ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

Report Date: May 24, 2017

**Project: Wilcox Oil Company Superfund Site**

Submittal Date: 04/26/2017
Group Number: 1793843
SDG: WLC06
PO Number: 15838
State of Sample Origin: OK

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| ETF-WC-01 Soil | 8960229 |
| ETF-WC-01 Soil | 8960230 |
| ETF-WC-01 Soil | 8960231 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To EA Engineering Attn: Pamela Moss

Respectfully Submitted,

Angela M. Miller
Specialist

(717) 556-7260

9965007

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

# Analysis Report

**Sample Description: ETF-WC-01 Soil**

**Project Name: Wilcox Oil Company Superfund Site**

**LL Sample # SW 8960229**
**LL Group # 1793843**
**Account # 30056**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC061 SDG#: WLC06-01

| CAT No. | Analysis Name | CAS Number | Dry Result | | Dry Method Detection Limit* | Dry Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **Pesticides/PCBs** | **SW-846 8082A Feb 2007 Rev 1** | | **ug/kg** | | **ug/kg** | **ug/kg** | |
| 10885 | PCB-1016 | 12674-11-2 | N.D. | | 64 | 300 | 1 |
| 10885 | PCB-1221 | 11104-28-2 | N.D. | | 82 | 300 | 1 |
| 10885 | PCB-1232 | 11141-16-5 | N.D. | | 140 | 300 | 1 |
| 10885 | PCB-1242 | 53469-21-9 | N.D. | | 59 | 300 | 1 |
| 10885 | PCB-1248 | 12672-29-6 | N.D. | | 59 | 300 | 1 |
| 10885 | PCB-1254 | 11097-69-1 | N.D. | | 59 | 300 | 1 |
| 10885 | PCB-1260 | 11096-82-5 | N.D. | | 87 | 300 | 1 |
| 10885 | PCB-1262 | 37324-23-5 | N.D. | | 59 | 300 | 1 |
| 10885 | PCB-1268 | 11100-14-4 | N.D. | | 59 | 300 | 1 |
| 10885 | Total PCBs | 1336-36-3 | N.D. | | 59 | 300 | 1 |
| | Reporting limits were raised due to interference from the sample matrix. | | | | | | |
| **GC Petroleum Hydrocarbons** | **TX 1005 Rev 3, 06/01** | | **mg/kg** | | **mg/kg** | **mg/kg** | |
| 02321 | >C12 - C28 Hydrocarbons | n.a. | 350,000 | | 7,400 | 15,000 | 25 |
| 02321 | >C28 - C35 Hydrocarbons | n.a. | 110,000 | | 7,400 | 15,000 | 25 |
| 02321 | C6 - C12 Hydrocarbons | n.a. | 9,000 | J | 7,400 | 15,000 | 25 |
| 02321 | Total C6 - C28 Hydrocarbons | n.a. | 360,000 | | 7,400 | 15,000 | 25 |
| 02321 | Total C6 - C35 Hydrocarbons | n.a. | 470,000 | | 7,400 | 15,000 | 25 |
| | Reporting limits were raised due to interference from the sample matrix. | | | | | | |
| **Wet Chemistry** | **SW-846 Chapter 7.3** | | **mg/kg** | | **mg/kg** | **mg/kg** | |
| 01123 | Cyanide (Reactivity) | n.a. | N.D. | | 19.8 | 59.3 | 1 |
| | **40 CFR 261.21(a)(2)** | | | | | | |
| 00542 | Ignitability | n.a. | See Below | | 0 | 0 | 1 |
| | The sample did not spontaneously ignite when exposed to air or water. The sample did not ignite by friction. The sample vapors did not ignite when exposed to a flame using a closed cup apparatus. | | | | | | |
| | **SW-846 9045D modified** | | **Std. Units** | | **Std. Units** | **Std. Units** | |
| 00394 | pH | n.a. | 7.10 | | 0.0100 | 0.0100 | 1 |
| | The pH was measured in water at 20.2 C. | | | | | | |
| | **SW-846 Chapter 7** | | | | | | |
| 00496 | Corrosivity | n.a. | See Below | | 0 | 0 | 1 |
| | The pH of the sample is 7.10 indicating that the sample is not corrosive. A sample is corrosive if it exhibits a pH equal to or less than 2 or equal to or greater than 12.5. | | | | | | |
| | **SW-846 Chapter 7.3** | | **mg/kg** | | **mg/kg** | **mg/kg** | |
| 01122 | Sulfide (Reactivity) | n.a. | N.D. | | 53.6 | 160 | 1 |
| | **SW-846 Chapter 7.3** | | **see below** | | **see below** | **see below** | |
| 01121 | Reactivity | n.a. | See Below | | 0 | 0 | 1 |

*=This limit was used in the evaluation of the final result

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

# Analysis Report

**Sample Description: ETF-WC-01 Soil**

**Project Name: Wilcox Oil Company Superfund Site**

**LL Sample # SW 8960229**
**LL Group # 1793843**
**Account # 30056**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC061 SDG#: WLC06-01

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit* | Dry Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **Wet Chemistry** | **SW-846 Chapter 7.3** | | **see below** | **see below** | **see below** | |
| | Reactivity: This sample was extracted and analyzed by the interim method described in SW-846 Revision 3, December 1996 - Chapter 7.3. The Interim Guidance for Reactive Cyanide and Reactive Sulfide (SW-846 Sections 7.3.3 and 7.3.4 of Chapter 7 - December 1996) identifies a reactive material as generating more than 250 mg/kg of hydrogen cyanide or 500 mg/kg of hydrogen sulfide. This waste is not considered hazardous due to reactivity based on that standard. These results do not reflect total cyanide or total sulfide. On July 14, 2005, EPA published a rule in the Federal Register that removed the Interim Guidance and the method referenced above. At this time there is no specific guidance or a method to be used to evaluate "Reactivity". | | | | | |
| **Wet Chemistry** | **SM 2540 G-1997** | | % | % | % | |
| 00111 | Moisture | n.a. | 43.9 | 0.50 | 0.50 | 1 |
| | Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis. | | | | | |

