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March 30, 2020

Mr. Harry Allen
Federal On-Scene Coordinator
U. S. Environmental Protection Agency
Region 9, Emergency Response Section
2445 North Palm Drive, Signal Hill, CA 90755

Subject: Guam Chlorinated Herbicides Investigation –October 2019 Data Results
Task Order Number: 68HE0919F0113
Document Control Number: 0035-08-AAJD

Dear Mr. Allen:

Under the Task Order (TO) No. 68HE0919F0113, the United States (U.S.) Environmental Protection Agency (EPA) Region 9 Federal On-Scene Coordinator (FOSC), Harry Allen, tasked the Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START), at the request of the Government of Guam, to support a continuing investigation of residual legacy chlorinated herbicides on Guam in October, 2019 (**Figure 1**).

This sampling event is a continuation of earlier investigations conducted in April 2018 and November 2018. This investigation is being conducted based on reports of chlorinated herbicide use by veterans who were stationed in Guam at the request of the Government of Guam. To date, locations within Andersen Air Force Base (AAFB) and locations along a pipeline located off base have been tested for certain herbicides (Weston, 2019). An off-base sampling event for residual herbicides was conducted by the EPA and START in November 2018. During that sampling event, trace concentrations of 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and 2-(2,4,5-trichlorophenoxy) propionic acid (2,4,5-TP, also known by the common name "silvex" or "fenoprop") were detected in samples collected from locations along a pipeline reportedly involved in chlorinated herbicide spraying (Weston, 2019). Previous sampling locations from the April 2018, November 2018 and October 2019 sampling events are depicted in **Figure 2**.

Chlorinated herbicides were reportedly applied during the 1960s and 1970s. A Navy field manual reported 2,4,5-T was an approved herbicide for use on Guam (Navy, 1958). It is anticipated that any herbicide residuals may have undergone degradation since the time they were used. Limitations in resolution for the previously utilized EPA Method 8151A may have restricted the ability to detect the contaminants of concern at the lower concentrations necessary to quantitatively assess long-term risks. Therefore, a modified analytical method with increased resolution, EPA Method 8321A, was utilized to detect herbicides at lower concentrations than was possible with EPA Method 8151A. In addition, EPA requested dioxin/furan analysis of soil samples to provide supporting evidence of legacy chlorinated herbicide use. For the October 2019 sampling event, in conjunction with analyzing soil samples for legacy chlorinated herbicides, dioxin/furan analysis was performed using EPA Method 8290. The method includes 17 dioxin and furan congeners,

some of which were known manufacturing byproducts of the production of chlorinated herbicide components (EPA, 2006).

This letter report presents a summary of START mobilization activities and analytical results from soil samples collected during the October 2019 sampling event. **Attachment A** provides a list of citations for this document, **Attachment B** provides a photographic log of Site conditions and Site activities, **Attachment C** provides the figures for this letter report, and **Attachment D** contains the soil sampling analytical results, toxic equivalency quotient (TEQ) calculations using the Kaplan-Meier (K-M) method, and data validation reports.

Mobilization Activities

Sampling took place over two days, October 2, 2019 and October 4, 2019. The sample locations were determined based on locations provided by a veteran who reported knowledge of herbicide spraying events (**Figure 1**). For each sample, START used dedicated sampling equipment to collect 5-point composite surface (0 to 0.25 feet below ground surface) soil samples from areas where the veteran indicated herbicide spraying may have occurred. A total of ten 5-point composite surface soil samples (including two duplicate soil samples) were collected from areas along different sections of the pipeline. Samples were collected at valves and other common access points along the pipeline where spraying of chlorinated herbicides reportedly took place. Sample aliquots were collected using dedicated disposable scoops and homogenized in a disposable aluminum pan prior to being placed in a clear 8-ounce soil jar. Soil samples were placed on ice and chilled to 4 degrees Celsius prior to being shipped to a TestAmerica laboratory in Denver, Colorado for analysis. All ten soil samples were analyzed for chlorinated herbicides by EPA Method 8321A and for dioxins and furans by EPA Method 8290. A photographic log of Site conditions and Site activities is provided in **Attachment B-Photographic Log.**

Sampling Results

No detections were observed for chlorinated herbicides using EPA Method 8321A during the October 2019 sampling event (**Table 1**). One or more individual dioxin and furan congeners were detected in all 10 composite samples, including the two duplicate samples using EPA Method 8290 (**Table 2**). All sample results are compared to EPA Regional Screening Levels (RSLs) for residential soil (EPA, 2019a) and to Tropical Pacific Environmental Screening Levels (TPESL) for unrestricted land use in shallow soil where groundwater is not a concern or potential drinking water source (TPESL, 2017).[1]

For the dioxin and furan congeners, the total dioxin TEQ concentration for each sample was calculated using the K-M mean estimation technique following the EPA Advanced K-M TEQ Calculator version 9.1 (TEQ Calculator [EPA, 2014]) for comparison to the 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) RSL. These data are presented in **Attachment D - Sampling Results**. In order to calculate a TEQ, a toxic equivalent factor (TEF) is assigned to each member of the dioxin and dioxin-like compounds category. The TEF is the ratio of the toxicity of one of the compounds in this category to the toxicity of the two most toxic

[1] Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater Screening Levels, Tropical Pacific Edition (TPESL, 2017), is prepared by Hawaii Department of Health, Hazard Evaluation and Emergency Response for use in tropical areas outside of Hawaii, including Guam and the Commonwealth of the Mariana Islands.

compounds in the category, which are each assigned a TEF of 1 (i.e., 2,3,7,8-TCDD and 1,2,3,7,8-pentachlorodibenzo-p-dioxin). TEFs have been established through international agreements and currently range from 1 to 0.0001 (Van den Berg and others, 2006; EPA, 2016). A TEQ is calculated by multiplying the actual grams weight of each dioxin and dioxin-like compound by its corresponding TEF (e.g., 10 grams times 0.1 TEF = 1 gram TEQ) and then summing the results. The number that results from this calculation is referred to as grams TEQ.

Calculations of sums or totals for multi-constituent chemicals such as total dioxin TEQs have typically involved simple substitution of zero, one half the detection limit (DL), or the DL for left-centered (non-detect) congeners. Because this practice introduces bias to estimates used in statistical calculations, many sources now strongly caution against the use of arbitrary surrogate values for non-detects for data with three or more non-detect, qualified and/or rejected congeners (TEQ Calculator [EPA, 2014]). Helsel (2009) describes an approach for calculating totals using the K-M approach which uses a nonparametric maximum likelihood estimator in calculations of the intermediate mean and total TEQ on influential congeners (high toxicity, TEQ factors close to 1 [Van den Berg and others, 2006], high concentrations) (TEQ Calculator [EPA, 2014]). The EPA has been utilizing the K-M method for the treatment of non-detect dioxin congeners since 2009 (EPA, 2009a, 2009b) and developed the TEQ calculator macro in 2014 to estimate TEQ using the K-M Method. Further details regarding the use of the K-M estimator for deriving TEQ estimations are presented in the K-M discussion of the EPA Advanced K-M TEQ Calculator (TEQ Calculator [EPA, 2014]). K-M data output for this site, including the K-M TEQ calculations, using the EPA Advanced K-M TEQ calculator is provided in **Attachment D-Sampling Results.**

The total dioxin TEQ concentrations exceeded the EPA RSLs for 2,3,7,8-TCDD of 4.8 picograms per gram (pg/g), but did not exceed the TPESL (EPA, 2019a; TPESL, 2017) in 8 of 10 composite soil samples, including both duplicate samples (G-01-01-D and G-04-02-D). TEQ values exceeding the EPA RSL value ranged from 5.1 pg/g (G-03-01) to 13 pg/g (G-04-01), with the highest TEQ value at the Tiyan Junction location. The individual dioxin congener 1,2,3,4,6,7,8-heptachlorodibenzodioxin (1,2,3,4,6,7,8-HpCDD) exceeded its EPA RSL value of 480 pg/g in one sample (G-04-01). Figures depicting Site sampling locations and EPA RSL exceedances are presented in **Attachment C-Figures 3 through 6**.

Discussion

The chlorinated herbicide 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) itself is not considered carcinogenic, but 2,4,5-T was known to have varying levels of contamination with the known carcinogen, 2,3,7,8-TCDD, from the manufacturing process. Contamination with 2,3,7,8-TCDD led to the discontinuation of use of 2,4,5-T and similar chlorinated herbicides in 1985 (CDC, 2016). In previous research, TCDD was found in pre-1970 samples of 2,4,5-trichlorophenol, the manufacturing precursor of 2,4,5-T. In addition to TCDD, other polychlorinated dibenzo-*p*-dioxins (PCDDs), including 2,7-dichloro-dibenzo-*p*-dioxin and 1,3,6,8-tetrachloro-dibenzo-*p*-dioxin, were measured in the same pre-1970 samples (Cochrane and others, 1982). Additionally, herbicide formulas often included simultaneous use of chemicals including 2,4-dichlorophenoxyacetic acid (2,4-D), kerosene, and diesel (EPA, 2019b). The purity of these additive substances is unknown due to lack of data. A summary of literary citations for this document is provided in **Attachment A-Citations**.

As described above, 8 of 10 samples had total dioxin TEQ results that exceeded the RSL and 8 of 10 had detections of the 2,3,7,8-TCDD congener. All samples, including the two samples with the total dioxin TEQ below the EPA RSL value, had high levels of octachlorodibenzodioxin (OCDD) and 1,2,3,4,6,7,8-HpCDD. Without a sample of the alleged herbicides used during the reported spraying event at the Site, a site-specific dioxin congener fingerprint comparison cannot be completed. For this discussion, data collected at this Site were compared with documented dioxin congener fingerprints from peer-reviewed publications with similar contaminants of concern. Ubiquitous combustion process sources such as wood fires and vehicle exhaust are common sources of 1,2,3,4,6,7,8-HpCDD and OCDD in the environment (Quadrini and others, 2015). Also, OCDD may originate from weathering of pentachlorophenol (EPA, 2006; Quadrini and others, 2015; Towey and others, 2010). These congeners may consequently dominate regional PCDD and polychlorinated dibenzofurans (PCDF) fingerprints (Quadrini and others, 2015).

Tiyan Junction was the location where trace concentrations of 2,4,5-T and 2,4,5-TP were detected during the 2018 sampling event by EPA and START (Weston, 2019). The highest total dioxin TEQ concentration (13 pg/g in sample G-04-02) was measured at this location during this sampling event (Figure 6). Total dioxin TEQ concentrations ranged from 6.3 pg/g (sample G-04-02) to 13 pg/g (sample G-04-01), which was 1.4 times higher than any other TEQ result recorded during this sampling event and 2.7 times higher than the EPA RSL of 4.8 pg/g for 2,3,7,8-TCDD. At the Tiyan Junction location (samples G-04-01, G-04-02 and G-04-02-D [duplicate sample]), all samples contained elevated levels of 1,2,3,4,6,7,8-HpCDD, OCDD, 1,2,3,4,7,8,9-heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF) and octachlorodibenzofuran (OCDF) in relation to other congeners. Samples that contained elevated levels of 1,2,3,4,7,8,9-HpCDF and OCDF tended to have higher TEQ concentrations.

Following a similar methodology to that presented in Quadrini and others (2015) and Cleverly and others (1997), the individual congener data were plotted by sample (**Figure 7**) and the total dioxin/total furan data for each sample were plotted using mean and standard deviation to measure central tendency (**Figure 8**). Quadrini and others (2015) showed that OCDD and 1,2,3,4,6,7,8-HpCDD likely originated from non-herbicide sources (e.g., fuel combustion) and so were excluded from the data presented in **Figure 7**. Additionally, the exclusion of data for OCDD and 1,2,3,4,6,7,8-HpCDD allowed for better resolution of the congener distribution in **Figure 7**. The individual congener distribution for samples (**Figure 7**) and the central tendency for total dioxins/total furans (**Figure 8**) collected during the 2019 sampling event show high OCDF and 1,2,3,4,7,8,9-HpCDF levels, similar to herbicide fingerprints presented in literature by Cleverly (Cleverly and others, 1997). Although there is no conclusive samples from the spraying event and a complete dioxin congener fingerprint comparison cannot be completed, the congener patterns in some soil samples are consistent with residual chlorinated herbicides. **Figure 7** in **Appendix D presents** the congener distribution, excluding OCDD and 1,2,3,4,6,7,8-HpCDD as previously discussed, for all sample locations during the 2019 sampling event. **Figure 8** in **Appendix D** presents the data for total dioxins/total furans with the central tendency of sample data presented for each congener.

Summary

In the October 2019 sampling investigation, samples collected at the Tiyan Junction location contained total TEQ concentrations ranging from 6.3 to 13 pg/g (G-04-01), which was 1.4 times higher than any other TEQ result recorded during this sampling event. Total TCDD in this location ranged from 1.1 to 1.4 pg/g. In addition, the Andersen fence line location (GS-3) contained Total TCDD at concentrations ranging from 2 to 2.1 pg/g with TEQs of 5.1 and 6.0 pg/g. Although no detections of trace chlorinated herbicides were observed during the 2019 sampling event, trace concentrations of 2,4,5-T and 2,4,5-TP were detected at the Tiyan Junction location sampling site during the 2018 sampling event and have been detected on Andersen at other locations (Weston, 2019).

As previously discussed, OCDD and 1,2,3,4,6,7,8-HpCDD concentrations may be attributed to other sources. Whereas the congener 1,2,3,4,6,7,8-HpCDD is not associated with chlorinated herbicides, higher OCDD concentrations could be a marker indicating that TCDD was initially higher but has degraded. 2,3,7,8-TCDD concentrations are anticipated in soils where residual 2,4,5-T is detected.

Taking into consideration the length of time since the reported use of chlorinated herbicides on Guam and their subsequent weathering, TCDD and/or other congeners have undergone environmental degradation. Concentrations may have originally been higher because the relative degradation rates vary depending on the congener and environmental conditions (EPA, 1989). Migration of dioxin congeners within the soil profile is possible over time (Fan and others, 2006; Banout and others, 2014).

It is probable that TCDD dioxin congener concentrations detected in soils are associated with chlorinated herbicides. Records of chlorinated herbicide use by the military on Guam (Navy, 1958) and veteran affidavits documenting the use of 2,4,5-T and 2,4,5-TP along with data collected from previous soil sampling events suggest the presence and use of chlorinated herbicides was likely. Finally, the herbicides in question were known to contain TCDD.

To clarify any remaining uncertainty about herbicide types, amounts and locations sprayed, continued investigation of suspect areas is recommended. Additional sampling at depths up to 12 inches is suggested to account for possible degradation and migration of residual herbicides and dioxin congeners. Similarities and differences between sample location characteristics (environmental conditions, vegetation cover, historical land use, previous excavations, use of imported fill, etc.) and the congener profiles should be further investigated as possible markers to aid in identifying historical herbicide use.

Respectfully,

WESTON SOLUTIONS, Inc.

Amanda Wagner
START Project Scientist

Attachments:
A - Citations
B – Photographic Documentation
C – Figures
D – Sampling Results

cc: WESTON START DCN File

ATTACHMENT A: CITATIONS

Citations

- Banout and others. 2014. Agent Orange Footprint Still Visible in Rural Areas of Central Vietnam. Journal of Environmental and Public Health. Volume 2014, Article ID 528965. http://dx.doi.org/10.1155/2014/528965

- Centers for Disease Control and Prevention (CDC). 2016. National Biomonitoring Program - Biomonitoring Study: 2,4,5-Trichlorophenoxyacetic Acid. Last updated on December 23, 2016. Accessed: January 6, 2020. https://www.cdc.gov/biomonitoring/2,4,5-TrichlorophenoxyaceticAcid_BiomonitoringSummary.html

- Cleverly and others. 1997. The congener profiles of anthropogenic sources of chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans in the United States. Organohal. Comp. 32: 430–435.

- Cochrane and others. 1982. Analysis of technical and formulated products of 2,4-dichlorophenoxyacetic acid for the presence of chlorinated dibenzo-*p*-dioxins.

- EPA (U.S. Environmental Protection Agency). 1989 Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. EPA/625/3-89/016. Risk Assessment Forum, Washington, DC.

- EPA. 2006. An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds In the U.S. for the Years 1987, 1995, and 2000. U.S. Environmental Protection Agency, Washington, DC, EPA/600/P-03/002F.

- EPA. 2009a. ProUCL Version 4.00.04 Technical Guide (Draft). Prepared by A. Singh and A.K. Singh. EPA/600/R-07/041. February.

- EPA. 2009b. ProUCL Version 4.00.04 User Guide (Draft). Prepared by A. Singh, R. Maichle, A.K. Singh, S.E. Lee and N. Armbya. Office of Research and Development, National Exposure Research Laboratory. EPA/600/R-07/038. February.

- EPA. 2014. EPA advanced KM TEQ Calculator. Version 9.1, issued July 31, 2014.

- EPA. 2016. Dioxin and Dioxin-Like Compounds Toxic Equivalency Information. Last updated July 25, 2016. Accessed on January 14, 2020. https://www.epa.gov/toxics-release-inventory-tri-program/dioxin-and-dioxin-compounds-toxic-equivalency-information

- EPA. 2019a. Regional Screening Levels For Chemical Contaminants at Superfund Sites. Available at: http://www.epa.gov/region9/superfund/prg/. RSL tables last updated November 2019.

- EPA. 2019b. Ingredients Used in Pesticide Products – 2,4-D. Last Updated on February 20, 2019. Accessed: January 12, 2020. https://www.epa.gov/ingredients-used-pesticide-products/24-d

- Fan and others. 2006. Fate and transport of 1278-TCDD, 1378-TCDD, and 1478-TCDD in soil-water systems. Science of the Total Environment. 371 (2006) pp. 323-333. doi: 10.1016/j.scitotenv.2006.07.024.

- Helsel. 2009. Summing Nondetects: Incorporating Low-Level Contaminants in Risk Assessment. Integrated Environmental Assessment and Management. 6(3): 361-366.

- United States Navy (Navy), 1958. Guam Soils Conservation Series No. 2. Herbicides. Civil Engineering Corps Bureau of Yards and Docks, Department of the Navy. August 15, 1958, pg. 26.

- Quadrini and others. 2015. Fingerprinting 2,3,7,8-tetrachlorodibenzodioxin contamination within the lower Passaic River. Environ Toxicol Chem. 2015 Jul; 34(7): 1485–1498. Published online 2015 May 5. doi: 10.1002/etc.2961.

- Towey and others. 2010. Hierarchical cluster analysis of polychlorinated dioxins and furans in Michigan, USA, soils: evaluation of industrial and background congener profiles. Environ Toxicol Chem. 2010 Jan;29(1):64-72. doi: 10.1002/etc.24.

- Tropical Pacific Environmental Screening Levels (TPESL). 2017. Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater - Tropical Pacific Edition, Fall 2017. Prepared by: Hawai‘i Department of Health, Hazard Evaluation and Emergency Response. Accessed: January 12, 2020. https://health.hawaii.gov/heer/ehe-guidance-tropical-pacific-edition/

- Van den Berg and others. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences. 93(2): 223-241. Accessed on January 12, 2020. http://epa-prgs.ornl.gov/chemicals/help/documents.vandenberg2006.pdf

- Weston Solutions, Inc. (WESTON®). 2019. Guam Agent Orange Final Site Assessment Report. May 22, 2019.

ATTACHMENT B: PHOTOGRAPHIC DOCUMENTATION

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PHOTOGRAPH LOG

Project Name:	Site Location:	Task Order No:
Guam Herbicide Investigation	Polaris Point Sampling Location, Guam	68HE0919F0113

Photo No. 1	Date: 10/02/19

Direction Photo Taken:

North

Description:

Valve pit enclosed with chain link fence and barbed wire. Remnants of a missile display stand behind the dark gray car.

5-point composite sample G-01-01 taken at this location.

Photo No. 2	Date: 10/02/19

Direction Photo Taken:

North

Description:

5-point composite sample was taken around and inside the fenced area as well as near the missile stand.

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PHOTOGRAPH LOG

Project Name:	Site Location:	Task Order No:
Guam Herbicide Investigation	Nimitz Hill Sampling Location, Guam	68HE0919F0113

Photo No. 3	Date: 10/02/19

Direction Photo Taken:

Southeast

Description:

Sample location G-02-01

Composite sample locations include the two faces of the fence line shown.

Photo No. 4	Date: 10/02/19

Direction Photo Taken:

East

Description:

Composite for sample G-02-01 also includes the area behind the metal structure shown.

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PHOTOGRAPH LOG

Project Name:	Site Location:	Task Order No:
Guam Herbicide Investigation	Nimitz Hill Sampling Location, Guam	68HE0919F0113

Photo No. 5	Date: 10/02/19

Direction Photo Taken:

North

Description:

Sample Location G-02-02

Downhill from sample G-02-01.

Some composite locations taken from the concrete abutment.

Photo No. 6	Date: 10/02/19

Direction Photo Taken:

South

Description:

Taken from same location as photo number 5 (above). Composite sample locations were collected from along the pipeline near the foil pan.

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PHOTOGRAPH LOG

Project Name:	Site Location:	Task Order No:
Guam Herbicide Investigation	Nimitz Hill Sampling Location, Guam	68HE0919F0113

Photo No. 7	Date: 10/02/19

Direction Photo Taken:

South

Description:

Composite sample G-02-03 was taken along the pipeline and concrete support structure.

Photo No. 8	Date: 10/02/19

Direction Photo Taken:

South

Description:

Composite sample G-02-03 was also taken from around the length of this pipe (same pipe as above).

Sample Location G-02-03 was uphill from both G-02-01 and G-02-02 and was the closest to the main road.

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PHOTOGRAPH LOG

Project Name:	Site Location:	Task Order No:
Guam Herbicide Investigation	Upi Elementary School Sampling Location, Guam	68HE0919F0113

Photo No. 9	Date: 10/02/19

Direction Photo Taken:

North.

Description:

Composite sample G-03-01 collected along the fence line of the Andersen Air Force Base.

Photo No. 10	Date: 10/02/19

Direction Photo Taken:

Northeast.

Description:

Sample location G-03-02 collected along fenceline outside of Andersen AFB.

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PHOTOGRAPH LOG

Project Name:	Site Location:	Task Order No:
Guam Herbicide Investigation	Tiyan Junction Sampling Location, Guam	68HE0919F0113

Photo No. 11	Date: 10/04/19

Direction Photo Taken:

West

Description:

Sample Location G-04-01.

Composite taken along the left side of the pipe. Sample Location G-04-02 can be seen in the background following the pipe.

Photo No. 12	Date: 10/04/19

Direction Photo Taken:

South

Description:

Sample Location G-04-02.

Composite taken in a radius around the valve.

