 0.973 |
| 13C-1,2,3,7,8,9-HxCDF | 2000 | 1109.913 | 55 | | 29-147 | 0.53 | 1.008 |
| 13C-2,3,4,6,7,8-HxCDF | 2000 | 1086.211 | 54 | | 28-136 | 0.52 | 0.987 |
| 13C-1,2,3,4,6,7,8-HpCDF | 2000 | 1016.055 | 51 | | 28-143 | 0.43 | 1.044 |
| 13C-1,2,3,4,7,8,9-HpCDF | 2000 | 1185.537 | 59 | | 26-138 | 0.44 | 1.081 |
| | | | | | | | |
| 37Cl-2,3,7,8-TCDD | 800 | 380.065 | 48 | | 35-197 | NA | 1.024 |

Table 1.0 Summary of Aroclor and Dioxin/Furan Analyses for Samples Collected from the Indoor Environment at the Sky Valley Education Center, Monroe, WA (Samples Collected on January 4, 2019 by Environmental Health & Engineering, Inc., Newton, MA)

| Field ID#[a] | Transmitted Sample ID#[b] | Analysis | Sample Type | Location | Description | Result[c] | Data Flags[d] | Analyte | Units |
|---|---|---|---|---|---|---|---|---|---|
| 184824 | 184824 | PCB | Bulk - Dust | Classroom #20 | Dust collected from face of filter in unit ventilator | <10 | U | Aroclor | µg/g |
| 184827 | 184827 | PCB | Bulk - Dust | Classroom #11 | Dust collected from face of filter in unit ventilator | <13 | U | Aroclor | µg/g |
| 184829 | 184829 | PCB | Bulk - Dust | Classroom #5 | Dust collected from face of filter in unit ventilator | 1.9 | J | A1254 | µg/g |
| 184831 | 184831 | PCB | Wipe | Classroom # 5 | Dust on black mastic material in unit ventilator | <0.5 | U | Aroclor | µg/100cm$^2$ |
| 184838 | 184838 | PCB | Wipe | Gym - Boy's Locker Rm | Black, soot-like material on ceiling, near toilet, 2nd strip | <0.31 | U | Aroclor | µg/100cm$^2$ |
| 184840 | 184840 | PCB | Wipe | Gym - Girl's Locker Rm | Black, soot-like material on ceiling, near entrance | <0.34 | U | Aroclor | µg/100cm$^2$ |
| 184852 | 184852 | PCB | Bulk - Tar | Transportation Building Shed | Black tar-like material from lighting aluminum base plate | 180 | P(A1248) | A1242 (130)<br>A1248 (49) | µg/g |
| 184844 & 184845[e] | 187056 | PCB | Bulk - Dust | Annex Building | Dust from inside cabinet heater in hall outside Room B | 24 | | A1242 (17)<br>A1254 (6.8) | µg/g |
| 184844 & 184845[e] | 187057 | D/F | Bulk - Dust | Annex Building | Dust from inside cabinet heater in hall outside Room B | 523 | J, K | D/F TEQ | ng/Kg |
| 184846 | 187058 | PCB | Bulk - Dust | Annex Building | Dust from return/exhaust duct btwn Rms A and C | 3.7 | J | A1260 | µg/g |
| 184846 | 187059 | D/F | Bulk - Dust | Annex Building | Dust from return/exhaust duct btwn Rms A and C | 542 | J, K | D/F TEQ | ng/Kg |
| 184825 | 187061 | D/F | Bulk - Carpet | Classroom # 20 | Tan carpet remnant from inside unit ventilator | 66.9 | J, K | D/F TEQ | ng/Kg |
| 184825 | 187062 | PCB | Bulk - Carpet | Classroom # 20 | Tan carpet remnant from inside unit ventilator | 12 | P(A1248) | A1248 (6.8)<br>A1254 (5.5) | µg/g |
| 184828 | 187064 | PCB | Bulk - Carpet | Classroom #11 | Carpet remnant under wall, multi-colored | 4.2 | J(A1260) | A1254 (3.0)<br>A1260 (1.2) | µg/g |
| 184829 | 187065 | D/F | Bulk - Dust | Classroom #5 | Dust collected from face of filter in unit ventilator | 200 | J, K | D/F TEQ | ng/Kg |
| 184830 | 187066 | PCB | Bulk - Carpet | Classroom #5 | Tan carpet remnant from inside unit ventilator | 4.9 | P(A1248) | A1248 (2.4)<br>A1254 (2.5) | µg/g |
| 184830 | 187067 | D/F | Bulk - Carpet | Classroom #5 | Tan carpet remnant from inside unit ventilator | 128 | | D/F TEQ | ng/Kg |

Table 1.0 Summary of Aroclor and Dioxin/Furan Analyses for Samples Collected from the Indoor Environment at the Sky Valley Education Center, Monroe, WA (Samples Collected on January 4, 2019 by Environmental Health & Engineering, Inc., Newton, MA)

| Field ID#[a] | Transmitted Sample ID#[b] | Analysis | Sample Type | Location | Description | Result[c] | Data Flags[d] | Analyte | Units |
|---|---|---|---|---|---|---|---|---|---|
| 184852 | 187069 | D/F | Bulk - Tar | Transportation Building Shed | Black tar-like material from lighting aluminum base plate | 162 | J, K | D/F TEQ | ng/Kg |

[a]Number assigned to the sample collected in the field at Sky Valley Education Center
[b]Number assigned to the sample transmitted to the laboratory. In some cases the sample was submitted under the Field ID#, in other cases the sample was split for dioxin/furan analysis and assigned a new number known as the Transmitted Sample ID# in this table.
[c]All samples analyzed for ALS Environmental Laboratories, Houston, TX. Aroclor analysis was conducted using EPA Method 8082 and included Arcolors A1016, A1221, A1232, A1242, A1248, A1254 and A1260. Dioxin/furan analysis was conducted using EPA Method 1613B.
[d]Refer to laboratory reports for data qualifiers. A "U" flag indicates that no analytes in the sample were found above the method detection limit. A "J" flag indicates that one or more analytes were detected below the method reporting limit (above the detection limit but below the quantification limit). A "K" flag indicates the concentration for one or more dioxin/furan congeners in the sample are estimates as the ion abundance ratios for the primary and secondary ions are outside theoretical acceptance limits. A "P" flag indicates that one or more analytes had dual column results that differed by more than 40%.
[e]Two dust samples were collected from the same surface and composited for analysis to insure an adequate amount sample for the laboratory.

$cm^2$ square centimeter
D/F dioxin/furan
g gram
kg kilogram, or 1,000 grams
ng nanogram, or $1x10^{-9}$ grams
TEF Toxic Equivalent Factor
TEQ Toxic Equivalency, calculated by the laboratory based on measured levels of target dioxin/furan congeners and applying the TEFs from WHO (2005)
µg micrograms, or $1x10^{-6}$ grams
ng/kg nanograms of analyte per kilogram of sample, or parts per trillion (ppt)
µg/g micrograms of analyte per gram of sample, or parts per million (ppm)
WHO World Health Organization
"<" less than the method detection limit (MDL)

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