*=This limit was used in the evaluation of the final result

**Sample Description: ETF-WC-01 Soil**

**Project Name: Wilcox Oil Company Superfund Site**

**LL Sample # SW 8960229**
**LL Group # 1793843**
**Account # 30056**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC061 SDG#: WLC06-01

| CAT No. | Analysis Name | CAS Number | Dry Result | | Dry EDL* | Dry MRL | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **Dioxins/Furans** | **SW-846 8290A Feb 2007 Rev 1** | | **ng/kg** | | **ng/kg** | **ng/kg** | |
| 12937 | 2378-TCDD | 1746-01-6 | 1.17 | JBQ | 1.10 | 17.8 | 1 |
| 12937 | 12378-PeCDD | 40321-76-4 | 2.31 | JQ | 0.884 | 89.1 | 1 |
| 12937 | 123478-HxCDD | 39227-28-6 | 3.59 | JBQ | 1.42 | 89.1 | 1 |
| 12937 | 123678-HxCDD | 57653-85-7 | 4.41 | JB | 1.50 | 89.1 | 1 |
| 12937 | 123789-HxCDD | 19408-74-3 | 3.12 | JBQ | 1.49 | 89.1 | 1 |
| 12937 | 1234678-HpCDD | 35822-46-9 | 39.4 | JB | 2.25 | 89.1 | 1 |
| 12937 | OCDD | 3268-87-9 | 347 | B | 6.54 | 178 | 1 |
| 12937 | 2378-TCDF | 51207-31-9 | 4.78 | JBQ | 1.61 | 17.8 | 1 |
| 12937 | 12378-PeCDF | 57117-41-6 | 4.97 | JB | 0.634 | 89.1 | 1 |
| 12937 | 23478-PeCDF | 57117-31-4 | 4.23 | JBQ | 0.555 | 89.1 | 1 |
| 12937 | 123478-HxCDF | 70648-26-9 | 4.00 | JB | 1.09 | 89.1 | 1 |
| 12937 | 123678-HxCDF | 57117-44-9 | 4.34 | JB | 1.05 | 89.1 | 1 |
| 12937 | 123789-HxCDF | 72918-21-9 | 9.47 | JBQ | 1.85 | 89.1 | 1 |
| 12937 | 234678-HxCDF | 60851-34-5 | 4.34 | JB | 1.10 | 89.1 | 1 |
| 12937 | 1234678-HpCDF | 67562-39-4 | 8.51 | JBQ | 2.27 | 89.1 | 1 |
| 12937 | 1234789-HpCDF | 55673-89-7 | 7.87 | JB | 2.90 | 89.1 | 1 |
| 12937 | OCDF | 39001-02-0 | 17.3 | JB | 6.60 | 178 | 1 |

The recovery for labeled compound 13C12-OCDF was marginally outside of QC acceptance limits in this sample. The data quality is not impacted by this result.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **D/F Toxic Equivalents** | **SW-846 8290A Feb 2007 Rev 1** | | **ng/kg** | | **ng/kg** | **ng/kg** | |
| 12937 | TEQ WHO 2005 - EDLx0.0 | n.a. | 2.44 | | | | 1 |

The recovery for labeled compound 13C12-OCDF was marginally outside of QC acceptance limits in this sample. The data quality is not impacted by this result.

| **Labeled Compounds** | **%Rec** | **Windows** |
|---|---|---|
| 13C12-2378-TCDD | 80 | 40 - 135 |
| 13C12-12378-PeCDD | 78 | 40 - 135 |
| 13C12-123478-HxCDD | 74 | 40 - 135 |
| 13C12-123678-HxCDD | 70 | 40 - 135 |
| 13C12-123789-HxCDD | 70 | 40 - 135 |
| 13C12-1234678-HpCDD | 54 | 40 - 135 |
| 13C12-OCDD | 41 | 40 - 135 |
| 13C12-2378-TCDF | 76 | 40 - 135 |
| 13C12-12378-PeCDF | 77 | 40 - 135 |
| 13C12-23478-PeCDF | 75 | 40 - 135 |
| 13C12-123478-HxCDF | 72 | 40 - 135 |
| 13C12-123678-HxCDF | 69 | 40 - 135 |
| 13C12-234678-HxCDF | 68 | 40 - 135 |
| 13C12-123789-HxCDF | 63 | 40 - 135 |
| 13C12-1234678-HpCDF | 53 | 40 - 135 |
| 13C12-1234789-HpCDF | 49 | 40 - 135 |
| 13C12-OCDF | 37 | 40 - 135 |

EDL = Estimated Detection Limit
*=This limit was used in the evaluation of the final result

**Sample Description: ETF-WC-01 Soil**

**Project Name: Wilcox Oil Company Superfund Site**

**LL Sample # SW 8960229**
**LL Group # 1793843**
**Account # 30056**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC061 SDG#: WLC06-01

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry EDL* | Dry MRL | Dilution Factor |
|---|---|---|---|---|---|---|

***Dioxins/Furans Data Qualifiers:***

| | |
|---|---|
| *B* | *Detected in Method Blank* |
| *U* | *Undetected* |
| *J* | *Estimated concentration between Estimated Detection Limit and Minimum Reporting Level* |
| *E* | *Exceeds calibration range* |
| *C* | *Confirmed quantitation on secondary GC column* |
| *Q* | *EMPC - Estimated Maximum Possible Concentration* |
| *F* | *Interference is present* |
| *S* | *Saturation of detection signal* |

EDL = Estimated Detection Limit
*=This limit was used in the evaluation of the final result

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

# Analysis Report

**Sample Description: ETF-WC-01 Soil**

**Project Name: Wilcox Oil Company Superfund Site**

**LL Sample # SW 8960229**
**LL Group # 1793843**
**Account # 30056**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC061 SDG#: WLC06-01