ATTACHMENT C: FIGURES

0 Miles 4

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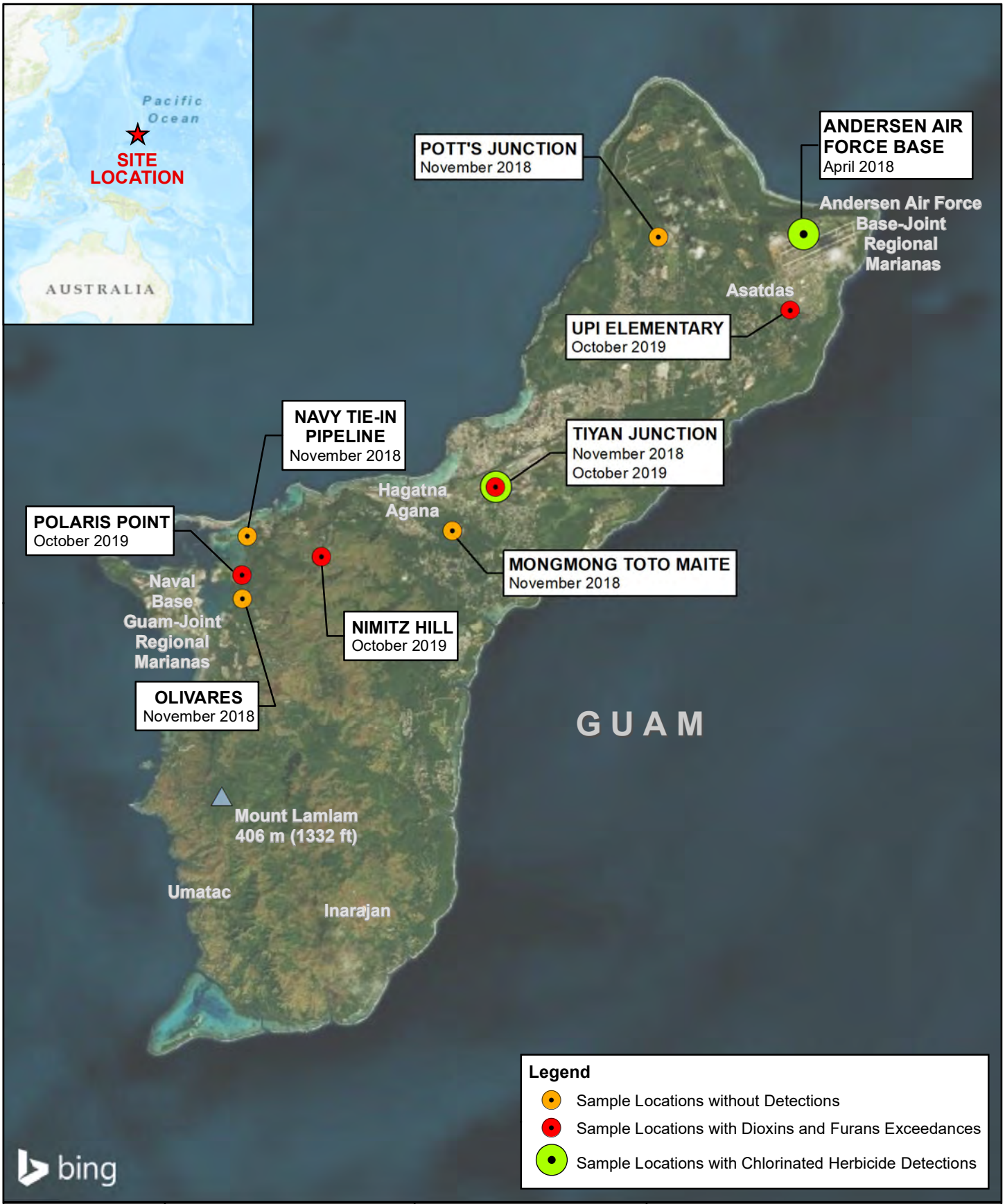
Pacific
Southwest

FIGURE 1
SITE LOCATION
Guam Chlorinated Herbicides
Site Investigation
Guam

Contract: 68HE0919D0002; **TO:** 68HE0919F0113

Document Control Number: 0035-08-AAJD



0 Miles 4

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Southwest

FIGURE 2
HISTORIAL SAMPLE RESULTS
Guam Chlorinated Herbicides
Site Investigation
Guam

Contract: 68HE0919D0002; **TO:** 68HE0919F0113

Document Control Number: 0035-08-AAJD

Notes:
bgs = below ground surface
* All samples taken 0-0.25 ft bgs
pg/g = picogram/gram
Bold and Underlined = screening level exceedance
* TCDD TEQ = Dioxin toxic equivalency; calculated using the Kaplan-Meier approach (TEQ Calculator, 2014)

Screening Levels:
EPA RSLs = Environmental Protection Agency Regional Screening Levels for residential soil (2019) (Residential):
- TCDD TEQ: 4.8 pg/g
TPESLs = Tropical Pacific Environmental Screening Levels for unrestricted land use in shallow soil where groundwater is not a concern or potential drinking water source (2017) (Unrestricted Land Usage):
- TCDD TEQ: 480 pg/g

0 Feet 40

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FIGURE 3
POLARIS POINT DIOXIN AND FURANS EXCEEDANCES
Guam Chlorinated Herbicides
Site Investigation
Guam

Contract: 68HE0919D0002; **TO:** 68HE0919F0113
Document Control Number: 0035-08-AAJD

Notes:
bgs = below ground surface
* All samples taken 0-0.25 ft bgs
pg/g = picogram/gram
Bold and Underlined = screening level exceedance
* TCDD TEQ = Dioxin toxic equivalency; calculated using the Kaplan-Meier approach (TEQ Calculator, 2014)

Screening Levels:
EPA RSLs = Environmental Protection Agency Regional Screening Levels for residential soil (2019) (Residential):
- TCDD TEQ: 4.8 pg/g
TPESLs = Tropical Pacific Environmental Screening Levels for unrestricted land use in shallow soil where groundwater is not a concern or potential drinking water source (2017) (Unrestricted Land Usage):
- TCDD TEQ: 480 pg/g

0 Feet 60

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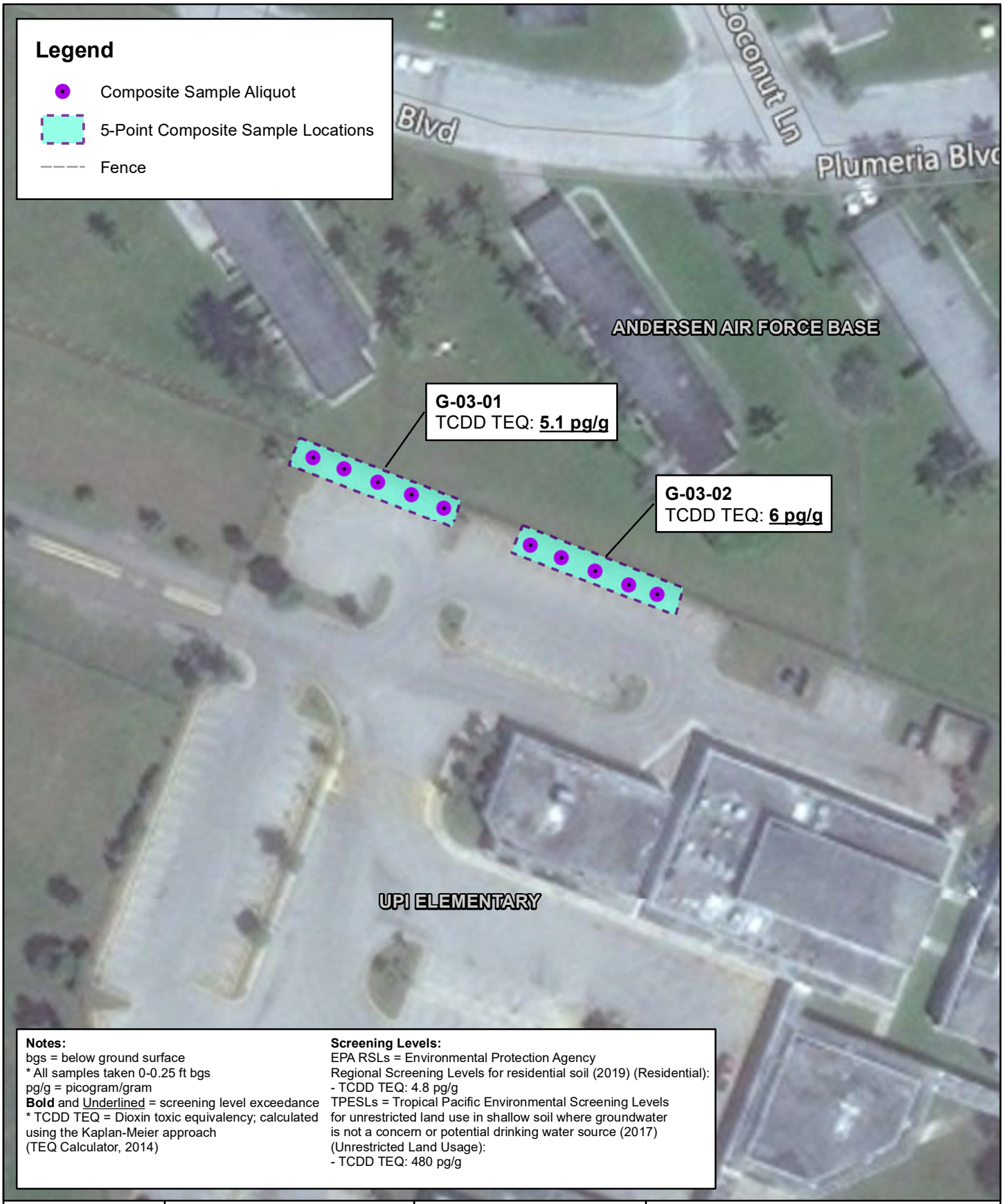
Southwest

FIGURE 4
NIMITZ HILL DIOXIN AND FURANS EXCEEDANCES
Guam Chlorinated Herbicides
Site Investigation
Guam

Contract: 68HE0919D0002; **TO:** 68HE0919F0113
Document Control Number: 0035-08-AAJD



Notes:
bgs = below ground surface
* All samples taken 0-0.25 ft bgs
pg/g = picogram/gram
Bold and Underlined = screening level exceedance
* TCDD TEQ = Dioxin toxic equivalency; calculated using the Kaplan-Meier approach (TEQ Calculator, 2014)

Screening Levels:
EPA RSLs = Environmental Protection Agency Regional Screening Levels for residential soil (2019) (Residential):
- TCDD TEQ: 4.8 pg/g
TPESLs = Tropical Pacific Environmental Screening Levels for unrestricted land use in shallow soil where groundwater is not a concern or potential drinking water source (2017) (Unrestricted Land Usage):
- TCDD TEQ: 480 pg/g

0 Feet 60

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Southwest

FIGURE 5
UPI ELEMENTARY DIOXINS AND FURANS EXCEEDANCES
Guam Chlorinated Herbicides Site Investigation
Guam

Contract: 68HE0919D0002; **TO:** 68HE0919F0113
Document Control Number: 0035-08-AAJD

Notes:
bgs = below ground surface
* All samples taken 0-0.25 ft bgs
pg/g = picogram/gram
Bold and Underlined = screening level exceedance
* TCDD TEQ = Dioxin toxic equivalency; calculated using the Kaplan-Meier approach (TEQ Calculator, 2014)

Screening Levels:
EPA RSLs = Environmental Protection Agency Regional Screening Levels for residential soil (2019) (Residential):
- TCDD TEQ: 4.8 pg/g and 1,2,3,4,6,7,8-HpCDD: 480 pg/g
TPESLs = Tropical Pacific Environmental Screening Levels for unrestricted land use in shallow soil where groundwater is not a concern or potential drinking water source (2017) (Unrestricted Land Usage):
- TCDD TEQ: 480 pg/g

0 Feet 40

PREPARED BY:
Region 9, START
Weston Solutions, Inc.
Concord, CA

PREPARED FOR:
EPA Region 9
Pacific
Southwest

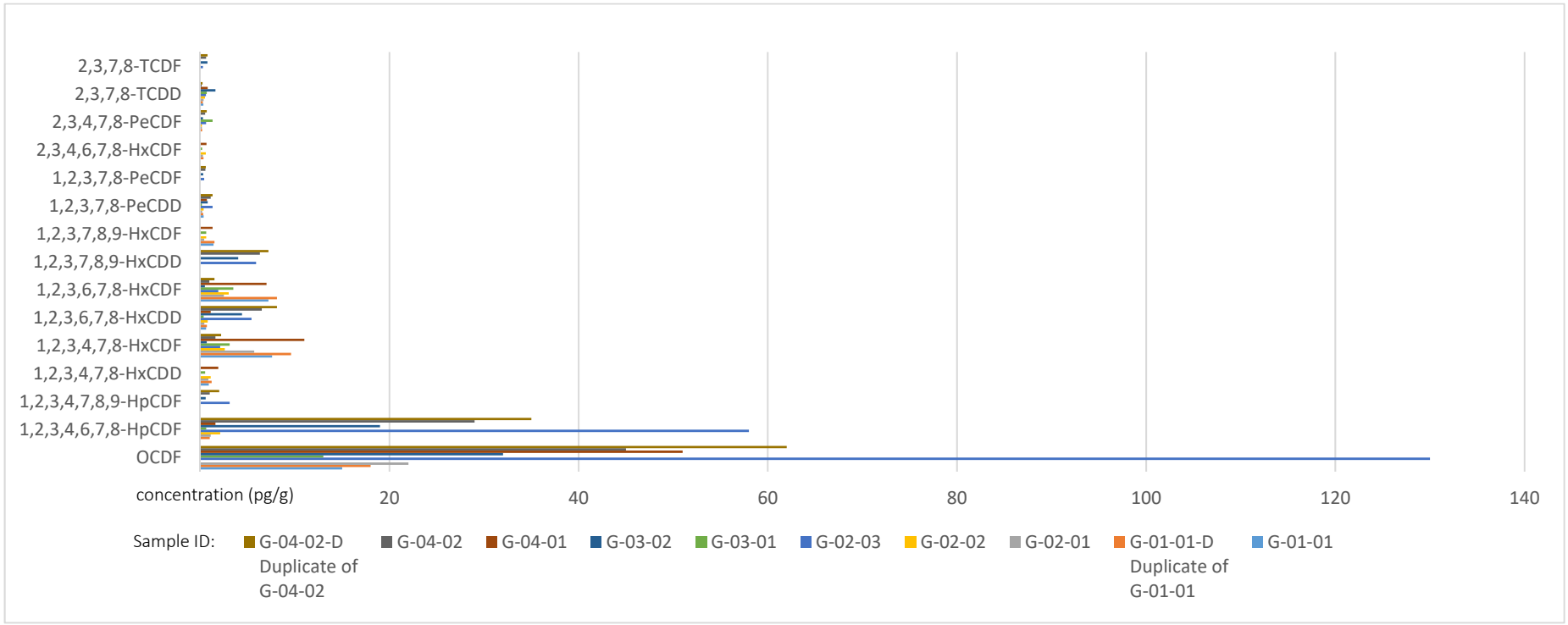
FIGURE 6
TIYAN JUNCTION DIOXIN AND FURANS EXCEEDANCES
Guam Chlorinated Herbicides
Site Investigation
Guam

Contract: 68HE0919D0002; **TO:** 68HE0919F0113

Document Control Number: 0035-08-AAJD

Figure 7
Guam Chlorinated Herbicides Investigation
October 2019 Sampling event
Guam

Dioxins and furan congener concentation distributions by sample



b2ŭŜăŸ
CDD = chlorinated dibenzo-p-dioxins
CDF = chlorinated dibenzofurans
I È Ī ĶŜÈI·
I LJ Ī ĶŜLJúI·
h Ī 2ŏúI·
Pe = penta
pg/g = picogram per gram
T = tetra
Ғ h / 55 I·yŘ ʍĭHΣoΣnΣcΣTΣy π I LJ / 55 ǿŜ℠ŜŜÈŏŧdzŘŜŘ ŘdzŜ ú2 úĶŜăŜ Ŏ2yƎŜyŜ℠ăōŜ\yƎ ĵy2øy˜õèL℠2ŘdzŎúă 2ŦŎ2Y˜õdzăúł2y˜

Task Order #: 68HE0919F0113

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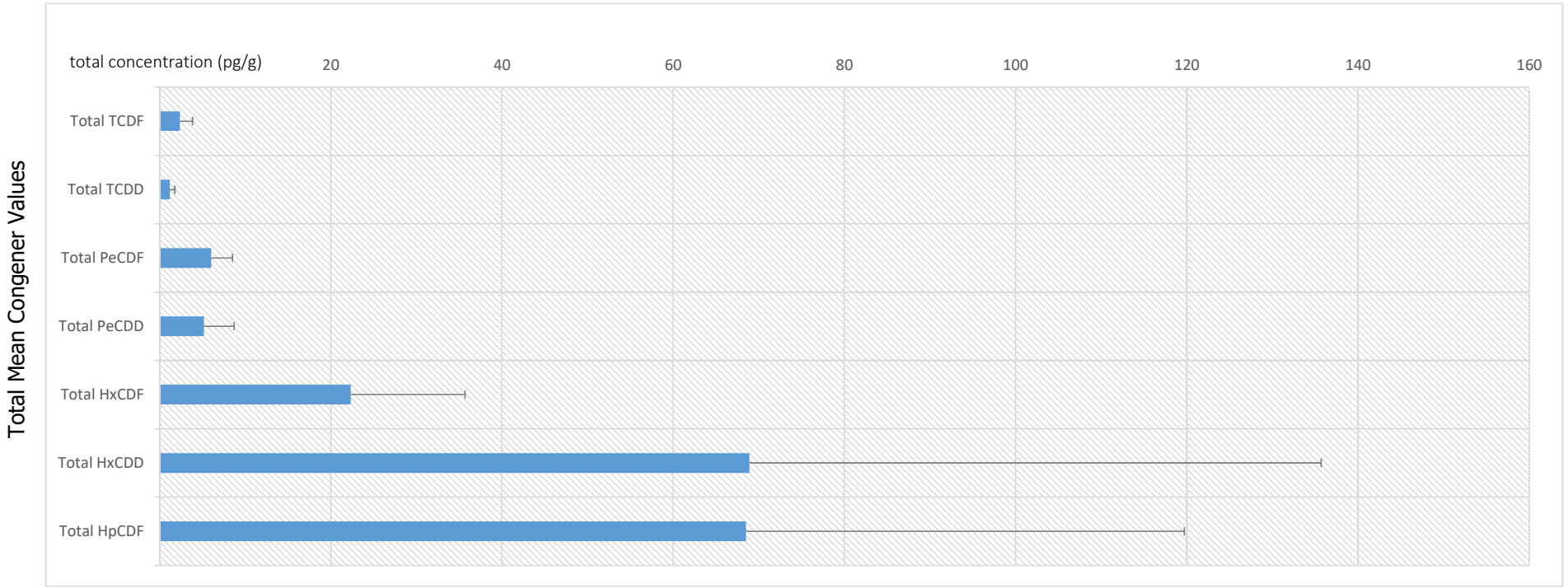
Figure 8
Guam Chlorinated Herbicide Investigation
October 2019 Sampling Event
Guam

Mean total dioxin and total furan concentrations as fractional distributions



Notes:
Hx = hexa
Hp = hepta
O = octa
Pe = penta
T = tetra
CDD = chlorinated dibenzo-p-dioxins
CDF = chlorinated dibenzofurans
* Total HpCDD was excluded due to these congeners being known byproducts of combustion

Task Order #: 68HE0919F0113

DCN: 0035-08-AAJD

ATTACHMENT D: SAMPLING RESULTS

Table 1
Summary of Chlorinated Herbicides Analytical Data - Soil Samples
Chlorinated Herbicides Site Investigation
Guam

Sample ID			G-01-01	G-01-01-D Duplicate of G-01-01	G-02-01	G-02-02	G-02-03	G-03-01	G-03-02	G-04-01	G-04-02	G-04-02-D Duplicate of G-04-02
Sample Date			**10/02/2019**	**10/02/2019**	**10/02/2019**	**10/02/2019**	**10/02/2019**	**10/02/2019**	**10/02/2019**	**10/04/2019**	**10/04/2019**	**10/04/2019**
Sample Depth (feet below ground surface)			**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**	**0 - 0.25**
Analyte	**EPA RSL (Residential) (mg/kg)**	**TPESL (Unrestriced Land Usage) (mg/kg)**	**Chlorinated Herbicides - Soil - (mg/kg)**									
2,4,5-T	630	12	ND (<0.0076)	ND (<0.0077)	ND (<0.0071)	ND (<0.0061)	ND (<0.0078)	ND (<0.006)	ND (<0.0061)	ND (<0.0064)	ND (<0.006)	ND (<0.0063)
2,4-D	700	0.34	ND (<0.0076)	ND (<0.0077)	ND (<0.0071)	ND (<0.0061)	ND (<0.0078)	ND (<0.006)	ND (<0.0061)	ND (<0.0064)	ND (<0.006)	ND (<0.0063)
2,4-DB	1,900	--	ND (<0.018) J	ND (<0.018)	ND (<0.017)	ND (<0.015)	ND (<0.019)	ND (<0.014)	ND (<0.015)	ND (<0.015)	ND (<0.014)	ND (<0.015)
Dicamba	1,900	--	ND (<0.0091) J	ND (<0.0092)	ND (<0.0086)	ND (<0.0073)	ND (<0.0094)	ND (<0.0072)	ND (<0.0074)	ND (<0.0077)	ND (<0.0072)	ND (<0.0076)
Dichlorprop	1,600	--	ND (<0.0076)	ND (<0.0077)	ND (<0.0071)	ND (<0.0061)	ND (<0.0078)	ND (<0.006)	ND (<0.0061)	ND (<0.0064)	ND (<0.006)	ND (<0.0063)
MCPA	32	--	ND (<0.0076)	ND (<0.0077)	ND (<0.0071)	ND (<0.0061)	ND (<0.0078)	ND (<0.006)	ND (<0.0061)	ND (<0.0064)	ND (<0.006)	ND (<0.0063)
MCPP	63	--	ND (<0.0076)	ND (<0.0077)	ND (<0.0071)	ND (<0.0061)	ND (<0.0078)	ND (<0.006)	ND (<0.0061)	ND (<0.0064)	ND (<0.006)	ND (<0.0063)
Silvex (2,4,5-TP)	510	0.87	ND (<0.0076)	ND (<0.0077)	ND (<0.0071)	ND (<0.0061)	ND (<0.0078)	ND (<0.006)	ND (<0.0061)	ND (<0.0064)	ND (<0.006)	ND (<0.0063)

Notes:
Chlorinated Herbicides by EPA 8321A
Bold, Underlined and Highlighted = Analytical result exceeds screening levels
ND = not detected above the reporting limit (<RL)
EPA RSLs = Environmental Protection Agency Regional Screening Levels for residential soil (November 2019)
TPESLs = Tropical Pacific Environmental Screening Levels for unrestricted land use in shallow soil where groundwater is not a concert or potential drinking water source (2017)
mg/kg = milligrams per kilogram
J = Indicates that the concentration is an approximate value because the analyte concentration is below the reporting limit and above the method detection limit

Table 2
Summary of Dioxins and Furans Analytical Data - Soil Samples
Chlorinated Herbicide Site Investigation
Guam

Sample ID			G-01-01	G-01-01-D Duplicate of G-01-01	G-02-01	G-02-02	G-02-03	G-03-01	G-03-02	G-04-01	G-04-02	G-04-02-D Duplicate of G-04-02
Sample Date			10/02/2019	10/02/2019	10/02/2019	10/02/2019	10/02/2019	10/02/2019	10/02/2019	10/04/2019	10/04/2019	10/04/2019
Sample Depth (feet below ground surface)			0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25	0 - 0.25
Analyte	**EPA RSL (Residential) (pg/g)**	**TPESL (Unrestriced Land Usage) (pg/g)**	**Dioxins and Furans - Soil - (pg/g)**									
1,2,3,4,6,7,8-HpCDD	480	--	210 J	250	170	49	200	140	150	**670**	190	230
1,2,3,4,6,7,8-HpCDF	488	--	15	18	22	ND (<6.4)	58	13	19	51	29	35
1,2,3,4,7,8,9-HpCDF	488	--	ND (<7.7)	1 J	1.1 J	2.1 J	3.1 J	0.63 J	0.57 J	1.6 J	1 J	2 J
1,2,3,4,7,8-HxCDD	49	--	ND (<7.7)	ND (<8.1)	ND (<6.9)	ND (<6.4)	ND (<8.2)	ND (<6.6)	ND (<6.3)	ND (<6.8)	ND (<6.6)	ND (<6.8)
1,2,3,4,7,8-HxCDF	48	--	0.9 J	1.2 J	0.86 J	1.1 J	2.1 J	0.52 J	0.68 J	1.9 J	1.6 J	2.2 J
1,2,3,6,7,8-HxCDD	49	--	7.6 J	9.6	5.7 J	2.6 J	5.4 J	3.1 J	4.4 J	11	6.5 J	8.1
1,2,3,6,7,8-HxCDF	48	--	0.62 J	0.7 J	0.43 J	0.79 J	1.9 J	0.35 J	0.49 J	1.1 J	0.95 J	1.5 J
1,2,3,7,8,9-HxCDD	49	--	7.2 J	8.1	2.5 J	3 J	5.9 J	3.5 J	4 J	7	6.3 J	7.2
1,2,3,7,8,9-HxCDF	49	--	ND (<7.7)	ND (<8.1)	ND (<6.9) J	ND (<6.4)	ND (<8.2)	ND (<6.6)	ND (<6.3) J	ND (<6.8)	ND (<6.6) J	ND (<6.8)
1,2,3,7,8-PeCDD	4.9	--	1.4 J	1.5 J	0.42 J	0.63 J	1.3 J	0.63 J	0.78 J	1.3 J	1.1 J	1.3 J
1,2,3,7,8-PeCDF	164	--	0.34 J	0.31 J	0.19 J	0.35 J	0.42 J	0.16 J	0.3 J	0.7 J	0.54 J	0.58 J
2,3,4,6,7,8-HxCDF	49	--	ND (<7.7)	ND (<8.1)	ND (<6.9)	ND (<6.4)	ND (<8.2)	ND (<6.6)	ND (<6.3)	ND (<6.8)	ND (<6.6)	ND (<6.8)
2,3,4,7,8-PeCDF	16	--	ND (<7.7)	0.33 J	0.27 J	0.59 J	0.61 J	0.19 J	0.28 J	0.66 J	0.51 J	0.68 J
2,3,7,8-TCDD	4.8	--	ND (<1.5)	0.19 J	0.17 J	0.17 J	0.6 J	1.3	1.6 J	ND (<1.4)	0.14 J	0.23 J
2,3,7,8-TCDF	48	--	0.32 J	0.26 J	0.35 J	0.5 J	0.28 J	0.69 J	0.75 J	0.78 J	0.61 J	0.77 J
OCDD	16,400	--	1,700 J	1,900	1,500	280	1,700	1,000	1,200	4,100	1,500	1,900
OCDF	16,400	--	30	29	59	16	130	33	32	170	45	62
Total HpCDD	--	--	390	450	320	98	640	290	290	2,900	550	680
Total HpCDF	--	--	39	40	62	13 J	130	30	39	180	68 J	84
Total HxCDD	--	--	49	55	32	21 J	62	30 J	33	250	72	85
Total HxCDF	--	--	16 J	17 J	18 J	6.8	37	7.5	12 J	44 J	27 J	38
Total PeCDD	--	--	3.4 J	4.3 J	2.2 J	3.4 J	5.6 J	1.5 J	1.7 J	12 J	8 J	9.4 J
Total PeCDF	--	--	3.6 J	6.9 J	2.8 J	2.4 J	6.1 J	4.8 J	8.4	9.3 J	7.6 J	8.3 J
Total TCDD	--	--	ND (<1.5)	0.41 J	0.59 J	0.71 J	1.4 J	2.1 J	2 J	1.1 J	1.1 J	1.4 J
Total TCDF	--	--	0.62 J	0.87 J	0.98 J	1.8 J	1.6 J	3.3 J	5.2	3.2 J	2.8 J	3.5 J
TEQ (KM TEQ)	4.8	480	**9.2**	**7.4**	4.6	3.4	**7.7**	**5.1**	**6**	**13**	**6.3**	**7.5**