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|---|
| 10885 | PCBs 8082A/3546 | SW-846 8082A Feb 2007 Rev 1 | 1 | 171230024A | 05/05/2017 | 09:29 | Kirby B Turner | 1 |
| 10497 | PCB Microwave Soil Extraction | SW-846 3546 | 2 | 171230024A | 05/03/2017 | 19:15 | Sally L Appleyard | 1 |
| 02321 | TX 1005 -(Soils) | TX 1005 Rev 3, 06/01 | 1 | 171170008A | 05/02/2017 | 01:14 | Heather E Williams | 25 |
| 11230 | TX DRO Soils Extraction | TX 1005 Rev 3, 06/01 | 1 | 171170008A | 04/27/2017 | 16:00 | Ryan J Dowdy | 1 |
| 12937 | Dioxin/Furans w/ WHO 2005 | SW-846 8290A Feb 2007 Rev 1 | 1 | 17118013 | 05/19/2017 | 19:43 | Michael A Ziegler | 1 |
| 11030 | Dioxins/Furans in Solids - Sox | SW-846 8290A Feb 2007 Rev 1 | 1 | 17118013 | 05/10/2017 | 09:00 | Deborah M Zimmerman | 1 |
| 01123 | Cyanide (Reactivity) | SW-846 Chapter 7.3 | 1 | 17135104201A | 05/15/2017 | 07:22 | Dein K Bernot | 1 |
| 00542 | Ignitability | 40 CFR 261.21(a)(2) | 1 | 17119054201A | 04/29/2017 | 05:35 | Daniel S Smith | 1 |
| 00394 | pH | SW-846 9045D modified | 1 | 17119039401A | 04/29/2017 | 13:00 | Luz M Groff | 1 |
| 00496 | Corrosivity | SW-846 Chapter 7 | 1 | 17119039401A | 04/29/2017 | 13:00 | Luz M Groff | 1 |
| 01121 | Reactivity | SW-846 Chapter 7.3 | 1 | 17132112101A | 05/12/2017 | 08:06 | Susan E Hibner | 1 |
| 01122 | Sulfide (Reactivity) | SW-846 Chapter 7.3 | 1 | 17132112101A | 05/12/2017 | 08:06 | Susan E Hibner | 1 |
| 00111 | Moisture | SM 2540 G-1997 | 1 | 17118820004B | 04/28/2017 | 20:50 | Scott W Freisher | 1 |

EDL = Estimated Detection Limit
*=This limit was used in the evaluation of the final result

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

# Analysis Report

**Sample Description: ETF-WC-01 Soil**
**TCLP NVE**

**LL Sample # TL 8960230**
**LL Group # 1793843**
**Account # 30056**

**Project Name: Wilcox Oil Company Superfund Site**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC062 SDG#: WLC06-02

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Semivolatiles** | **SW-846 8270D** | | **mg/l** | **mg/l** | **mg/l** | |
| 14252 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.003 | 0.005 | 1 |
| 14252 | 2,4-Dinitrotoluene | 121-14-2 | N.D. | 0.005 | 0.025 | 1 |
| 14252 | Hexachlorobenzene | 118-74-1 | N.D. | 0.0005 | 0.003 | 1 |
| 14252 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.003 | 0.005 | 1 |
| 14252 | Hexachloroethane | 67-72-1 | N.D. | 0.005 | 0.025 | 1 |
| 14252 | 2-Methylphenol | 95-48-7 | N.D. | 0.003 | 0.005 | 1 |
| 14252 | 4-Methylphenol | 106-44-5 | N.D. | 0.003 | 0.005 | 1 |
| | 3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds. | | | | | |
| 14252 | Nitrobenzene | 98-95-3 | N.D. | 0.003 | 0.005 | 1 |
| 14252 | Pentachlorophenol | 87-86-5 | N.D. | 0.005 | 0.025 | 1 |
| 14252 | Pyridine | 110-86-1 | N.D. | 0.010 | 0.025 | 1 |
| 14252 | 2,4,5-Trichlorophenol | 95-95-4 | N.D. | 0.003 | 0.005 | 1 |
| 14252 | 2,4,6-Trichlorophenol | 88-06-2 | N.D. | 0.003 | 0.005 | 1 |
| **Metals** | **SW-846 6010C** | | **mg/l** | **mg/l** | **mg/l** | |
| 07035 | Arsenic | 7440-38-2 | N.D. | 0.0097 | 0.0400 | 1 |
| 07046 | Barium | 7440-39-3 | 0.198 | 0.0011 | 0.0100 | 1 |
| 07049 | Cadmium | 7440-43-9 | N.D. | 0.00049 | 0.0100 | 1 |
| 07051 | Chromium | 7440-47-3 | N.D. | 0.0018 | 0.0300 | 1 |
| 07055 | Lead | 7439-92-1 | 0.0128 J | 0.0062 | 0.0300 | 1 |
| 07036 | Selenium | 7782-49-2 | N.D. | 0.0097 | 0.0400 | 1 |
| 07066 | Silver | 7440-22-4 | N.D. | 0.0019 | 0.0100 | 1 |
| | **SW-846 7470A** | | **mg/l** | **mg/l** | **mg/l** | |
| 00259 | Mercury | 7439-97-6 | N.D. | 0.000050 | 0.00020 | 1 |

## Sample Comments

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 14252 | TCLP 8270D MINI | SW-846 8270D | 1 | 17125WAD026 | 05/08/2017 01:09 | Brandon H Smith | 1 |
| 04731 | TCLP Leachate Extraction | SW-846 3510C | 1 | 17125WAD026 | 05/05/2017 15:30 | Christine Gleim | 1 |
| 07035 | Arsenic | SW-846 6010C | 2 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |
| 07046 | Barium | SW-846 6010C | 2 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |
| 07049 | Cadmium | SW-846 6010C | 2 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |
| 07051 | Chromium | SW-846 6010C | 2 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |

*=This limit was used in the evaluation of the final result

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

# Analysis Report

**Sample Description: ETF-WC-01 Soil**
**TCLP NVE**

**LL Sample # TL 8960230**
**LL Group # 1793843**
**Account # 30056**

**Project Name: Wilcox Oil Company Superfund Site**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC062 SDG#: WLC06-02

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07055 | Lead | SW-846 6010C | 1 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |
| 07036 | Selenium | SW-846 6010C | 2 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |
| 07066 | Silver | SW-846 6010C | 2 | 171281063602 | 05/10/2017 00:44 | Jonathan Allen | 1 |
| 00259 | Mercury | SW-846 7470A | 1 | 171220571301 | 05/03/2017 12:27 | Damary Valentin | 1 |
| 10636 | ICP-WW/TL, 3010A (tot) - U4 | SW-846 3010A | 1 | 171281063602 | 05/08/2017 22:00 | Annamaria Kuhns | 1 |
| 05713 | WW SW846 Hg Digest | SW-846 7470A | 1 | 171220571301 | 05/03/2017 09:05 | Lisa J Cooke | 1 |
| 00947 | TCLP Non-volatile Extraction | SW-846 1311 | 1 | 17121-2807-947 A | 05/01/2017 21:40 | Nicholas W Shroyer | n.a. |

*=This limit was used in the evaluation of the final result

eurofins
Lancaster Laboratories Environmental
2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

# Analysis Report

**Sample Description: ETF-WC-01 Soil**
**TCLP ZHE**

**LL Sample # TL 8960231**
**LL Group # 1793843**
**Account # 30056**

**Project Name: Wilcox Oil Company Superfund Site**

Collected: 04/25/2017 14:35 by JS

Submitted: 04/26/2017 09:40
Reported: 05/24/2017 21:07

EA Engineering
405 State Highway 121 Bypass
Building C, Suite 100
Lewisville TX 75067-8192

LC063 SDG#: WLC06-03

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | mg/l | mg/l | mg/l | |
| 11997 | Benzene | 71-43-2 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | 2-Butanone | 78-93-3 | N.D. | 0.060 | 0.20 | 20 |
| 11997 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | Chlorobenzene | 108-90-7 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | Chloroform | 67-66-3 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | Tetrachloroethene | 127-18-4 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | Trichloroethene | 79-01-6 | N.D. | 0.010 | 0.020 | 20 |
| 11997 | Vinyl Chloride | 75-01-4 | N.D. | 0.010 | 0.020 | 20 |

## Sample Comments

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | VOCs- 5ml Water by 8260C | SW-846 8260C | 1 | L171252AA | 05/05/2017 16:35 | Brett W Kenyon | 20 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030B | 1 | L171252AA | 05/05/2017 16:35 | Brett W Kenyon | 20 |
| 00946 | TCLP Zero Headspace Extraction | SW-846 1311 | 1 | 17118-2807-946 | 04/28/2017 13:50 | Nicholas W Shroyer | n.a. |

*=This limit was used in the evaluation of the final result

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Method Blank

| Analysis Name | Result | MDL** | LOQ |
|---|---|---|---|
| | mg/l | mg/l | mg/l |
| Batch number: L171252AA | Sample number(s): 8960231 | | |
| Benzene | N.D. | 0.0005 | 0.001 |
| 2-Butanone | N.D. | 0.003 | 0.010 |
| Carbon Tetrachloride | N.D. | 0.0005 | 0.001 |
| Chlorobenzene | N.D. | 0.0005 | 0.001 |
| Chloroform | N.D. | 0.0005 | 0.001 |
| 1,2-Dichloroethane | N.D. | 0.0005 | 0.001 |
| 1,1-Dichloroethene | N.D. | 0.0005 | 0.001 |
| Tetrachloroethene | N.D. | 0.0005 | 0.001 |
| Trichloroethene | N.D. | 0.0005 | 0.001 |
| Vinyl Chloride | N.D. | 0.0005 | 0.001 |
| Batch number: 17125WAD026 | Sample number(s): 8960230 | | |
| 1,4-Dichlorobenzene | N.D. | 0.003 | 0.005 |
| 2,4-Dinitrotoluene | N.D. | 0.005 | 0.025 |
| Hexachlorobenzene | N.D. | 0.0005 | 0.003 |
| Hexachlorobutadiene | N.D. | 0.003 | 0.005 |
| Hexachloroethane | N.D. | 0.005 | 0.025 |
| 2-Methylphenol | N.D. | 0.003 | 0.005 |
| 4-Methylphenol | N.D. | 0.003 | 0.005 |
| Nitrobenzene | N.D. | 0.003 | 0.005 |
| Pentachlorophenol | N.D. | 0.005 | 0.025 |
| Pyridine | N.D. | 0.010 | 0.025 |
| 2,4,5-Trichlorophenol | N.D. | 0.003 | 0.005 |
| 2,4,6-Trichlorophenol | N.D. | 0.003 | 0.005 |
| | ug/kg | ug/kg | ug/kg |
| Batch number: 171230024A | Sample number(s): 8960229 | | |
| PCB-1016 | N.D. | 3.6 | 17 |
| PCB-1221 | N.D. | 4.6 | 17 |
| PCB-1232 | N.D. | 8.0 | 17 |
| PCB-1242 | N.D. | 3.3 | 17 |
| PCB-1248 | N.D. | 3.3 | 17 |
| PCB-1254 | N.D. | 3.3 | 17 |
| PCB-1260 | N.D. | 4.9 | 17 |
| PCB-1262 | N.D. | 3.3 | 17 |
| PCB-1268 | N.D. | 3.3 | 17 |
| Total PCBs | N.D. | 3.3 | 17 |
| | mg/kg | mg/kg | mg/kg |
| Batch number: 171170008A | Sample number(s): 8960229 | | |
| >C12 - C28 Hydrocarbons | N.D. | 10 | 20 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## Method Blank (continued)

| Analysis Name | Result | MDL** | LOQ |
|---|---|---|---|
| | mg/kg | mg/kg | mg/kg |
| >C28 - C35 Hydrocarbons | N.D. | 10 | 20 |
| C6 - C12 Hydrocarbons | N.D. | 10 | 20 |
| Total C6 - C28 Hydrocarbons | N.D. | 10 | 20 |
| Total C6 - C35 Hydrocarbons | N.D. | 10 | 20 |
| | mg/l | mg/l | mg/l |
| Batch number: 171220571301 | Sample number(s): 8960230 | | |
| Mercury | N.D. | 0.000050 | 0.00020 |
| Batch number: 171281063602 | Sample number(s): 8960230 | | |
| Arsenic | N.D. | 0.0097 | 0.0400 |
| Barium | N.D. | 0.0011 | 0.0100 |
| Cadmium | N.D. | 0.00049 | 0.0100 |
| Chromium | N.D. | 0.0018 | 0.0300 |
| Lead | N.D. | 0.0062 | 0.0300 |
| Selenium | N.D. | 0.0097 | 0.0400 |
| Silver | N.D. | 0.0019 | 0.0100 |
| | mg/kg | mg/kg | mg/kg |
| Batch number: 17135104201A | Sample number(s): 8960229 | | |
| Cyanide (Reactivity) | N.D. | 20.0 | 60.0 |
| Batch number: 17132112101A | Sample number(s): 8960229 | | |
| Sulfide (Reactivity) | N.D. | 53.6 | 160 |