Notes:
Dioxins/Furans by EPA 8290A
Bold, Underlined and Highlighted = Analytical result exceeds screening levels
ND = not detected above the reporting limit (<RL)
EDL = Estimated Detection Limit
EPA RSLs = Environmental Protection Agency Regional Screening Levels for residential soil (November 2019)
TPESLs = Tropical Pacific Environmental Screening Levels for unrestricted land use in shallow soil where groundwater is not a concert or potential drinking water source (2017)
pg/g = picogram per gram
TEQ = Total Equivalent Quotient
J = Indicates that the concentration is an approximate value because the analyte concentration is below the reporting limit and above the method detection limit
*Toxicity Equivalency Factors from World Health Organization (2005)
KM = Kaplan-Meier method of estimating non-detect values

Summary of Dioxins and Furans TEQ Calculations
Chlorinated Herbicides Site Investigation
Guam

EPA Advanced KM TEQ Calculator

Advanced KM TEQ calculator for performing quasi-sensitivity analyses

Project Name: TCEQ Case Study - Mammal TEFs (Human equivalents)
Matrix: Soil
Units: ng/kg
Data entered by: TCEQ
Date entered: 12/2/2015

protect/unprotect sheet password = dioxin

SITE DATA

Sample notes	Chemical Sort Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Summary of Sensitivity Analysis (relative percent difference)	TEQs from Substitution			KM Method		
	WHO 2005 TEFs =	1	1	0.1	0.1	0.1	0.01	0.0003	0.1	0.03	0.3	0.1	0.1	0.1	0.1	0.01	0.01	0.0003							
	Sample ID: (must enter on Row A)	TCDD	PeCDD	1,4-HxCDD	1,6-HxCDD	1,9-HxCDD	1,4,6-HpCDD	OCDD	TCDF	1-PeCDF	4-PeCDF	1,4-HxCDF	1,6-HxCDF	1,8-HxCDF	4,6-HxCDF	1,4,6-HpCDF	1,4,9-HpCDF	OCDF		U = 0 & sum	U = 1/2 DL & sum	U = DL & sum	Sample KM TEQ	Qualifier	Select KM TEQ
1	G-01-01: Row A	1.5 U	1.4 J	7.7 U	7.6 J	7.2 J	210 J	1700 J	0.32 J	0.34 J	7.7 U	0.9 J	0.62 J	7.7 U	7.7 U	15	7.7 U	30							
	value to use: Row B	1.5	1.4	7.7	7.6	7.2	210	1700	0.32	0.34	7.7	0.9	0.62	7.7	7.7	15	7.7	30							
	congener TEC: Row C	1.5	1.4	0.77	0.76	0.72	2.1	0.51	0.032	0.0102	2.31	0.09	0.062	0.77	0.77	0.15	0.077	0.009	69%	5.8432	8.9417	12.0402	9.2132	J	Section 2, Treatment 1
	donor value to use: Row D																								
	donor TEC: Row E																								
2	G-02-01: Row A	0.17 J	0.42 J	6.9 U	5.7 J	2.5 J	170	1500	0.35 J	0.19 J	0.27 J	0.86 J	0.43 J	6.9 U	6.9 U	22	1.1 J	59							
	value to use: Row B	0.17	0.42	6.9	5.7	2.5	170	1500	0.35	0.19	0.27	0.86	0.43	6.9	6.9	22	1.1	59							
	congener TEC: Row C	0.17	0.42	0.69	0.57	0.25	1.7	0.45	0.035	0.0057	0.081	0.086	0.043	0.69	0.69	0.22	0.011	0.0177	41%	4.0594	5.0944	6.1294	4.6039	J	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
3	G-02-02: Row A	0.17 J	0.63 J	6.4 U	2.6 J	3 J	49	280	0.5 J	0.35 J	0.59 J	1.1 J	0.79 J	6.4 U	6.4 U	6.4 U	2.1 J	16							
	value to use: Row B	0.17	0.63	6.4	2.6	3	49	280	0.5	0.35	0.59	1.1	0.79	6.4	6.4	6.4	2.1	16							
	congener TEC: Row C	0.17	0.63	0.64	0.26	0.3	0.49	0.084	0.05	0.0105	0.177	0.11	0.079	0.64	0.64	0.064	0.021	0.0048	59%	2.3863	3.3783	4.3703	3.3919	J	Section 2, Treatment 1
	donor value to use: Row D																								
	donor TEC: Row E																								
4	G-02-03: Row A	0.6 J	1.3 J	8.2 U	5.4 J	5.9 J	200	1700	0.28 J	0.42 J	0.61 J	2.1 J	1.9 J	8.2 U	8.2 U	58	3.1 J	130							
	value to use: Row B	0.6	1.3	8.2	5.4	5.9	200	1700	0.28	0.42	0.61	2.1	1.9	8.2	8.2	58	3.1	130							
	congener TEC: Row C	0.6	1.3	0.82	0.54	0.59	2	0.51	0.028	0.0126	0.183	0.21	0.19	0.82	0.82	0.58	0.031	0.039	31%	6.8136	8.0436	9.2736	7.6920	J	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
5	G-03-01: Row A	1.3	0.63 J	6.6 U	3.1 J	3.5 J	140	1000	0.69 J	0.16 J	0.19 J	0.52 J	0.35 J	6.6 U	6.6 U	13	0.63 J	33							
	value to use: Row B	1.3	0.63	6.6	3.1	3.5	140	1000	0.69	0.16	0.19	0.52	0.35	6.6	6.6	13	0.63	33							
	congener TEC: Row C	1.3	0.63	0.66	0.31	0.35	1.4	0.3	0.069	0.0048	0.057	0.052	0.035	0.66	0.66	0.13	0.0063	0.0099	35%	4.654	5.644	6.634	5.1425	J	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
6	G-03-02: Row A	1.6 J	0.78 J	6.3 U	4.4 J	4 J	150	1200	0.75 J	0.3 J	0.28 J	0.68 J	0.49 J	6.3 U	6.3 U	19	0.57 J	32							
	value to use: Row B	1.6	0.78	6.3	4.4	4	150	1200	0.75	0.3	0.28	0.68	0.49	6.3	6.3	19	0.57	32							
	congener TEC: Row C	1.6	0.78	0.63	0.44	0.4	1.5	0.36	0.075	0.009	0.084	0.068	0.049	0.63	0.63	0.19	0.0057	0.0096	29%	5.5703	6.5153	7.4603	6.0313	J	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
7	G-04-01: Row A	1.4 U	1.3 J	6.8 U	11	7	670	4100	0.78 J	0.7 J	0.66 J	1.9 J	1.1 J	6.8 U	6.8 U	51	1.6 J	170							
	value to use: Row B	1.4	1.3	6.8	11	7	670	4100	0.78	0.7	0.66	1.9	1.1	6.8	6.8	51	1.6	170							
	congener TEC: Row C	1.4	1.3	0.68	1.1	0.7	6.7	1.23	0.078	0.021	0.198	0.19	0.11	0.68	0.68	0.51	0.016	0.051	25%	12.2040	13.9240	15.6440	13.0405	none	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
8	G-01-01-D: Row A	0.19 J	1.5 J	8.1 U	9.6	8.1	250	1900	0.26 J	0.31 J	0.33 J	1.2 J	0.7 J	8.1 U	8.1 U	18	1 J	29							
	value to use: Row B	0.19	1.5	8.1	9.6	8.1	250	1900	0.26	0.31	0.33	1.2	0.7	8.1	8.1	18	1	29							
	congener TEC: Row C	0.19	1.5	0.81	0.96	0.81	2.5	0.57	0.026	0.0093	0.099	0.12	0.07	0.81	0.81	0.18	0.01	0.0087	29%	7.0530	8.2680	9.4830	7.4379	none	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
9	G-04-02: Row A	0.14 J	1.1 J	6.6 U	6.5 J	6.3 J	190	1500	0.61 J	0.54 J	0.51 J	1.6 J	0.95 J	6.6 U	6.6 U	29	1 J	45							
	value to use: Row B	0.14	1.1	6.6	6.5	6.3	190	1500	0.61	0.54	0.51	1.6	0.95	6.6	6.6	29	1	45							
	congener TEC: Row C	0.14	1.1	0.66	0.65	0.63	1.9	0.45	0.061	0.0162	0.153	0.16	0.095	0.66	0.66	0.29	0.01	0.0135	30%	5.6687	6.6587	7.6487	6.3359	J	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								
10	G-04-02-D: Row A	0.23 J	1.3 J	6.8 U	8.1	7.2	230	1900	0.77 J	0.58 J	0.68 J	2.2 J	1.5 J	6.8 U	6.8 U	35	2 J	62							
	value to use: Row B	0.23	1.3	6.8	8.1	7.2	230	1900	0.77	0.58	0.68	2.2	1.5	6.8	6.8	35	2	62							
	congener TEC: Row C	0.23	1.3	0.68	0.81	0.72	2.3	0.57	0.077	0.0174	0.204	0.22	0.15	0.68	0.68	0.35	0.02	0.0186	25%	6.9870	8.0070	9.0270	7.5441	none	Section 1
	donor value to use: Row D																								
	donor TEC: Row E																								

GUAM AGENT ORANGE SITE
DATA VALIDATION REPORT

Date: November 18, 2019
Laboratory: Eurofins TestAmerica, West Sacramento, CA
Laboratory Job Number: 320-55071-1
Data Validation Performed By: Tara Johnson, Weston Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START)
Data Validation Reviewed By: Kelly Luck, WESTON START
Weston Work Order #: 20905.012.025.0035.00

This data validation report has been prepared by WESTON START under the START V U.S. Environmental Protection Agency (EPA) Region 9 contract. This report documents the data validation for 10 soil samples collected for the Guam Agent Orange site that were analyzed for the following parameters and methods:

- Herbicides by SW-846 Method 8321A
- Dioxins and Furans by SW-846 Method 8290A

A level II data package was received from Eurofins TestAmerica, West Sacramento, CA. The data validation was conducted in general accordance with the EPA "Contract Laboratory Program National Functional Guidance for Superfund Organic Methods Data Review" dated January 2017 and the EPA "Contract Laboratory Program National Functional Guidance for High Resolution Superfund Methods Data Review" dated April 2016. The Attachment contains the results summary sheets with any hand-written qualifiers applied during data validation.

Only one sample container was received for sample G-01-01-D; the sample volume was split into two containers to allow the sample to be analyzed at separate laboratories.

The data package was revised on November 18, 2019 to correct the sample name for G-01-01-D.

HERBICIDES by SW-846 METHOD 8321A

The following table summarizes the samples for which this data validation is being conducted.

Samples	Lab ID	Matrix	Date Collected	Date Prepared	Date Analyzed
G-04-02	320-55071-1	Solid	10/4/19	10/10/19	11/12/19
G-04-01	320-55071-2	Solid	10/4/19	10/10/19	11/12/19
G-04-02-D	320-55071-3	Solid	10/4/19	10/10/19	11/12/19
G-01-01-D	320-55071-4	Solid	10/2/19	10/10/19	11/12/19
G-01-01	320-55071-5	Solid	10/2/19	10/10/19	11/12/19
G-03-01	320-55071-6	Solid	10/2/19	10/10/19	11/12/19
G-03-02	320-55071-7	Solid	10/2/19	10/10/19	11/12/19
G-02-03	320-55071-8	Solid	10/2/19	10/10/19	11/12/19
G-02-02	320-55071-9	Solid	10/2/19	10/10/19	11/12/19

Samples	Lab ID	Matrix	Date Collected	Date Prepared	Date Analyzed
G-02-01	320-55071-10	Solid	10/2/19	10/10/19	11/12/19

Herbicides analyses were conducted by the Eurofins TestAmerica laboratory in Denver, CO.

1. Data Verification Check

A data verification and completeness check was performed in accordance with the Stage 1 and 2A verification checks outlined in the EPA "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" dated January 13, 2009. For the herbicides analyses, all analytical data package items were received from the laboratory and the analyses requested were performed.

2. Holding Times

The samples were received within the recommended temperature limit of ≤6 ºC and were extracted and analyzed within the recommended holding times of 14 days from sample collection to extraction and 40 days from extraction to analysis.

3. Blanks

One method blank was analyzed with the sample set and was free of target compound contamination above the method detection limits.

4. Surrogates

Surrogate recovery results were within laboratory-established quality control (QC) limits for all samples.

5. Laboratory Control Sample (LCS) Results

One LCS was analyzed with the sample set and the recoveries were within laboratory-established QC limits for all analytes.

6. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Results

Sample G-01-01 was used for MS and MSD analyses. Recoveries of all analytes were within laboratory-established QC limits with the exception of 2,4-DB (0% for MS and MSD) and dicamba (49%; MSD only). In addition, the relative percent differences (RPDs) were within QC limits for all analytes except 2,4-DB, for which RPD could not be calculated. The results for 2,4-DB and dicamba in sample G-01-01 were qualified as estimated (UJ).

7. Field Duplicate Results

The sample set included two field duplicate pairs:

- G-04-02 and G-04-02-D; and
- G-01-01 and G-01-01-D.

No herbicides were detected in either sample pair; therefore, RPDs could not be calculated.

8. Overall Assessment

In addition to the qualifiers discussed above, the data validator applied "U" qualifiers to sample results reported by the laboratory as "ND".

Eurofins TestAmerica flagged sample results with the following laboratory qualifier:

F1: Indicates MS and/or MSD recovery was outside acceptance limits. These qualifiers were removed by the data validator and "UJ" qualifiers were added.

The herbicides data are acceptable for use as qualified based on the information received.

DIOXINS and FURANS by SW-846 METHOD 8290A

The following table summarizes the samples for which this data validation is being conducted.

Samples	Lab ID	Matrix	Date Collected	Date Prepared	Date Analyzed
G-04-02	320-55071-1	Solid	10/4/19	10/8/19	10/17/19
G-04-01	320-55071-2	Solid	10/4/19	10/8/19	10/17/19
G-04-02-D	320-55071-3	Solid	10/4/19	10/8/19	10/21/19
G-01-01-D	320-55071-4	Solid	10/2/19	10/8/19	10/18/19
G-01-01	320-55071-5	Solid	10/2/19	10/8/19	10/18/19
G-03-01	320-55071-6	Solid	10/2/19	10/8/19	10/18/19
G-03-02	320-55071-7	Solid	10/2/19	10/8/19	10/18/19
G-02-03	320-55071-8	Solid	10/2/19	10/8/19	10/18/19
G-02-02	320-55071-9	Solid	10/2/19	10/8/19	10/18/19
G-02-01	320-55071-10	Solid	10/2/19	10/8/19	10/18/19

1. Data Verification Check

A data verification and completeness check was performed in accordance with the Stage 1 and 2A verification checks outlined in the EPA "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" dated January 13, 2009. For the dioxins and furans analyses, all analytical data package items were received from the laboratory and the analyses requested were performed.

2. Holding Times

The samples were received within the recommended temperature limit of ≤6 ºC and were extracted and analyzed within the recommended holding time limits of 30 days from sample collection to extraction and 45 days from extraction to analysis.

3. Blanks

One method blank was analyzed with the sample set. The blank was free of target compound contamination above the estimated detection limits (EDLs) with the following exceptions, which were detected above the EDLs but below the reporting limits (RLs): 1,2,3,4,7,8-HxCDD (0.239 pg/g); 1,2,3,7,8,9-HxCDF (0.0802 pg/g); 2,3,4,6,7,8-HxCDF (0.0418 pg/g); 1,2,3,4,6,7,8-HpCDD (0.114 pg/g); 1,2,3,4,6,7,8-HpCDF (0.0727 pg/g); OCDD (0.726 pg/g); OCDF (0.200 pg/g); Total HxCDD (0.239 pg/g); Total HxCDF (0.122 pg/g); Total HpCDD (0.235 pg/g); and Total HpCDF (0.0727 pg/g).

For sample results in which the above analytes were found at levels greater than the EDL but less than the RL, results for those analytes were changed to nondetected (ND) with the RL as the limit of detection. This situation applied to the results for 1,2,3,4,7,8-HxCDD, 1,2,3,7,8,9-HxCDF, and 2,3,4,6,7,8-HxCDF in all samples, except that in sample G-04-01, the analyte 1,2,3,7,8,9-HxCDF was not detected; therefore, no qualification was needed. This situation also applied to the results for 1,2,3,4,6,7,8-HpCDF in sample G-02-02.

No other qualification of data was needed as results for the affected analytes were above the RL and much greater than the amount found in the blank.

4. Surrogates

The surrogate (isotope dilution analyte) recovery results were within laboratory-established QC limits for all samples.

5. LCS Results

One LCS was analyzed with the sample set. All recoveries were within laboratory-established QC limits.

6. MS and MSD Results

Sample G-01-01 was used for MS/MSD analyses. The recoveries were within laboratory-established QC limits with the exception of 1,2,3,4,6,7,8-HpCDD (150%; MS only). The result for 1,2,3,4,6,7,8-HpCDD was qualified as estimated (J) in sample G-01-01.

Both recoveries for OCDD were also outside QC limits, but the concentration of OCDD in the unspiked sample was >4x the amount of the spiked concentration so no qualification was needed based on poor MS/MSD recovery. The RPD for OCDD was outside laboratory-established QC

limits (26%); therefore, the result for OCDD was qualified as estimated (J) in sample G-01-01 based on RPD.

7. Field Duplicate Results

The sample set included two field duplicate pairs:

- G-04-02 and G-04-02-D; and
- G-01-01 and G-01-01-D.

The RPDs were within QC limits (RPD ≤50%; or absolute difference <RL for results <5x RL) for all detected target analytes.

8. Overall Assessment

Elevated noise or matrix interferences for 1,2,3,4,6,7,8-HpCDD and Total HpCDD in sample G-04-01 caused elevation of the EDLs; the RLs were raised to match the EDLs.

In addition to the qualifiers discussed above, the data validator applied "U" qualifiers to sample results reported as "ND".

Eurofins TestAmerica flagged sample results with the following laboratory qualifiers:

J: Indicates the result is less than the RL but greater than or equal to the EDL and the concentration is an approximate value. The data validator left these qualifiers in place.

q: Indicates the reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference. These qualifiers were removed by the data validator and "J" or "UJ" qualifiers were added

B: Indicates compound was found in the blank and sample. These qualifiers were removed by the data validator. For sample results less than the RL, the result was changed to ND at the RL.

G: Indicates the reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference. These qualifiers were removed by the data validator.

F1: Indicates MS and/or MSD recovery was outside acceptance limits. This qualifier was removed by the data validator and a "J" qualifier was added.

F2: Indicates MS/MSD RPD exceeds control limits. This qualifier was removed by the data validator and a "J" qualifier was added.

The dioxins and furans data are acceptable for use as qualified based on the information received.

ATTACHMENT

EUROFINS TESTAMERICA
RESULTS SUMMARY WITH QUALIFIERS

Client Sample ID: G-04-02
Date Collected: 10/04/19 11:20
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-1
Matrix: Solid
Percent Solids: 76.8

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0060	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
2,4-D	ND		0.0060	0.00073	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
2,4-DB	ND		0.014	0.0064	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
Dicamba	ND		0.0072	0.0034	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
Dichlorprop	ND		0.0060	0.00076	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
MCPA	ND		0.0060	0.00070	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
MCPP	ND		0.0060	0.00056	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
Silvex (2,4,5-TP)	ND		0.0060	0.00089	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*30*		*22 - 111*	*10/10/19 16:33*	*11/12/19 04:41*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.14	J q	1.3	0.062	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
2,3,7,8-TCDF	0.61	J	1.3	0.054	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8-PeCDD	1.1	J	6.6	0.11	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8-PeCDF	0.54	J	6.6	0.065	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
2,3,4,7,8-PeCDF	0.51	J q	6.6	0.066	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,7,8-HxCDD	ND 2.6	U B U	6.6	0.16	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,6,7,8-HxCDD	6.5	J	6.6	0.14	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8,9-HxCDD	6.3	J	6.6	0.14	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,7,8-HxCDF	1.6	J	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,6,7,8-HxCDF	0.95	J	6.6	0.14	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8,9-HxCDF	ND 0.21	U q B UJ	6.6	0.16	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
2,3,4,6,7,8-HxCDF	ND 1.1	U B U	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,6,7,8-HpCDD	190	B	6.6	2.7	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,6,7,8-HpCDF	29	B	6.6	0.54	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,7,8,9-HpCDF	1.0	J q	6.6	0.66	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
OCDD	1500	B	13	0.84	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
OCDF	45	B	13	0.090	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total TCDD	1.1	J q	1.3	0.062	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total TCDF	2.8	q J	1.3	0.054	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total PeCDD	8.0	q J	6.6	0.11	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total PeCDF	7.6	q J	6.6	0.065	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HxCDD	72	B	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HxCDF	27	q B J	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HpCDD	550	B	6.6	2.7	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HpCDF	68	q B J	6.6	0.60	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-2,3,7,8-TCDF	*63*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,7,8-PeCDD	*70*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,7,8-PeCDF	*69*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,4,7,8-HxCDF	*63*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-OCDD	*62*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*

TBJ 11/18/19

Client Sample ID: G-04-02

Date Collected: 10/04/19 11:20
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-1
Matrix: Solid
Percent Solids: 76.8

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	23.2		0.1	0.1	%			10/14/19 16:37	1
Percent Solids	76.8		0.1	0.1	%			10/14/19 16:37	1

Client Sample ID: G-04-01

Date Collected: 10/04/19 11:18
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-2
Matrix: Solid
Percent Solids: 74.7

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0064	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
2,4-D	ND		0.0064	0.00078	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
2,4-DB	ND		0.015	0.0068	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
Dicamba	ND		0.0077	0.0037	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
Dichlorprop	ND		0.0064	0.00081	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
MCPA	ND		0.0064	0.00074	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
MCPP	ND		0.0064	0.00060	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
Silvex (2,4,5-TP)	ND		0.0064	0.00095	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*47*		*22 - 111*	*10/10/19 16:33*	*11/12/19 04:47*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND	U	1.4	0.063	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
2,3,7,8-TCDF	0.78	J	1.4	0.054	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8-PeCDD	1.3	J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8-PeCDF	0.70	J	6.8	0.067	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
2,3,4,7,8-PeCDF	0.66	J	6.8	0.069	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,7,8-HxCDD	~~ND 4.2~~ J B	U	6.8	0.37	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,6,7,8-HxCDD	11		6.8	0.33	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8,9-HxCDD	7.0		6.8	0.31	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,7,8-HxCDF	1.9	J q	6.8	0.20	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,6,7,8-HxCDF	1.1	J	6.8	0.19	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8,9-HxCDF	ND	U	6.8	0.21	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
2,3,4,6,7,8-HxCDF	~~ND 4.2~~ J B	U	6.8	0.19	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,6,7,8-HpCDD	670 B		12	12	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,6,7,8-HpCDF	51 B		6.8	1.1	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,7,8,9-HpCDF	1.6	J	6.8	1.3	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
OCDD	4100 B		14	3.1	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
OCDF	170 B		14	0.12	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total TCDD	1.1	J q	1.4	0.063	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total TCDF	3.2	q J	1.4	0.054	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total PeCDD	12	q J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total PeCDF	9.3	q J	6.8	0.068	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HxCDD	250 B		6.8	0.34	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HxCDF	44 q B	J	6.8	0.20	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HpCDD	2900 B		12	12	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HpCDF	180 B		6.8	1.2	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/17/19 23:41*	*1*

TBJ 11/18/19

Client Sample ID: G-04-01

Date Collected: 10/04/19 11:18
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-2
Matrix: Solid
Percent Solids: 74.7

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,7,8-PeCDD	74		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,7,8-PeCDF	68		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,6,7,8-HxCDD	64		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,4,7,8-HxCDF	64		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,4,6,7,8-HpCDD	71		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,4,6,7,8-HpCDF	64		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-OCDD	67		40 - 135	10/08/19 14:09	10/17/19 23:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	25.3		0.1	0.1	%			10/14/19 16:37	1
Percent Solids	74.7		0.1	0.1	%			10/14/19 16:37	1

Client Sample ID: G-04-02-D

Date Collected: 10/04/19 11:35
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-3
Matrix: Solid
Percent Solids: 74.4