| Analysis Name | Result | EDL** | MRL |
|---|---|---|---|
| | ng/kg | ng/kg | ng/kg |
| Batch number: 17118013 | Sample number(s): 8960229 | | |
| 2378-TCDD | 0.0191 J | 0.0163 | 1.00 |
| 12378-PeCDD | N.D. | 0.0190 | 5.00 |
| 123478-HxCDD | 0.0421 J | 0.0110 | 5.00 |
| 123678-HxCDD | 0.0446 J | 0.0113 | 5.00 |
| 123789-HxCDD | 0.0478 J | 0.0111 | 5.00 |
| 1234678-HpCDD | 0.0675 J | 0.0113 | 5.00 |
| OCDD | 0.216 J | 0.0219 | 10.0 |
| 2378-TCDF | 0.0319 J | 0.0128 | 1.00 |
| 12378-PeCDF | 0.0741 J | 0.0125 | 5.00 |
| 23478-PeCDF | 0.0498 J | 0.0109 | 5.00 |
| 123478-HxCDF | 0.0634 J | 0.00750 | 5.00 |
| 123678-HxCDF | 0.0478 J | 0.00687 | 5.00 |
| 123789-HxCDF | 0.0830 J | 0.00948 | 5.00 |
| 234678-HxCDF | 0.0314 J | 0.00711 | 5.00 |
| 1234678-HpCDF | 0.0683 J | 0.00502 | 5.00 |
| 1234789-HpCDF | 0.0513 J | 0.00707 | 5.00 |
| OCDF | 0.0907 J | 0.0194 | 10.0 |
| TEQ WHO 2005 - EDLx0.0 | 0.0141 | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## LCS/LCSD

| Analysis Name | LCS Spike Added | LCS Conc | LCSD Spike Added | LCSD Conc | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| | mg/l | mg/l | mg/l | mg/l | | | | | |
| Batch number: L171252AA | Sample number(s): 8960231 | | | | | | | | |
| Benzene | 0.0200 | 0.0187 | 0.0200 | 0.0191 | 93 | 95 | 78-120 | 2 | 30 |
| 2-Butanone | 0.150 | 0.133 | 0.150 | 0.136 | 89 | 90 | 53-140 | 2 | 30 |
| Carbon Tetrachloride | 0.0200 | 0.0189 | 0.0200 | 0.0195 | 95 | 97 | 76-123 | 3 | 30 |
| Chlorobenzene | 0.0200 | 0.0188 | 0.0200 | 0.0196 | 94 | 98 | 80-120 | 4 | 30 |
| Chloroform | 0.0200 | 0.0191 | 0.0200 | 0.0194 | 95 | 97 | 80-120 | 1 | 30 |
| 1,2-Dichloroethane | 0.0200 | 0.0200 | 0.0200 | 0.0202 | 100 | 101 | 66-128 | 1 | 30 |
| 1,1-Dichloroethene | 0.0200 | 0.0206 | 0.0200 | 0.0206 | 103 | 103 | 76-124 | 0 | 30 |
| Tetrachloroethene | 0.0200 | 0.0189 | 0.0200 | 0.0196 | 94 | 98 | 80-129 | 4 | 30 |
| Trichloroethene | 0.0200 | 0.0187 | 0.0200 | 0.0192 | 93 | 96 | 80-120 | 3 | 30 |
| Vinyl Chloride | 0.0200 | 0.0179 | 0.0200 | 0.0181 | 89 | 90 | 63-121 | 1 | 30 |
| | mg/l | mg/l | mg/l | mg/l | | | | | |
| Batch number: 17125WAD026 | Sample number(s): 8960230 | | | | | | | | |
| 1,4-Dichlorobenzene | 0.250 | 0.172 | 0.250 | 0.149 | 69 | 59 | 41-104 | 14 | 30 |
| 2,4-Dinitrotoluene | 0.250 | 0.233 | 0.250 | 0.230 | 93 | 92 | 76-122 | 2 | 30 |
| Hexachlorobenzene | 0.250 | 0.212 | 0.250 | 0.210 | 85 | 84 | 67-125 | 1 | 30 |
| Hexachlorobutadiene | 0.250 | 0.175 | 0.250 | 0.129 | 70 | 52 | 28-110 | 31* | 30 |
| Hexachloroethane | 0.250 | 0.163 | 0.250 | 0.129 | 65 | 51 | 28-103 | 24 | 30 |
| 2-Methylphenol | 0.250 | 0.194 | 0.250 | 0.195 | 78 | 78 | 50-104 | 1 | 30 |
| 4-Methylphenol | 0.250 | 0.178 | 0.250 | 0.180 | 71 | 72 | 45-101 | 1 | 30 |
| Nitrobenzene | 0.250 | 0.220 | 0.250 | 0.212 | 88 | 85 | 53-119 | 4 | 30 |
| Pentachlorophenol | 0.250 | 0.243 | 0.250 | 0.241 | 97 | 97 | 59-134 | 1 | 30 |
| Pyridine | 0.250 | 0.120 | 0.250 | 0.124 | 48 | 50 | 19-68 | 4 | 30 |
| 2,4,5-Trichlorophenol | 0.250 | 0.228 | 0.250 | 0.230 | 91 | 92 | 69-122 | 1 | 30 |
| 2,4,6-Trichlorophenol | 0.250 | 0.229 | 0.250 | 0.231 | 91 | 92 | 68-125 | 1 | 30 |
| | ug/kg | ug/kg | ug/kg | ug/kg | | | | | |
| Batch number: 171230024A | Sample number(s): 8960229 | | | | | | | | |
| PCB-1016 | 168 | 176.76 | | | 105 | | 76-121 | | |
| PCB-1260 | 167 | 183.32 | | | 110 | | 79-130 | | |
| | mg/kg | mg/kg | mg/kg | mg/kg | | | | | |
| Batch number: 171170008A | Sample number(s): 8960229 | | | | | | | | |
| >C12 - C28 Hydrocarbons | 251 | 293.39 | 251 | 282.16 | 117 | 112 | 75-125 | 4 | 20 |
| C6 - C12 Hydrocarbons | 250 | 257.59 | 250 | 262.98 | 103 | 105 | 75-125 | 2 | 20 |
| Total C6 - C28 Hydrocarbons | 501 | 550.98 | 501 | 545.13 | 110 | 109 | 75-125 | 1 | 20 |
| | mg/l | mg/l | mg/l | mg/l | | | | | |
| Batch number: 171220571301 | Sample number(s): 8960230 | | | | | | | | |
| Mercury | 0.00100 | 0.00105 | | | 105 | | 80-120 | | |
| Batch number: 171281063602 | Sample number(s): 8960230 | | | | | | | | |
| Arsenic | 0.150 | 0.165 | | | 110 | | 80-120 | | |
| Barium | 2.00 | 1.97 | | | 99 | | 80-120 | | |
| Cadmium | 0.0500 | 0.0513 | | | 103 | | 80-120 | | |
| Chromium | 0.200 | 0.202 | | | 101 | | 80-120 | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## LCS/LCSD (continued)

| Analysis Name | LCS Spike Added mg/l | LCS Conc mg/l | LCSD Spike Added mg/l | LCSD Conc mg/l | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.150 | 0.144 | | | 96 | | 80-120 | | |
| Selenium | 0.150 | 0.170 | | | 113 | | 80-120 | | |
| Silver | 0.0500 | 0.0523 | | | 105 | | 80-120 | | |
| | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | | | | | |
| Batch number: 17135104201A | Sample number(s): 8960229 | | | | | | | | |
| Cyanide (Reactivity) | 1000 | 1005.78 | | | 101 | | 77-113 | | |
| Batch number: 17119039401A | Sample number(s): 8960229 | | | | | | | | |
| Corrosivity | 7.00 | 6.99 | | | 100 | | 89-110 | | |
| | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | | | | | |
| Batch number: 17132112101A | Sample number(s): 8960229 | | | | | | | | |
| Sulfide (Reactivity) | 570 | 452.85 | | | 79 | | 68-102 | | |
| | **Std. Units** | **Std. Units** | **Std. Units** | **Std. Units** | | | | | |
| Batch number: 17119039401A | Sample number(s): 8960229 | | | | | | | | |
| pH | 7.00 | 6.99 | | | 100 | | 95-105 | | |
| | **%** | **%** | **%** | **%** | | | | | |
| Batch number: 17118820004B | Sample number(s): 8960229 | | | | | | | | |
| Moisture | 89.5 | 89.4 | | | 100 | | 99-101 | | |

| Analysis Name | OPR Spike Added ng/kg | OPR Conc ng/kg | OPRD Spike Added ng/kg | OPRD Conc ng/kg | OPR %REC | OPRD %REC | OPR/OPRD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: 17118013 | Sample number(s): 8960229 | | | | | | | | |
| 2378-TCDD | 20 | 19.57 | | | 98 | | 67-158 | | |
| 12378-PeCDD | 100 | 102.52 | | | 103 | | 70-142 | | |
| 123478-HxCDD | 100 | 102.09 | | | 102 | | 70-164 | | |
| 123678-HxCDD | 100 | 102.58 | | | 103 | | 76-134 | | |
| 123789-HxCDD | 100 | 102.2 | | | 102 | | 64-162 | | |
| 1234678-HpCDD | 100 | 101.54 | | | 102 | | 70-140 | | |
| OCDD | 200 | 204.28 | | | 102 | | 78-144 | | |
| 2378-TCDF | 20 | 20.68 | | | 103 | | 75-158 | | |
| 12378-PeCDF | 100 | 100.98 | | | 101 | | 80-134 | | |
| 23478-PeCDF | 100 | 101.24 | | | 101 | | 68-160 | | |
| 123478-HxCDF | 100 | 101.91 | | | 102 | | 72-134 | | |
| 123678-HxCDF | 100 | 102.24 | | | 102 | | 84-130 | | |
| 123789-HxCDF | 100 | 100.61 | | | 101 | | 78-130 | | |
| 234678-HxCDF | 100 | 101.56 | | | 102 | | 70-156 | | |
| 1234678-HpCDF | 100 | 102.97 | | | 103 | | 82-122 | | |
| 1234789-HpCDF | 100 | 101.71 | | | 102 | | 78-138 | | |
| OCDF | 200 | 201.66 | | | 101 | | 63-170 | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