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0063	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
2,4-D	ND		0.0063	0.00077	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
2,4-DB	ND		0.015	0.0067	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
Dicamba	ND		0.0076	0.0036	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
Dichlorprop	ND		0.0063	0.00080	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
MCPA	ND		0.0063	0.00073	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
MCPP	ND		0.0063	0.00059	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
Silvex (2,4,5-TP)	ND		0.0063	0.00094	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	33		22 - 111	10/10/19 16:33	11/12/19 04:53	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.23	J q	1.4	0.12	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
2,3,7,8-TCDF	0.77	J	1.4	0.097	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8-PeCDD	1.3	J	6.8	0.25	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8-PeCDF	0.58	J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
2,3,4,7,8-PeCDF	0.68	J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,7,8-HxCDD	ND ~~3.3~~	~~J B~~ U	6.8	0.19	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,6,7,8-HxCDD	8.1		6.8	0.17	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8,9-HxCDD	7.2		6.8	0.16	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,7,8-HxCDF	2.2	J	6.8	0.20	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,6,7,8-HxCDF	1.5	J	6.8	0.19	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8,9-HxCDF	ND ~~0.62~~	~~J B~~ U	6.8	0.21	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
2,3,4,6,7,8-HxCDF	ND ~~1.6~~	~~J B~~ U	6.8	0.19	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,6,7,8-HpCDD	230	~~B~~	6.8	2.6	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,6,7,8-HpCDF	35	~~B~~	6.8	0.53	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,7,8,9-HpCDF	2.0	J	6.8	0.64	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
OCDD	1900	~~B~~	14	1.1	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
OCDF	62	~~B~~	14	0.18	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1

TBJ 11/18/19

Client Sample ID: G-04-02-D

Date Collected: 10/04/19 11:35
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-3
Matrix: Solid
Percent Solids: 74.4

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDD	1.4	q J	1.4	0.12	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total TCDF	3.5	q J	1.4	0.097	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total PeCDD	9.4	q J	6.8	0.25	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total PeCDF	8.3	q J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HxCDD	85	B	6.8	0.17	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HxCDF	38	B	6.8	0.20	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HpCDD	680	B	6.8	2.6	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HpCDF	84	B	6.8	0.59	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	68		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-2,3,7,8-TCDF	62		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-1,2,3,7,8-PeCDD	66		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-1,2,3,7,8-PeCDF	71		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-1,2,3,6,7,8-HxCDD	65		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-1,2,3,4,7,8-HxCDF	72		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-1,2,3,4,6,7,8-HpCDD	53		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-1,2,3,4,6,7,8-HpCDF	54		40 - 135	10/08/19 14:09	10/21/19 22:24	1
13C-OCDD	46		40 - 135	10/08/19 14:09	10/21/19 22:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	25.6		0.1	0.1	%			10/14/19 16:37	1
Percent Solids	74.4		0.1	0.1	%			10/14/19 16:37	1

Client Sample ID: G-01-01-D

Date Collected: 10/02/19 10:50
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-4
Matrix: Solid
Percent Solids: 62.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0077	0.0014	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
2,4-D	ND		0.0077	0.00093	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
2,4-DB	ND		0.018	0.0081	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
Dicamba	ND		0.0092	0.0044	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
Dichlorprop	ND		0.0077	0.00096	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
MCPA	ND		0.0077	0.00089	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
MCPP	ND		0.0077	0.00072	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
Silvex (2,4,5-TP)	ND		0.0077	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	42		22 - 111	10/10/19 16:33	11/12/19 04:59	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.19	J q	1.6	0.053	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
2,3,7,8-TCDF	0.26	J	1.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8-PeCDD	1.5	J	8.1	0.14	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8-PeCDF	0.31	J	8.1	0.065	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
2,3,4,7,8-PeCDF	0.33	J	8.1	0.067	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,7,8-HxCDD	ND ~~3.5~~	J B U	8.1	0.17	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1

TBJ 11/18/19

Client Sample ID: G-01-01-D

Date Collected: 10/02/19 10:50
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-4
Matrix: Solid
Percent Solids: 62.0

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDD	9.6		8.1	0.15	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8,9-HxCDD	8.1		8.1	0.14	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,7,8-HxCDF	1.2	J	8.1	0.086	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,6,7,8-HxCDF	0.70	J	8.1	0.081	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8,9-HxCDF	ND 0.27	J B U	8.1	0.089	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
2,3,4,6,7,8-HxCDF	ND 0.78	J B U	8.1	0.083	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,6,7,8-HpCDD	250	B	8.1	2.9	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,6,7,8-HpCDF	18	B	8.1	0.23	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,7,8,9-HpCDF	1.0	J	8.1	0.28	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
OCDD	1900	B	16	1.3	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
OCDF	29	B	16	0.084	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total TCDD	0.41	J q	1.6	0.053	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total TCDF	0.87	J q	1.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total PeCDD	4.3	J q	8.1	0.14	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total PeCDF	6.9	J q	8.1	0.066	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HxCDD	55	B	8.1	0.15	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HxCDF	17	q B J	8.1	0.085	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HpCDD	450	B	8.1	2.9	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HpCDF	40	B	8.1	0.25	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-2,3,7,8-TCDF	*60*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*63*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-OCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	38.0		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	62.0		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-01-01

Date Collected: 10/02/19 10:05
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-5
Matrix: Solid
Percent Solids: 65.5

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0076	0.0013	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
2,4-D	ND	U	0.0076	0.00092	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
2,4-DB	ND	F1 U J	0.018	0.0080	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
Dicamba	ND	F1 U J	0.0091	0.0043	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
Dichlorprop	ND	U	0.0076	0.00095	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
MCPA	ND	U	0.0076	0.00088	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
MCPP	ND	U	0.0076	0.00071	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
Silvex (2,4,5-TP)	ND	U	0.0076	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1

TBJ 11/18/19

Client Sample Results

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-01-01
Date Collected: 10/02/19 10:05
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-5
Matrix: Solid
Percent Solids: 65.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	33		22 - 111	10/10/19 16:33	11/12/19 05:05	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND	U	1.5	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
2,3,7,8-TCDF	0.32	J	1.5	0.10	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8-PeCDD	1.4	J	7.7	0.26	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8-PeCDF	0.34	J	7.7	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
2,3,4,7,8-PeCDF	ND	U	7.7	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,7,8-HxCDD	ND ~~3.2~~	~~J B~~ U	7.7	0.25	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,6,7,8-HxCDD	7.6	J	7.7	0.22	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8,9-HxCDD	7.2	J	7.7	0.21	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,7,8-HxCDF	0.90	J	7.7	0.16	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,6,7,8-HxCDF	0.62	J	7.7	0.15	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8,9-HxCDF	ND ~~0.43~~	~~J B~~ U	7.7	0.17	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
2,3,4,6,7,8-HxCDF	ND ~~0.70~~	~~J B~~ U	7.7	0.16	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,6,7,8-HpCDD	210	~~B F1~~ J	7.7	2.6	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,6,7,8-HpCDF	15	~~B~~	7.7	0.37	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,7,8,9-HpCDF	ND	U	7.7	0.45	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
OCDD	1700	~~B F2~~ J	15	1.7	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
OCDF	30	~~B~~	15	0.17	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total TCDD	ND	U	1.5	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total TCDF	0.62	J ~~q~~	1.5	0.10	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total PeCDD	3.4	J ~~q~~	7.7	0.26	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total PeCDF	3.6	J ~~q~~	7.7	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HxCDD	49	~~B~~	7.7	0.23	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HxCDF	16	~~q B~~ J	7.7	0.16	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HpCDD	390	~~B~~	7.7	2.6	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HpCDF	39	~~B~~	7.7	0.41	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	71		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-2,3,7,8-TCDF	64		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-1,2,3,7,8-PeCDD	73		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-1,2,3,7,8-PeCDF	68		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-1,2,3,6,7,8-HxCDD	61		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-1,2,3,4,7,8-HxCDF	61		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-1,2,3,4,6,7,8-HpCDD	68		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-1,2,3,4,6,7,8-HpCDF	59		40 - 135	10/08/19 14:09	10/18/19 05:35	1
13C-OCDD	60		40 - 135	10/08/19 14:09	10/18/19 05:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	34.5		0.1	0.1	%			10/11/19 16:06	1
Percent Solids	65.5		0.1	0.1	%			10/11/19 16:06	1

TEJ 11/18/19

Client Sample ID: G-03-01
Date Collected: 10/02/19 14:55
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-6
Matrix: Solid
Percent Solids: 75.6

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0060	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
2,4-D	ND		0.0060	0.00073	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
2,4-DB	ND		0.014	0.0064	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
Dicamba	ND		0.0072	0.0034	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
Dichlorprop	ND		0.0060	0.00076	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
MCPA	ND		0.0060	0.00070	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
MCPP	ND		0.0060	0.00057	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
Silvex (2,4,5-TP)	ND		0.0060	0.00089	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*32*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:23*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.3		1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
2,3,7,8-TCDF	0.69	J	1.3	0.047	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8-PeCDD	0.63	J	6.6	0.052	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8-PeCDF	0.16	J q	6.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
2,3,4,7,8-PeCDF	0.19	J	6.6	0.052	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,7,8-HxCDD	ND 1.6	J B U	6.6	0.091	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,6,7,8-HxCDD	3.1	J	6.6	0.080	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8,9-HxCDD	3.5	J	6.6	0.077	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,7,8-HxCDF	0.52	J	6.6	0.062	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,6,7,8-HxCDF	0.35	J	6.6	0.058	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8,9-HxCDF	ND 0.21	J B U	6.6	0.064	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
2,3,4,6,7,8-HxCDF	ND 0.37	J B U	6.6	0.060	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,6,7,8-HpCDD	140	B	6.6	1.5	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,6,7,8-HpCDF	13	B	6.6	0.16	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,7,8,9-HpCDF	0.63	J	6.6	0.20	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
OCDD	1000	B	13	0.74	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
OCDF	33	B	13	0.058	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total TCDD	2.1	q J	1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total TCDF	3.3	q J	1.3	0.047	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total PeCDD	1.5	J q	6.6	0.052	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total PeCDF	4.8	J q	6.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HxCDD	30	q B J	6.6	0.083	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HxCDF	7.5	B	6.6	0.061	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HpCDD	290	B	6.6	1.5	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HpCDF	30	B	6.6	0.18	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*69*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-2,3,7,8-TCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,7,8-PeCDD	*76*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*63*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*73*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-OCDD	*67*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*

TEJ 11/18/19

Client Sample ID: G-03-01

Date Collected: 10/02/19 14:55
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-6
Matrix: Solid
Percent Solids: 75.6

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	24.4		0.1	0.1	%			10/11/19 16:06	1
Percent Solids	75.6		0.1	0.1	%			10/11/19 16:06	1

Client Sample ID: G-03-02

Date Collected: 10/02/19 15:10
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-7
Matrix: Solid
Percent Solids: 79.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0061	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
2,4-D	ND		0.0061	0.00075	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
2,4-DB	ND		0.015	0.0065	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
Dicamba	ND		0.0074	0.0035	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
Dichlorprop	ND		0.0061	0.00077	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
MCPA	ND		0.0061	0.00071	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
MCPP	ND		0.0061	0.00058	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
Silvex (2,4,5-TP)	ND		0.0061	0.00091	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*35*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:36*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.6	q J	1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8-PeCDD	0.78	J	6.3	0.093	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8-PeCDF	0.30	J	6.3	0.087	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
2,3,4,7,8-PeCDF	0.28	J	6.3	0.090	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,7,8-HxCDD	ND 1.6	J B U	6.3	0.11	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,6,7,8-HxCDD	4.4	J	6.3	0.093	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8,9-HxCDD	4.0	J	6.3	0.090	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,7,8-HxCDF	0.68	J	6.3	0.084	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,6,7,8-HxCDF	0.49	J	6.3	0.079	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8,9-HxCDF	ND 0.21	J q B	6.3	0.087	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
2,3,4,6,7,8-HxCDF	ND 0.59	J B	6.3	0.081	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,6,7,8-HpCDD	150	B	6.3	1.9	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,6,7,8-HpCDF	19	B	6.3	0.23	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,7,8,9-HpCDF	0.57	J	6.3	0.28	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
OCDD	1200	B	13	0.87	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
OCDF	32	B	13	0.055	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total TCDD	2.0	q J	1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total TCDF	5.2		1.3	0.050	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total PeCDD	1.7	J q	6.3	0.093	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total PeCDF	8.4		6.3	0.088	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HxCDD	33	B	6.3	0.097	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HxCDF	12	q B J	6.3	0.083	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HpCDD	290	B	6.3	1.9	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HpCDF	39	B	6.3	0.26	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-2,3,7,8-TCDF	*58*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*

TBJ 11/18/19

Client Sample ID: G-03-02

Date Collected: 10/02/19 15:10
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-7
Matrix: Solid
Percent Solids: 79.0

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDD	72		40 - 135	10/08/19 14:09	10/18/19 08:39	1
13C-1,2,3,7,8-PeCDF	64		40 - 135	10/08/19 14:09	10/18/19 08:39	1
13C-1,2,3,6,7,8-HxCDD	61		40 - 135	10/08/19 14:09	10/18/19 08:39	1
13C-1,2,3,4,7,8-HxCDF	64		40 - 135	10/08/19 14:09	10/18/19 08:39	1
13C-1,2,3,4,6,7,8-HpCDD	69		40 - 135	10/08/19 14:09	10/18/19 08:39	1
13C-1,2,3,4,6,7,8-HpCDF	65		40 - 135	10/08/19 14:09	10/18/19 08:39	1
13C-OCDD	64		40 - 135	10/08/19 14:09	10/18/19 08:39	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.75	J	1.3	0.48	pg/g	☼	10/08/19 14:09	10/18/19 18:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		40 - 135	10/08/19 14:09	10/18/19 18:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	21.0		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	79.0		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-02-03

Date Collected: 10/02/19 11:29
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-8
Matrix: Solid
Percent Solids: 62.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0078	0.0014	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
2,4-D	ND		0.0078	0.00096	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
2,4-DB	ND		0.019	0.0083	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
Dicamba	ND		0.0094	0.0045	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
Dichlorprop	ND		0.0078	0.00099	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
MCPA	ND		0.0078	0.00091	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
MCPP	ND		0.0078	0.00074	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
Silvex (2,4,5-TP)	ND		0.0078	0.0012	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	37		22 - 111	10/10/19 16:33	11/12/19 05:42	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.60	J	1.6	0.055	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
2,3,7,8-TCDF	0.28	J	1.6	0.039	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8-PeCDD	1.3	J	8.2	0.13	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8-PeCDF	0.42	J	8.2	0.091	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
2,3,4,7,8-PeCDF	0.61	J	8.2	0.094	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,7,8-HxCDD	ND ~~3.3 J B~~ U		8.2	0.14	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,6,7,8-HxCDD	5.4	J	8.2	0.12	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8,9-HxCDD	5.9	J	8.2	0.11	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,7,8-HxCDF	2.1	J	8.2	0.16	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,6,7,8-HxCDF	1.9	J	8.2	0.15	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8,9-HxCDF	ND ~~0.91 J B~~ U		8.2	0.17	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
2,3,4,6,7,8-HxCDF	ND ~~2.2 J B~~ U		8.2	0.16	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1

TEJ 11/18/19

Client Sample ID: G-02-03

Date Collected: 10/02/19 11:29
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-8
Matrix: Solid
Percent Solids: 62.0

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	200	B	8.2	3.3	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,6,7,8-HpCDF	58	B	8.2	0.66	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,7,8,9-HpCDF	3.1	J	8.2	0.80	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
OCDD	1700	B	16	1.1	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
OCDF	130	B	16	0.12	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total TCDD	1.4	J q	1.6	0.055	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total TCDF	1.6	q J	1.6	0.039	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total PeCDD	5.6	J q	8.2	0.13	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total PeCDF	6.1	J q	8.2	0.092	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HxCDD	62	B	8.2	0.12	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HxCDF	37	B	8.2	0.16	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HpCDD	640	B	8.2	3.3	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HpCDF	130	B	8.2	0.73	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-2,3,7,8-TCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*60*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*63*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*55*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-OCDD	*54*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	38.0		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	62.0		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-02-02

Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9
Matrix: Solid
Percent Solids: 78.9

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0061	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
2,4-D	ND		0.0061	0.00075	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
2,4-DB	ND		0.015	0.0065	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
Dicamba	ND		0.0073	0.0035	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
Dichlorprop	ND		0.0061	0.00077	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
MCPA	ND		0.0061	0.00071	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
MCPP	ND		0.0061	0.00057	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
Silvex (2,4,5-TP)	ND		0.0061	0.00091	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*37*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:48*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.17	J q	1.3	0.041	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1

TBJ 11/18/19

Client Sample ID: G-02-02

Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9

Matrix: Solid
Percent Solids: 78.9

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.50	J	1.3	0.033	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8-PeCDD	0.63	J	6.4	0.097	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8-PeCDF	0.35	J	6.4	0.042	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
2,3,4,7,8-PeCDF	0.59	J	6.4	0.043	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,7,8-HxCDD	ND 1.6 J B	U	6.4	0.096	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,6,7,8-HxCDD	2.6	J	6.4	0.084	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8,9-HxCDD	3.0	J	6.4	0.081	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,7,8-HxCDF	1.1	J	6.4	0.056	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,6,7,8-HxCDF	0.79	J	6.4	0.052	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8,9-HxCDF	ND 1.1 J B	U	6.4	0.058	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
2,3,4,6,7,8-HxCDF	ND 0.84 J B	U	6.4	0.054	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,6,7,8-HpCDD	49 B		6.4	0.55	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,6,7,8-HpCDF	ND 5.2 J B	U	6.4	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,7,8,9-HpCDF	2.1 J q		6.4	0.15	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
OCDD	280 B		13	0.22	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
OCDF	16 B		13	0.066	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total TCDD	0.71 J q		1.3	0.041	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total TCDF	1.8 q	J	1.3	0.033	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total PeCDD	3.4 J q		6.4	0.097	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total PeCDF	2.4 J q		6.4	0.043	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HxCDD	21 q B	J	6.4	0.087	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HxCDF	6.8 B		6.4	0.055	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HpCDD	98 B		6.4	0.55	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HpCDF	13 q B	J	6.4	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-2,3,7,8-TCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,7,8-PeCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,4,7,8-HxCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-OCDD	*49*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	21.1		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	78.9		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-02-01

Date Collected: 10/02/19 10:43
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-10

Matrix: Solid
Percent Solids: 70.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND	U	0.0071	0.0013	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
2,4-D	ND	U	0.0071	0.00087	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
2,4-DB	ND	U	0.017	0.0076	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
Dicamba	ND	U	0.0086	0.0041	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1

TBJ 11/18/19

Client Sample ID: G-02-01
Date Collected: 10/02/19 10:43
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-10
Matrix: Solid
Percent Solids: 70.0

Method: 8321A - Herbicides (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorprop	ND	U	0.0071	0.00090	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
MCPA	ND	U	0.0071	0.00083	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
MCPP	ND	U	0.0071	0.00067	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
Silvex (2,4,5-TP)	ND	U	0.0071	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*40*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:54*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.17	J q	1.4	0.042	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
2,3,7,8-TCDF	0.35	J	1.4	0.038	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8-PeCDD	0.42	J	6.9	0.073	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8-PeCDF	0.19	J	6.9	0.049	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
2,3,4,7,8-PeCDF	0.27	J	6.9	0.051	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,7,8-HxCDD	ND 1.3	J B U	6.9	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,6,7,8-HxCDD	5.7	J	6.9	0.12	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8,9-HxCDD	2.5	J	6.9	0.12	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,7,8-HxCDF	0.86	J	6.9	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,6,7,8-HxCDF	0.43	J	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8,9-HxCDF	ND 0.29	J q B	U J 6.9	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
2,3,4,6,7,8-HxCDF	ND 0.64	J B	U 6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,6,7,8-HpCDD	170	B	6.9	2.0	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,6,7,8-HpCDF	22	B	6.9	0.32	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,7,8,9-HpCDF	1.1	J	6.9	0.39	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
OCDD	1500	B	14	1.1	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
OCDF	59	B	14	0.080	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total TCDD	0.59	J q	1.4	0.042	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total TCDF	0.98	J q	1.4	0.038	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total PeCDD	2.2	J q	6.9	0.073	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total PeCDF	2.8	J q	6.9	0.050	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HxCDD	32	B	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HxCDF	18	q B J	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HpCDD	320	B	6.9	2.0	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HpCDF	62	B	6.9	0.35	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-2,3,7,8-TCDF	*55*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,4,7,8-HxCDF	*54*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*49*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-OCDD	*47*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	30.0		0.1	0.1	%			10/14/19 09:51	1
Percent Solids	70.0		0.1	0.1	%			10/14/19 09:51	1

TBJ 11/18/19

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-55071-1
Client Project/Site: START R9 - Guam Agent Orange
Revision: 1

For:
Weston Solutions, Inc.
2300 Clayton Road
Suite 900
Concord, California 94520

Attn: Amanda Wagner

Authorized for release by:
11/18/2019 12:08:02 PM

Dylan Bieniulis, Project Manager I
(303)736-0138
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Table of Contents

Definitions/Glossary

Client: Weston Solutions, Inc. Job ID: 320-55071-1
Project/Site: START R9 - Guam Agent Orange

Qualifiers

LCMS

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Dioxin

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

General Chemistry

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-55071-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

CASE NARRATIVE

Client: Weston Solutions, Inc.

Project: START R9 - Guam Agent Orange

Report Number: 320-55071-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISION - 11/18/2019
The client sample ID for laboratory sample 320-55071-4 was revised to match the chain of custody. Original client sample ID was logged incorrectly due to transcription error.

RECEIPT
The samples were received on 10/07/2019; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.8 C.

The chain of custody notes 2 containers were submitted for G-04-01-D (320-55071-4); however, the laboratory only received 1 container. The laboratory split half the volume into a second container to make volume available to both laboratory locations performing the requested analyses (8321A Herbicides in Denver and 8290 Dioxin analysis in Sacramento). The client was notified on 10/8/2019.

HERBICIDES
Samples G-04-02 (320-55071-1), G-04-01 (320-55071-2), G-04-02-D (320-55071-3), G-04-01-D (320-55071-4), G-01-01 (320-55071-5), G-03-01 (320-55071-6), G-03-02 (320-55071-7), G-02-03 (320-55071-8), G-02-02 (320-55071-9) and G-02-01 (320-55071-10) were analyzed for herbicides in accordance with EPA SW-846 Method 8321A. The samples were prepared on 10/10/2019 and analyzed on 11/12/2019.

2,4-DB failed the recovery criteria low for the MS of sample G-01-01 (320-55071-5) in batch 280-477353. 2,4-DB and Dicamba failed the recovery criteria low for the MSD of sample G-01-01 (320-55071-5) in batch 280-477353. Refer to the QC report for details.

The continuing calibration verification (CCV) associated with batch 280-477353 recovered above the upper control limit for 2,4,5-T, 2,4-DB, Dichlorprop and Silvex (2,4,5-TP) The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: G-03-02 (320-55071-7), G-02-03 (320-55071-8), G-02-02 (320-55071-9) and G-02-01 (320-55071-10).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIOXINS AND FURANS (HRGC/HRMS)
Samples G-04-02 (320-55071-1), G-04-01 (320-55071-2), G-04-02-D (320-55071-3), G-04-01-D (320-55071-4), G-01-01 (320-55071-5), G-03-01 (320-55071-6), G-03-02 (320-55071-7), G-02-03 (320-55071-8), G-02-02 (320-55071-9) and G-02-01 (320-55071-10) were analyzed for dioxins and furans (HRGC/HRMS) in accordance with SW846 8290A. The samples were prepared on 10/08/2019 and

Job ID: 320-55071-1 (Continued)

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

analyzed on 10/17/2019, 10/18/2019 and 10/21/2019.

Several analytes were detected in method blank MB 320-329327/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

1,2,3,4,6,7,8-HpCDD and OCDD failed the recovery criteria high for the MS of sample G-01-01 (320-55071-5) in batch 320-331858. OCDD failed the recovery criteria low for the MSD of sample G-01-01 (320-55071-5) in batch 320-331858. OCDD exceeded the RPD limit. Refer to the QC report for details.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

The following sample exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): G-04-01 (320-55071-2) . The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples G-04-02 (320-55071-1), G-04-01 (320-55071-2), G-04-02-D (320-55071-3), G-04-01-D (320-55071-4), G-01-01 (320-55071-5), G-03-01 (320-55071-6), G-03-02 (320-55071-7), G-02-03 (320-55071-8), G-02-02 (320-55071-9) and G-02-01 (320-55071-10) were analyzed for percent solids in accordance with ASTM D2216-90. The samples were analyzed on 10/10/2019, 10/11/2019 and 10/14/2019.

Percent Moisture exceeded the RPD limit for the duplicate of sample 320-55123-6. Sample matrix interference and/or non-homogeneity are suspected. The matrix consisted of pebbles. Data is being reported with this narration. Refer to the QC report for details.