| Analysis Name | Unspiked Conc mg/l | MS Spike Added mg/l | MS Conc mg/l | MSD Spike Added mg/l | MSD Conc mg/l | MS %Rec | MSD %Rec | MS/MSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|---|
| Batch number: L171252AA | Sample number(s): 8960231 UNSPK: 8960231 | | | | | | | | | |
| Benzene | N.D. | 0.400 | 0.379 | 0.400 | 0.371 | 95 | 93 | 78-120 | 2 | 30 |
| 2-Butanone | N.D. | 3.00 | 2.68 | 3.00 | 2.69 | 89 | 90 | 53-140 | 0 | 30 |
| Carbon Tetrachloride | N.D. | 0.400 | 0.376 | 0.400 | 0.356 | 94 | 89 | 76-123 | 5 | 30 |
| Chlorobenzene | N.D. | 0.400 | 0.389 | 0.400 | 0.385 | 97 | 96 | 80-120 | 1 | 30 |
| Chloroform | N.D. | 0.400 | 0.384 | 0.400 | 0.373 | 96 | 93 | 80-120 | 3 | 30 |
| 1,2-Dichloroethane | N.D. | 0.400 | 0.389 | 0.400 | 0.384 | 97 | 96 | 66-128 | 1 | 30 |
| 1,1-Dichloroethene | N.D. | 0.400 | 0.401 | 0.400 | 0.378 | 100 | 94 | 76-124 | 6 | 30 |
| Tetrachloroethene | N.D. | 0.400 | 0.396 | 0.400 | 0.386 | 99 | 96 | 80-129 | 3 | 30 |
| Trichloroethene | N.D. | 0.400 | 0.375 | 0.400 | 0.363 | 94 | 91 | 80-120 | 3 | 30 |
| Vinyl Chloride | N.D. | 0.400 | 0.352 | 0.400 | 0.332 | 88 | 83 | 63-121 | 6 | 30 |
| | **ug/kg** | **ug/kg** | **ug/kg** | **ug/kg** | **ug/kg** | | | | | |
| Batch number: 171230024A | Sample number(s): 8960229 UNSPK: P966476 | | | | | | | | | |
| PCB-1016 | N.D. | 167 | 125.32 | 168 | 114.76 | 75* | 68* | 76-121 | 9 | 50 |
| PCB-1260 | N.D. | 166 | 109.98 | 167 | 98.94 | 66* | 59* | 79-130 | 11 | 50 |
| | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | | | | | |
| Batch number: 171170008A | Sample number(s): 8960229 UNSPK: P960033 | | | | | | | | | |
| >C12 - C28 Hydrocarbons | N.D. | 244 | 244.21 | 247 | 270.12 | 100 | 109 | 75-125 | 10 | 20 |
| C6 - C12 Hydrocarbons | N.D. | 243 | 215.96 | 246 | 238.43 | 89 | 97 | 75-125 | 10 | 20 |
| Total C6 - C28 Hydrocarbons | N.D. | 486 | 460.17 | 493 | 508.55 | 95 | 103 | 75-125 | 10 | 20 |
| | **mg/l** | **mg/l** | **mg/l** | **mg/l** | **mg/l** | | | | | |
| Batch number: 171220571301 | Sample number(s): 8960230 UNSPK: P963191 | | | | | | | | | |
| Mercury | N.D. | 0.0200 | 0.0174 | 0.0200 | 0.0171 | 87 | 86 | 80-120 | 2 | 20 |
| Batch number: 171281063602 | Sample number(s): 8960230 UNSPK: P959663 | | | | | | | | | |
| Arsenic | N.D. | 5.00 | 5.08 | 5.00 | 4.94 | 102 | 99 | 75-125 | 3 | 20 |
| Barium | 0.267 | 100 | 4.22 | 100 | 4.23 | 4* | 4* | 75-125 | 0 | 20 |
| Cadmium | N.D. | 1.00 | 0.925 | 1.00 | 0.898 | 93 | 90 | 75-125 | 3 | 20 |
| Chromium | 0.00225 | 5.00 | 4.45 | 5.00 | 4.36 | 89 | 87 | 75-125 | 2 | 20 |
| Lead | 0.0127 | 5.00 | 1.57 | 5.00 | 1.53 | 31* | 30* | 75-125 | 3 | 20 |
| Selenium | N.D. | 1.00 | 1.03 | 1.00 | 1.00 | 103 | 100 | 75-125 | 2 | 20 |
| Silver | N.D. | 5.00 | 2.05 | 5.00 | 2.01 | 41* | 40* | 75-125 | 2 | 20 |
| | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | | | | | |
| Batch number: 17135104201A | Sample number(s): 8960229 UNSPK: P979339 | | | | | | | | | |
| Cyanide (Reactivity) | N.D. | 1000 | N.D. | 1000 | N.D. | 0* | 0* | 77-113 | 0 | 11 |
| | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | **mg/kg** | | | | | |
| Batch number: 17132112101A | Sample number(s): 8960229 UNSPK: P979339 | | | | | | | | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

| Analysis Name | Unspiked Conc mg/kg | MS Spike Added mg/kg | MS Conc mg/kg | MSD Spike Added mg/kg | MSD Conc mg/kg | MS %Rec | MSD %Rec | MS/MSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfide (Reactivity) | N.D. | 546 | 443.36 | 544 | 422.95 | 81 | 78 | 68-102 | 5 | 24 |

## Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | BKG Conc mg/l | DUP Conc mg/l | DUP RPD | DUP RPD Max |
|---|---|---|---|---|
| Batch number: 171220571301 | Sample number(s): 8960230 BKG: P963191 | | | |
| Mercury | N.D. | N.D. | 0 (1) | 20 |
| Batch number: 171281063602 | Sample number(s): 8960230 BKG: P959663 | | | |
| Arsenic | N.D. | N.D. | 0 (1) | 20 |
| Barium | 0.267 | 0.265 | 1 | 20 |
| Cadmium | N.D. | N.D. | 0 (1) | 20 |
| Chromium | 0.00225 | 0.00191 | 16 (1) | 20 |
| Lead | 0.0127 | 0.0106 | 18 (1) | 20 |
| Selenium | N.D. | N.D. | 0 (1) | 20 |
| Silver | N.D. | N.D. | 0 (1) | 20 |
| Batch number: 17119039401A | Sample number(s): 8960229 BKG: P960235 | | | |
| Corrosivity | 10.57 | 10.52 | 0 | 2 |
| | Std. Units | Std. Units | | |
| Batch number: 17119039401A | Sample number(s): 8960229 BKG: P960235 | | | |
| pH | 10.57 | 10.52 | 0 | 3 |
| | % | % | | |
| Batch number: 17118820004B | Sample number(s): 8960229 BKG: P962543 | | | |
| Moisture | 10.36 | 10.86 | 5 | 5 |

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260C
Batch number: L171252AA

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260C
Batch number: L171252AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 8960231 | 100 | 100 | 100 | 98 |
| Blank | 101 | 101 | 99 | 99 |
| LCS | 101 | 101 | 99 | 100 |
| LCSD | 100 | 100 | 101 | 101 |
| MS | 101 | 101 | 101 | 99 |
| MSD | 99 | 100 | 102 | 100 |
| Limits: | 80-116 | 77-113 | 80-113 | 78-113 |

Analysis Name: TCLP 8270D MINI
Batch number: 17125WAD026

| | Nitrobenzene-d5 | 2-Fluorobiphenyl | Terphenyl-d14 | Phenol-d6 | 2-Fluorophenol | 2,4,6-Tribromophenol |
|---|---|---|---|---|---|---|
| 8960230 | 75 | 71 | 84 | 29 | 40 | 82 |
| Blank | 78 | 72 | 90 | 34 | 46 | 86 |
| LCS | 83 | 78 | 85 | 37 | 50 | 86 |
| LCSD | 81 | 77 | 84 | 37 | 50 | 86 |
| Limits: | 29-119 | 41-112 | 38-125 | 10-71 | 10-84 | 13-149 |

Analysis Name: PCBs 8082A/3546
Batch number: 171230024A

| | Tetrachloro-m-xylene | Decachlorobiphenyl |
|---|---|---|
| 8960229 | 62 | 43* |
| Blank | 120 | 109 |
| LCS | 122 | 109 |
| MS | 90 | 63 |
| MSD | 82 | 69 |
| Limits: | 53-140 | 45-143 |