No percent moisture was found in the following samples in analytical batch 320-330140 due to hygroscopic characteristics: (480-160240-A-4) and (480-160240-A-4 DU). The matrix of the sample was dry sand. The samples were reweighed and there was no change in weight. Samples were not reanalyzed and is being reported with this narration.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-04-02 — Lab Sample ID: 320-55071-1

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.14	J q	1.3	0.062	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.61	J	1.3	0.054	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	1.1	J	6.6	0.11	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.54	J	6.6	0.065	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.51	J q	6.6	0.066	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	2.6	J B	6.6	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	6.5	J	6.6	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	6.3	J	6.6	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	1.6	J	6.6	0.15	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.95	J	6.6	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.21	J q B	6.6	0.16	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	1.1	J B	6.6	0.15	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	190	B	6.6	2.7	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	29	B	6.6	0.54	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	1.0	J q	6.6	0.66	pg/g	1	☼	8290A	Total/NA
OCDD	1500	B	13	0.84	pg/g	1	☼	8290A	Total/NA
OCDF	45	B	13	0.090	pg/g	1	☼	8290A	Total/NA
Total TCDD	1.1	J q	1.3	0.062	pg/g	1	☼	8290A	Total/NA
Total TCDF	2.8	q	1.3	0.054	pg/g	1	☼	8290A	Total/NA
Total PeCDD	8.0	q	6.6	0.11	pg/g	1	☼	8290A	Total/NA
Total PeCDF	7.6	q	6.6	0.065	pg/g	1	☼	8290A	Total/NA
Total HxCDD	72	B	6.6	0.15	pg/g	1	☼	8290A	Total/NA
Total HxCDF	27	q B	6.6	0.15	pg/g	1	☼	8290A	Total/NA
Total HpCDD	550	B	6.6	2.7	pg/g	1	☼	8290A	Total/NA
Total HpCDF	68	q B	6.6	0.60	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-04-01 — Lab Sample ID: 320-55071-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDF	0.78	J	1.4	0.054	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	1.3	J	6.8	0.11	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.70	J	6.8	0.067	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.66	J	6.8	0.069	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	4.2	J B	6.8	0.37	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	11		6.8	0.33	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	7.0		6.8	0.31	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	1.9	J q	6.8	0.20	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	1.1	J	6.8	0.19	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	1.2	J B	6.8	0.19	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	670	G B	12	12	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	51	B	6.8	1.1	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	1.6	J	6.8	1.3	pg/g	1	☼	8290A	Total/NA
OCDD	4100	B	14	3.1	pg/g	1	☼	8290A	Total/NA
OCDF	170	B	14	0.12	pg/g	1	☼	8290A	Total/NA
Total TCDD	1.1	J q	1.4	0.063	pg/g	1	☼	8290A	Total/NA
Total TCDF	3.2	q	1.4	0.054	pg/g	1	☼	8290A	Total/NA
Total PeCDD	12	q	6.8	0.11	pg/g	1	☼	8290A	Total/NA
Total PeCDF	9.3	q	6.8	0.068	pg/g	1	☼	8290A	Total/NA
Total HxCDD	250	B	6.8	0.34	pg/g	1	☼	8290A	Total/NA
Total HxCDF	44	q B	6.8	0.20	pg/g	1	☼	8290A	Total/NA
Total HpCDD	2900	G B	12	12	pg/g	1	☼	8290A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-04-01 (Continued)

Lab Sample ID: 320-55071-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
Total HpCDF	180	B	6.8	1.2	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-04-02-D

Lab Sample ID: 320-55071-3

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.23	J q	1.4	0.12	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.77	J	1.4	0.097	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	1.3	J	6.8	0.25	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.58	J	6.8	0.11	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.68	J	6.8	0.11	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	3.3	J B	6.8	0.19	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	8.1		6.8	0.17	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	7.2		6.8	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	2.2	J	6.8	0.20	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	1.5	J	6.8	0.19	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.62	J B	6.8	0.21	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	1.6	J B	6.8	0.19	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	230	B	6.8	2.6	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	35	B	6.8	0.53	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	2.0	J	6.8	0.64	pg/g	1	☼	8290A	Total/NA
OCDD	1900	B	14	1.1	pg/g	1	☼	8290A	Total/NA
OCDF	62	B	14	0.18	pg/g	1	☼	8290A	Total/NA
Total TCDD	1.4	q	1.4	0.12	pg/g	1	☼	8290A	Total/NA
Total TCDF	3.5	q	1.4	0.097	pg/g	1	☼	8290A	Total/NA
Total PeCDD	9.4	q	6.8	0.25	pg/g	1	☼	8290A	Total/NA
Total PeCDF	8.3	q	6.8	0.11	pg/g	1	☼	8290A	Total/NA
Total HxCDD	85	B	6.8	0.17	pg/g	1	☼	8290A	Total/NA
Total HxCDF	38	B	6.8	0.20	pg/g	1	☼	8290A	Total/NA
Total HpCDD	680	B	6.8	2.6	pg/g	1	☼	8290A	Total/NA
Total HpCDF	84	B	6.8	0.59	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-01-01-D

Lab Sample ID: 320-55071-4

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.19	J q	1.6	0.053	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.26	J	1.6	0.051	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	1.5	J	8.1	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.31	J	8.1	0.065	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.33	J	8.1	0.067	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	3.5	J B	8.1	0.17	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	9.6		8.1	0.15	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	8.1		8.1	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	1.2	J	8.1	0.086	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.70	J	8.1	0.081	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.27	J B	8.1	0.089	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.78	J B	8.1	0.083	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	250	B	8.1	2.9	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	18	B	8.1	0.23	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	1.0	J	8.1	0.28	pg/g	1	☼	8290A	Total/NA
OCDD	1900	B	16	1.3	pg/g	1	☼	8290A	Total/NA
OCDF	29	B	16	0.084	pg/g	1	☼	8290A	Total/NA
Total TCDD	0.41	J q	1.6	0.053	pg/g	1	☼	8290A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: G-01-01-D (Continued)

Lab Sample ID: 320-55071-4

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
Total TCDF	0.87	J q	1.6	0.051	pg/g	1	☼	8290A	Total/NA
Total PeCDD	4.3	J q	8.1	0.14	pg/g	1	☼	8290A	Total/NA
Total PeCDF	6.9	J q	8.1	0.066	pg/g	1	☼	8290A	Total/NA
Total HxCDD	55	B	8.1	0.15	pg/g	1	☼	8290A	Total/NA
Total HxCDF	17	q B	8.1	0.085	pg/g	1	☼	8290A	Total/NA
Total HpCDD	450	B	8.1	2.9	pg/g	1	☼	8290A	Total/NA
Total HpCDF	40	B	8.1	0.25	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-01-01

Lab Sample ID: 320-55071-5

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDF	0.32	J	1.5	0.10	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	1.4	J	7.7	0.26	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.34	J	7.7	0.13	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	3.2	J B	7.7	0.25	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	7.6	J	7.7	0.22	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	7.2	J	7.7	0.21	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	0.90	J	7.7	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.62	J	7.7	0.15	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.43	J B	7.7	0.17	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.70	J B	7.7	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	210	B F1	7.7	2.6	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	15	B	7.7	0.37	pg/g	1	☼	8290A	Total/NA
OCDD	1700	B F2	15	1.7	pg/g	1	☼	8290A	Total/NA
OCDF	30	B	15	0.17	pg/g	1	☼	8290A	Total/NA
Total TCDF	0.62	J q	1.5	0.10	pg/g	1	☼	8290A	Total/NA
Total PeCDD	3.4	J q	7.7	0.26	pg/g	1	☼	8290A	Total/NA
Total PeCDF	3.6	J q	7.7	0.13	pg/g	1	☼	8290A	Total/NA
Total HxCDD	49	B	7.7	0.23	pg/g	1	☼	8290A	Total/NA
Total HxCDF	16	q B	7.7	0.16	pg/g	1	☼	8290A	Total/NA
Total HpCDD	390	B	7.7	2.6	pg/g	1	☼	8290A	Total/NA
Total HpCDF	39	B	7.7	0.41	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-03-01

Lab Sample ID: 320-55071-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.3		1.3	0.051	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.69	J	1.3	0.047	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	0.63	J	6.6	0.052	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.16	J q	6.6	0.051	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.19	J	6.6	0.052	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	1.6	J B	6.6	0.091	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	3.1	J	6.6	0.080	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	3.5	J	6.6	0.077	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	0.52	J	6.6	0.062	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.35	J	6.6	0.058	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.21	J B	6.6	0.064	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.37	J B	6.6	0.060	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	140	B	6.6	1.5	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	13	B	6.6	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	0.63	J	6.6	0.20	pg/g	1	☼	8290A	Total/NA
OCDD	1000	B	13	0.74	pg/g	1	☼	8290A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: G-03-01 (Continued)

Lab Sample ID: 320-55071-6

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
OCDF	33	B	13	0.058	pg/g	1	☼	8290A	Total/NA
Total TCDD	2.1	q	1.3	0.051	pg/g	1	☼	8290A	Total/NA
Total TCDF	3.3	q	1.3	0.047	pg/g	1	☼	8290A	Total/NA
Total PeCDD	1.5	J q	6.6	0.052	pg/g	1	☼	8290A	Total/NA
Total PeCDF	4.8	J q	6.6	0.051	pg/g	1	☼	8290A	Total/NA
Total HxCDD	30	q B	6.6	0.083	pg/g	1	☼	8290A	Total/NA
Total HxCDF	7.5	B	6.6	0.061	pg/g	1	☼	8290A	Total/NA
Total HpCDD	290	B	6.6	1.5	pg/g	1	☼	8290A	Total/NA
Total HpCDF	30	B	6.6	0.18	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-03-02

Lab Sample ID: 320-55071-7

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	1.6	q	1.3	0.051	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	0.78	J	6.3	0.093	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.30	J	6.3	0.087	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.28	J	6.3	0.090	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	1.6	J B	6.3	0.11	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	4.4	J	6.3	0.093	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	4.0	J	6.3	0.090	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	0.68	J	6.3	0.084	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.49	J	6.3	0.079	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.21	J q B	6.3	0.087	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.59	J B	6.3	0.081	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	150	B	6.3	1.9	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	19	B	6.3	0.23	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	0.57	J	6.3	0.28	pg/g	1	☼	8290A	Total/NA
OCDD	1200	B	13	0.87	pg/g	1	☼	8290A	Total/NA
OCDF	32	B	13	0.055	pg/g	1	☼	8290A	Total/NA
Total TCDD	2.0	q	1.3	0.051	pg/g	1	☼	8290A	Total/NA
Total TCDF	5.2		1.3	0.050	pg/g	1	☼	8290A	Total/NA
Total PeCDD	1.7	J q	6.3	0.093	pg/g	1	☼	8290A	Total/NA
Total PeCDF	8.4		6.3	0.088	pg/g	1	☼	8290A	Total/NA
Total HxCDD	33	B	6.3	0.097	pg/g	1	☼	8290A	Total/NA
Total HxCDF	12	q B	6.3	0.083	pg/g	1	☼	8290A	Total/NA
Total HpCDD	290	B	6.3	1.9	pg/g	1	☼	8290A	Total/NA
Total HpCDF	39	B	6.3	0.26	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF - RA	0.75	J	1.3	0.48	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-02-03

Lab Sample ID: 320-55071-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.60	J	1.6	0.055	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.28	J	1.6	0.039	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	1.3	J	8.2	0.13	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.42	J	8.2	0.091	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.61	J	8.2	0.094	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	3.3	J B	8.2	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	5.4	J	8.2	0.12	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	5.9	J	8.2	0.11	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	2.1	J	8.2	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	1.9	J	8.2	0.15	pg/g	1	☼	8290A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: G-02-03 (Continued)

Lab Sample ID: 320-55071-8

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,7,8,9-HxCDF	0.91	J B	8.2	0.17	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	2.2	J B	8.2	0.16	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	200	B	8.2	3.3	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	58	B	8.2	0.66	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	3.1	J	8.2	0.80	pg/g	1	☼	8290A	Total/NA
OCDD	1700	B	16	1.1	pg/g	1	☼	8290A	Total/NA
OCDF	130	B	16	0.12	pg/g	1	☼	8290A	Total/NA
Total TCDD	1.4	J q	1.6	0.055	pg/g	1	☼	8290A	Total/NA
Total TCDF	1.6	q	1.6	0.039	pg/g	1	☼	8290A	Total/NA
Total PeCDD	5.6	J q	8.2	0.13	pg/g	1	☼	8290A	Total/NA
Total PeCDF	6.1	J q	8.2	0.092	pg/g	1	☼	8290A	Total/NA
Total HxCDD	62	B	8.2	0.12	pg/g	1	☼	8290A	Total/NA
Total HxCDF	37	B	8.2	0.16	pg/g	1	☼	8290A	Total/NA
Total HpCDD	640	B	8.2	3.3	pg/g	1	☼	8290A	Total/NA
Total HpCDF	130	B	8.2	0.73	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-02-02

Lab Sample ID: 320-55071-9

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.17	J q	1.3	0.041	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.50	J	1.3	0.033	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	0.63	J	6.4	0.097	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.35	J	6.4	0.042	pg/g	1	☼	8290A	Total/NA
2,3,4,7,8-PeCDF	0.59	J	6.4	0.043	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	1.6	J B	6.4	0.096	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	2.6	J	6.4	0.084	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	3.0	J	6.4	0.081	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	1.1	J	6.4	0.056	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.79	J	6.4	0.052	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	1.1	J B	6.4	0.058	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.84	J B	6.4	0.054	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	49	B	6.4	0.55	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	5.2	J B	6.4	0.13	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	2.1	J q	6.4	0.15	pg/g	1	☼	8290A	Total/NA
OCDD	280	B	13	0.22	pg/g	1	☼	8290A	Total/NA
OCDF	16	B	13	0.066	pg/g	1	☼	8290A	Total/NA
Total TCDD	0.71	J q	1.3	0.041	pg/g	1	☼	8290A	Total/NA
Total TCDF	1.8	q	1.3	0.033	pg/g	1	☼	8290A	Total/NA
Total PeCDD	3.4	J q	6.4	0.097	pg/g	1	☼	8290A	Total/NA
Total PeCDF	2.4	J q	6.4	0.043	pg/g	1	☼	8290A	Total/NA
Total HxCDD	21	q B	6.4	0.087	pg/g	1	☼	8290A	Total/NA
Total HxCDF	6.8	B	6.4	0.055	pg/g	1	☼	8290A	Total/NA
Total HpCDD	98	B	6.4	0.55	pg/g	1	☼	8290A	Total/NA
Total HpCDF	13	q B	6.4	0.14	pg/g	1	☼	8290A	Total/NA

Client Sample ID: G-02-01

Lab Sample ID: 320-55071-10

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,7,8-TCDD	0.17	J q	1.4	0.042	pg/g	1	☼	8290A	Total/NA
2,3,7,8-TCDF	0.35	J	1.4	0.038	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDD	0.42	J	6.9	0.073	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8-PeCDF	0.19	J	6.9	0.049	pg/g	1	☼	8290A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: G-02-01 (Continued)

Lab Sample ID: 320-55071-10

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
2,3,4,7,8-PeCDF	0.27	J	6.9	0.051	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDD	1.3	J B	6.9	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDD	5.7	J	6.9	0.12	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDD	2.5	J	6.9	0.12	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8-HxCDF	0.86	J	6.9	0.14	pg/g	1	☼	8290A	Total/NA
1,2,3,6,7,8-HxCDF	0.43	J	6.9	0.13	pg/g	1	☼	8290A	Total/NA
1,2,3,7,8,9-HxCDF	0.29	J q B	6.9	0.14	pg/g	1	☼	8290A	Total/NA
2,3,4,6,7,8-HxCDF	0.64	J B	6.9	0.13	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDD	170	B	6.9	2.0	pg/g	1	☼	8290A	Total/NA
1,2,3,4,6,7,8-HpCDF	22	B	6.9	0.32	pg/g	1	☼	8290A	Total/NA
1,2,3,4,7,8,9-HpCDF	1.1	J	6.9	0.39	pg/g	1	☼	8290A	Total/NA
OCDD	1500	B	14	1.1	pg/g	1	☼	8290A	Total/NA
OCDF	59	B	14	0.080	pg/g	1	☼	8290A	Total/NA
Total TCDD	0.59	J q	1.4	0.042	pg/g	1	☼	8290A	Total/NA
Total TCDF	0.98	J q	1.4	0.038	pg/g	1	☼	8290A	Total/NA
Total PeCDD	2.2	J q	6.9	0.073	pg/g	1	☼	8290A	Total/NA
Total PeCDF	2.8	J q	6.9	0.050	pg/g	1	☼	8290A	Total/NA
Total HxCDD	32	B	6.9	0.13	pg/g	1	☼	8290A	Total/NA
Total HxCDF	18	q B	6.9	0.13	pg/g	1	☼	8290A	Total/NA
Total HpCDD	320	B	6.9	2.0	pg/g	1	☼	8290A	Total/NA
Total HpCDF	62	B	6.9	0.35	pg/g	1	☼	8290A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: G-04-02
Date Collected: 10/04/19 11:20
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-1
Matrix: Solid
Percent Solids: 76.8

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0060	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
2,4-D	ND		0.0060	0.00073	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
2,4-DB	ND		0.014	0.0064	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
Dicamba	ND		0.0072	0.0034	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
Dichlorprop	ND		0.0060	0.00076	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
MCPA	ND		0.0060	0.00070	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
MCPP	ND		0.0060	0.00056	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1
Silvex (2,4,5-TP)	ND		0.0060	0.00089	mg/Kg	☼	10/10/19 16:33	11/12/19 04:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*30*		*22 - 111*	*10/10/19 16:33*	*11/12/19 04:41*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.14**	**J q**	1.3	0.062	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
2,3,7,8-TCDF	**0.61**	**J**	1.3	0.054	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8-PeCDD	**1.1**	**J**	6.6	0.11	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8-PeCDF	**0.54**	**J**	6.6	0.065	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
2,3,4,7,8-PeCDF	**0.51**	**J q**	6.6	0.066	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,7,8-HxCDD	**2.6**	**J B**	6.6	0.16	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,6,7,8-HxCDD	**6.5**	**J**	6.6	0.14	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8,9-HxCDD	**6.3**	**J**	6.6	0.14	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,7,8-HxCDF	**1.6**	**J**	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,6,7,8-HxCDF	**0.95**	**J**	6.6	0.14	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,7,8,9-HxCDF	**0.21**	**J q B**	6.6	0.16	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
2,3,4,6,7,8-HxCDF	**1.1**	**J B**	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,6,7,8-HpCDD	**190**	**B**	6.6	2.7	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,6,7,8-HpCDF	**29**	**B**	6.6	0.54	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
1,2,3,4,7,8,9-HpCDF	**1.0**	**J q**	6.6	0.66	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
OCDD	**1500**	**B**	13	0.84	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
OCDF	**45**	**B**	13	0.090	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total TCDD	**1.1**	**J q**	1.3	0.062	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total TCDF	**2.8**	**q**	1.3	0.054	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total PeCDD	**8.0**	**q**	6.6	0.11	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total PeCDF	**7.6**	**q**	6.6	0.065	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HxCDD	**72**	**B**	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HxCDF	**27**	**q B**	6.6	0.15	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HpCDD	**550**	**B**	6.6	2.7	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1
Total HpCDF	**68**	**q B**	6.6	0.60	pg/g	☼	10/08/19 14:09	10/17/19 22:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-2,3,7,8-TCDF	*63*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,7,8-PeCDD	*70*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,7,8-PeCDF	*69*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,4,7,8-HxCDF	*63*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*
13C-OCDD	*62*		*40 - 135*	*10/08/19 14:09*	*10/17/19 22:55*	*1*

Client Sample ID: G-04-02
Lab Sample ID: 320-55071-1
Date Collected: 10/04/19 11:20 **Matrix: Solid**
Date Received: 10/07/19 09:05 **Percent Solids: 76.8**

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**23.2**		0.1	0.1	%			10/14/19 16:37	1
Percent Solids	**76.8**		0.1	0.1	%			10/14/19 16:37	1

Client Sample ID: G-04-01
Lab Sample ID: 320-55071-2
Date Collected: 10/04/19 11:18 **Matrix: Solid**
Date Received: 10/07/19 09:05 **Percent Solids: 74.7**

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0064	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
2,4-D	ND		0.0064	0.00078	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
2,4-DB	ND		0.015	0.0068	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
Dicamba	ND		0.0077	0.0037	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
Dichlorprop	ND		0.0064	0.00081	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
MCPA	ND		0.0064	0.00074	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
MCPP	ND		0.0064	0.00060	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1
Silvex (2,4,5-TP)	ND		0.0064	0.00095	mg/Kg	☼	10/10/19 16:33	11/12/19 04:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*47*		*22 - 111*	*10/10/19 16:33*	*11/12/19 04:47*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.4	0.063	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
2,3,7,8-TCDF	**0.78**	**J**	1.4	0.054	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8-PeCDD	**1.3**	**J**	6.8	0.11	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8-PeCDF	**0.70**	**J**	6.8	0.067	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
2,3,4,7,8-PeCDF	**0.66**	**J**	6.8	0.069	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,7,8-HxCDD	**4.2**	**J B**	6.8	0.37	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,6,7,8-HxCDD	**11**		6.8	0.33	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8,9-HxCDD	**7.0**		6.8	0.31	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,7,8-HxCDF	**1.9**	**J q**	6.8	0.20	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,6,7,8-HxCDF	**1.1**	**J**	6.8	0.19	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,7,8,9-HxCDF	ND		6.8	0.21	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
2,3,4,6,7,8-HxCDF	**1.2**	**J B**	6.8	0.19	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,6,7,8-HpCDD	**670**	**G B**	12	12	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,6,7,8-HpCDF	**51**	**B**	6.8	1.1	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
1,2,3,4,7,8,9-HpCDF	**1.6**	**J**	6.8	1.3	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
OCDD	**4100**	**B**	14	3.1	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
OCDF	**170**	**B**	14	0.12	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total TCDD	**1.1**	**J q**	1.4	0.063	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total TCDF	**3.2**	**q**	1.4	0.054	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total PeCDD	**12**	**q**	6.8	0.11	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total PeCDF	**9.3**	**q**	6.8	0.068	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HxCDD	**250**	**B**	6.8	0.34	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HxCDF	**44**	**q B**	6.8	0.20	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HpCDD	**2900**	**G B**	12	12	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1
Total HpCDF	**180**	**B**	6.8	1.2	pg/g	☼	10/08/19 14:09	10/17/19 23:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/17/19 23:41*	*1*

Client Sample ID: G-04-01

Date Collected: 10/04/19 11:18
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-2

Matrix: Solid
Percent Solids: 74.7

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,7,8-PeCDD	74		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,7,8-PeCDF	68		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,6,7,8-HxCDD	64		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,4,7,8-HxCDF	64		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,4,6,7,8-HpCDD	71		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-1,2,3,4,6,7,8-HpCDF	64		40 - 135	10/08/19 14:09	10/17/19 23:41	1
13C-OCDD	67		40 - 135	10/08/19 14:09	10/17/19 23:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	25.3		0.1	0.1	%			10/14/19 16:37	1
Percent Solids	74.7		0.1	0.1	%			10/14/19 16:37	1

Client Sample ID: G-04-02-D

Date Collected: 10/04/19 11:35
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-3

Matrix: Solid
Percent Solids: 74.4

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0063	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
2,4-D	ND		0.0063	0.00077	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
2,4-DB	ND		0.015	0.0067	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
Dicamba	ND		0.0076	0.0036	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
Dichlorprop	ND		0.0063	0.00080	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
MCPA	ND		0.0063	0.00073	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
MCPP	ND		0.0063	0.00059	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1
Silvex (2,4,5-TP)	ND		0.0063	0.00094	mg/Kg	☼	10/10/19 16:33	11/12/19 04:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	33		22 - 111	10/10/19 16:33	11/12/19 04:53	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.23	J q	1.4	0.12	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
2,3,7,8-TCDF	0.77	J	1.4	0.097	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8-PeCDD	1.3	J	6.8	0.25	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8-PeCDF	0.58	J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
2,3,4,7,8-PeCDF	0.68	J	6.8	0.11	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,7,8-HxCDD	3.3	J B	6.8	0.19	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,6,7,8-HxCDD	8.1		6.8	0.17	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8,9-HxCDD	7.2		6.8	0.16	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,7,8-HxCDF	2.2	J	6.8	0.20	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,6,7,8-HxCDF	1.5	J	6.8	0.19	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,7,8,9-HxCDF	0.62	J B	6.8	0.21	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
2,3,4,6,7,8-HxCDF	1.6	J B	6.8	0.19	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,6,7,8-HpCDD	230	B	6.8	2.6	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,6,7,8-HpCDF	35	B	6.8	0.53	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
1,2,3,4,7,8,9-HpCDF	2.0	J	6.8	0.64	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
OCDD	1900	B	14	1.1	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
OCDF	62	B	14	0.18	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1

Client Sample ID: G-04-02-D

Date Collected: 10/04/19 11:35
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-3

Matrix: Solid
Percent Solids: 74.4

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDD	1.4	q	1.4	0.12	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total TCDF	3.5	q	1.4	0.097	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total PeCDD	9.4	q	6.8	0.25	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total PeCDF	8.3	q	6.8	0.11	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HxCDD	85	B	6.8	0.17	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HxCDF	38	B	6.8	0.20	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HpCDD	680	B	6.8	2.6	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1
Total HpCDF	84	B	6.8	0.59	pg/g	☼	10/08/19 14:09	10/21/19 22:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-2,3,7,8-TCDF	*62*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-1,2,3,7,8-PeCDF	*71*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-1,2,3,4,7,8-HxCDF	*72*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*53*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*54*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*
13C-OCDD	*46*		*40 - 135*	*10/08/19 14:09*	*10/21/19 22:24*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	25.6		0.1	0.1	%			10/14/19 16:37	1
Percent Solids	74.4		0.1	0.1	%			10/14/19 16:37	1