Analysis Name: TX 1005 -(Soils)
Batch number: 171170008A

| | Orthoterphenyl | Trifluorotoluene |
|---|---|---|
| 8960229 | 117 | 94 |
| Blank | 100 | 102 |
| LCS | 96 | 106 |
| LCSD | 96 | 107 |
| MS | 85 | 89 |
| MSD | 91 | 101 |
| Limits: | 70-130 | 70-130 |

Analysis Name: Dioxin/Furans w/ WHO 2005
Batch number: 17118013

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Quality Control Summary

Client Name: EA Engineering
Reported: 05/24/2017 21:07

Group Number: 1793843

## Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Dioxin/Furans w/ WHO 2005
Batch number: 17118013

| | 13C12-2378-TCDD | 13C12-12378-PeCDD | 13C12-123478-HxCDD | 13C12-123678-HxCDD | 13C12-123789-HxCDD | 13C12-1234678-HpCDD |
|---|---|---|---|---|---|---|
| 8960229 | 80 | 78 | 74 | 70 | 70 | 54 |
| Blank | 65 | 74 | 79 | 78 | 79 | 83 |
| OPR | 53 | 62 | 72 | 72 | 73 | 71 |
| Limits: | 40-135 | 40-135 | 40-135 | 40-135 | 40-135 | 40-135 |

| | 13C12-OCDD | 13C12-2378-TCDF | 13C12-12378-PeCDF | 13C12-23478-PeCDF | 13C12-123478-HxCDF | 13C12-123678-HxCDF |
|---|---|---|---|---|---|---|
| 8960229 | 41 | 76 | 77 | 75 | 72 | 69 |
| Blank | 86 | 56 | 67 | 64 | 66 | 74 |
| OPR | 67 | 47 | 54 | 54 | 58 | 63 |
| Limits: | 40-135 | 40-135 | 40-135 | 40-135 | 40-135 | 40-135 |

| | 13C12-234678-HxCDF | 13C12-123789-HxCDF | 13C12-1234678-HpCDF | 13C12-1234789-HpCDF | 13C12-OCDF |
|---|---|---|---|---|---|
| 8960229 | 68 | 63 | 53 | 49 | 37* |
| Blank | 69 | 63 | 82 | 68 | 69 |
| OPR | 62 | 62 | 73 | 59 | 55 |
| Limits: | 40-135 | 40-135 | 40-135 | 40-135 | 40-135 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ / MRL.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

30056 | 1793843 | 8960229-31



**EA Engineering - Wilcox**
DateShipped: 4/25/2017
CarrierName: FedEx
AirbillNo: 7789 8804 4925

**CHAIN OF CUSTODY RECORD**
Site #: 277
Contact Name: Patrick Appel
Contact Phone: 972-315-3922

**No: 6-042517-142918-0155**
Lab Contact: Angela Miller
Lab: Eurofins Lancaster Laboratories Environmental LLC
Lab Phone: 717-656-2300

| Lab # | Sample # | Analyses | Preservative | Sampler | Collected | Sample Time | Numb Cont | Container | Lab QC |
|---|---|---|---|---|---|---|---|---|---|
| | ETF-WC-01 | Ignitability Moisture PCBs pH | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 8oz Jar | N |
| | ETF-WC-01 | Dioxins Furans | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 8oz Jar | N |
| | ETF-WC-01 | Reactivity | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 4oz Jar | N |
| | ETF-WC-01 | GRO | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 4oz Jar | N |
| | ETF-WC-01 | ORO | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 8oz Jar | N |
| | ETF-WC-01 | DRO | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 8oz Jar | N |
| | ETF-WC-01 | TCLP Metals TCLP SVOCs | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 3 | 8oz Jar | N |
| | ETF-WC-01 | TCLP VOCs | Ice to 4C | Jason Stroup | 4/25/2017 | 14:35 | 1 | 4oz Jar | N |

Special Instructions:

**SAMPLES TRANSFERRED FROM**
**CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by (Signature and Organization) | Date/Time | Received by (Signature and Organization) | Date/Time | Sample Condition Upon Receipt |
|---|---|---|---|---|---|
| | EA | 4-25-17 1800 | Adam Bugler EA | 4-25-17 1800 | |
| | Adam Bugler EA | 4-25-17 2000 | FedEx (courier) | 4-25-17 2000 | |
| | | | | | |
| | | | 3 / ELLE | 4-26-17 / 940 | Intact |

eurofins | Lancaster Laboratories Environmental

# Sample Administration Receipt Documentation Log

Doc Log ID: 181849

Group Number(s): 1793843

Client: EA

## Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | Fed Ex | Arrival Timestamp: | 04/26/2017 9:40 |
| Number of Packages: | 3 | Number of Projects: | 1 |

## Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Sample IDs on COC match Containers: | Yes |
| Custody Seal Present: | Yes | Sample Date/Times match COC: | Yes |
| Custody Seal Intact: | Yes | VOA Vial Headspace ≥ 6mm: | N/A |
| Samples Chilled: | Yes | Total Trip Blank Qty: | 0 |
| Paperwork Enclosed: | Yes | Air Quality Samples Present: | No |
| Samples Intact: | Yes | | |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |

*Unpacked by Timothy Cubberley (6520) at 11:49 on 04/26/2017*

## Samples Chilled Details

*Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.*

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Elevated Temp? |
|---|---|---|---|---|---|---|---|
| 1 | DT131 | 0.8 | DT | Wet | Y | Bagged | N |
| 2 | DT131 | 0.8 | DT | Wet | Y | Bagged | N |
| 3 | DT131 | 0.4 | DT | Wet | Y | Bagged | N |



2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **BMQL** | Below Minimum Quantitation Level | **mg** | milligram(s) |
| **C** | degrees Celsius | **mL** | milliliter(s) |
| **cfu** | colony forming units | **MPN** | Most Probable Number |
| **CP Units** | cobalt-chloroplatinate units | **N.D.** | none detected |
| **F** | degrees Fahrenheit | **ng** | nanogram(s) |
| **g** | gram(s) | **NTU** | nephelometric turbidity units |
| **IU** | International Units | **pg/L** | picogram/liter |
| **kg** | kilogram(s) | **RL** | Reporting Limit |
| **L** | liter(s) | **TNTC** | Too Numerous To Count |
| **lb.** | pound(s) | **µg** | microgram(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| **meq** | milliequivalents | **umhos/cm** | micromhos/cm |

**<** less than

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Laboratory Data Qualifiers:*

C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…
W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

**Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.