Client Sample ID: G-01-01-D

Date Collected: 10/02/19 10:50
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-4

Matrix: Solid
Percent Solids: 62.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0077	0.0014	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
2,4-D	ND		0.0077	0.00093	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
2,4-DB	ND		0.018	0.0081	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
Dicamba	ND		0.0092	0.0044	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
Dichlorprop	ND		0.0077	0.00096	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
MCPA	ND		0.0077	0.00089	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
MCPP	ND		0.0077	0.00072	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1
Silvex (2,4,5-TP)	ND		0.0077	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 04:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*42*		*22 - 111*	*10/10/19 16:33*	*11/12/19 04:59*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.19	J q	1.6	0.053	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
2,3,7,8-TCDF	0.26	J	1.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8-PeCDD	1.5	J	8.1	0.14	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8-PeCDF	0.31	J	8.1	0.065	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
2,3,4,7,8-PeCDF	0.33	J	8.1	0.067	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,7,8-HxCDD	3.5	J B	8.1	0.17	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1

Client Sample ID: G-01-01-D

Date Collected: 10/02/19 10:50
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-4

Matrix: Solid
Percent Solids: 62.0

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDD	9.6		8.1	0.15	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8,9-HxCDD	8.1		8.1	0.14	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,7,8-HxCDF	1.2	J	8.1	0.086	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,6,7,8-HxCDF	0.70	J	8.1	0.081	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,7,8,9-HxCDF	0.27	J B	8.1	0.089	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
2,3,4,6,7,8-HxCDF	0.78	J B	8.1	0.083	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,6,7,8-HpCDD	250	B	8.1	2.9	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,6,7,8-HpCDF	18	B	8.1	0.23	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
1,2,3,4,7,8,9-HpCDF	1.0	J	8.1	0.28	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
OCDD	1900	B	16	1.3	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
OCDF	29	B	16	0.084	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total TCDD	0.41	J q	1.6	0.053	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total TCDF	0.87	J q	1.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total PeCDD	4.3	J q	8.1	0.14	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total PeCDF	6.9	J q	8.1	0.066	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HxCDD	55	B	8.1	0.15	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HxCDF	17	q B	8.1	0.085	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HpCDD	450	B	8.1	2.9	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1
Total HpCDF	40	B	8.1	0.25	pg/g	☼	10/08/19 14:09	10/18/19 04:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-2,3,7,8-TCDF	*60*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,7,8-PeCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*63*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*
13C-OCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/18/19 04:49*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	38.0		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	62.0		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-01-01

Date Collected: 10/02/19 10:05
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-5

Matrix: Solid
Percent Solids: 65.5

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0076	0.0013	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
2,4-D	ND		0.0076	0.00092	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
2,4-DB	ND	F1	0.018	0.0080	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
Dicamba	ND	F1	0.0091	0.0043	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
Dichlorprop	ND		0.0076	0.00095	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
MCPA	ND		0.0076	0.00088	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
MCPP	ND		0.0076	0.00071	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1
Silvex (2,4,5-TP)	ND		0.0076	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:05	1

Client Sample ID: G-01-01
Date Collected: 10/02/19 10:05
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-5
Matrix: Solid
Percent Solids: 65.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*33*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:05*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.5	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
2,3,7,8-TCDF	**0.32**	**J**	1.5	0.10	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8-PeCDD	**1.4**	**J**	7.7	0.26	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8-PeCDF	**0.34**	**J**	7.7	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
2,3,4,7,8-PeCDF	ND		7.7	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,7,8-HxCDD	**3.2**	**J B**	7.7	0.25	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,6,7,8-HxCDD	**7.6**	**J**	7.7	0.22	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8,9-HxCDD	**7.2**	**J**	7.7	0.21	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,7,8-HxCDF	**0.90**	**J**	7.7	0.16	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,6,7,8-HxCDF	**0.62**	**J**	7.7	0.15	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,7,8,9-HxCDF	**0.43**	**J B**	7.7	0.17	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
2,3,4,6,7,8-HxCDF	**0.70**	**J B**	7.7	0.16	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,6,7,8-HpCDD	**210**	**B F1**	7.7	2.6	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,6,7,8-HpCDF	**15**	**B**	7.7	0.37	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
1,2,3,4,7,8,9-HpCDF	ND		7.7	0.45	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
OCDD	**1700**	**B F2**	15	1.7	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
OCDF	**30**	**B**	15	0.17	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total TCDD	ND		1.5	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total TCDF	**0.62**	**J q**	1.5	0.10	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total PeCDD	**3.4**	**J q**	7.7	0.26	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total PeCDF	**3.6**	**J q**	7.7	0.13	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HxCDD	**49**	**B**	7.7	0.23	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HxCDF	**16**	**q B**	7.7	0.16	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HpCDD	**390**	**B**	7.7	2.6	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1
Total HpCDF	**39**	**B**	7.7	0.41	pg/g	☼	10/08/19 14:09	10/18/19 05:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-2,3,7,8-TCDF	*64*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-1,2,3,7,8-PeCDD	*73*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-1,2,3,4,7,8-HxCDF	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*
13C-OCDD	*60*		*40 - 135*	*10/08/19 14:09*	*10/18/19 05:35*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**34.5**		0.1	0.1	%			10/11/19 16:06	1
Percent Solids	**65.5**		0.1	0.1	%			10/11/19 16:06	1

Client Sample ID: G-03-01

Date Collected: 10/02/19 14:55
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-6

Matrix: Solid
Percent Solids: 75.6

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0060	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
2,4-D	ND		0.0060	0.00073	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
2,4-DB	ND		0.014	0.0064	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
Dicamba	ND		0.0072	0.0034	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
Dichlorprop	ND		0.0060	0.00076	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
MCPA	ND		0.0060	0.00070	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
MCPP	ND		0.0060	0.00057	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1
Silvex (2,4,5-TP)	ND		0.0060	0.00089	mg/Kg	☼	10/10/19 16:33	11/12/19 05:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*32*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:23*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**1.3**		1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
2,3,7,8-TCDF	**0.69**	**J**	1.3	0.047	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8-PeCDD	**0.63**	**J**	6.6	0.052	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8-PeCDF	**0.16**	**J q**	6.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
2,3,4,7,8-PeCDF	**0.19**	**J**	6.6	0.052	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,7,8-HxCDD	**1.6**	**J B**	6.6	0.091	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,6,7,8-HxCDD	**3.1**	**J**	6.6	0.080	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8,9-HxCDD	**3.5**	**J**	6.6	0.077	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,7,8-HxCDF	**0.52**	**J**	6.6	0.062	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,6,7,8-HxCDF	**0.35**	**J**	6.6	0.058	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,7,8,9-HxCDF	**0.21**	**J B**	6.6	0.064	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
2,3,4,6,7,8-HxCDF	**0.37**	**J B**	6.6	0.060	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,6,7,8-HpCDD	**140**	**B**	6.6	1.5	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,6,7,8-HpCDF	**13**	**B**	6.6	0.16	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
1,2,3,4,7,8,9-HpCDF	**0.63**	**J**	6.6	0.20	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
OCDD	**1000**	**B**	13	0.74	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
OCDF	**33**	**B**	13	0.058	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total TCDD	**2.1**	**q**	1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total TCDF	**3.3**	**q**	1.3	0.047	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total PeCDD	**1.5**	**J q**	6.6	0.052	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total PeCDF	**4.8**	**J q**	6.6	0.051	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HxCDD	**30**	**q B**	6.6	0.083	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HxCDF	**7.5**	**B**	6.6	0.061	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HpCDD	**290**	**B**	6.6	1.5	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1
Total HpCDF	**30**	**B**	6.6	0.18	pg/g	☼	10/08/19 14:09	10/18/19 07:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*69*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-2,3,7,8-TCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,7,8-PeCDD	*76*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*63*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*73*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*
13C-OCDD	*67*		*40 - 135*	*10/08/19 14:09*	*10/18/19 07:53*	*1*

Client Sample ID: G-03-01

Date Collected: 10/02/19 14:55
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-6
Matrix: Solid
Percent Solids: 75.6

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	24.4		0.1	0.1	%			10/11/19 16:06	1
Percent Solids	75.6		0.1	0.1	%			10/11/19 16:06	1

Client Sample ID: G-03-02

Date Collected: 10/02/19 15:10
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-7
Matrix: Solid
Percent Solids: 79.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0061	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
2,4-D	ND		0.0061	0.00075	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
2,4-DB	ND		0.015	0.0065	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
Dicamba	ND		0.0074	0.0035	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
Dichlorprop	ND		0.0061	0.00077	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
MCPA	ND		0.0061	0.00071	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
MCPP	ND		0.0061	0.00058	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1
Silvex (2,4,5-TP)	ND		0.0061	0.00091	mg/Kg	☼	10/10/19 16:33	11/12/19 05:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*35*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:36*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.6	q	1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8-PeCDD	0.78	J	6.3	0.093	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8-PeCDF	0.30	J	6.3	0.087	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
2,3,4,7,8-PeCDF	0.28	J	6.3	0.090	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,7,8-HxCDD	1.6	J B	6.3	0.11	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,6,7,8-HxCDD	4.4	J	6.3	0.093	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8,9-HxCDD	4.0	J	6.3	0.090	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,7,8-HxCDF	0.68	J	6.3	0.084	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,6,7,8-HxCDF	0.49	J	6.3	0.079	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,7,8,9-HxCDF	0.21	J q B	6.3	0.087	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
2,3,4,6,7,8-HxCDF	0.59	J B	6.3	0.081	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,6,7,8-HpCDD	150	B	6.3	1.9	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,6,7,8-HpCDF	19	B	6.3	0.23	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
1,2,3,4,7,8,9-HpCDF	0.57	J	6.3	0.28	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
OCDD	1200	B	13	0.87	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
OCDF	32	B	13	0.055	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total TCDD	2.0	q	1.3	0.051	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total TCDF	5.2		1.3	0.050	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total PeCDD	1.7	J q	6.3	0.093	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total PeCDF	8.4		6.3	0.088	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HxCDD	33	B	6.3	0.097	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HxCDF	12	q B	6.3	0.083	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HpCDD	290	B	6.3	1.9	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1
Total HpCDF	39	B	6.3	0.26	pg/g	☼	10/08/19 14:09	10/18/19 08:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-2,3,7,8-TCDF	*58*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*

Client Sample ID: G-03-02

Date Collected: 10/02/19 15:10
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-7

Matrix: Solid
Percent Solids: 79.0

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,7,8-PeCDD	*72*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*65*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*
13C-OCDD	*64*		*40 - 135*	*10/08/19 14:09*	*10/18/19 08:39*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	**0.75**	**J**	1.3	0.48	pg/g	☼	10/08/19 14:09	10/18/19 18:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*67*		*40 - 135*	*10/08/19 14:09*	*10/18/19 18:49*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**21.0**		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	**79.0**		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-02-03

Date Collected: 10/02/19 11:29
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-8

Matrix: Solid
Percent Solids: 62.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0078	0.0014	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
2,4-D	ND		0.0078	0.00096	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
2,4-DB	ND		0.019	0.0083	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
Dicamba	ND		0.0094	0.0045	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
Dichlorprop	ND		0.0078	0.00099	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
MCPA	ND		0.0078	0.00091	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
MCPP	ND		0.0078	0.00074	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1
Silvex (2,4,5-TP)	ND		0.0078	0.0012	mg/Kg	☼	10/10/19 16:33	11/12/19 05:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*37*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:42*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.60**	**J**	1.6	0.055	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
2,3,7,8-TCDF	**0.28**	**J**	1.6	0.039	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8-PeCDD	**1.3**	**J**	8.2	0.13	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8-PeCDF	**0.42**	**J**	8.2	0.091	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
2,3,4,7,8-PeCDF	**0.61**	**J**	8.2	0.094	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,7,8-HxCDD	**3.3**	**J B**	8.2	0.14	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,6,7,8-HxCDD	**5.4**	**J**	8.2	0.12	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8,9-HxCDD	**5.9**	**J**	8.2	0.11	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,7,8-HxCDF	**2.1**	**J**	8.2	0.16	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,6,7,8-HxCDF	**1.9**	**J**	8.2	0.15	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,7,8,9-HxCDF	**0.91**	**J B**	8.2	0.17	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
2,3,4,6,7,8-HxCDF	**2.2**	**J B**	8.2	0.16	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1

Client Sample ID: G-02-03

Date Collected: 10/02/19 11:29
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-8

Matrix: Solid
Percent Solids: 62.0

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	200	B	8.2	3.3	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,6,7,8-HpCDF	58	B	8.2	0.66	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
1,2,3,4,7,8,9-HpCDF	3.1	J	8.2	0.80	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
OCDD	1700	B	16	1.1	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
OCDF	130	B	16	0.12	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total TCDD	1.4	J q	1.6	0.055	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total TCDF	1.6	q	1.6	0.039	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total PeCDD	5.6	J q	8.2	0.13	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total PeCDF	6.1	J q	8.2	0.092	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HxCDD	62	B	8.2	0.12	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HxCDF	37	B	8.2	0.16	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HpCDD	640	B	8.2	3.3	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1
Total HpCDF	130	B	8.2	0.73	pg/g	☼	10/08/19 14:09	10/18/19 09:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-2,3,7,8-TCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*58*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*60*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*63*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*55*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*
13C-OCDD	*54*		*40 - 135*	*10/08/19 14:09*	*10/18/19 09:25*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	38.0		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	62.0		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-02-02

Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9

Matrix: Solid
Percent Solids: 78.9

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0061	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
2,4-D	ND		0.0061	0.00075	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
2,4-DB	ND		0.015	0.0065	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
Dicamba	ND		0.0073	0.0035	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
Dichlorprop	ND		0.0061	0.00077	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
MCPA	ND		0.0061	0.00071	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
MCPP	ND		0.0061	0.00057	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1
Silvex (2,4,5-TP)	ND		0.0061	0.00091	mg/Kg	☼	10/10/19 16:33	11/12/19 05:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*37*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:48*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.17	J q	1.3	0.041	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1

Client Sample ID: G-02-02

Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9

Matrix: Solid
Percent Solids: 78.9

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.50	J	1.3	0.033	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8-PeCDD	0.63	J	6.4	0.097	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8-PeCDF	0.35	J	6.4	0.042	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
2,3,4,7,8-PeCDF	0.59	J	6.4	0.043	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,7,8-HxCDD	1.6	J B	6.4	0.096	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,6,7,8-HxCDD	2.6	J	6.4	0.084	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8,9-HxCDD	3.0	J	6.4	0.081	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,7,8-HxCDF	1.1	J	6.4	0.056	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,6,7,8-HxCDF	0.79	J	6.4	0.052	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,7,8,9-HxCDF	1.1	J B	6.4	0.058	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
2,3,4,6,7,8-HxCDF	0.84	J B	6.4	0.054	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,6,7,8-HpCDD	49	B	6.4	0.55	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,6,7,8-HpCDF	5.2	J B	6.4	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
1,2,3,4,7,8,9-HpCDF	2.1	J q	6.4	0.15	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
OCDD	280	B	13	0.22	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
OCDF	16	B	13	0.066	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total TCDD	0.71	J q	1.3	0.041	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total TCDF	1.8	q	1.3	0.033	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total PeCDD	3.4	J q	6.4	0.097	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total PeCDF	2.4	J q	6.4	0.043	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HxCDD	21	q B	6.4	0.087	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HxCDF	6.8	B	6.4	0.055	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HpCDD	98	B	6.4	0.55	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1
Total HpCDF	13	q B	6.4	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*66*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-2,3,7,8-TCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,7,8-PeCDD	*68*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,7,8-PeCDF	*62*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,6,7,8-HxCDD	*55*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,4,7,8-HxCDF	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*53*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*
13C-OCDD	*49*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:11*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	21.1		0.1	0.1	%			10/10/19 17:32	1
Percent Solids	78.9		0.1	0.1	%			10/10/19 17:32	1

Client Sample ID: G-02-01

Date Collected: 10/02/19 10:43
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-10

Matrix: Solid
Percent Solids: 70.0

Method: 8321A - Herbicides (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0071	0.0013	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
2,4-D	ND		0.0071	0.00087	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
2,4-DB	ND		0.017	0.0076	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
Dicamba	ND		0.0086	0.0041	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1

Client Sample ID: G-02-01
Date Collected: 10/02/19 10:43
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-10
Matrix: Solid
Percent Solids: 70.0

Method: 8321A - Herbicides (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorprop	ND		0.0071	0.00090	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
MCPA	ND		0.0071	0.00083	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
MCPP	ND		0.0071	0.00067	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1
Silvex (2,4,5-TP)	ND		0.0071	0.0011	mg/Kg	☼	10/10/19 16:33	11/12/19 05:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*40*		*22 - 111*	*10/10/19 16:33*	*11/12/19 05:54*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.17**	**J q**	1.4	0.042	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
2,3,7,8-TCDF	**0.35**	**J**	1.4	0.038	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8-PeCDD	**0.42**	**J**	6.9	0.073	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8-PeCDF	**0.19**	**J**	6.9	0.049	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
2,3,4,7,8-PeCDF	**0.27**	**J**	6.9	0.051	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,7,8-HxCDD	**1.3**	**J B**	6.9	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,6,7,8-HxCDD	**5.7**	**J**	6.9	0.12	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8,9-HxCDD	**2.5**	**J**	6.9	0.12	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,7,8-HxCDF	**0.86**	**J**	6.9	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,6,7,8-HxCDF	**0.43**	**J**	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,7,8,9-HxCDF	**0.29**	**J q B**	6.9	0.14	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
2,3,4,6,7,8-HxCDF	**0.64**	**J B**	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,6,7,8-HpCDD	**170**	**B**	6.9	2.0	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,6,7,8-HpCDF	**22**	**B**	6.9	0.32	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
1,2,3,4,7,8,9-HpCDF	**1.1**	**J**	6.9	0.39	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
OCDD	**1500**	**B**	14	1.1	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
OCDF	**59**	**B**	14	0.080	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total TCDD	**0.59**	**J q**	1.4	0.042	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total TCDF	**0.98**	**J q**	1.4	0.038	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total PeCDD	**2.2**	**J q**	6.9	0.073	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total PeCDF	**2.8**	**J q**	6.9	0.050	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HxCDD	**32**	**B**	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HxCDF	**18**	**q B**	6.9	0.13	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HpCDD	**320**	**B**	6.9	2.0	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1
Total HpCDF	**62**	**B**	6.9	0.35	pg/g	☼	10/08/19 14:09	10/18/19 10:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*61*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-2,3,7,8-TCDF	*55*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,4,7,8-HxCDF	*54*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*49*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*
13C-OCDD	*47*		*40 - 135*	*10/08/19 14:09*	*10/18/19 10:57*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**30.0**		0.1	0.1	%			10/14/19 09:51	1
Percent Solids	**70.0**		0.1	0.1	%			10/14/19 09:51	1

Toxicity Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-04-02 — Lab Sample ID: 320-55071-1

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	0.14	J q	pg/g	1	0.14	1	0.14	1	0.00	8290A
2,3,7,8-TCDF	0.61	J	pg/g	0.1	0.061	0.1	0.061	0.1	0.061	8290A
1,2,3,7,8-PeCDD	1.1	J	pg/g	1	1.1	1	1.1	1	1.1	8290A
1,2,3,7,8-PeCDF	0.54	J	pg/g	0.03	0.016	0.03	0.016	0.03	0.016	8290A
2,3,4,7,8-PeCDF	0.51	J q	pg/g	0.3	0.15	0.3	0.15	0.3	0.00	8290A
1,2,3,4,7,8-HxCDD	2.6	J B	pg/g	0.1	0.26	0.1	0.26	0.1	0.26	8290A
1,2,3,6,7,8-HxCDD	6.5	J	pg/g	0.1	0.65	0.1	0.65	0.1	0.65	8290A
1,2,3,7,8,9-HxCDD	6.3	J	pg/g	0.1	0.63	0.1	0.63	0.1	0.63	8290A
1,2,3,4,7,8-HxCDF	1.6	J	pg/g	0.1	0.16	0.1	0.16	0.1	0.16	8290A
1,2,3,6,7,8-HxCDF	0.95	J	pg/g	0.1	0.095	0.1	0.095	0.1	0.095	8290A
1,2,3,7,8,9-HxCDF	0.21	J q B	pg/g	0.1	0.021	0.1	0.021	0.1	0.00	8290A
2,3,4,6,7,8-HxCDF	1.1	J B	pg/g	0.1	0.11	0.1	0.11	0.1	0.11	8290A
1,2,3,4,6,7,8-HpCDD	190	B	pg/g	0.01	1.9	0.01	1.9	0.01	1.9	8290A
1,2,3,4,6,7,8-HpCDF	29	B	pg/g	0.01	0.29	0.01	0.29	0.01	0.29	8290A
1,2,3,4,7,8,9-HpCDF	1.0	J q	pg/g	0.01	0.010	0.01	0.010	0.01	0.00	8290A
OCDD	1500	B	pg/g	0.0003	0.45	0.0003	0.45	0.0003	0.45	8290A
OCDF	45	B	pg/g	0.0003	0.014	0.0003	0.014	0.0003	0.014	8290A
Total Dioxin/Furan TEQ			pg/g		6.1		6.1		5.7	TEQ

Client Sample ID: G-04-01 — Lab Sample ID: 320-55071-2

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	ND		pg/g	1	0.063	1	0.032	1	0.00	8290A
2,3,7,8-TCDF	0.78	J	pg/g	0.1	0.078	0.1	0.078	0.1	0.078	8290A
1,2,3,7,8-PeCDD	1.3	J	pg/g	1	1.3	1	1.3	1	1.3	8290A
1,2,3,7,8-PeCDF	0.70	J	pg/g	0.03	0.021	0.03	0.021	0.03	0.021	8290A
2,3,4,7,8-PeCDF	0.66	J	pg/g	0.3	0.20	0.3	0.20	0.3	0.20	8290A
1,2,3,4,7,8-HxCDD	4.2	J B	pg/g	0.1	0.42	0.1	0.42	0.1	0.42	8290A
1,2,3,6,7,8-HxCDD	11		pg/g	0.1	1.1	0.1	1.1	0.1	1.1	8290A
1,2,3,7,8,9-HxCDD	7.0		pg/g	0.1	0.70	0.1	0.70	0.1	0.70	8290A
1,2,3,4,7,8-HxCDF	1.9	J q	pg/g	0.1	0.19	0.1	0.19	0.1	0.00	8290A
1,2,3,6,7,8-HxCDF	1.1	J	pg/g	0.1	0.11	0.1	0.11	0.1	0.11	8290A
1,2,3,7,8,9-HxCDF	ND		pg/g	0.1	0.021	0.1	0.011	0.1	0.00	8290A
2,3,4,6,7,8-HxCDF	1.2	J B	pg/g	0.1	0.12	0.1	0.12	0.1	0.12	8290A
1,2,3,4,6,7,8-HpCDD	670	G B	pg/g	0.01	6.7	0.01	6.7	0.01	6.7	8290A
1,2,3,4,6,7,8-HpCDF	51	B	pg/g	0.01	0.51	0.01	0.51	0.01	0.51	8290A
1,2,3,4,7,8,9-HpCDF	1.6	J	pg/g	0.01	0.016	0.01	0.016	0.01	0.016	8290A
OCDD	4100	B	pg/g	0.0003	1.2	0.0003	1.2	0.0003	1.2	8290A
OCDF	170	B	pg/g	0.0003	0.051	0.0003	0.051	0.0003	0.051	8290A
Total Dioxin/Furan TEQ			pg/g		13		13		13	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-04-02-D — Lab Sample ID: 320-55071-3

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	0.23	J q	pg/g	1	0.23	1	0.23	1	0.00	8290A
2,3,7,8-TCDF	0.77	J	pg/g	0.1	0.077	0.1	0.077	0.1	0.077	8290A
1,2,3,7,8-PeCDD	1.3	J	pg/g	1	1.3	1	1.3	1	1.3	8290A
1,2,3,7,8-PeCDF	0.58	J	pg/g	0.03	0.017	0.03	0.017	0.03	0.017	8290A
2,3,4,7,8-PeCDF	0.68	J	pg/g	0.3	0.20	0.3	0.20	0.3	0.20	8290A
1,2,3,4,7,8-HxCDD	3.3	J B	pg/g	0.1	0.33	0.1	0.33	0.1	0.33	8290A
1,2,3,6,7,8-HxCDD	8.1		pg/g	0.1	0.81	0.1	0.81	0.1	0.81	8290A
1,2,3,7,8,9-HxCDD	7.2		pg/g	0.1	0.72	0.1	0.72	0.1	0.72	8290A
1,2,3,4,7,8-HxCDF	2.2	J	pg/g	0.1	0.22	0.1	0.22	0.1	0.22	8290A
1,2,3,6,7,8-HxCDF	1.5	J	pg/g	0.1	0.15	0.1	0.15	0.1	0.15	8290A
1,2,3,7,8,9-HxCDF	0.62	J B	pg/g	0.1	0.062	0.1	0.062	0.1	0.062	8290A
2,3,4,6,7,8-HxCDF	1.6	J B	pg/g	0.1	0.16	0.1	0.16	0.1	0.16	8290A
1,2,3,4,6,7,8-HpCDD	230	B	pg/g	0.01	2.3	0.01	2.3	0.01	2.3	8290A
1,2,3,4,6,7,8-HpCDF	35	B	pg/g	0.01	0.35	0.01	0.35	0.01	0.35	8290A
1,2,3,4,7,8,9-HpCDF	2.0	J	pg/g	0.01	0.020	0.01	0.020	0.01	0.020	8290A
OCDD	1900	B	pg/g	0.0003	0.57	0.0003	0.57	0.0003	0.57	8290A
OCDF	62	B	pg/g	0.0003	0.019	0.0003	0.019	0.0003	0.019	8290A
Total Dioxin/Furan TEQ			pg/g		7.5		7.5		7.3	TEQ

Client Sample ID: G-01-01-D — Lab Sample ID: 320-55071-4

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	0.19	J q	pg/g	1	0.19	1	0.19	1	0.00	8290A
2,3,7,8-TCDF	0.26	J	pg/g	0.1	0.026	0.1	0.026	0.1	0.026	8290A
1,2,3,7,8-PeCDD	1.5	J	pg/g	1	1.5	1	1.5	1	1.5	8290A
1,2,3,7,8-PeCDF	0.31	J	pg/g	0.03	0.0093	0.03	0.0093	0.03	0.0093	8290A
2,3,4,7,8-PeCDF	0.33	J	pg/g	0.3	0.099	0.3	0.099	0.3	0.099	8290A
1,2,3,4,7,8-HxCDD	3.5	J B	pg/g	0.1	0.35	0.1	0.35	0.1	0.35	8290A
1,2,3,6,7,8-HxCDD	9.6		pg/g	0.1	0.96	0.1	0.96	0.1	0.96	8290A
1,2,3,7,8,9-HxCDD	8.1		pg/g	0.1	0.81	0.1	0.81	0.1	0.81	8290A
1,2,3,4,7,8-HxCDF	1.2	J	pg/g	0.1	0.12	0.1	0.12	0.1	0.12	8290A
1,2,3,6,7,8-HxCDF	0.70	J	pg/g	0.1	0.070	0.1	0.070	0.1	0.070	8290A
1,2,3,7,8,9-HxCDF	0.27	J B	pg/g	0.1	0.027	0.1	0.027	0.1	0.027	8290A
2,3,4,6,7,8-HxCDF	0.78	J B	pg/g	0.1	0.078	0.1	0.078	0.1	0.078	8290A
1,2,3,4,6,7,8-HpCDD	250	B	pg/g	0.01	2.5	0.01	2.5	0.01	2.5	8290A
1,2,3,4,6,7,8-HpCDF	18	B	pg/g	0.01	0.18	0.01	0.18	0.01	0.18	8290A
1,2,3,4,7,8,9-HpCDF	1.0	J	pg/g	0.01	0.010	0.01	0.010	0.01	0.010	8290A
OCDD	1900	B	pg/g	0.0003	0.57	0.0003	0.57	0.0003	0.57	8290A
OCDF	29	B	pg/g	0.0003	0.0087	0.0003	0.0087	0.0003	0.0087	8290A
Total Dioxin/Furan TEQ			pg/g		7.5		7.5		7.3	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-01-01 — Lab Sample ID: 320-55071-5

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	ND		pg/g	1	0.13	1	0.065	1	0.00	8290A
2,3,7,8-TCDF	0.32	J	pg/g	0.1	0.032	0.1	0.032	0.1	0.032	8290A
1,2,3,7,8-PeCDD	1.4	J	pg/g	1	1.4	1	1.4	1	1.4	8290A
1,2,3,7,8-PeCDF	0.34	J	pg/g	0.03	0.010	0.03	0.010	0.03	0.010	8290A
2,3,4,7,8-PeCDF	ND		pg/g	0.3	0.039	0.3	0.020	0.3	0.00	8290A
1,2,3,4,7,8-HxCDD	3.2	J B	pg/g	0.1	0.32	0.1	0.32	0.1	0.32	8290A
1,2,3,6,7,8-HxCDD	7.6	J	pg/g	0.1	0.76	0.1	0.76	0.1	0.76	8290A
1,2,3,7,8,9-HxCDD	7.2	J	pg/g	0.1	0.72	0.1	0.72	0.1	0.72	8290A
1,2,3,4,7,8-HxCDF	0.90	J	pg/g	0.1	0.090	0.1	0.090	0.1	0.090	8290A
1,2,3,6,7,8-HxCDF	0.62	J	pg/g	0.1	0.062	0.1	0.062	0.1	0.062	8290A
1,2,3,7,8,9-HxCDF	0.43	J B	pg/g	0.1	0.043	0.1	0.043	0.1	0.043	8290A
2,3,4,6,7,8-HxCDF	0.70	J B	pg/g	0.1	0.070	0.1	0.070	0.1	0.070	8290A
1,2,3,4,6,7,8-HpCDD	210	B F1	pg/g	0.01	2.1	0.01	2.1	0.01	2.1	8290A
1,2,3,4,6,7,8-HpCDF	15	B	pg/g	0.01	0.15	0.01	0.15	0.01	0.15	8290A
1,2,3,4,7,8,9-HpCDF	ND		pg/g	0.01	0.0045	0.01	0.0023	0.01	0.00	8290A
OCDD	1700	B F2	pg/g	0.0003	0.51	0.0003	0.51	0.0003	0.51	8290A
OCDF	30	B	pg/g	0.0003	0.0090	0.0003	0.0090	0.0003	0.0090	8290A
Total Dioxin/Furan TEQ			pg/g		6.4		6.4		6.3	TEQ

Client Sample ID: G-03-01 — Lab Sample ID: 320-55071-6

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	1.3		pg/g	1	1.3	1	1.3	1	1.3	8290A
2,3,7,8-TCDF	0.69	J	pg/g	0.1	0.069	0.1	0.069	0.1	0.069	8290A
1,2,3,7,8-PeCDD	0.63	J	pg/g	1	0.63	1	0.63	1	0.63	8290A
1,2,3,7,8-PeCDF	0.16	J q	pg/g	0.03	0.0048	0.03	0.0048	0.03	0.00	8290A
2,3,4,7,8-PeCDF	0.19	J	pg/g	0.3	0.057	0.3	0.057	0.3	0.057	8290A
1,2,3,4,7,8-HxCDD	1.6	J B	pg/g	0.1	0.16	0.1	0.16	0.1	0.16	8290A
1,2,3,6,7,8-HxCDD	3.1	J	pg/g	0.1	0.31	0.1	0.31	0.1	0.31	8290A
1,2,3,7,8,9-HxCDD	3.5	J	pg/g	0.1	0.35	0.1	0.35	0.1	0.35	8290A
1,2,3,4,7,8-HxCDF	0.52	J	pg/g	0.1	0.052	0.1	0.052	0.1	0.052	8290A
1,2,3,6,7,8-HxCDF	0.35	J	pg/g	0.1	0.035	0.1	0.035	0.1	0.035	8290A
1,2,3,7,8,9-HxCDF	0.21	J B	pg/g	0.1	0.021	0.1	0.021	0.1	0.021	8290A
2,3,4,6,7,8-HxCDF	0.37	J B	pg/g	0.1	0.037	0.1	0.037	0.1	0.037	8290A
1,2,3,4,6,7,8-HpCDD	140	B	pg/g	0.01	1.4	0.01	1.4	0.01	1.4	8290A
1,2,3,4,6,7,8-HpCDF	13	B	pg/g	0.01	0.13	0.01	0.13	0.01	0.13	8290A
1,2,3,4,7,8,9-HpCDF	0.63	J	pg/g	0.01	0.0063	0.01	0.0063	0.01	0.0063	8290A
OCDD	1000	B	pg/g	0.0003	0.30	0.0003	0.30	0.0003	0.30	8290A
OCDF	33	B	pg/g	0.0003	0.0099	0.0003	0.0099	0.0003	0.0099	8290A
Total Dioxin/Furan TEQ			pg/g		4.9		4.9		4.9	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-03-02 — Lab Sample ID: 320-55071-7

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	1.6	q	pg/g	1	1.6	1	1.6	1	0.00	8290A
1,2,3,7,8-PeCDD	0.78	J	pg/g	1	0.78	1	0.78	1	0.78	8290A
1,2,3,7,8-PeCDF	0.30	J	pg/g	0.03	0.0090	0.03	0.0090	0.03	0.0090	8290A
2,3,4,7,8-PeCDF	0.28	J	pg/g	0.3	0.084	0.3	0.084	0.3	0.084	8290A
1,2,3,4,7,8-HxCDD	1.6	J B	pg/g	0.1	0.16	0.1	0.16	0.1	0.16	8290A
1,2,3,6,7,8-HxCDD	4.4	J	pg/g	0.1	0.44	0.1	0.44	0.1	0.44	8290A
1,2,3,7,8,9-HxCDD	4.0	J	pg/g	0.1	0.40	0.1	0.40	0.1	0.40	8290A
1,2,3,4,7,8-HxCDF	0.68	J	pg/g	0.1	0.068	0.1	0.068	0.1	0.068	8290A
1,2,3,6,7,8-HxCDF	0.49	J	pg/g	0.1	0.049	0.1	0.049	0.1	0.049	8290A
1,2,3,7,8,9-HxCDF	0.21	J q B	pg/g	0.1	0.021	0.1	0.021	0.1	0.00	8290A
2,3,4,6,7,8-HxCDF	0.59	J B	pg/g	0.1	0.059	0.1	0.059	0.1	0.059	8290A
1,2,3,4,6,7,8-HpCDD	150	B	pg/g	0.01	1.5	0.01	1.5	0.01	1.5	8290A
1,2,3,4,6,7,8-HpCDF	19	B	pg/g	0.01	0.19	0.01	0.19	0.01	0.19	8290A
1,2,3,4,7,8,9-HpCDF	0.57	J	pg/g	0.01	0.0057	0.01	0.0057	0.01	0.0057	8290A
OCDD	1200	B	pg/g	0.0003	0.36	0.0003	0.36	0.0003	0.36	8290A
OCDF	32	B	pg/g	0.0003	0.0096	0.0003	0.0096	0.0003	0.0096	8290A
2,3,7,8-TCDF - RA	0.75	J	pg/g	0.1	0.075	0.1	0.075	0.1	0.075	8290A
Total Dioxin/Furan TEQ			pg/g		5.8		5.8		4.2	TEQ

Client Sample ID: G-02-03 — Lab Sample ID: 320-55071-8

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	0.60	J	pg/g	1	0.60	1	0.60	1	0.60	8290A
2,3,7,8-TCDF	0.28	J	pg/g	0.1	0.028	0.1	0.028	0.1	0.028	8290A
1,2,3,7,8-PeCDD	1.3	J	pg/g	1	1.3	1	1.3	1	1.3	8290A
1,2,3,7,8-PeCDF	0.42	J	pg/g	0.03	0.013	0.03	0.013	0.03	0.013	8290A
2,3,4,7,8-PeCDF	0.61	J	pg/g	0.3	0.18	0.3	0.18	0.3	0.18	8290A
1,2,3,4,7,8-HxCDD	3.3	J B	pg/g	0.1	0.33	0.1	0.33	0.1	0.33	8290A
1,2,3,6,7,8-HxCDD	5.4	J	pg/g	0.1	0.54	0.1	0.54	0.1	0.54	8290A
1,2,3,7,8,9-HxCDD	5.9	J	pg/g	0.1	0.59	0.1	0.59	0.1	0.59	8290A
1,2,3,4,7,8-HxCDF	2.1	J	pg/g	0.1	0.21	0.1	0.21	0.1	0.21	8290A
1,2,3,6,7,8-HxCDF	1.9	J	pg/g	0.1	0.19	0.1	0.19	0.1	0.19	8290A
1,2,3,7,8,9-HxCDF	0.91	J B	pg/g	0.1	0.091	0.1	0.091	0.1	0.091	8290A
2,3,4,6,7,8-HxCDF	2.2	J B	pg/g	0.1	0.22	0.1	0.22	0.1	0.22	8290A
1,2,3,4,6,7,8-HpCDD	200	B	pg/g	0.01	2.0	0.01	2.0	0.01	2.0	8290A
1,2,3,4,6,7,8-HpCDF	58	B	pg/g	0.01	0.58	0.01	0.58	0.01	0.58	8290A
1,2,3,4,7,8,9-HpCDF	3.1	J	pg/g	0.01	0.031	0.01	0.031	0.01	0.031	8290A
OCDD	1700	B	pg/g	0.0003	0.51	0.0003	0.51	0.0003	0.51	8290A
OCDF	130	B	pg/g	0.0003	0.039	0.0003	0.039	0.0003	0.039	8290A
Total Dioxin/Furan TEQ			pg/g		7.5		7.5		7.5	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Toxicity Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-02-02 — Lab Sample ID: 320-55071-9

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	0.17	J q	pg/g	1	0.17	1	0.17	1	0.00	8290A
2,3,7,8-TCDF	0.50	J	pg/g	0.1	0.050	0.1	0.050	0.1	0.050	8290A
1,2,3,7,8-PeCDD	0.63	J	pg/g	1	0.63	1	0.63	1	0.63	8290A
1,2,3,7,8-PeCDF	0.35	J	pg/g	0.03	0.011	0.03	0.011	0.03	0.011	8290A
2,3,4,7,8-PeCDF	0.59	J	pg/g	0.3	0.18	0.3	0.18	0.3	0.18	8290A
1,2,3,4,7,8-HxCDD	1.6	J B	pg/g	0.1	0.16	0.1	0.16	0.1	0.16	8290A
1,2,3,6,7,8-HxCDD	2.6	J	pg/g	0.1	0.26	0.1	0.26	0.1	0.26	8290A
1,2,3,7,8,9-HxCDD	3.0	J	pg/g	0.1	0.30	0.1	0.30	0.1	0.30	8290A
1,2,3,4,7,8-HxCDF	1.1	J	pg/g	0.1	0.11	0.1	0.11	0.1	0.11	8290A
1,2,3,6,7,8-HxCDF	0.79	J	pg/g	0.1	0.079	0.1	0.079	0.1	0.079	8290A
1,2,3,7,8,9-HxCDF	1.1	J B	pg/g	0.1	0.11	0.1	0.11	0.1	0.11	8290A
2,3,4,6,7,8-HxCDF	0.84	J B	pg/g	0.1	0.084	0.1	0.084	0.1	0.084	8290A
1,2,3,4,6,7,8-HpCDD	49	B	pg/g	0.01	0.49	0.01	0.49	0.01	0.49	8290A
1,2,3,4,6,7,8-HpCDF	5.2	J B	pg/g	0.01	0.052	0.01	0.052	0.01	0.052	8290A
1,2,3,4,7,8,9-HpCDF	2.1	J q	pg/g	0.01	0.021	0.01	0.021	0.01	0.00	8290A
OCDD	280	B	pg/g	0.0003	0.084	0.0003	0.084	0.0003	0.084	8290A
OCDF	16	B	pg/g	0.0003	0.0048	0.0003	0.0048	0.0003	0.0048	8290A
Total Dioxin/Furan TEQ			pg/g		2.8		2.8		2.6	TEQ

Client Sample ID: G-02-01 — Lab Sample ID: 320-55071-10

Analyte	Result	Qualifier	Unit	WHO 2005 ND = EDL TEF	WHO 2005 ND = EDL TEQ	WHO 2005 ND = ½ EDL TEF	WHO 2005 ND = ½ EDL TEQ	WHO 2005 ND/EMPC = 0 TEF	WHO 2005 ND/EMPC = 0 TEQ	Method
2,3,7,8-TCDD	0.17	J q	pg/g	1	0.17	1	0.17	1	0.00	8290A
2,3,7,8-TCDF	0.35	J	pg/g	0.1	0.035	0.1	0.035	0.1	0.035	8290A
1,2,3,7,8-PeCDD	0.42	J	pg/g	1	0.42	1	0.42	1	0.42	8290A
1,2,3,7,8-PeCDF	0.19	J	pg/g	0.03	0.0057	0.03	0.0057	0.03	0.0057	8290A
2,3,4,7,8-PeCDF	0.27	J	pg/g	0.3	0.081	0.3	0.081	0.3	0.081	8290A
1,2,3,4,7,8-HxCDD	1.3	J B	pg/g	0.1	0.13	0.1	0.13	0.1	0.13	8290A
1,2,3,6,7,8-HxCDD	5.7	J	pg/g	0.1	0.57	0.1	0.57	0.1	0.57	8290A
1,2,3,7,8,9-HxCDD	2.5	J	pg/g	0.1	0.25	0.1	0.25	0.1	0.25	8290A
1,2,3,4,7,8-HxCDF	0.86	J	pg/g	0.1	0.086	0.1	0.086	0.1	0.086	8290A
1,2,3,6,7,8-HxCDF	0.43	J	pg/g	0.1	0.043	0.1	0.043	0.1	0.043	8290A
1,2,3,7,8,9-HxCDF	0.29	J q B	pg/g	0.1	0.029	0.1	0.029	0.1	0.00	8290A
2,3,4,6,7,8-HxCDF	0.64	J B	pg/g	0.1	0.064	0.1	0.064	0.1	0.064	8290A
1,2,3,4,6,7,8-HpCDD	170	B	pg/g	0.01	1.7	0.01	1.7	0.01	1.7	8290A
1,2,3,4,6,7,8-HpCDF	22	B	pg/g	0.01	0.22	0.01	0.22	0.01	0.22	8290A
1,2,3,4,7,8,9-HpCDF	1.1	J	pg/g	0.01	0.011	0.01	0.011	0.01	0.011	8290A
OCDD	1500	B	pg/g	0.0003	0.45	0.0003	0.45	0.0003	0.45	8290A
OCDF	59	B	pg/g	0.0003	0.018	0.0003	0.018	0.0003	0.018	8290A
Total Dioxin/Furan TEQ			pg/g		4.3		4.3		4.1	TEQ

TEF Reference:

WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners
WHO 2005 = World Health Organization (WHO) 2005 TEF, Dioxins, Furans and PCB Congeners

Note: The analytes PCB-156 and PCB-157 coelute as a single peak.

Surrogate Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Method: 8321A - Herbicides (LC/MS)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	DCPAA (22-111)									
320-55071-1	G-04-02	30									
320-55071-2	G-04-01	47									
320-55071-3	G-04-02-D	33									
320-55071-4	G-01-01-D	42									
320-55071-5	G-01-01	33									
320-55071-5 MS	G-01-01	46									
320-55071-5 MSD	G-01-01	27									
320-55071-6	G-03-01	32									
320-55071-7	G-03-02	35									
320-55071-8	G-02-03	37									
320-55071-9	G-02-02	37									
320-55071-10	G-02-01	40									
LCS 280-473626/2-A	Lab Control Sample	45									
MB 280-473626/1-A	Method Blank	48									

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Isotope Dilution Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (40-135)	TCDF (40-135)	PeCDD (40-135)	PeCDF (40-135)	HxDD (40-135)	HxCDF (40-135)	HpCDD (40-135)	HpCDF (40-135)
320-55071-1	G-04-02	71	63	70	69	58	63	64	60
320-55071-2	G-04-01	68	60	74	68	64	64	71	64
320-55071-3	G-04-02-D	68	62	66	71	65	72	53	54
320-55071-4	G-01-01-D	68	60	71	65	61	65	68	63
320-55071-5	G-01-01	71	64	73	68	61	61	68	59
320-55071-5 MS	G-01-01	63	57	65	60	51	54	58	50
320-55071-5 MSD	G-01-01	64	56	69	62	55	58	63	55
320-55071-6	G-03-01	69	59	76	68	63	65	73	67
320-55071-7	G-03-02	66	58	72	64	61	64	69	65
320-55071-7 - RA	G-03-02		67						
320-55071-8	G-02-03	68	59	71	64	58	60	63	55
320-55071-9	G-02-02	66	59	68	62	55	59	59	53
320-55071-10	G-02-01	61	55	62	58	53	54	56	49
LCS 320-329327/2-A	Lab Control Sample	70	59	73	67	63	64	67	63
MB 320-329327/1-A	Method Blank	71	62	73	68	68	69	70	66

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OCDD (40-135)
320-55071-1	G-04-02	62
320-55071-2	G-04-01	67
320-55071-3	G-04-02-D	46
320-55071-4	G-01-01-D	66
320-55071-5	G-01-01	60
320-55071-5 MS	G-01-01	53
320-55071-5 MSD	G-01-01	57
320-55071-6	G-03-01	67
320-55071-7	G-03-02	64
320-55071-7 - RA	G-03-02	
320-55071-8	G-02-03	54
320-55071-9	G-02-02	49
320-55071-10	G-02-01	47
LCS 320-329327/2-A	Lab Control Sample	61
MB 320-329327/1-A	Method Blank	63

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
OCDD = 13C-OCDD

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Method: 8321A - Herbicides (LC/MS)

Lab Sample ID: MB 280-473626/1-A
Matrix: Solid
Analysis Batch: 477353

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 473626

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		0.0050	0.00089	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
2,4-D	ND		0.0050	0.00061	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
2,4-DB	ND		0.012	0.0053	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
Dicamba	ND		0.0060	0.0029	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
Dichlorprop	ND		0.0050	0.00063	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
MCPA	ND		0.0050	0.00058	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
MCPP	ND		0.0050	0.00047	mg/Kg		10/10/19 16:33	11/12/19 04:28	1
Silvex (2,4,5-TP)	ND		0.0050	0.00074	mg/Kg		10/10/19 16:33	11/12/19 04:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*48*		*22 - 111*	*10/10/19 16:33*	*11/12/19 04:28*	*1*

Lab Sample ID: LCS 280-473626/2-A
Matrix: Solid
Analysis Batch: 477353

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 473626

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	0.0100	0.00613		mg/Kg		61	30 - 130
2,4-D	0.0100	0.00639		mg/Kg		64	30 - 130
2,4-DB	0.0100	ND		mg/Kg		50	50 - 130
Dicamba	0.0100	0.00553	J	mg/Kg		55	50 - 130
Dichlorprop	0.0100	0.00583		mg/Kg		58	50 - 130
MCPA	0.0100	0.00570		mg/Kg		57	50 - 130
MCPP	0.0100	0.00594		mg/Kg		59	50 - 130
Silvex (2,4,5-TP)	0.0100	0.00479	J	mg/Kg		48	30 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*45*		*22 - 111*

Lab Sample ID: 320-55071-5 MS
Matrix: Solid
Analysis Batch: 477353

Client Sample ID: G-01-01
Prep Type: Total/NA
Prep Batch: 473626

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	ND		0.0144	0.00764		mg/Kg	☼	53	30 - 130
2,4-D	ND		0.0144	0.00959		mg/Kg	☼	66	30 - 130
2,4-DB	ND	F1	0.0144	ND	F1	mg/Kg	☼	0	50 - 130
Dicamba	ND	F1	0.0144	0.00813	J	mg/Kg	☼	56	50 - 130
Dichlorprop	ND		0.0144	0.00765		mg/Kg	☼	53	50 - 130
MCPA	ND		0.0144	0.00858		mg/Kg	☼	59	50 - 130
MCPP	ND		0.0144	0.00834		mg/Kg	☼	58	50 - 130
Silvex (2,4,5-TP)	ND		0.0144	0.00817		mg/Kg	☼	57	30 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*46*		*22 - 111*

Method: 8321A - Herbicides (LC/MS) (Continued)

Lab Sample ID: 320-55071-5 MSD
Matrix: Solid
Analysis Batch: 477353

Client Sample ID: G-01-01
Prep Type: Total/NA
Prep Batch: 473626

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,5-T	ND		0.0148	0.00664	J	mg/Kg	☼	45	30 - 130	14	40
2,4-D	ND		0.0148	0.00712	J	mg/Kg	☼	48	30 - 130	30	40
2,4-DB	ND	F1	0.0148	ND	F1	mg/Kg	☼	0	50 - 130	NC	40
Dicamba	ND	F1	0.0148	0.00733	J F1	mg/Kg	☼	49	50 - 130	10	40
Dichlorprop	ND		0.0148	0.00810		mg/Kg	☼	55	50 - 130	6	40
MCPA	ND		0.0148	0.00741		mg/Kg	☼	50	50 - 130	15	40
MCPP	ND		0.0148	0.00751		mg/Kg	☼	51	50 - 130	10	40
Silvex (2,4,5-TP)	ND		0.0148	0.00716	J	mg/Kg	☼	48	30 - 130	13	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*27*		*22 - 111*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-329327/1-A
Matrix: Solid
Analysis Batch: 331857

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 329327

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		1.0	0.045	pg/g		10/08/19 14:09	10/17/19 18:08	1
2,3,7,8-TCDF	ND		1.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,7,8-PeCDD	ND		5.0	0.044	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,7,8-PeCDF	ND		5.0	0.034	pg/g		10/08/19 14:09	10/17/19 18:08	1
2,3,4,7,8-PeCDF	ND		5.0	0.035	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,4,7,8-HxCDD	0.239	J	5.0	0.031	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,6,7,8-HxCDD	ND		5.0	0.027	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,7,8,9-HxCDD	ND		5.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,4,7,8-HxCDF	ND		5.0	0.027	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,6,7,8-HxCDF	ND		5.0	0.025	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,7,8,9-HxCDF	0.0802	J q	5.0	0.028	pg/g		10/08/19 14:09	10/17/19 18:08	1
2,3,4,6,7,8-HxCDF	0.0418	J	5.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,4,6,7,8-HpCDD	0.114	J	5.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,4,6,7,8-HpCDF	0.0727	J q	5.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
1,2,3,4,7,8,9-HpCDF	ND		5.0	0.032	pg/g		10/08/19 14:09	10/17/19 18:08	1
OCDD	0.726	J	10	0.036	pg/g		10/08/19 14:09	10/17/19 18:08	1
OCDF	0.200	J	10	0.037	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total TCDD	ND		1.0	0.045	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total TCDF	ND		1.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total PeCDD	ND		5.0	0.044	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total PeCDF	ND		5.0	0.044	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total HxCDD	0.239	J	5.0	0.028	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total HxCDF	0.122	J q	5.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total HpCDD	0.235	J	5.0	0.026	pg/g		10/08/19 14:09	10/17/19 18:08	1
Total HpCDF	0.0727	J q	5.0	0.029	pg/g		10/08/19 14:09	10/17/19 18:08	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*40 - 135*	*10/08/19 14:09*	*10/17/19 18:08*	*1*
13C-2,3,7,8-TCDF	*62*		*40 - 135*	*10/08/19 14:09*	*10/17/19 18:08*	*1*

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-329327/1-A
Matrix: Solid
Analysis Batch: 331857

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 329327

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDD	73		40 - 135	10/08/19 14:09	10/17/19 18:08	1
13C-1,2,3,7,8-PeCDF	68		40 - 135	10/08/19 14:09	10/17/19 18:08	1
13C-1,2,3,6,7,8-HxCDD	68		40 - 135	10/08/19 14:09	10/17/19 18:08	1
13C-1,2,3,4,7,8-HxCDF	69		40 - 135	10/08/19 14:09	10/17/19 18:08	1
13C-1,2,3,4,6,7,8-HpCDD	70		40 - 135	10/08/19 14:09	10/17/19 18:08	1
13C-1,2,3,4,6,7,8-HpCDF	66		40 - 135	10/08/19 14:09	10/17/19 18:08	1
13C-OCDD	63		40 - 135	10/08/19 14:09	10/17/19 18:08	1

Lab Sample ID: LCS 320-329327/2-A
Matrix: Solid
Analysis Batch: 331857

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 329327

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	20.0	19.1		pg/g		96	77 - 130
2,3,7,8-TCDF	20.0	21.0		pg/g		105	79 - 137
1,2,3,7,8-PeCDD	100	110		pg/g		110	79 - 134
1,2,3,7,8-PeCDF	100	104		pg/g		104	81 - 134
2,3,4,7,8-PeCDF	100	105		pg/g		105	76 - 132
1,2,3,4,7,8-HxCDD	100	114		pg/g		114	65 - 144
1,2,3,6,7,8-HxCDD	100	107		pg/g		107	73 - 147
1,2,3,7,8,9-HxCDD	100	119		pg/g		119	80 - 143
1,2,3,4,7,8-HxCDF	100	101		pg/g		101	72 - 140
1,2,3,6,7,8-HxCDF	100	97.7		pg/g		98	63 - 152
1,2,3,7,8,9-HxCDF	100	106		pg/g		106	72 - 152
2,3,4,6,7,8-HxCDF	100	99.9		pg/g		100	72 - 151
1,2,3,4,6,7,8-HpCDD	100	112		pg/g		112	86 - 134
1,2,3,4,6,7,8-HpCDF	100	105		pg/g		105	81 - 137
1,2,3,4,7,8,9-HpCDF	100	111		pg/g		111	79 - 139
OCDD	200	219		pg/g		109	80 - 137
OCDF	200	217		pg/g		108	75 - 141

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	70		40 - 135
13C-2,3,7,8-TCDF	59		40 - 135
13C-1,2,3,7,8-PeCDD	73		40 - 135
13C-1,2,3,7,8-PeCDF	67		40 - 135
13C-1,2,3,6,7,8-HxCDD	63		40 - 135
13C-1,2,3,4,7,8-HxCDF	64		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	67		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	63		40 - 135
13C-OCDD	61		40 - 135

Lab Sample ID: 320-55071-5 MS
Matrix: Solid
Analysis Batch: 331858

Client Sample ID: G-01-01
Prep Type: Total/NA
Prep Batch: 329327

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	ND		29.5	28.5		pg/g	☼	97	77 - 130
2,3,7,8-TCDF	0.32	J	29.5	29.8		pg/g	☼	100	79 - 137

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: 320-55071-5 MS
Matrix: Solid
Analysis Batch: 331858

Client Sample ID: G-01-01
Prep Type: Total/NA
Prep Batch: 329327

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,7,8-PeCDD	1.4	J	147	159		pg/g	☼	107	79 - 134
1,2,3,7,8-PeCDF	0.34	J	147	149		pg/g	☼	101	81 - 134
2,3,4,7,8-PeCDF	ND		147	155		pg/g	☼	105	76 - 132
1,2,3,4,7,8-HxCDD	3.2	J B	147	174		pg/g	☼	115	65 - 144
1,2,3,6,7,8-HxCDD	7.6	J	147	165		pg/g	☼	107	73 - 147
1,2,3,7,8,9-HxCDD	7.2	J	147	178		pg/g	☼	116	80 - 143
1,2,3,4,7,8-HxCDF	0.90	J	147	146		pg/g	☼	98	72 - 140
1,2,3,6,7,8-HxCDF	0.62	J	147	135		pg/g	☼	91	63 - 152
1,2,3,7,8,9-HxCDF	0.43	J B	147	151		pg/g	☼	102	72 - 152
2,3,4,6,7,8-HxCDF	0.70	J B	147	141		pg/g	☼	95	72 - 151
1,2,3,4,6,7,8-HpCDD	210	B F1	147	430	F1	pg/g	☼	150	86 - 134
1,2,3,4,6,7,8-HpCDF	15	B	147	170		pg/g	☼	105	81 - 137
1,2,3,4,7,8,9-HpCDF	ND		147	180		pg/g	☼	122	79 - 139
OCDD	1700	B F2	295	2480	4	pg/g	☼	265	80 - 137
OCDF	30	B	295	353		pg/g	☼	110	75 - 141

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*63*		*40 - 135*
13C-2,3,7,8-TCDF	*57*		*40 - 135*
13C-1,2,3,7,8-PeCDD	*65*		*40 - 135*
13C-1,2,3,7,8-PeCDF	*60*		*40 - 135*
13C-1,2,3,6,7,8-HxCDD	*51*		*40 - 135*
13C-1,2,3,4,7,8-HxCDF	*54*		*40 - 135*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*40 - 135*
13C-1,2,3,4,6,7,8-HpCDF	*50*		*40 - 135*
13C-OCDD	*53*		*40 - 135*

Lab Sample ID: 320-55071-5 MSD
Matrix: Solid
Analysis Batch: 331858

Client Sample ID: G-01-01
Prep Type: Total/NA
Prep Batch: 329327

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	ND		29.5	27.6		pg/g	☼	94	77 - 130	3	20
2,3,7,8-TCDF	0.32	J	29.5	30.0		pg/g	☼	101	79 - 137	1	20
1,2,3,7,8-PeCDD	1.4	J	147	161		pg/g	☼	108	79 - 134	1	20
1,2,3,7,8-PeCDF	0.34	J	147	149		pg/g	☼	101	81 - 134	0	20
2,3,4,7,8-PeCDF	ND		147	154		pg/g	☼	104	76 - 132	1	20
1,2,3,4,7,8-HxCDD	3.2	J B	147	172		pg/g	☼	115	65 - 144	1	20
1,2,3,6,7,8-HxCDD	7.6	J	147	164		pg/g	☼	106	73 - 147	1	20
1,2,3,7,8,9-HxCDD	7.2	J	147	180		pg/g	☼	117	80 - 143	1	20
1,2,3,4,7,8-HxCDF	0.90	J	147	147		pg/g	☼	99	72 - 140	1	20
1,2,3,6,7,8-HxCDF	0.62	J	147	139		pg/g	☼	94	63 - 152	3	20
1,2,3,7,8,9-HxCDF	0.43	J B	147	150		pg/g	☼	101	72 - 152	1	20
2,3,4,6,7,8-HxCDF	0.70	J B	147	139		pg/g	☼	94	72 - 151	2	20
1,2,3,4,6,7,8-HpCDD	210	B F1	147	367		pg/g	☼	107	86 - 134	16	20
1,2,3,4,6,7,8-HpCDF	15	B	147	162		pg/g	☼	100	81 - 137	5	20
1,2,3,4,7,8,9-HpCDF	ND		147	174		pg/g	☼	118	79 - 139	3	20
OCDD	1700	B F2	295	1910	4 F2	pg/g	☼	71	80 - 137	26	20
OCDF	30	B	295	339		pg/g	☼	105	75 - 141	4	20

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C-2,3,7,8-TCDD	64		40 - 135
13C-2,3,7,8-TCDF	56		40 - 135
13C-1,2,3,7,8-PeCDD	69		40 - 135
13C-1,2,3,7,8-PeCDF	62		40 - 135
13C-1,2,3,6,7,8-HxCDD	55		40 - 135
13C-1,2,3,4,7,8-HxCDF	58		40 - 135
13C-1,2,3,4,6,7,8-HpCDD	63		40 - 135
13C-1,2,3,4,6,7,8-HpCDF	55		40 - 135
13C-OCDD	57		40 - 135

Method: D 2216 - Percent Moisture

Lab Sample ID: 480-160240-A-4 DU
Matrix: Solid
Analysis Batch: 330140

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	0.0			0.1		%				NC	20
Percent Solids	100.0			99.9		%				0.1	20

Lab Sample ID: 320-55004-E-17 DU
Matrix: Solid
Analysis Batch: 330305

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	13.1			13.3		%				2	20
Percent Solids	86.9			86.7		%				0.3	20

Lab Sample ID: 590-11994-A-6 DU
Matrix: Solid
Analysis Batch: 330691

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	4.6			4.9		%				6	20
Percent Solids	95.4			95.1		%				0.3	20

Lab Sample ID: 320-55123-A-6 DU
Matrix: Solid
Analysis Batch: 330898

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	10.2			12.7	F3	%				22	20
Percent Solids	89.8			87.3		%				3	20

QC Association Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

LCMS

Prep Batch: 473626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-1	G-04-02	Total/NA	Solid	Auto Shaker	
320-55071-2	G-04-01	Total/NA	Solid	Auto Shaker	
320-55071-3	G-04-02-D	Total/NA	Solid	Auto Shaker	
320-55071-4	G-01-01-D	Total/NA	Solid	Auto Shaker	
320-55071-5	G-01-01	Total/NA	Solid	Auto Shaker	
320-55071-6	G-03-01	Total/NA	Solid	Auto Shaker	
320-55071-7	G-03-02	Total/NA	Solid	Auto Shaker	
320-55071-8	G-02-03	Total/NA	Solid	Auto Shaker	
320-55071-9	G-02-02	Total/NA	Solid	Auto Shaker	
320-55071-10	G-02-01	Total/NA	Solid	Auto Shaker	
MB 280-473626/1-A	Method Blank	Total/NA	Solid	Auto Shaker	
LCS 280-473626/2-A	Lab Control Sample	Total/NA	Solid	Auto Shaker	
320-55071-5 MS	G-01-01	Total/NA	Solid	Auto Shaker	
320-55071-5 MSD	G-01-01	Total/NA	Solid	Auto Shaker	

Analysis Batch: 477353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-1	G-04-02	Total/NA	Solid	8321A	473626
320-55071-2	G-04-01	Total/NA	Solid	8321A	473626
320-55071-3	G-04-02-D	Total/NA	Solid	8321A	473626
320-55071-4	G-01-01-D	Total/NA	Solid	8321A	473626
320-55071-5	G-01-01	Total/NA	Solid	8321A	473626
320-55071-6	G-03-01	Total/NA	Solid	8321A	473626
320-55071-7	G-03-02	Total/NA	Solid	8321A	473626
320-55071-8	G-02-03	Total/NA	Solid	8321A	473626
320-55071-9	G-02-02	Total/NA	Solid	8321A	473626
320-55071-10	G-02-01	Total/NA	Solid	8321A	473626
MB 280-473626/1-A	Method Blank	Total/NA	Solid	8321A	473626
LCS 280-473626/2-A	Lab Control Sample	Total/NA	Solid	8321A	473626
320-55071-5 MS	G-01-01	Total/NA	Solid	8321A	473626
320-55071-5 MSD	G-01-01	Total/NA	Solid	8321A	473626

Specialty Organics

Prep Batch: 329327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-1	G-04-02	Total/NA	Solid	8290	
320-55071-2	G-04-01	Total/NA	Solid	8290	
320-55071-3	G-04-02-D	Total/NA	Solid	8290	
320-55071-4	G-01-01-D	Total/NA	Solid	8290	
320-55071-5	G-01-01	Total/NA	Solid	8290	
320-55071-6	G-03-01	Total/NA	Solid	8290	
320-55071-7	G-03-02	Total/NA	Solid	8290	
320-55071-7 - RA	G-03-02	Total/NA	Solid	8290	
320-55071-8	G-02-03	Total/NA	Solid	8290	
320-55071-9	G-02-02	Total/NA	Solid	8290	
320-55071-10	G-02-01	Total/NA	Solid	8290	
MB 320-329327/1-A	Method Blank	Total/NA	Solid	8290	
LCS 320-329327/2-A	Lab Control Sample	Total/NA	Solid	8290	
320-55071-5 MS	G-01-01	Total/NA	Solid	8290	
320-55071-5 MSD	G-01-01	Total/NA	Solid	8290	

Specialty Organics

Analysis Batch: 331857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-1	G-04-02	Total/NA	Solid	8290A	329327
320-55071-2	G-04-01	Total/NA	Solid	8290A	329327
MB 320-329327/1-A	Method Blank	Total/NA	Solid	8290A	329327
LCS 320-329327/2-A	Lab Control Sample	Total/NA	Solid	8290A	329327

Analysis Batch: 331858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-4	G-01-01-D	Total/NA	Solid	8290A	329327
320-55071-5	G-01-01	Total/NA	Solid	8290A	329327
320-55071-6	G-03-01	Total/NA	Solid	8290A	329327
320-55071-7	G-03-02	Total/NA	Solid	8290A	329327
320-55071-8	G-02-03	Total/NA	Solid	8290A	329327
320-55071-9	G-02-02	Total/NA	Solid	8290A	329327
320-55071-10	G-02-01	Total/NA	Solid	8290A	329327
320-55071-5 MS	G-01-01	Total/NA	Solid	8290A	329327
320-55071-5 MSD	G-01-01	Total/NA	Solid	8290A	329327

Analysis Batch: 332162

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-7 - RA	G-03-02	Total/NA	Solid	8290A	329327

Analysis Batch: 332655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-3	G-04-02-D	Total/NA	Solid	8290A	329327

General Chemistry

Analysis Batch: 330140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-4	G-01-01-D	Total/NA	Solid	D 2216	
320-55071-7	G-03-02	Total/NA	Solid	D 2216	
320-55071-8	G-02-03	Total/NA	Solid	D 2216	
320-55071-9	G-02-02	Total/NA	Solid	D 2216	
480-160240-A-4 DU	Duplicate	Total/NA	Solid	D 2216	

Analysis Batch: 330305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-5	G-01-01	Total/NA	Solid	D 2216	
320-55071-6	G-03-01	Total/NA	Solid	D 2216	
320-55004-E-17 DU	Duplicate	Total/NA	Solid	D 2216	

Analysis Batch: 330691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-10	G-02-01	Total/NA	Solid	D 2216	
590-11994-A-6 DU	Duplicate	Total/NA	Solid	D 2216	

Analysis Batch: 330898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55071-1	G-04-02	Total/NA	Solid	D 2216	
320-55071-2	G-04-01	Total/NA	Solid	D 2216	
320-55071-3	G-04-02-D	Total/NA	Solid	D 2216	

General Chemistry (Continued)

Analysis Batch: 330898 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55123-A-6 DU	Duplicate	Total/NA	Solid	D 2216	

Lab Chronicle

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-04-02
Date Collected: 10/04/19 11:20
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330898	10/14/19 16:37	HRB	TAL SAC

Client Sample ID: G-04-02
Date Collected: 10/04/19 11:20
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-1
Matrix: Solid
Percent Solids: 76.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.84 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 04:41	CBB	TAL DEN
Total/NA	Prep	8290			9.86 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331857	10/17/19 22:55	AS	TAL SAC

Client Sample ID: G-04-01
Date Collected: 10/04/19 11:18
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330898	10/14/19 16:37	HRB	TAL SAC

Client Sample ID: G-04-01
Date Collected: 10/04/19 11:18
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-2
Matrix: Solid
Percent Solids: 74.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.47 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 04:47	CBB	TAL DEN
Total/NA	Prep	8290			9.86 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331857	10/17/19 23:41	AS	TAL SAC

Client Sample ID: G-04-02-D
Date Collected: 10/04/19 11:35
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330898	10/14/19 16:37	HRB	TAL SAC

Client Sample ID: G-04-02-D
Date Collected: 10/04/19 11:35
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-3
Matrix: Solid
Percent Solids: 74.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.62 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 04:53	CBB	TAL DEN
Total/NA	Prep	8290			9.85 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			332655	10/21/19 22:24	ALM	TAL SAC

Client Sample ID: G-01-01-D
Date Collected: 10/02/19 10:50
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330140	10/10/19 17:32	HRB	TAL SAC

Client Sample ID: G-01-01-D
Date Collected: 10/02/19 10:50
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-4
Matrix: Solid
Percent Solids: 62.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.54 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 04:59	CBB	TAL DEN
Total/NA	Prep	8290			9.95 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 04:49	AS	TAL SAC

Client Sample ID: G-01-01
Date Collected: 10/02/19 10:05
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330305	10/11/19 16:06	TCS	TAL SAC

Client Sample ID: G-01-01
Date Collected: 10/02/19 10:05
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-5
Matrix: Solid
Percent Solids: 65.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.11 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 05:05	CBB	TAL DEN
Total/NA	Prep	8290			9.95 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 05:35	AS	TAL SAC

Client Sample ID: G-03-01
Date Collected: 10/02/19 14:55
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330305	10/11/19 16:06	TCS	TAL SAC

Client Sample ID: G-03-01
Date Collected: 10/02/19 14:55
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-6
Matrix: Solid
Percent Solids: 75.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.99 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 05:23	CBB	TAL DEN
Total/NA	Prep	8290			10.07 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 07:53	AS	TAL SAC

Lab Chronicle

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-03-02
Date Collected: 10/02/19 15:10
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330140	10/10/19 17:32	HRB	TAL SAC

Client Sample ID: G-03-02
Date Collected: 10/02/19 15:10
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-7
Matrix: Solid
Percent Solids: 79.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.3 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 05:36	CBB	TAL DEN
Total/NA	Prep	8290			10.06 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 08:39	AS	TAL SAC
Total/NA	Prep	8290	RA		10.06 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A	RA	1			332162	10/18/19 18:49	KSS	TAL SAC

Client Sample ID: G-02-03
Date Collected: 10/02/19 11:29
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330140	10/10/19 17:32	HRB	TAL SAC

Client Sample ID: G-02-03
Date Collected: 10/02/19 11:29
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-8
Matrix: Solid
Percent Solids: 62.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.28 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1	1 mL	1.0 mL	477353	11/12/19 05:42	CBB	TAL DEN
Total/NA	Prep	8290			9.87 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 09:25	AS	TAL SAC

Client Sample ID: G-02-02
Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330140	10/10/19 17:32	HRB	TAL SAC

Client Sample ID: G-02-02
Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9
Matrix: Solid
Percent Solids: 78.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.36 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 05:48	CBB	TAL DEN

Lab Chronicle

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Client Sample ID: G-02-02

Date Collected: 10/02/19 11:06
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-9

Matrix: Solid
Percent Solids: 78.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8290			9.92 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 10:11	AS	TAL SAC

Client Sample ID: G-02-01

Date Collected: 10/02/19 10:43
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-10

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			330691	10/14/19 09:51	MC	TAL SAC

Client Sample ID: G-02-01

Date Collected: 10/02/19 10:43
Date Received: 10/07/19 09:05

Lab Sample ID: 320-55071-10

Matrix: Solid
Percent Solids: 70.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Auto Shaker			10.0 g	10 mL	473626	10/10/19 16:33	TEH	TAL DEN
Total/NA	Analysis	8321A		1			477353	11/12/19 05:54	CBB	TAL DEN
Total/NA	Prep	8290			10.28 g	20 uL	329327	10/08/19 14:09	FC	TAL SAC
Total/NA	Analysis	8290A		1			331858	10/18/19 10:57	AS	TAL SAC

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Weston Solutions, Inc.
Job ID: 320-55071-1
Project/Site: START R9 - Guam Agent Orange

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4025	01-08-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Method	Method Description	Protocol	Laboratory
8321A	Herbicides (LC/MS)	SW846	TAL DEN
8290A	Dioxins and Furans (HRGC/HRMS)	SW846	TAL SAC
TEQ	Total TEQ Calculation	TAL SOP	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
8290	Soxhlet Extraction of Dioxins and Furans	SW846	TAL SAC
Auto Shaker	Wrist Action Shaker Extraction Technique	None	TAL DEN

Protocol References:

ASTM = ASTM International
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Weston Solutions, Inc.
Project/Site: START R9 - Guam Agent Orange

Job ID: 320-55071-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-55071-1	G-04-02	Solid	10/04/19 11:20	10/07/19 09:05	
320-55071-2	G-04-01	Solid	10/04/19 11:18	10/07/19 09:05	
320-55071-3	G-04-02-D	Solid	10/04/19 11:35	10/07/19 09:05	
320-55071-4	G-01-01-D	Solid	10/02/19 10:50	10/07/19 09:05	
320-55071-5	G-01-01	Solid	10/02/19 10:05	10/07/19 09:05	
320-55071-6	G-03-01	Solid	10/02/19 14:55	10/07/19 09:05	
320-55071-7	G-03-02	Solid	10/02/19 15:10	10/07/19 09:05	
320-55071-8	G-02-03	Solid	10/02/19 11:29	10/07/19 09:05	
320-55071-9	G-02-02	Solid	10/02/19 11:06	10/07/19 09:05	
320-55071-10	G-02-01	Solid	10/02/19 10:43	10/07/19 09:05	

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # — Group # — Sample # —

Client: Weston Solutions			
Project Name/#: Guam Agent Orange	Site ID #:		
Project Manager: Amanda Wagner	P.O. #: 0101633		
Sampler: A. Wagner / N. Lew	PWSID #:		
Phone #: (702) 606-3489	Quote #:		
State where samples were collected: GU	For Compliance: Yes ☐ No ☐		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Water	Other:	Total # of Containers	8321 Herbicides	8290 Dioxin
G-04-02	10/4/19	1120		X				2	X	X
G-04-01	10/4/19	1118		X				2	X	X
G-04-02-D	10/4/19	1135		X				2	X	X
G-01-01-D	10/2/19	1050		X				2	X	X
G-01-01 (MS/MSD)	10/2/19	1005		X				2	X	X
G-03-01	10/2/19	1455		X				2	X	X
G-03-02	10/2/19	1510		X				2	X	X
G-02-03	10/2/19	1129		X				2	X	X
G-02-02	10/2/19	1106		X				2	X	X
G-02-01	10/2/19	1043		X				2	X	X

Matrix: ☐ Tissue ☐ Sediment ☐ Ground ☐ Surface ☐ Potable ☐ NPDES

Analyses Requested — Preservation and Filtration Codes

For Lab Use Only: SF #: — SCR #: —

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; F = Field Filtered; O = Other

Remarks

320-55071 Chain of Custody

Turnaround Time Requested (TAT) (please check): Standard ☒ Rush ☐
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed: Normal TAT

Rush results requested by (please check): E-Mail ☐ Phone ☐

E-mail Address:

Phone:

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐
Type III (Reduced non-CLP) ☐ CT RCP ☐
Type VI (Raw Data Only) ☐ TX TRRP-13 ☐
NJ DKQP ☐ NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☒ No ☐ If yes, format: will provide template via email

Relinquished by:	Date	Time	Received by:	Date	Time
Amanda Wagner	10/4/19	0950	Retusac	10/7/19	705

Relinquished by Commercial Carrier: UPS ____ FedEx ____ Other ____

Temperature upon receipt 3.8 °C

Login Sample Receipt Checklist

Client: Weston Solutions, Inc.

Job Number: 320-55071-1

Login Number: 55071
List Number: 1
Creator: Onishi, Marc

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1066317, 1066316
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	False	Refer to Job Narrative for details.
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Weston Solutions, Inc.

Job Number: 320-55071-1

Login Number: 55071
List Number: 2
Creator: Bunzli, Eric K

List Source: Eurofins TestAmerica, Denver
List Creation: 10/09/19 01:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	False	Seals on cooler but date and time not filled out.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	